UPDATED ENVIRONMENTAL MANAGEMENT PLAN (EMP)

CONSTRUCTION OF ONANKALI SERVICE STATION ON 6000 M² IN ONANKALI COMMUNAL AREA, OSHIKOTO REGION

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LIST OF ACRONYMS

BOD	Biological Oxygen Demand
COD	Chemical Oxygen Demand
EHS	Environmental Health and Safety
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
ERPs	Emergence Response plans
IEA	Initial Environmental Audit
NEMA	National Environmental management Authority
OHS	Occupational Health and Safety
PH	Power of Hydrogen
PMS	Petroleum Motor Spirit (Premium Gasoline)
PPE	Personal Protective Equipment
RMS	Regular Motor Spirit (Regular)
SEM	Sustainable Environmental Management
SS	Suspended Solids
ULG	Unleaded Gasoline
UPSS	Underground Petroleum Storage System
UST	Underground Storage Tank
WCC	Waste Collection Centre

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UPDATED ENVIRONMENTAL MANAGEMENT PLAN

PETROLEUM FILLING STATION IN ONANKALI COMMUNAL AREA, OSHIKOTO REGION

Proposed Land Use: Service Station

Total Site Area: The site measures 6000 m²

EXECUTIVE SUMMARY

The proponent (Nambaza Investments cc) acquired an Environmental Clearance Certificate (ECC) 00722 in July 2020 for the construction and development of the Onankali Service Station in Onankali Communal area with GPS Position: 18°11'16.3"S 16°22'43.2"E. This ECC has since expired. It is therefore a requirement through the Namibia Environmental Act, Act no. 5 of 2007, that an ECC should be renewed after three (3 years). The Onankali Service Station construction development project is currently under construction and entails the construction of a standard service station with three dispensing pumps (petrol and diesel) with 3 double walled Underground Storage Tanks of 45 cubic metres, as well as a business plaza consisting a supermarket, pharmacy, doctors practice and general retail shop on a 6000 sqm.

The service station will also have a canopy covered forecourt, ablutions, tyre fitment & oil changing facilities, convenience store and street upgrading in order to provide safe access to the proposed service station. The portion of land is Communal land that was allocated to Nambaza Investment cc for is business development construction. The Onankali Service Station project ECC renewal presents a re-assessment of the potential environmental, occupational health and safety, social and community impacts of construction and development of the service station.

This ECC renewal subsequently proposes risk mitigation measures and design enhancement as part of the updated Environmental Management Plan (EMP). The findings of the EIA reveals that the development of a service station poses potential environmental damage in the form of air pollution due to the additional traffic generated, destruction of the landscape, aesthetic view and visual impacts in a rural environment characterised by open blocks of crop fields separated by livestock corridors.

Onankali is a typical Namibia rural setting with income derived from agriculture, businesses, cash remittances, salaries and wages and pensions. The predicted environmental impacts can

be managed resulting in minimal or insignificant residual effects through the successful implementation of the proposed Environmental Management Plan (EMP). The initial EIA report concluded that all identified risks can be easily mitigated and managed by implementing the hierarchy of controls following environmental management standards, best practices and management systems. Specific instructions have been formulated as part of the Environmental and Social Management Plan (EMP). The updated EMP will therefore be used as an onsite management tool during the construction, operations and decommissioning phases of the service station.

The main objective of the ECC renewal is to provide information on the nature and extent of potential environmental impacts arising from the construction and operation of the proposed Filling station (hereinafter referred to as "the Project") and related activities taking place concurrently and to contribute to decisions on the overall environmental acceptability of the Project after the implementation of environmental mitigation measures. The methodologies used to conduct the first initial EIA study were an Interviews) Field observations b) Desktop research. The public participation comments, Freehold document, and Architectural Designs have been annexed at the back of the main Scoping report.

The scope of the study was to describe the project, document all the baseline information, address both the positive and negative impacts and develop mitigation measures for negative impacts including designing environmental management plan for the project. The following were viewed as areas of concern as well as positive impacts that have been discussed at depth in the report and their mitigation measures outlined.

a) Solid and liquid waste generation
b) Noise nuisance
c) Employment
d) dust emissions and air pollution
e) occupational health and safety concerns
f) National economic benefits
g) energy use
h) loss of vegetation
i) Soil erosion
j) Fire hazards and accidents) land use shift
k) Increased water demand

l) Gaseous emissions

m) Increased pressure on existing infrastructure.

Project Design

The draft updated EMP report is based on information and Consultation with the proponent.

The proposed filling station is composed of the following major sections:

- The canopy over pumps (fore court)
- Underground oil storage tanks and breathers, fuel retail (diesel pumps)
- Offices and shops
- Drive ways: walkways; acceleration and deceleration lanes; and parking areas
- Oil/water interceptor
- Washrooms

Table 1: Possible external impacts/ factors & mitigation measures

Possible Impact	**Proposed Mitigation Measures**
Impact on excavated soil	• Control construction especially during wet/rainy conditions Landscaping • Compact loose properly • Dispose excavated loose properly
Compromising Safety and health of workers, neighbours' pedestrians and visitors	• Fence off the site • Display warning signs of construction works. • Issue workers with safety appliances. • Ensure safe access to the site through culverts. Provide a first aid kit. • Avail pit latrine and bathing facilities.
Traffic and Transport Impact	• Construct acceleration and deceleration lanes. • Deliver materials on need basis. • The personnel on the ground should guide traffic movements. • Damaged drainage should be repaired and maintained after construction
Increased Human Activities – Increased Solid Waste Generation	• Place litterbins at the site. • Ensure that there are elaborate programmes of waste removal frequently. • Waste generated should be contained appropriate
Impact on air quality	• Wet or cover dust generating activities. • Provide PPE to the workers. • Switch off vehicle engine and machinery when not in use.

Environmental concern during the construction phase	• Proponent will liaise with the environmental consultants throughout the construction phase
Noise and vibration levels	• Use of manual labour. • Noise assessment should be done. • Use of PPE. • Work with machinery should be limited today time only.
Solid waste generation	• Ensure all the waste, damaged and unused building materials are removed safely from the site and sold out, reused or disposed properly. • Ensure general cleaning of the compound and disposal of solid wastes. • Use oil receptors for containing waste oil. • Provide litter bin for trash and solid waste. • Liaise with waste handlers especially tyres recyclers to collect worn out • Tyres for disposal or retreat. • Service vehicles at the service bay to minimize oil spills. • Recover waste and split oil into oil receptors.
Emergency preparedness	• Provide suitable fire extinguishers including ABC or CO2 and place them near probable source ignition. • Warning signs should be in place. • Sources of fire should be restricted to all. • Smoking and disposal of cigarette waste should be limited to designated facilities and areas far from the fuel dispensing canopy.

Conclusion

It should always be remembered that petrol filling stations once put into operation need to be closely managed. This will ensure that the environment is always safeguarded. It is therefore important that the site conduct regular site assessments to provide early indication of leaks or releases of product into the ground and available risks. If there is considered to be a very high risk, a redevelopment should be considered. Other methods to be considered, which will point to early indications of leaks are:

- There should be accurate records of stocks and sales;
- Modern stock control systems;
- Associated with tank gauging systems, to provide an early warning when stock losses are outside acceptable parameters;

- The project's systems should be tested on a regular basis as they get older, to attest they are sound;
- Testing of both the tanks and lines should be by precision tightness methods and;
- Monitoring wells should be installed around the site to give an early indication of a product release.

Considering the proposed location, construction, management and mitigation measures that will be put in place and the project's contribution in the provision of petroleum products and creating employment opportunities, its implementation is considered important and beneficial. The key effort should be geared towards safeguarding the environment. This can be effectively overcome through close following and implementation of the recommended Environmental Management Plan (EMP).

