APP-001416

ENVIRONMENTAL SCOPING REPORT

PROPOSED CONTINUED OPERATION OF THE EXISTING OCTAGON KLEINE KUPPE CONSUMER FUEL FACILITY IN WINDHOEK, KHOMAS REGION

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May 2020

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EXECUTIVE SUMMARY

An Environmental Scoping Assessment (ESA) has been commissioned by Total Namibia (Pty) Ltd, for the proposed continued operations of the existing Octagon Kleine Kuppe consumer fuel installation, in Windhoek.

Considering the nature of the proposed development and its activities, the ESA has been undertaken in accordance with the requirements of existing national legislations, of which the National Environmental Assessment Policy (1995), the Environmental Management Act (2007) and its regulations of 2012, and other relevant legislations and regulations pertaining to Environmental Assessments and protection of the environment in the Republic of Namibia are considered most important. Some existing international policies are also taken into account and are used as guidelines.

Impacts identified from baseline studies, site visits and stakeholder consultation process have been assessed making use of a comprehensive assessment methodology as provided by the Department of Environmental Affairs (DEA) of Namibia. This included looking at impact significance through, its nature, extent, duration, probability and intensity. Major issues or impacts identified are soil, surface and ground water impacts; air quality (including dust pollution); ecological impacts; risk of fires and explosions; hygiene and health impact; heritage impacts; generation of waste; traffic safety, especially during construction; noise pollution; safety and security; and cumulative impacts.

These impacts are assessed in each of the stages of project development namely, maintanance, operation and possible decommissioning phases.

Socio-economic impacts amongst others include creation of part-time and permanent employment opportunities and economic spin-offs for the local businesses and suppliers. Waste generation during all stages of the development is eminent; however implementation of proper management strategies should address these issues. Minor surface spillages during the operations of the facility may result in a collective long-term significant impact on surface and groundwater.

Cumulative impacts expected as a result of the consumer fuel storage and supply facility include, dust and exhaust emissions from construction vehicles frequenting the facility during all phases of the development, coupled with the existing emissions from vehicles in the surrounding areas, the air quality will be impacted.

In general, impacts are expected to be low to medium, mostly short lived and site specific. Mitigation options recommended in the Environmental Management Plan (EMP) will guide and ensure that the impacts of the maintanance, operational and possible decommissioning activities are minimised.

All environmental risks can be minimised and managed through implementation of preventative measures and sound management systems. Environmental audits should be carried out to ensure compliance of the EMP and environmental regulations of Namibia.

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List of Abbreviations

EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMA	Environmental Management Act
EMS	Environmental Management System
ESA	Environmental Scoping Assessment
I&Aps	Interested and Affected Parties
PPPPs	Projects, Plans, Programmes and Policies
LRP	Lead Replacement Petrol
ULP	Unleaded Petrol
SANS	South African National Standards

PROJECT DETAILS

TEAM MEMBERS		
NAME	**POSITION**	**COMPANY**
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REPORT STATUS:	**FINAL**

CLEARANCE ISSUED TO:

Please note that the environmental certificate should be made out to the proponent:

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GLOSSARY OF TERMS

Project area - Refers to the entire study area encompassing the total area as indicated on the study area map.

Project site - Refers to the geographical setting (piece of land) on which the proposed development is to be located.

Assessment - The process of collecting, organising, analysing, interpreting and communicating information relevant to decision making.

Alternatives - A possible course of action, in place of another, that would meet the same purpose and need but which would avoid or minimize negative impacts or enhance project benefits. These can include alternative locations/sites, routes, layouts, processes, designs, schedules and/or inputs. The "no-go" alternative constitutes the 'without project' option and provides a benchmark against which to evaluate changes; development should result in net benefit to society and should avoid undesirable negative impacts.

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.

Evaluation – means the process of ascertaining the relative importance or significance of information, the light of people's values, preference and judgements in order to make a decision.

Environment – Is the complex of natural and anthropogenic factors and elements that are mutually interrelated and affect the ecological equilibrium and the quality of life. As defined in the Environmental Policy and Environmental Management Bill of Namibia - *"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 Scoping Assessment (ESA) – process of evaluating the likely environmental impacts of a proposed project or development, taking into account inter-related socio-economic, cultural and human-health impacts, both beneficial and adverse.

Environmental Management Plan (EMP) - A legally binding working document, which stipulates environmental and socio-economic mitigation measures that must be implemented by several responsible parties throughout the duration of the proposed project.

Consumer Fuel Facility / Consumer Installation - is defined as a petrol or diesel installation (above ground or below ground), including any pump, storage tank and piping used in relation thereto, for the purpose of dispensing fuel into own or hired petrol or diesel consuming equipment or own or hired vehicles.

Diesel - a distillate oil which can be used as fuel for the operation of a compression ignition engine and which has an approximate boiling temperature of between 150 °C to 400 °C.

Hazard - Anything that has the potential to cause harm to a vulnerable target. The terms "hazard" and "risk" are often used interchangeably. However, in terms of risk assessment, they are two very distinct terms. A hazard is any agent that can cause harm or damage to humans, property, or the environment.

Risk - The probability that exposure to a hazard will lead to a negative consequence or more simply, a hazard poses no risk if there is no exposure to that hazard.

Interested and Affected Party (I&AP) - any person, group of persons or organization interested in or affected by an activity; and any organ of state that may have jurisdiction over any aspect of the activity.