1. INTRODUCTION

1.1 Petroleum Industry in Namibia

The Southern African republic of Namibia has no known oil or gas reserves, until recently oil reserves were discovered in Southern part of the country. The Namibia government has encouraged foreign interest in oil exploration and there is a modest upstream oil industry. It is endowed with other energy sources including wood fuel, coal, solar and wind power, much of which is untapped. The country's commercial energy needs are supplied by electricity, coal, fuel wood and oil-derived products.

Petroleum is Namibia's major source of commercial energy and has, over the years, accounted for about 80% of the country's commercial energy requirements. Demand for oil in Namibia is quite small due to the country's underdeveloped economy, which is heavily dependent on labour intensive and rain-fed agriculture systems. The domestic demand for various petroleum fuels on average stands at 1 million tons per year, all of it imported from the Gulf region, either as crude oil for processing at the Namibian Petroleum Refineries Limited or as refined petroleum products.

Prior to liberalization in 1990, a significant feature of Namibia's oil industry was a relatively high level of government's direct participation, and a correspondingly low level of private sector involvement. few marketing and distribution companies were responsible for procuring

and importing their own oil. The National Oil Industry of Namibia was mandated to supply 30% of the crude oil requirement into the country.

Since liberalization, many new companies have been licensed by the government to engage in petroleum trading, especially import and export, wholesale and retail of petroleum products. The Namibian Petroleum industry, represent the government. s presence in the petroleum industry. The Petroleum is owned on a 50:50 equity holding between the government and other shippers, namely, Shell and British Petroleum have acquired exploration licenses in Namibia.

Despite the hype surrounding the possibility of oil off the Namibian coast, a viable find remains elusive, with the only discovery to date being nothing more than an appetite whether for exploration companies and prospect licence holders. Nevertheless, exploration continues, and with the arrival of oil majors and many upcoming drilling projects, we will begin to see a clearer picture of Namibia's oil potential, and should oil be discovered, only time will tell if it will help or hamper Namibia's development

1.2 Environmental Impacts of the Petroleum Industry

The environmental impact of petroleum is often negative because it is toxic to almost all forms of life. The possibility of climate change exists. Petroleum, commonly referred to as oil, is closely linked to virtually all aspects of present society, especially for transportation and heating for both homes and for commercial activities.

1.2 Toxicity

Petroleum distillates contaminate surface run-off and kill almost all life. Crude oil is a mixture of many different kinds of organic compounds, many of which are highly toxic and cancer causing (carcinogenic). Oil is "acutely lethal" to fish, that is it kills fish quickly, at a concentration of 4000 parts per million (ppm) (0.4%). Crude oil and petroleum distillates cause birth defects. [2] Benzene is present in both crude oil and gasoline and is known to cause leukemia in humans. The compound is also known to lower the white blood cell count in humans, which would leave people exposed to it more susceptible to infections. Studies have linked benzene exposure in the mere parts per billion (ppb) ranges to terminal leukemia, Hodgkins lymphoma, and other blood and immune system diseases within 5-15 years of exposure."

1.3 Air pollution

When oil or petroleum distillates are burned usually the combustion is not complete. This means that incompletely burned compounds are created in addition to just water and carbon dioxide. The other compounds are often toxic to life. Examples are carbon monoxide and methanol. Also, fine particulates of soot blacken humans' and other animals' lungs and cause heart problems or

1.4 Acid rain

High temperatures created by the combustion of petroleum causes nitrogen gas in the surrounding air to oxidize, creating nitrous oxides. Nitrous oxides, along with sulfur dioxide from the sulfur in the oil, combine with water in the atmosphere to create acid rain. Acid rain causes many problems such as dead trees and acidified lakes with dead fish. Coral reefs in the world's oceans are killed by acidic water caused by acid rain.

Acid rain leads to increased corrosion of machinery and structures (large amounts of capital), and to the slow destruction of archaeological structures like the marble ruins in Rome and Greece.

1.5 Climate change

Humans burning large amounts of petroleum create large amounts of CO2 (carbon dioxide) gas that traps heat in the earth's atmosphere. Also, some organic compounds, such as methane released from petroleum drilling or from the petroleum itself, trap heat several times more efficiently than CO2. Soot blocks the sun from reaching the earth and could cause cooling of the earth's atmosphere.

1.6 Oil spills

An oil spill is the release of a liquid petroleum hydrocarbon into the environment, especially marine areas, due to human activity, and is a form of pollution. The term is usually applied to marine oil spills, where oil is released into the ocean or coastal waters, but spills may also occur on land. Oil spills may be due to releases of crude oil from tankers, offshore platforms, drilling rigs and wells, as well as spills of refined petroleum products (such as gasoline, diesel) and their by-products, heavier fuels used by large ships such as bunker fuel, or the spill of any oily

refuse or waste oil. Major oil spills include the Kuwaiti oil fires, Kuwaiti oil lakes, Lakeview Gusher, Gulf War oil spill, and the Deepwater Horizon oil spill.

Spilt oil penetrates into the structure of the plumage of birds and the fur of mammals, reducing its insulating ability, and making them more vulnerable to temperature fluctuations and much less buoyant in the water. Clean-up and recovery from an oil spill is difficult and depends upon many factors, including the type of oil spilled, the temperature of the water (affecting evaporation and biodegradation), and the types of shorelines and beaches involved. Spills may take weeks, months or even years to clean up.

1.7 Volatile organic compounds

Volatile organic compounds (VOCs) are gases or vapours emitted by various solids and liquids, many of which have short- and long-term adverse effects on human health and the environment. VOCs from petroleum are toxic and foul the air, and some like benzene are extremely toxic, carcinogenic and cause DNA damage. Benzene often makes up about 1% of crude oil and gasoline. Benzene is present in automobile exhaust. More important for vapors from spills of diesel and crude oil are aliphatic, volatile compounds. Although "less toxic" than compounds like benzene, their overwhelming abundance can still cause health concerns even when benzene levels in the air are relatively low. The compounds are sometimes collectively measured as "Total Petroleum Hydrocarbons" or "TPH."

1.8 Waste oil

Waste oil is used oil containing breakdown products and impurities from use. Some examples of waste oil are used oils such as hydraulic, transmission oil, brake fluids, motor oil, crankcase oil, gear box oil and synthetic oil. Many of the same problems associated with natural petroleum exist with waste oil. When waste oil from vehicles drips out engines over streets and roads, the oil travels into the water table bringing with it such toxins as benzene. This poisons both soil and drinking water. Runoff from storms carries waste oil into rivers and oceans, poisoning them as well.

2. DETAILED DESCRIPTIONS OF THE PROPOSED ACTIVITY

2.1 Brief project Description

The proposed service station entails the construction and operation as well as associated infrastructure and services for the provision of fuel and related supplies. The proposed service station will have 5 partitions, namely:

- A canopy covered forecourt, ablutions, bakery, tyre fitment & spares shop,
- A convenience store; completed with interlocked pavements to provide safe access to the proposed service station.

The project dimensions will be as follow:

- Total buildings (4 x shops, ablution facilities, tyre fitment, convenient store and bakery) with a total area measuring 820 sqm.
- Total site area measures 4000 sqm comprising a steel canopy, pedestrian walkway and duct, relaxation deck, cages, backyard paved area, pumps zone, drive ways, parking's with shade net cover and landscaping.

The petroleum filling station is aimed at providing convenient services to local residents of Onankali, passengers in-transit, tourists and the entire region to provide for petroleum fuel pumps and parking for both small cars and light weight vehicles within Onankali and vehicles in transit to neighbouring towns, which will also halt to relive the pressure of services and parking spaces within the CBD of Oshivelo and Omuthiya.

The site is located in Onankali Communal land, on a 6000 square meter of land within the Oshikoto Region. The site measures 6000 m². It is situated and exists within an area where other commercial business exists and are planned, such as Industrial businesses, informal shops, formal general businesses, public schools and many more compatible land uses. The site was fist used as a crop field, hence most of the existing vegetation was already removed. The site is currently being developed and is under-construction with no trees or plant vegetation.

Figure 1: Project area locality: Onankali Service station (Source: Google map, 2023)

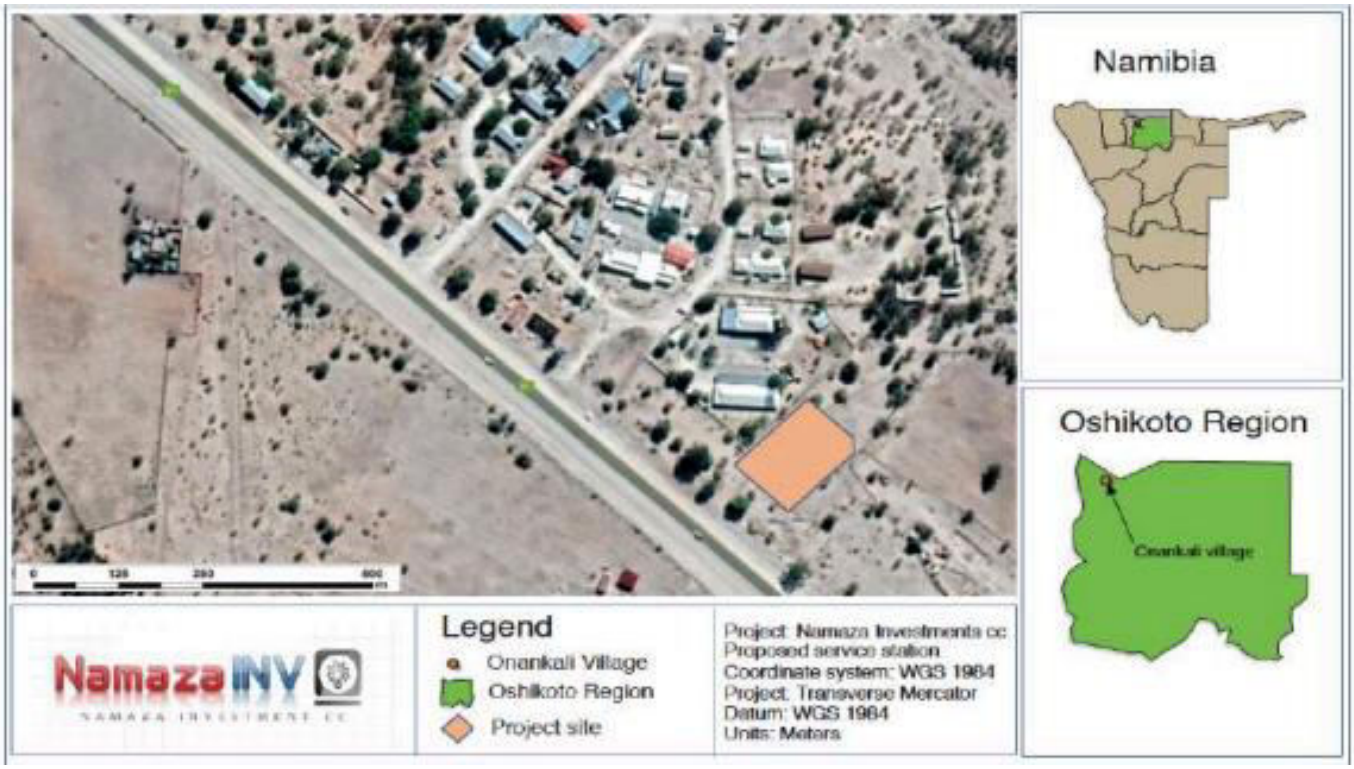

Figure 2: Site location with co-ordinated (Source: Abisai Konstantinus, 2020)

Figure 3: Project Site 'Entry' and 'Exit' (source: google maps)

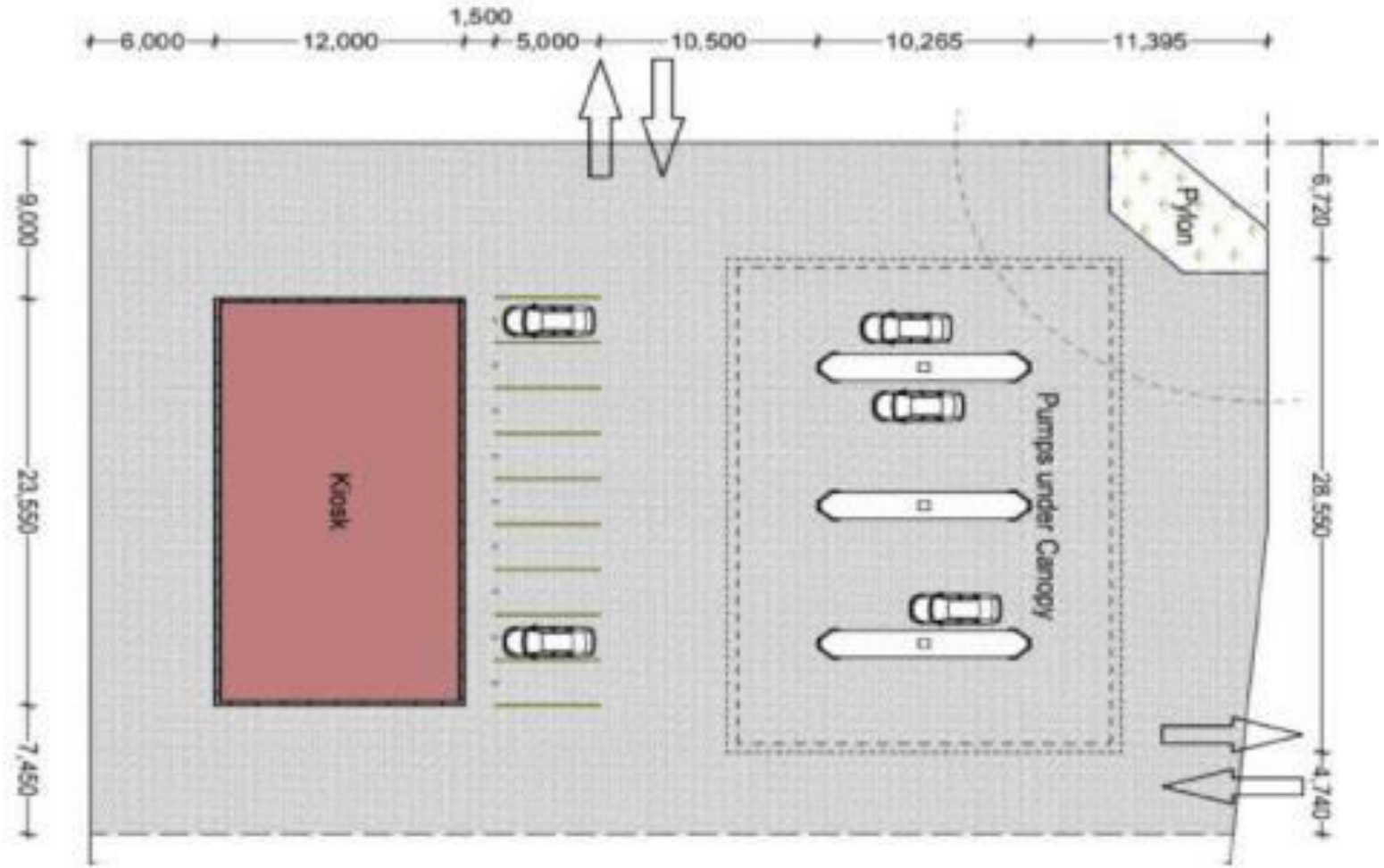

Figure 4: Project layout design.

2.2 The Service station construction phases

This chapter entails the planning, designing and documenting of the Onankali service station project. It offers an ideal opportunity to consider and incorporate proactive environmental management measures with the goal of attaining sustainable development. While there are still chances of accidental impacts taking place; however, through the incorporation of contingency plans (e.g., as proposed in the updated EMP) during the planning phase, the necessary corrective action can be taken to further limit potential impacts.