Proponent (Applicant) – means a person who intends or undertakes a project, policy, programme or plan.

Significant Impact - means an impact that by its magnitude, duration, intensity or probability of occurrence may have a notable effect on one or more aspects of the environment.

Environmental Clearance Certificate - This Certificate obtained from the Ministry of Environment and Tourism (Directorate of Environmental Affairs) approving the EIA study and providing clearance to the proponent to initiate work.

Environmental Assessment Practitioner - A person designated by a proponent to manage the assessment process.

Local Authority - Means a local authority council as defined in section 1 of the Local Authorities Act, 1992 (Act No. 23 of 1992).

1. BACKGROUND AND INTRODUCTION

Total Namibia (Pty) Ltd. has commissioned an Environmental Scoping Assessment (**ESA**) for the proposed continued operations of the existing Octagon Kleine Kuppe consumer fuel installation, in Windhoek. Total Namibia supplies fuel to the fuel facility.

On-site fuel storage facilities carries a risk potential that can be reduced by following a set of safety, security, environmental, and regulatory guidelines. The risk is manageable through choosing the best location for aboveground storage tank, incorporation of good engineering practices, and observance of industry standards.

1.1. Project Rationale

Octagon Construction (Pty) Ltd specializes in the construction of roads, bridges, municipal services, earth works, building structures and housing development projects. The company is busy with the construction and installation of bulk municipal services for the Kleine Kuppe Extension 1 township development. The consumer fuel storage tank and its associated infrastructure are situated at the company's construction camp site in Kleine Kuppe.

The installation supplies diesel fuel to the company's construction fleet, which allows the company to operate its fleet more efficiently and effectively during the construction project.

Potential spin-offs:

- Employment: The creation of approximately new jobs is expected. It is estimated that the new jobs will improve the livelihoods of the new workers and their families.
- Skills development: As the maintanance and operation of the development requires specialised work and skills it can be expected that experts will be training locals in certain skills during project duration.
- Contribution to economic development (e.g. supply of materials and goods for construction purposes; new businesses, employment etc.).
- Technology transfer to Namibia: The facility includes state-of-the-art technology. The operation, maintenance and support of these new technologies will expose local artisans and industries to these technologies. This can have a positive effect on the local communities.

1.2. Location and Land Use

The project site (22.62194°S; 17.10819°E) is located on Ambrose Street, in the Kleine Kuppe township of Windhoek. See Figure 1. The site is surrounded by undeveloped land and occupies an approximate land size of 100m^2.