2.2.1 Construction phase

This phase entails the actual development/ construction of the project infrastructure. The activities during this phase include:

- Excavation of trenches and pits for services and infrastructure
- Installation of engineering services, underground storage tanks, oil separator, spill control infrastructure, submersibles, generator and dispensing pumps
- Electrical reticulation above and below ground
- Construction of buildings, paving, pump islands, storm water drainage, site access streets and related infrastructure.
- Transportation of equipment, components, machines and building material to site
- Site clean-up and housekeeping. The bulk of the impacts during this phase will have immediate effects (e.g., noise, dust and water pollution). If the site is monitored on a continual basis during the construction phase, it is possible to identify these impacts as they occur. These impacts can then be mitigated through the contingency plans identified in the planning phase, together with a commitment to sound environmental management

2.2.3 Operational phase

The operational phase entails the operation of the project for the intended purpose. The activities during this phase include:

- Decanting fuel to the underground storage tanks from street tankers
- Fuel dispensing into vehicles and approved containers
- Tyre repair operations • Operations of the kitchen and onsite shops
- Site clean-up and housekeeping Similar to the construction phase, the bulk of impacts during this phase will be the additional traffic generated by vehicles have (e.g. noise,

dust and light pollution). If the site is monitored on a continual basis during the construction phase, it is possible to identify these impacts as they occur. These impacts can then be mitigated through the contingency plans identified in the planning phase, together with a commitment to sound environmental management.

2.2.4 Decommissioning phase

• Demolition and removal of physical structure not to be reused for further land use. • Site rehabilitation and clean-up

The following tasks have been completed in the project subsequent the last version of this report:

- Brick up structure of Convenient Store – 23/12/2022
- Installation of roof trusses for convenient store – 27/12/2022
- Substructure: steel fixing, bases, and stub columns for auxiliary tenant shops – 03/01/2023
- Installation of roof sheeting for convenient store – 09/01/2023

The following tasks are subsequently scheduled going fourth:

- Plastering and Painting – 14/01/2023
- Installation of Services – 20/01/2023
- Installation of doors and windows – 20/02/2023
- Installation of Forecourt Canopy – 30/02/2023

Figure 5: Current service station construction activities

The EMP study report is based on information and consultations with the proponent, design Engineers and the general public. Main (summary) components of the proposed project shall include:

- The canopy over pumps (fore court)
- Underground diesel oil storage tanks and breathers
- Office building/convenient shop
- Drive ways: walkways; acceleration and deceleration lanes; and parking areas
- Oil/water interceptor
- Generator/compressor room
- Service bay
- Washrooms

2.5.1 Design of Tank Installation

A fuel tank (also called a petrol tank or gas tank) is a safe container for flammable fluids, often gasoline or diesel fuel. Though any storage tank for fuel may be so called, the term is typically applied to part of an engine system in which the fuel is stored and propelled (fuel pump) or released (pressurized gas) into an engine. Fuel tanks range in size and complexity from the small plastic tank of a butane lighter to the multi-chambered cryogenic Space Shuttle external tank. Due to soil climate conditions of the northern Namibia (Onankali communal area), Nambaza Investment cc plans to use the plastic tanks that are resistant to rust.