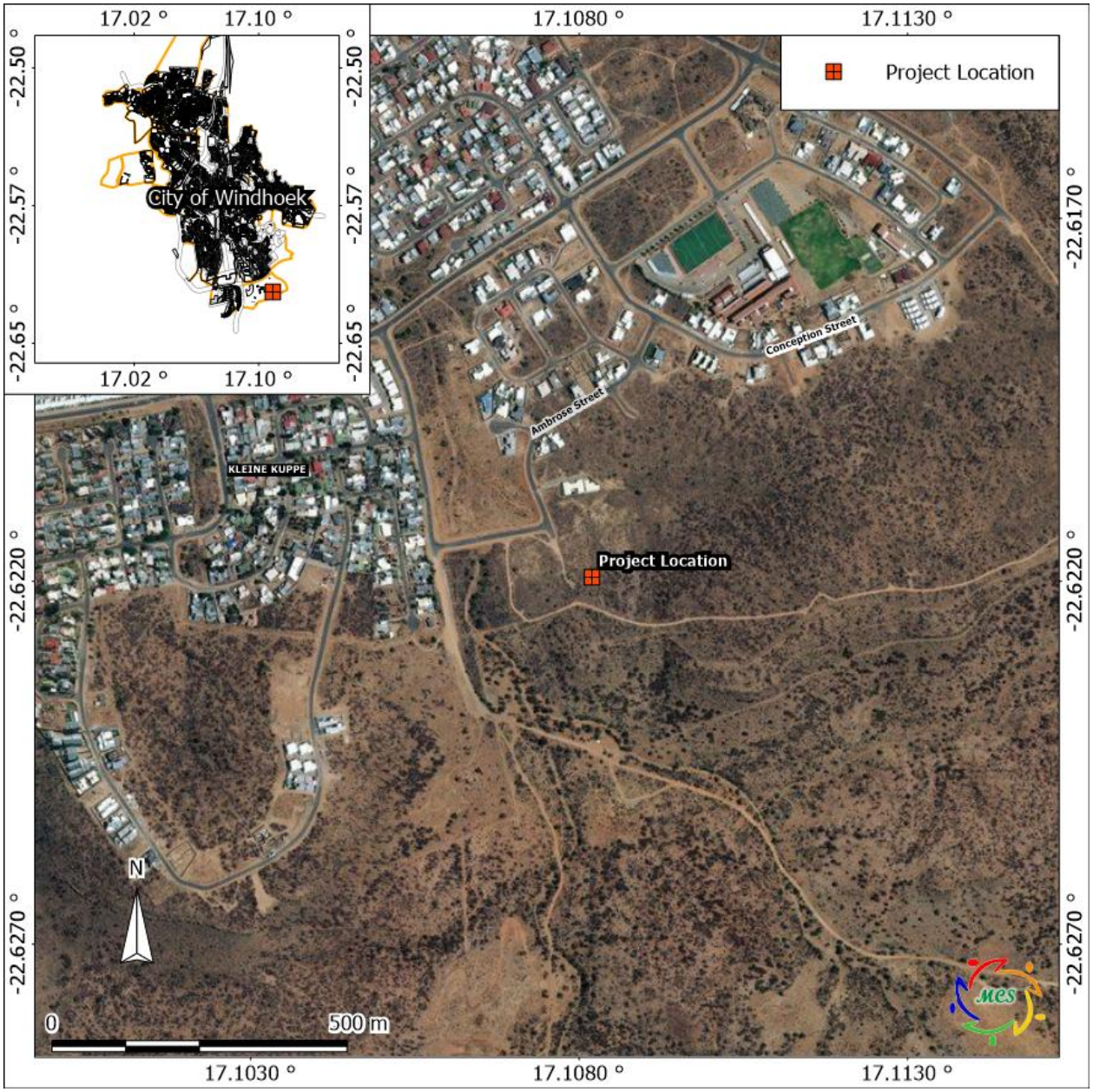

Figure 1. Project location (22.62194°S; 17.10819°E)

1.3. Project Phases

The project is made up of 3 phases, namely the operation, maintanance and possible decommissioning. Activities involved in all phases are as follows:

Operational Phase:

- Filling of the aboveground storage tank from road transport tankers.
- Dispensing of fuel into company trucks, vehicles and other relevant equipment.

Maintanance Phase:

- Regular maintenance fuel system.
- Regular maintanance of bund walls, floors and other spill control measures.
- Regular maintanance of associated electrical supply.

- ❖ Regular maintanance of associated buildings and other infrastructure.

Possible Decommissioning Phase:

- ❖ Removal of all infrastructure not reused during future use of land; and
- ❖ Rehabilitation of the land.

2. TERMS OF REFERENCE

Total Namibia (Pty) Ltd. has commissioned an Environmental Scoping Assessment (**ESA**) for the proposed continued operations of the existing Octagon Kleine Kuppe consumer fuel installation, in Windhoek. The facility is located at 22.62194°S; 17.10819°E.

Matrix Consulting Services was appointed to undertake the Environmental Scoping Assessment for the consumer fuel facility. This study will enable decision makers to make an informed decision regarding the development and make sure it does not have significant impacts and that they are mitigated. The environmental scoping assessment was conducted to comply with the Environmental Assessment Policy (1995) and the Environmental Management Act (2007) and its regulations of 2012.

3. ENVIRONMENTAL STUDY REQUIREMENTS

According to the Environmental Management Act no. 7 of 2007, the proponent requires an environmental clearance from the Ministry of Environment and Tourism (Department of Environmental Affairs) to undertake of the construction and operation of a consumer fuel facility. The certificate means that the Ministry of Environment and Tourism is satisfied that the activity in question will not have an unduly negative impact on the environment. It may set conditions for the activity to prevent or to minimise harmful impacts on the environment.

The proposed development is listed as a project requiring an environmental assessment as per the following listed activities in the environmental Management Act no 7 of 2007 and its Guidelines (06 February 2012):

Table 1. List of activities identified in the EIA Regulations that apply to the proposed project

Activity Description:	Description of Activity	Activities
Activity 9.4 Hazardous Substance Treatment, Handling and Storage	The storage and handling of a dangerous goods, including petrol, diesel, liquid petroleum gas or paraffin, in containers with a combined capacity of more than 30 cubic meters at any one location	The project entails the handling of hazardous substances.
Activity 9.5 Hazardous Substance Treatment, Handling and Storage	Construction of filling stations or any other facility for the underground and aboveground storage of dangerous goods, including petrol, diesel, liquid, petroleum, gas or paraffin.	The project includes the operation and maintanance of a consumer fuel installation.

4. DESCRIPTION OF ALTERNATIVES

4.1 No-Go Alternative

At the moment, no fuel retail facility exists in the Kleine Kuppe area, or within a 2km radius of the township development. The consumer fuel facility will provide the much needed convenience, accessibility, fuel security and best fuel price economics for Octagon Construction (contractor). The consumer facility will help eliminate driver downtime, which in turn, reduces operating costs and improves productivity. The facility will enable the company to control their fuelling needs and requirements.

Should the proposed continued operation of the fuel installation not proceed, company growth and the on-going development in the area will be hindered due to the lack of fuelling capacity, resulting in fuel shortage to company fleet and operations. The No-Go option is thus not considered to be a feasible alternative at this stage.

4.2 Site Alternative

The facility is situated at the company's construction camp site, which is generally suitable for this type of operation. The environmental footprint is expected to be minimal as the project location is already disturbed and earmarked for development. The possible impacts at the site, both environmental and socio-economic, are of such a nature that they can be mitigated through good practice and compliance to the EMP.

5. SCOPE

The scope of the ESA aims at identifying and evaluating potential environmental impacts emanating from the operations, maintanance and possible decommissioning activities of the consumer fuel facility. Relevant data have been compiled by making use of secondary sources and from project site visits. Potential environmental impacts and associated social impacts will be identified and addressed in this report.

The environmental scoping assessment report aims to address the following:

a) Identification of potential positive and negative environmental impacts.

b) Provide sufficient information to determine if the proposed project will result in significant adverse impacts.

c) Identification of "hotspots" which should be avoided where possible due to the significance of impacts.

d) Evaluation of the nature and extent of potential environmental impacts

e) Identify a range of management actions which could mitigate the potential adverse impacts to required levels.

f) Provide sufficient information to the Ministry of Environment to make an informed decision regarding the proposed project.

g) Conduct a public participation exercise.

h) Present and incorporate comments made by stakeholders.

6. METHODOLOGY

The following methods were used to investigate the potential impacts on the social and natural environment due to the construction and operation of the consumer fuel facility:

a) Information about the site and its surroundings was obtained from existing secondary information and site visits.

b) Neighbours, interested and affected Parties (I&APs) were consulted and their views, comments and opinions are presented in this report.

7. STATUTORY REQUIREMENTS

The EIA process is undertaken in terms of Namibia's Environmental Management act no. 7 of 2007 and the Environmental Assessment Policy of 1995, which stipulates activities that may have significant impacts on the environment. Listed activities require the authorisation from the Ministry of Environment and Tourism (DEA). Section 32 of the Environmental Management Act requires that an application for an environmental clearance certificate be made for the listed activities. The following environmental legislation is relevant to this project:

I. The Namibian Constitution

The Namibian Constitution has a section on principles of state policy. These principles cannot be enforced by the courts in the same way as other sections of the Constitution. But they are intended to guide the Government in making laws which can be enforced.

The Constitution clearly indicates that the state shall actively promote and maintain the welfare of the people by adopting policies aimed at management of ecosystems, essential ecological processes and biological diversity of Namibia for the benefit of all Namibians, both present and future.

II. Environmental Management Act No.7 of 2007

This Act provides a list of projects requiring an Environmental assessment. It aims to promote the sustainable management of the environment and the use of natural resources and to provide for a process of assessment and control of activities which may have significant effects on the environment; and to provide for incidental matters.

The Act defines the term "*environment*" as an interconnected system of natural and human-made elements such as land, water and air; all living organisms and matter arising from nature, cultural, historical, artistic, economic and social heritage and values.

The Environmental Management Act has three main purposes:

(a) to make sure that people consider the impact of activities on the environment carefully and in good time

(b) to make sure that all interested or affected people have a chance to participate in environmental assessments

(c) to make sure that the findings of environmental assessments are considered before any decisions are made about activities which might affect the environment.

Line Ministry: Ministry of Environment and Tourism

III. The Water Act (Act No 54 of 1956)

The Water Act No. 54 of 1956 as amended, aims to provide management of the national water resources to achieve sustainable use of water for the benefit of all water users.

The Act broadly controls the use and conservation of water for domestic, agricultural, urban and industrial purposes; to control, in certain respects, the use of sea water; to control certain activities on or in water in certain areas; and to control activities which may alter the natural occurrence of certain types of atmospheric precipitation.

IV. Water Resources Management Act of Namibia (2004) *(Guideline only)*

This act repealed the existing South African Water Act No.54 of 1956 which was used by Namibia. This Act ensures that Namibia's water resources are managed, developed, protected, conserved and used in ways which are consistent with fundamental principles depicted in section 3 of this Act. Part IX regulates the control and protection of groundwater resources. Part XI, titled Water Pollution Control, regulates discharge of effluent by permit.

Line Ministry: Ministry of Agriculture, Water Affairs and Forestry

V. Environmental Assessment Policy of Namibia (1995)

Environmental Assessments (EA's) seek to ensure that the environmental consequences of development projects and policies are considered, understood and incorporated into the planning process, and that the term ENVIRONMENT (in the context of IEM and EA's) is broadly interpreted to include biophysical, social, economic, cultural, historical and political components.

All listed policies, programmes and projects, whether initiated by the government or the private sector, should be subjected to the established EA procedure as set out in Figure 2.