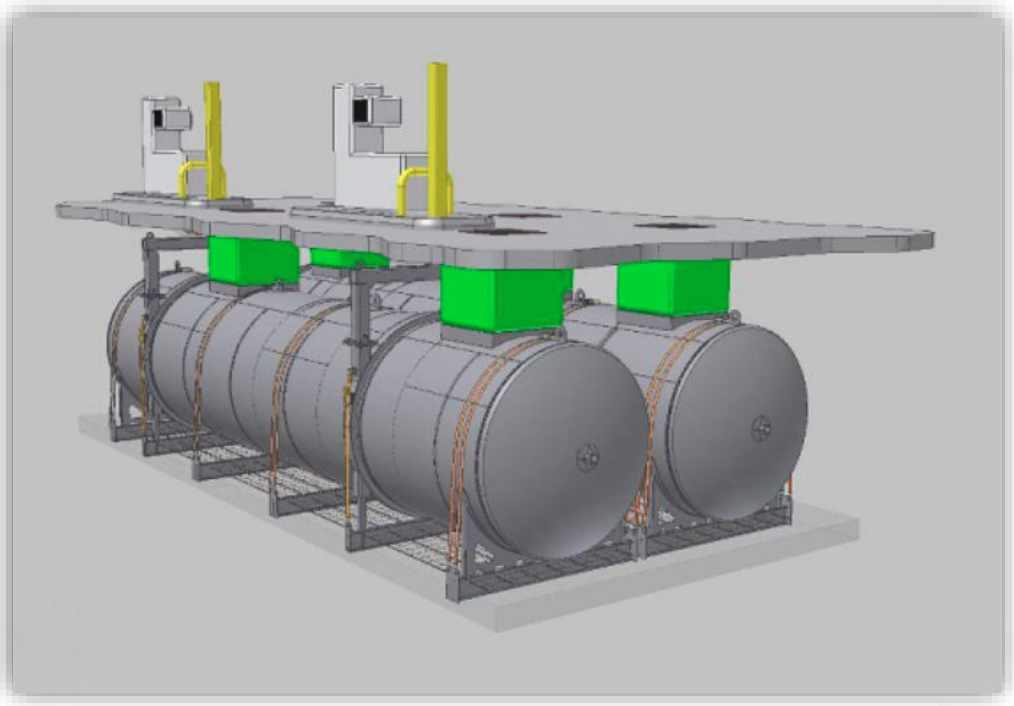

Figure 6: Fuel tank installation design

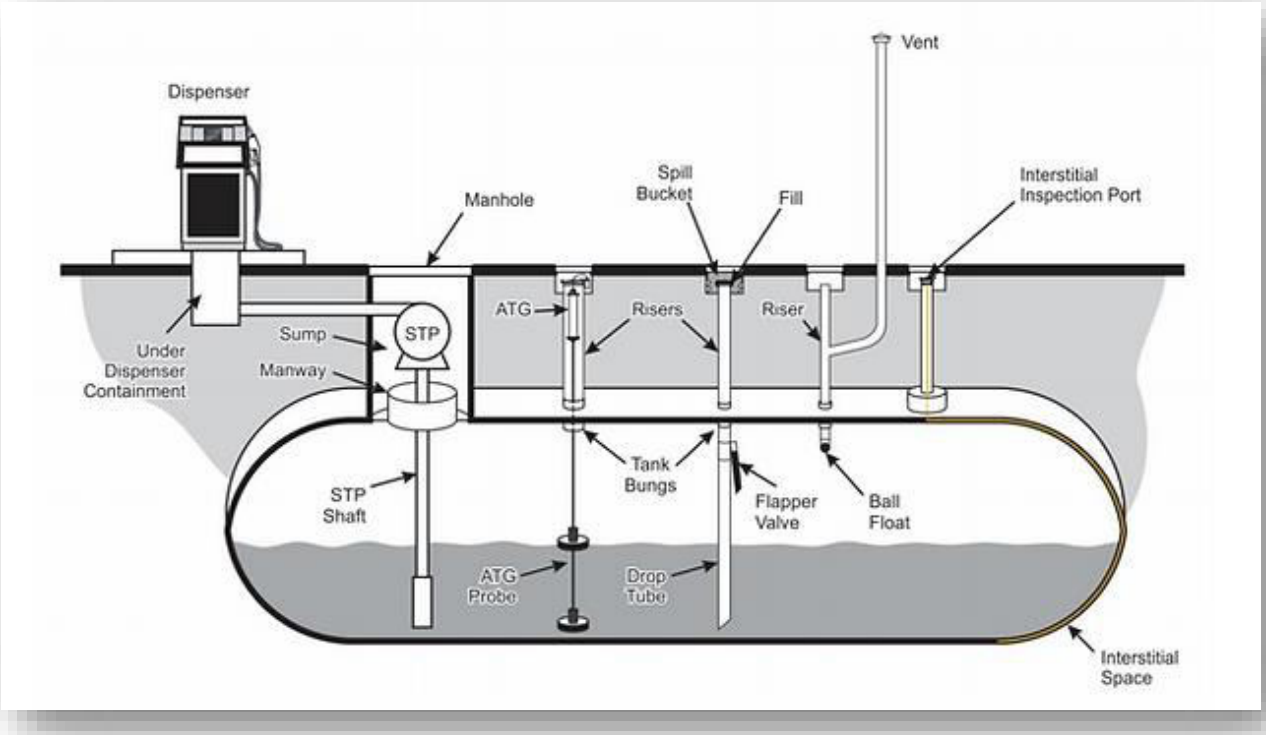

Figure 7: Layout design of tank installation

2.5.2 Underground Storage Tanks (UST)

The tanks are manufactured from coated steel. These are called composite tanks. The manhole section is fitted with a overfill protection device and self-contained manhole which is impervious to hydrocarbon and is sealed to prevent contamination to the surrounding environment. The materials used to make the tanks are corrosive free metals. A documented leak monitoring system will be put in place.

Fuel retail (diesel pump)

A gasoline pump referred in the development scope of Nambaza Investment cc project is a machine at a filling station that can or will be used to pump gasoline (petrol), diesel, or other types of liquid fuel into vehicles. In Oil Industry parlance, Petrol Pumps are referred to as Retail Outlets. A fuel pump is a fluid handling device that moves gasoline from the fuel tank to the engine. However, Nambaza Investment cc shall use the electric fuel pump as the most efficient for business

It is the common point of contact of customers with Oil Industry is the Petrol Pump. In Oil Industry parlance, Petrol Pumps are referred to as Retail Outlets (ROs).

- As per the existing Namibian Government policy, Petrol Diesel Pumps can be set up by Public Sector Oil Companies as well as Private Sector Oil Companies dealing in storage and distribution of petroleum products as per guidelines. Presently, the Oil Companies engaged in retail business of automotive fuels are IOC, HPC, BPC, NRL, MRPL, ONGC, RIL, Essar and Shell.
- Petrol, in technical language is called "Motor Spirit" (MS). It is mainly used in passenger vehicles such as 2 / 3 wheelers and cars. High Speed Diesel (HSD): HPCL markets two types of Diesels across the country i.e **Normal diesel and Branded diesel.**

- **Normal Diesel:** These are used in heavy commercial vehicles, buses, tractors, motor cars, pump sets and in various other diesel engine driven applications. This is the type of diesel that will be used in the proposed truck-port business

- **Branded Diesel:** This is preferred by new generation vehicles and is sold by HPCL under the brand Name "Turbojet", which contains multi-functional additive that enhances the performance of new generation vehicles and ensures peak engine performance.

- **Lubricants:** These are vital products for healthy life of an engine. A lubricant is a viscous product used in the engine for its smooth functioning. Different grades of lubricants are needed for different engines, gear box and other components.

Facilities provided at Retail Outlets:

Facilities: A Retail Outlet is not just a place for meeting fuel needs. It offers a range of services which can be classified as under:

Mandatory Facilities: These are the facilities which every retail outlet must provide. These include free air, display of working hours and display of name and telephone number of oil company personnel for the convenience of customers. First Aid Box, toilet and safety equipment as per statutory requirements such as fire extinguishers and sand buckets etc. this fundamental information shall be displayed as a standard procedure when setting up the fuel service station

Other Facilities: For the convenience of customers few additional facilities may be provided by dealers at the retail outlet premises. These include water-coolers, convenience

stores, snack-bars, Dhaba's and rest-rooms, bathing and washing space for truckers, telephone facility- PCO/STD, ATM, servicing / repair shop, tyre shop, loyalty card program etc.

2.5.3 Safety – Our utmost concern:

Petroleum products are highly inflammable and are, therefore, dangerous if not handled properly. In Namibia their handling is strictly governed by Petroleum & Explosives Safety Organization (PESO) Rules. A Petrol Pump (like the one proposed for Nambaza Investment cc) will be a licensed premise and all activities to be carried out with strict adherence to PESO Rules. For the safety of all concerned, the following precautions will and must be observed:

- Switch off the engine before taking delivery of fuel (to avoid possible fire caused by spillage of fuel)
- Caution sign "Please DO NOT smoke" within the Petrol Pump premises.
- Caution sign "Never light a match stick" within the Petrol Pump premises.
- It is advisable to get off the vehicle while refuelling.
- It is not advisable to carry petrol / diesel in plastic / glass bottles.

2.5.4 Secondary Containment Fuel Systems

Secondary containment fuel systems will be installed including tank gauging. The secondary containment system encloses all primary fuel hoses and connections, isolating the system completely from the environment i.e. 'a pipe within a pipe'.

2.5.5 Underground Piping System

The proponent shall use co-axial polyethylene piping with fusion welded couplings terminated on either end with rubber boots within the pump and tank sumps. No joins are made between the tank and the pump thereby ensuring that if a leak occurs it is contained within the sumps. The piping is doubled walled and laid at a fall of 1:100 back to the tank, ensuring that if a breakage occurs in the inner skin, the fuel will run back to the tank containment sump where it is able to be removed.

2.5.6 Tank Farm

The tank farm is the area of the filling station where the tanks that contain the relevant fuels are stored. These tanks are stored underground and are therefore referred to as USTs. When installing the USTs to assemble the tank farm, the proponent will utilize the latest technology, both in the manufacturing and installation process. The USTs are manufactured from mild steel and are coated with GRP on the exterior. These tanks are called Composite tanks. SANS 1535 and Underwriters Laboratories (UL) standards govern the manufacturing standards. A self-contained manhole, which is impervious to hydrocarbons, is fitted to the tank and is sealed to prevent contamination to the surrounding environment. Monitoring wells are also fitted to each end of the tank to allow for continued ground water sampling.

2.5.7 Leak Monitoring Wells

Before back-filling of the tank farm takes place, leak monitoring wells (i.e., high-density polyethylene slotted/perforated pipes with a 160mm outside diameter, wrapped in a porous geotextile, or ABS (acrylonitrile-butadiene-styrene) single-walled wedge-slot tubular screens) will be installed in each corner of the excavation. A minimum of four wells will be installed to a depth of 500mm below the floor of the excavation. If the soil at the bottom of the excavation is of a sandy nature, the observation wells will be taken down an additional depth of 500mm below the floor of the excavation. A minimum of one well should be installed at each corner of the excavation.

2.5.8 Tank Gauging System

Tank gauging is a complete fuel management system. The purpose of the fuel management system is to provide leak detection and reconciliation services for filling stations, thus allowing for early leak detection and system monitoring of the tanks. The sophisticated system very accurately monitors (up to 16 tanks and 64 sensors) all sales and deliveries relevant to the filling station, which then in turn determines if any losses in product has occurred. An alarm is incorporated into the system for the purpose of environmental monitoring, which is not only beneficial to the surrounding environmental elements, but facilitates the proponent in maintaining up-to date quantity and quality reports for record keeping purposes

2.5.9 Soil and ground/surface water analysis will be done for total Hydrocarbon (TPH), Polycyclic Aromatic Hydrocarbon (PAH) and BTEX analysis

Soil and water samples will be collected randomly from the petrol station once per annum when it starts operating. The samples will be taken in National Environmental management Authority (NEMA) approved laboratories for analysis. TPH will be estimated gravimetrically following standard methods of TPH analysis, while the heavy metals will also be determined.

2.5.10 Groundwater monitoring

Groundwater monitoring should be undertaken annually (once per year) where groundwater monitoring wells is installed. Groundwater monitoring bores should be sampled and analysed; all analysis for organic and inorganic substances must be done for total concentrations. That is; pH, Total Petroleum Hydrocarbons, BTEX (Total) Benzene Toluene Ethyl Benzene Xylene, and Lead. An exceedance of the groundwater parameters may indicate a leak.