Line Ministry: Ministry of Environment and Tourism

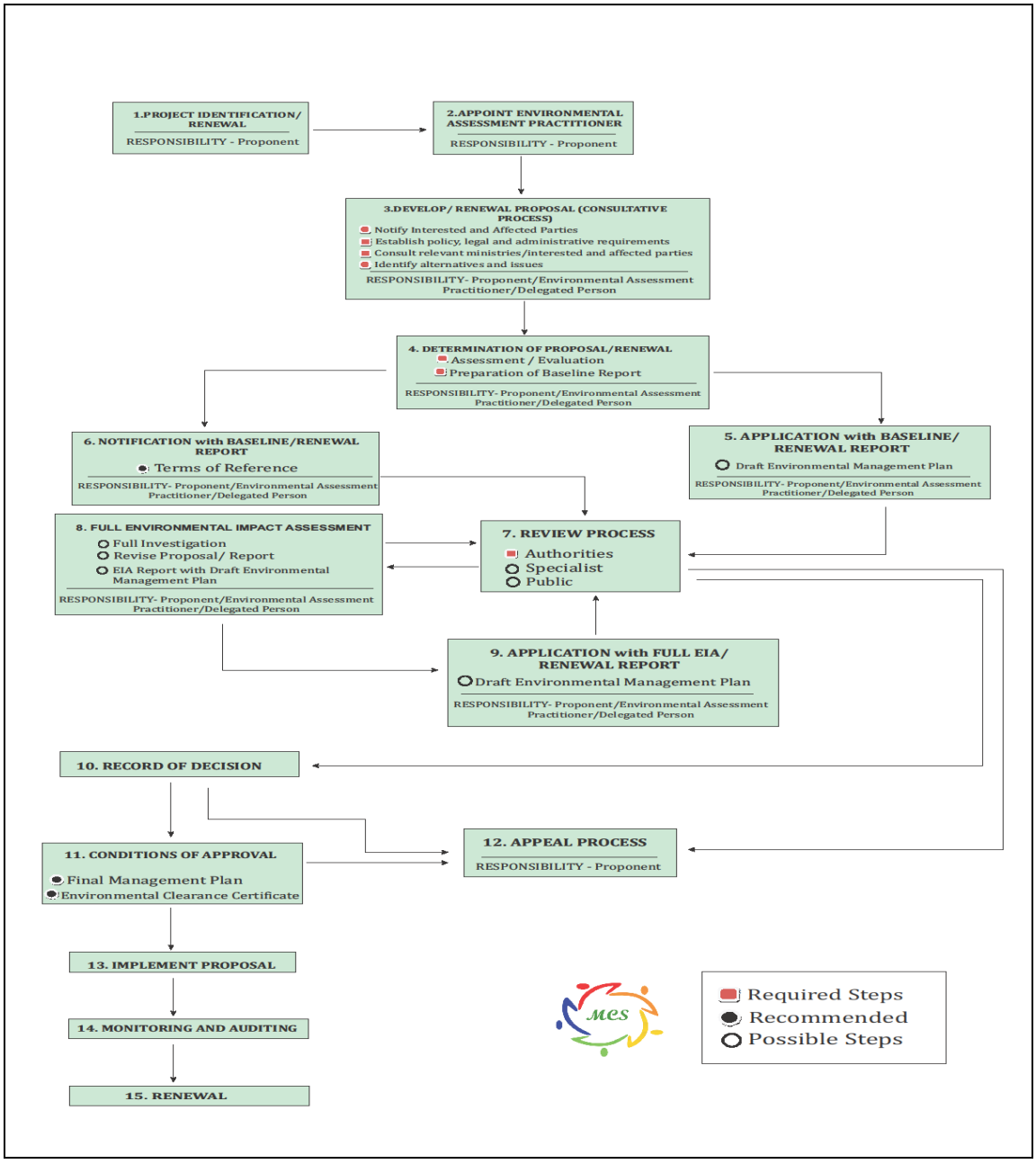

Figure 2: Environmental Assessment Procedure of Namibia *(Adapted from the Environmental Assessment Policy of 1995)*

Apart from the requirements of the Environmental Assessment Policy, the following sustainability principles needs to be taken into consideration, particularly to achieve proper waste management and pollution control:

- ✓ **Cradle to Grave Responsibility**

This principle provides that those who manufacture potentially harmful products should be liable for their safe production, use and disposal and that those who initiate potentially polluting activities should be liable for their commissioning, operation and decommissioning.

- ✓ **Precautionary Principle**

There are numerous versions of the precautionary principle. At its simplest it provides that if there is any doubt about the effects of a potentially polluting activity, a cautious approach should be adopted.

- ✓ **The Polluter Pays Principle**

A person who generates waste or causes pollution should, in theory, pay the full costs of its treatment or of the harm, which it causes to the environment.

- ✓ **Public Participation and Access to Information**

In the context of environmental management, citizens should have access to information and the right to participate in decisions making.

VI. Petroleum Products and Energy Act of Namibia (Act No. 13 of 1990)

The Act makes provision for impact assessment for new proposed consumer fuel facilities and petroleum products known to have detrimental effects on the environment.

VII. Draft Pollution Control and Waste Management Bill *(Guideline only)*

The proposed continued operations of the consumer fuel facility in Kleine Kuppe, only applies to Parts 2, 7 and 8 of the Bill.

Part 2 stipulates that no person shall discharge or cause to be discharged any pollutant to the air from a process except under and in accordance with the provisions of an air pollution licence issued under section 23. It further provides for procedures to be followed in licence application, fees to be paid and required terms of conditions for air pollution licences.

Part 7 states that any person who sells, stores, transports or uses any hazardous substances or products containing hazardous substances shall notify the competent authority, in accordance with sub-section (2), of the presence and quantity of those substances.

Part 8 calls for emergency preparedness by the person handling hazardous substances, through emergency response plans.

VIII. Atmospheric Pollution Prevention Ordinance of Namibia (No. 11 of 1976)

The Ordinance prohibits anyone from carrying on a scheduled process without a registration certificate in a controlled area. A certificate must be issued if it can be demonstrated that the best practical means are being adopted for preventing or reducing the escape into the atmosphere of noxious or offensive gases produced by the scheduled process. Best practice would be to notify the line Ministry about emissions but it is not a legal requirement.

Line Ministry: Ministry of Health and Social Services

IX. Hazardous Substances Ordinance No. 14 of 1974

The Ordinance applies to the manufacture, sale, use, disposal and dumping of hazardous substances, as well as their import and export and is administered by the Minister of Health and Social Welfare. Its primary purpose is to prevent hazardous substances from causing injury, ill-health or the death of human beings.

Line Ministry: Ministry of Health and Social Services

8. INSTALLATIONS AND RELATED ACTIVITIES

The fuel facility is equipped with one 23m3 above ground diesel storage tank. Constructed from durable carbon steel, the tank is housed in a steel containment tank farm. Access is by ladder to the manhole. The tank is fitted with a shut-off valve, vent pipe, dispensing point and an off-loading bay is installed at the site.