2.5.11 Oil/Water Interceptor

A chamber oil/water interceptor will be constructed at the filling station. The interceptor will be constructed out of reinforced concrete walls and floor and plastered internally with waterproof cement. A vent pipe from each chamber will be installed within the interceptor to allow for fugitive emissions to escape.

2.5.12 Oil Tank: for used oil

The provision for used oil tank shall be made on a concrete plinth. The plinth will have a retainer wall around it that will be able to contain the net contents of the used oil tank. The concrete plinth will be sloped towards a sump whose drainage will be connected to the oil interceptor tank/chamber for treatment of a potentially contaminated wastewater.

2.5.13 Forecourt Areas and Spillage Drainage

All service areas on the forecourt service area, as well as the refuelling area, will be constructed from concrete to form an impervious surface. Surfaces will be sloped to falls, and led to a spillage containment system, where the contamination is able to be removed without entering the sewage or storm water system or contaminating any surrounding soil

2.5.14 Fire Protection; Emergency Response

Fire extinguishers will be installed and fire incident management and control measures will be instituted, which will include provision of sand buckets, warning signs such as "NO SMOKING" signs, etc, which must be posted within the operation area and where they can easily be seen. The firefighting equipment will be located strategically within the proposed project. The electrical system at the service station will be connected to a centrally located emergency stop switch to enhance power control in the event of an emergence i.e., switch will shut off the electrical power of the entire project.

2.5.15 Steel Canopy over Pump Island

A structural steel canopy will be fabricated and erected at the proposed project. These canopies will be designed by a qualified structural engineer and fabricated/installed by a specialist.

2.5.16 Electrical System

The electrical system at the filling station will be designed by a registered engineer and in accordance with the electric power regulations in Namibia and other electrical standards such as National Electric Code. The electrical system will include power supply to the mechanical pumps, underside of the steel canopy, the offices, and Machine/compressor room and security systems. On completion of the electrical works, it is expected that Nampower and/or CEnored will approve the electrical works and issue a power connection certificate to the proponent.

3. ENVIRONMENTAL ISSUES AND IMPACTS

This chapter seeks to fulfil the requirements of Sub-regulation with respect to the description of environmental issues identified during the EIA process, their significance and potential for mitigation; and with respect to the assessment of identified significant impacts.

3.1 Environmental Issues

An environmental issue is defined as "a generally expressed environmental concern or impact" raised in an EIA process by the EAP, key stakeholders, authorities or I&APs. The purpose of this section is to reflect the key environmental issues associated with the proposed project that has been raised through the EIA process. Key issues were identified according to the following criteria:

- Whether or not the issue raised falls within the scope and the responsibility of the project;

- Whether or not there is sufficient information available to respond to the issues or concerns raised without further specialist investigation; and
- Whether any aspect of the project is inconsistent with the legal, policy or planning framework.

Table 2 shows the key environmental issues identified during the Scoping phase of the EIA process. Sub-regulation 8(d) requires that an assessment of the significance of each issue be provided together with an indication of the extent to which the issue could be addressed through the implementation of mitigation measures. It should be understood that an environmental issue does not equate to an environmental impact hence the identification of impacts associated with each issue.

In assessing the significance of an environmental issue, the following have been taken into account and a rating of High, Medium or Low is given:

- The number of potential impacts associated with the issue;
- The probable extent of these impacts; and
- The potential for mitigation of these impacts.

The following criteria have been taken into account in determining the mitigation potential of an environmental issue:

- The existence of legislation, norms and standards intended to safeguard the particular environmental issue;
- Whether mitigation can be achieved through design of the development;
- Whether mitigation can be achieved through management of the development.

Utilising the mitigation potential criteria listed above the rating of mitigation potential has been determined as follows:

- High = all three mitigation potential criteria apply
- Moderate = two mitigation potential criteria apply
- Low = one mitigation potential criterion applies

Table 2: Assessment of key environmental issues associated with the proposed construction and development, their significance and potential for mitigation

Environmental Issue	Mitigation Potential	Significance of Issue	Associated Impacts
Ecological/Biological			
Damage to ecosystem components and loss of biodiversity	Low to Moderate potential for mitigation	Moderate	Transformation of vegetation /plants
			Displacement of fauna
			Pollution
Physical Environment			
Contamination of air, soil and water resources	Moderate to High potential for mitigation	Moderate	Above ground: Air quality – dust, volatile organic compounds, odour Waste Management – litter
			Soil
			Surface water
			Ground water
Socio-Economic			
Change to the social and economic structure of Onankali Communal development & Community	Moderate to High potential for mitigation	High	Employment – includes both the creation of jobs and the possible loss of jobs
			Feasibility of filling station
			Safety risks to neighbours
			Security risks to neighbours: Increased noise and disturbance

			Decrease in property values of neighbouring residential area
			Health
			Visual impacts
			View and Sense of place
			Traffic impacts associated with the location of access to the development and construction activities Increased vehicle traffic through a residential area

Table 3: Other assessment of key environmental issues associated with the proposed service station development, their significance and potential for mitigation

Potential Impact	Pre-mitigation	Mitigation measure	Post mitigation
1. Impact of keeping and storing chemicals.	Medium	▪ Premises to be designed in accordance with SABS/NSI codes of practice; ▪ All chemicals and materials to be stored in accordance with SABS/NSI codes of practice; ▪ All workers to wear personal protective clothing while on site; ▪ All workers to receive appropriate health and safety training	Low
2. Impact of chemicals on municipal services.	Medium	▪ Drain outlets to be closed pipe/sealed configuration. ▪ Regular testing of water quality to monitor pollutants	Low
3. Impact proposed zoning on traffic generation.	Low	▪ No mitigation required.	Low
4. Impact of the proposed zoning on essential services and pressure on council to provide additional public and essential services.	Medium	▪ Ensure there are sufficient bulk essential services for the development in the short and long term; ▪ Focus development income on infrastructure delivery; ▪ Encourage the use of renewable sources of energy such as solar panels to reduce electrical consumption; ▪ Install water-saving taps and toilets to reduce water consumption;	Low
5. Impact on surrounding land-uses	Low	No mitigation required.	Low
6. Impact on biodiversity and the natural environment.	Low	No mitigation required.	Low
7. Impact of the development on the geography of the environment.	Low	No mitigation required.	Low
8. Impact on the quality of life of the community	Low	No mitigation required.	Low
9. Impact of the development on job creation	Low	No mitigation required.	Low

4. ENVIRONMENTAL MANAGEMENT PLAN

4.1 Objectives of the Environmental Management Plan (EMP)

An EMP is a tool used to take pro-active action by addressing potential problems before they occur. This should limit the corrective measure needed. The Environmental Management Plan (EMP) provides management options to ensure impacts of the petroleum filling station development project operations are minimised. The EMP acts as a stand-alone but complimentary document, which can be used during the various phases (operational and decommissioning) of the petroleum filling station project. All personnel taking part in the operation of the filling station project should be made aware of the contents of the EMP, so as to plan the relevant activities accordingly in an environmental suitable way. As a result, the objectives of an Environmental Management Plan are to ensure the following:

- To include all components of the petroleum filling station project operations
- To prescribe the best and practicable control methods to lessen the environmental impacts associated with the operations of the filling station
- To monitor and audit the performance and of operational personnel to supply such control
- Lastly is to ensure that appropriate environmental training is provided to all operational personnel.

The proponent/investor Nambaza Investment cc implements an Environmental Management System (EMS) similar to the ISO 14001 system. An environmental Management System is an internationally recognised and certified management system that will ensure ongoing incorporation of environmental constraints. At the heart of an ISO 14001 EMS is the concept of continental improvement of environmental performance with resulting increases in operational efficiency, financial savings and reduction in environmental, health and safety risks. An effective EMS would need to include the following factors:

- A stated environmental policy which sets the desired level of environmental performance
- An environmental legal register

- An institutional structure which sets out the responsibility, authority, line of communications and the resources needed to implement the EMS
- Identification of environmental, safety and health training needs
- An environmental program, stipulating environmental objectives and target to be met and work instructions and control to be applied in order to achieve compliance with the environmental policy
- Periodic internal and external audits and reviews of environmental performance and the effectiveness of the EMS.

Accordingly, commitment of the developer to effective environmental management provides the channel whereby strategies are transformed from the documented form and implemented. For the filling station project, the developer is committed to implementing a comprehensive environmental management programme. The project manager/developer and Operations Manager have ultimate responsibility for the achievement of environmental targets during the construction and operational phases, respectively. The environmental programme commits the owners or developers to allocation of sufficient resources, continuous improvement of environmental management practices in order to fulfil social and ethical responsibility and compliance with national and international standards.

The developer is responsible for the:

- Allocation of Resources
- Risk Assessment
- ensuring that the environmental policy is in place and communicated to all workers
- Designating role of staff members in EMP
- Appointment and monitoring of environmental management team

4.2 The implementation of the Environmental Management plan

Table 4 outlines the management of the environmental elements during the planning and operational phases. Section 2 provides a brief summary of the management of the Filling Station development project. Contents of these tables could be incorporated into a HSEQ management system. The proponent who is also the investor or owner of the business Nambaza Investment cc would be responsible to assign the responsibilities and ensure that the tasks are executed.

4.3 Mitigation Measures during Constructions Phase & Operation Phases of the Filling Station Development (table 4)

Aspects	Impact	Mitigation	Indicator	Responsible Party
Waste Management Plan	There is a potential environmental contamination and degradation from waste on site.	The Contractor should compile a Waste Management Plan which should address as a minimum the mitigation measures included below	Correct handling of waste	Contractor and ECO
Hazardous waste	Impact on soil and water	All heavy construction vehicles and equipment on site should be provided with a drip tray. ▪ The drip trays should be cleaned daily and spillage handled, stored and disposed of as hazardous waste. ▪ Maintenance and washing of construction vehicles should be take place only at a designated workshop area. ▪ The workshop should have an oil-water separator for collected run-off from washing. ▪ Spilled cement and/or concrete (wet or dry) should be treated as hazardous waste and disposed of by the end of each day in the appropriate hazardous waste containers. ▪ All hazardous substances or chemicals should be	Correct handling, use and storage of materials, including hazardous material.	Contractor and ECO

		stored in a specific location on an impermeable surface that is bunded.		
General waste	The incorrect management of solid waste can result in the pollution of soil, groundwater and the general environment. Windblown litter can also contribute to a negative visual impact.	The construction site should be kept tidy at all times. All domestic and general construction waste produced on a daily basis should be cleaned and contained daily. ▪ No waste may be buried or burned. ▪ Waste containers (bins) should be emptied regularly and removed from site to a recognised (municipal) waste disposal site. All recyclable waste needs to be taken to the nearest recycling depot. ▪ A sufficient number of separate bins for hazardous and domestic/general waste must be provided on site. These should be clearly marked as such. ▪ Construction labourers should be sensitised to dispose of waste in a responsible manner and not to litter. ▪ No waste may remain on site after the completion of the project	Complaints from neighbours. No windblown waste. Contamination of the ground and water resources	Contractor and ECO
Sewage and grey water	Incorrect management of sewage and grey waste may contaminate the soil, vegetation	▪ Sewage should not be discharged directly onto open soil. ▪ All sewage must be removed regularly and	No sewage and grey water pools on site	ECO

	and underground water resources.	disposed of at a recognised (municipal) sewage treatment facility. ▪ Grey water that is not recycled should be removed along with sewage on a regular basis. ▪ Separate toilets should be available for men and women and should clearly be indicated as such. ▪ Portable toilets (i.e. easily transportable) should be available at the construction site: ▪ Sewage needs to be removed on a regular basis to an approved municipal) sewage disposal site. Alternatively, sewage may be pumped into sealable containers and stored until it can be removed. ▪ Workers responsible for cleaning the toilets should be provided with latex		
Environmental Training of workers	Without proper training the health and safety of workers will be at risk and preventable environmental impacts could occur.	All construction workers are to undergo environmental induction (training) which should include as a minimum the following: • Discussion of the potential environmental impacts of construction activities. • Employees' roles and responsibilities, including emergency preparedness. • Explanation of the mitigation measures that must be	All employees adhere to the mitigation measures provided in this document.	MET and proponent

		implemented when particular work groups carry out their respective activities.		
Communication	Inability to communicate the Environmental obligations effectively to responsible parties can result in unnecessary environmental degradation.	To ensure that the construction activities do not result in avoidable impacts on the environment by anticipating and managing the impacts. • All site instructions pertaining to environmental matters issued by the Contractor are to be copied to the ECO. • All sub-contractors, employees, suppliers or agents etc. must be fully aware of the environmental management requirements detailed in this EMP. • Have a copy of the EMP and ECC available on site at all times for reference purposes	ECO is aware of decisions taken by the engineer and contractors. All relevant stakeholders are also kept up to date of activity taking place on site.	ECO, Contractor and proponent
Socio-economic impact	The activity could benefit local Communities through job creation, however negative impacts are also possible and must be controlled.	Adhere to the legal provisions in the Labour Act (see Table 1) for the recruitment of labour (target percentages for gender balance, optimal use of local labour and SME's, etc.) in the Contract. The Contractor should compile a formal recruitment process including the following provisions as a minimum: • Recruitment should not take place at construction sites. • Ensure that all sub-contractors are aware of recommended recruitment procedures and discourage any recruitment of labour outside the agreed upon process. • Contractors should give preference in terms of	Contribute to employment and capacity building in the local community. Creating awareness amongst employees and the public.	Contractor and ECO

		recruitment of sub-contractors and individual labourers to those who are qualified and from the project area and only then look to surrounding towns. • Clearly explain to all job seekers the terms and conditions of their respective employment contracts (e.g., period of employment etc.) – make use of interpreters where necessary.		
Heritage Resources	Heritage resources can be impacted on during the site clearance, earthworks and the construction of the facility.	Should a heritage site or archaeological site be uncovered or discovered during the construction phase of the project, a "chance find" procedure should be applied in the order they appear below: • If operating machinery or equipment stop work; • Demarcate the site with danger tape; • Determine GPS position if possible; • Report findings to the construction foreman; • Report findings, site location and actions taken to superintendent; • Cease any works in immediate vicinity; • Visit site and determine whether work can proceed without damage to findings; • Determine and demarcate exclusion boundary; • Site location and details to be added to the project's Geographic Information System (GIS) for field	No heritage artifacts are disturbed or destroyed on site and the NHC is informed should any heritage artifacts be discovered on site.	ECO, Proponent and Contractor

		confirmation by archaeologist; • Inspect site and confirm addition to project GIS; • Advise the National Heritage Council (NHC) and request written permission to remove findings from work area; and • Recovery, packaging and labelling of findings for transfer to National Museum. • Should human remains be found, the following actions will be required: • Apply the chance find procedure as described above; • Schedule a field inspection with an archaeologist to confirm that remains are human; • Advise and liaise with the NHC and Police; • Remains will be recovered and removed either to the National Museum • National Forensic Laboratory.		
Topsoil	Topsoil may be removed during the site preparation and excavation process, which could lead to land degradation.	To minimise the erosion of topsoil: • When excavating, topsoil should be stockpiled in a demarcated area. • Stockpiled topsoil should be used to rehabilitate the nearest borrow area (existing borrow pits), if such an area is located less than 20 km from the stockpile.	All topsoil removed is rehabilitated to its natural state at the end of construction	ECO and Contractor