The supplier's guidelines for fuel storage and handling must be followed to reduce the risk of spillage and groundwater contamination. The facility is constructed and operated according to relevant SANS standards (or better).

See Figure 3 for layout design of the fuel installation.

Photos 1. Existing storage tank and associated tank farm

Photo 2. Existing dispensing and filler points

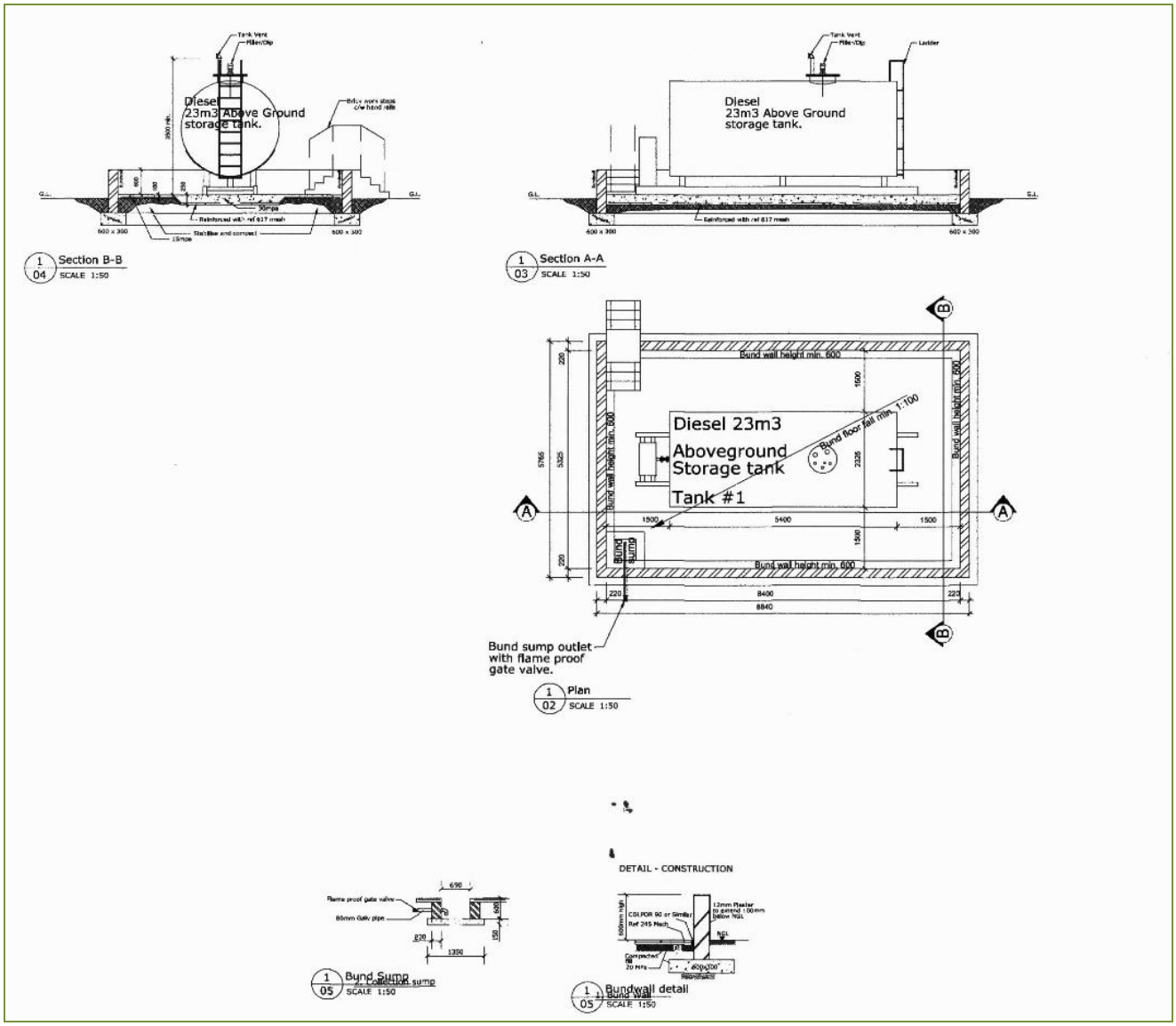

Figure 3. Proposed layout of the installation

9. ENERAL ENVIRONMENT OF THE STUDY AREA

This section lists the most important environmental characteristics of the study area and provides a statement on the potential environmental impacts on each.

9.2 Topography and Drainage

The site gently slopes to the north. The landscape is classified as being in the Khomas Hochland Plateau region, which is characterized by rolling hills in the west with many summit heights equivalent reflecting older land surfaces.

Local drainage is well developed and flow from the site takes place in a north-northwest direction. The relief of significant drainage lines and streams running in the area remain intact, and contribute well to the drainage of surface run-off in the area. These drainage systems flow north-westward towards the Goreangab Dam. The dam is situated approximately 13km northwest of the site.

Care should be taken to avoid contamination of water drainage lines in the area, especially during rainy seasons, as water in these streams and rivers are a source for aquifer recharge.

Proper drainage systems installed at the facility should control the flow of surface water run-off from the site; thereby preventing any possible surface pollution emanating from daily operational activities of the fuel facility. Storm water management systems should form part of the engineering designs.