Stormwater runoff, erosion, and pollution of surface water and groundwater resources	Contamination of storm water runoff can impact on the surface and groundwater resources. The mismanagement of storm water can furthermore result in erosion	Prevent storm water from eroding the land and becoming contaminated. • Should construction activities for the proposed infrastructure need to take place within the drainage features (i.e., linear development including roads and transmission lines) this must transect the streams at right angles and be limited as far as possible to ensure minimum disturbance of such areas. • Demarcate a 100 m no-go zone from ephemeral watercourses during construction to prevent construction activities from occurring near the ephemeral watercourses to prevent further loss of vegetation, erosion and watercourse sedimentation. • Any disturbed areas must be rehabilitated as Rubble, sand and waste material resulting from the construction activities must be cleared up but not disposed in any stream or drainage channels as it will impede on the flow in these channels. • The abstraction of groundwater must be properly controlled within a prescribed water demand management plan and as required by the license conditions. • A critical groundwater level must be determined and the groundwater table must be maintained above such critical	Stormwater not contaminated by construction activities. Storm water control measures are effective at regulating runoff from the site and erosion channels do not develop. Freshwater ecosystems are not unduly disturbed by construction activities within the drainage channels.	Contractor and ECO

		levels during water abstraction periods.		
Traffic	During the construction phase, it is expected that there will be regular movement of vehicle to and from the site for transportation of workers and materials.	To ensure that increased traffic volume is managed efficiently to minimise associated impacts: • Demarcate roads clearly. • Off-road driving should not be allowed. • All vehicles that transport materials to and from the site must be roadworthy. • Drivers that transport materials should have a valid driver's license and should adhere to all traffic rules. • Loads upon vehicles should be properly secured to avoid items falling off the vehicle. • Access road entrances must be demarcated, both at their exit point from existing roads and the entry point to the site. • Erect signage to warn motorists about construction activities and heavy vehicle movement where appropriate.	Traffic is orderly, free flowing and controlled	Contractor
Dust	Dust generated from material handling, roads and stockpiles can become a nuisance to neighbours.	To avoid nuisance impacts caused by dust as far as possible: • A watering truck should be used on gravel roads with the heaviest vehicle movement especially during dry and windy conditions. • However, due consideration should be given to water restrictions during times of drought.	No complaints received from public and or site staff.	Contractor and ECO

Noise	The increase in traffic and operation of equipment such as welding and fixing of the racks may result in noise becoming a nuisance.	To ensure that noise from the construction activities do not exceed unacceptable levels: • Work hours should be restricted to between 08h00 and 17h00 where construction involving the use of heavy equipment, power tools and the movement of heavy vehicles is less than 500 m from residential areas • If an exception to this provision is required, all residents within the 500 m radius should be given 1 week's written notice. • Workers will be required to wear ear protecting devices whenever possible. • If the contractor needs to undertake activities outside the hours above, the residential and community receptors within audible range of the activity must be notified within 24 hours in advance of the planned activity.	No noise complaints received.	Contractor and ECO

Table 5: Project Construction (Working Area Mobilization)

Aspect	***Impact***	***Mitigation***	***Indicator***	***Responsibility***
Demarcate the construction site	Without proper demarcation, the public would be able to access the site and would be at risk.	It is of outmost importance to prevent the encroachment of	Proper fencing in place to demarcate the construction	Contractor

		construction areas into surrounding environments		
Stockpiling of equipment and materials	Incorrect storing of materials can result in water and soil contamination, dust and or erosion. Incorrect storage and handling of materials also pose a risk of environmental contamination and could jeopardise the safety of public / site staff.	• Ensure that all materials and equipment handled and stored in a manner that environmental contamination and safety hazards are limited. • The IPP Contractor shall be advised by the Contractor of the housekeeping arrangements including areas intended for the stockpiling of materials. • Implement General Specifications as presented in this document.	• No public complaints or water/ soil contamination • Correct handling, use and storage of materials, including hazardous materials. • No incidents of environmental contamination. • No accidents or incidents related to the handling of materials	Contractor and ECO
Ablution facility	The lack of adequate ablution facilities and recess areas can compromise the health of site staff and result in environmental degradation.	To minimise the potential environmental impacts associated with workers on	Adequate ablution facilities are in place.	Contractors and ECO

		the site: Implement General Specifications		
Removal of vegetation	If the removal of vegetation is done incorrectly it may leave the site prone to erosion and compromise rehabilitation requirements post construction.	To ensure that the site is not prone to erosion and any disturbed areas can be rehabilitated as necessary post construction: Implement General Specifications.	Topsoil conserved in stockpiles for later use if necessary.	Contractor and ECO
Excavations for bulk earthworks	Created embankments (cut and fill) and retaining walls are required to level and stabilise the site. Excavations are also required to accommodate bulk services which might impact on the environment.	To limit the impact to the environment caused by excavations: Implement General Specifications	No heaps of materials left on site after the construction phase	Contractor and ECO
Removal of Equipment and temporary structures	If the construction site is not decommissioned it can result in environmental degradation	It is very imperative to leave the impacted area in an acceptable state: Implement General Specifications.	The area impacted by the construction activities pose no threat to the environment	Contractor and ECO

5. Decommissioning

In terms of the Environmental Management Act, it is necessary to consider the environmental impacts of decommissioning of any development, however, Onankali service station is expected to be operational for a period of 30 years or more. Thereafter, the service station facility could either be decommissioned or upgraded, depending on the feasibility. According to Namibian Legislation, decommissioning is considered as a separate activity which should be dealt with on its own.

This EMA requires the EIA to make recommendations that should be considered in the new EIA process prior to decommissioning. However, seeing the decommissioning phase is far in the future, these conditions are subject to change. A decommission plan should address the removal of the main infrastructure associated with the service station such as fuel tanks and infrastructure. Such a plan must also address aspects such as monitoring and management of surface of surface water flows and erosion. The following mitigation measures are recommended from an ecological point of view as part of the closure phase:

- Rehabilitate all areas impacted on by the infrastructure
- Remove all construction waste; rip temporary tracks, if feasible, and replace the topsoil.
- Re-introduce indigenous vegetation (especially protected species – i.e., Mopane) should form part of the rehabilitation process. In terms of socio-economic impacts, the following mitigation measures are recommended:
- Maximise the use of local labour on decommissioning activities;
- Provide adequate notification to staff and other stakeholders of the pending decommissioning;
- Provide staff with references so that they can pursue work with other companies;
- If feasible, assist staff in finding employment at other operations.

The proponent has and/or will develop a closure plan to be updated on an annual basis commencing at least 10 years prior to the envisaged decommissioning. The closure plan should identify the targets and objectives for closure, and will be important in allowing operations to work toward closure objectives. The proponent should commission specialist inputs from time

to time to provide direction on the closure plan to ensure the end result is as closely aligned with prevailing best practice as is possible, thereby minimising the risk and potential costs associated with decommissioning phase. The various stakeholders should also be engaged as early on in the closure planning process to ensure their interests are known and catered for from the point of origin. The construction phase EMP could be used as a guideline to facilitate the detailed decommissioning phase EMP.

REFERENCES

Mendelsohn, J., el Obeid, S. & Roberts, C., 2000. A Profile of North-Central Namibia. Windhoek: Gamsberg Macmillan Publishers.

Mendelsohn, J., Jarvis, A., Roberts, C. & Robertson, T., 2009. Atlas of Namibia. 3rd ed. Cape Town: Sunbird Publishers. Ramsar Convention on Wetlands, 2012.

Climate data weather of Onankali, www.climate-data.org, accessed 10 August 2019

Digital Atlas of Namibia Unpublished Report. Ministry of Environment & Tourism

Directorate of Environmental Affairs, 2008. Procedures and Guidelines for Environmental Impact Assessment (EIA) and Environmental Management Plans (EMP), Directorate of Environmental Affairs, Ministry of Environment and Tourism, Windhoek.

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