9.3 Climatic Conditions

The landscape is classified as being in the Khomas Hochland Plateau.

Classification of climate:	semi-arid highland savannah
Average rainfall:	Rainfall in the area is averaged between 300 to 350mm per year
Average evaporation:	Evaporation in the area is averaged 3000 to 3200mm per year.
Precipitation:	sporadic and unpredictable, high intensity, highly localised storm events between October and April does occur. Evaporation exceeds precipitation by approximately 90%.
Water Deficit:	Water deficit in the area is averaged 1701-1900mm/a
Temperatures:	Highest temperatures are measured in December with an average daily maximum of 31°C and minimum of 17.3°C; the coldest temperatures are measured in July with an

	average daily maximum of 20.4°C and minimum of 6.4°C.
Wind direction:	Predominantly southeasterly. Southerly, easterly, and northerly airflow is also common. Wind seldom blows from the northwest and southwest. Strong westerly winds blow in the afternoons and evenings in early summer.

Groundwater in Windhoek is an important source of potable water for the City of Windhoek. The aridity of the region causes the water resource to be a scarce commodity and has to be conserved and protected from pollution at all cost.

9.3 Soil and Geology

The area surrounding the site has a relatively thin soil cover. The poorly developed thin topsoil found in Windhoek is the product of alluvial and colluvial deposition of mainly fine sands and silts intermixed with residual quartz pebbles.

The soils in the study area are largely shallow, described as lithic leptosols (Mendelsohn, et al. 2002), and tend to have a sandy-to-sandy loam texture depending upon slope position, with a lot of gravel and stones embedded in the surface. On the slopes and ridges, much of the soil is covered by resistant quartzitic pebbles, which may act as ”pebble mulch” providing effective protection from rain splash erosion (Joubert, in prep.), thus reducing overall erosion on steep slopes.

Quartzitic schist from the Kuiseb Formation (Nks) underlies the site with a dip of 25 to 30° angles in the north-north-westerly direction. Windhoek’s geology is characterised by historical folding, faulting, thrusting and rifting episodes.

9.4 Hydrogeology of the Study Area

Metasedimentary rocks of the Swakop Group, which is part of the Damara Sequence, constitute the aquifer in the area. Geological lineaments and joints found in area form the major underground water conduits and hence determine the conditions of the aquifer. The geology underlying the study area is prone to plastic deformation rather than brittle, fracturing, exhibits significantly lower secondary porosity and permeability. Moreover host rock fracturing along fault planes results in better development of secondary porosity in quartzite compared to schistose terrain such that the aquifer reaches its maximum potential in this type of setting.

The project area was mapped during the study as having high aquifer pollution vulnerability, mainly due to the presence of highly sensitive geological structures present in the area. These geological features might form preferential pathways to the underlying aquifer. In order to protect these groundwater resources, pollution to these structures should be avoided at all cost.

According to the City of Windhoek, Namwater and the Department of Water Affairs database (DWA), 3 boreholes exist within a 1km radius of the site. Depth to water table is expected to be less than 85m below groundwater level (mbgl).

Groundwater belongs to the government of the Republic of Namibia; hence the area does fall within the Windhoek-Gobabis Subterranean Water Control Area, of Government Notice 189 of 6 February 1970. This means that Government controls groundwater usage in this area.

9.4.4 Preventing Surface- and Groundwater Contamination

Surface and groundwater are essentially one resource, physically connected by the hydrologic cycle. Streams interact with groundwater in three basic ways, i.e. *streams gain water from inflow of groundwater through the streambed, streams lose water by outflow through the streambed, or they do both depending upon the location along the stream*. It is the groundwater contribution that keeps streams flowing between precipitation events. As a result, proper management of the risks associated with aboveground storage tanks is essential in order to prevent surface and groundwater pollution. Preventative measures and strategies must form an integral part of the Environmental Management Plan (EMP). Possible release of contamination on site will mainly be mitigated by the well designed steel tank containment farm and structures installed at the site. The tank farm is designed and installed to hold at least 110 percent of the volume of the tank.

The consultant recommends that regular visual inspections of the storage tank, dispensing pumps and pipes, tank farm and operational areas be adopted. It is important to always release clean water from containment as soon as possible after any rain episode. The longer the water stays contained in the tank farm, the greater the opportunity for it to become contaminated with fuel (e.g., from a nozzle). In addition, corrosion may begin on the tank's surface or supporting structure, compromising its integrity. And the volume of rainwater decreases containment capacity for petroleum in the event of a spill. Ideally, this water should be released from containment through an oil and water separator, which is a device that traps the oil and releases the water. The separator must be sized for the anticipated flow volume, and it must be cleaned periodically.

Personnel should be trained to identify and eliminate risks; to conduct routine inspections of fuel storage containers; to dispense fuel and operate pump shutoffs properly; to contain spills; and to conduct cleanup procedures, including the safe operation of equipment. Involve your employees in scheduled reviews of your operation, identifying steps you can take to minimize spills.

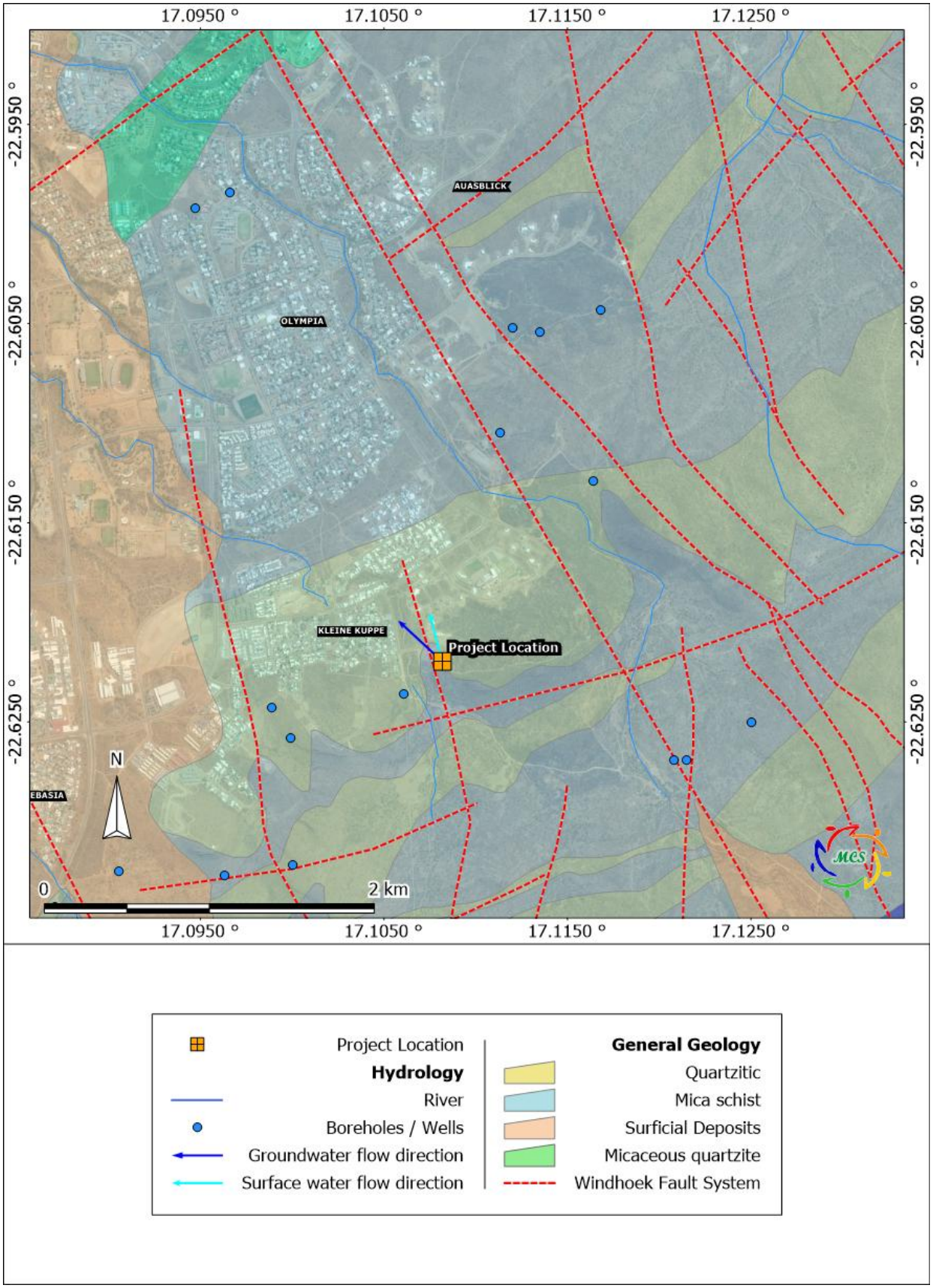

Figure 4. Hydrogeological map

9.5 General Ecology

The site falls within the Tree and shrub savanna biome, which is characterised by high shrubland and thorn bush type vegetation. The vegetation structure type in the area is classified as Dense Shrubland.

The site itself is cleared and earmarked for development. The surrounding land is dominated by thorn bush and trees (*Acacia mellifera)*, short to medium height grass and shrubs. The following photos below illustrate the prominent vegetation at the project location.

Photo 3. Thorn trees *(Acacia mellifera)*

Photo 4. Grass, shrubs and bush

Deducing from the Atlas of Namibia, the proposed site is within the area that is known to have >500 plant species and a low to medium diversity of higher plants (Mandelsohn et al (2003). With regards to fauna, minimal wildlife has been observed in the vicinity of the study area, with more baboons and domestic animals frequenting the site. Faunal species diversity is presented in the table below:

Table 2. General Fauna Diversity (Atlas of Namibia)

	Diversity	**Endemism**
Mammal	61 - 75 Species	0 Species
Scorpion	18 - 21 Species	0 Species
Bird	201 - 230 Species	0 Species

Reptile	71 - 80 Species	5 - 8 Species
Lizard	> 35 Species	N/A
Termite	7 - 9 Genera	N/A
Snakes	35 – 39 Species	N/A

10. ENVIRONMENTAL SENSITIVITY

According to City of Windhoek's Environmental Structure Plan of 2004, an environmental assessment and mapping study was conducted to provide a strategic overview of the environmental aspects of Windhoek.

As a result, control zones were delineated based on a few critical aspects such as the sensitivity of the southern Windhoek aquifer; sensitivity of the catchment of the Goreangab Dam (including rivers and streams throughout Windhoek; sensitivity of the environment and/or a specific critical environmental component; relative importance of the 'sense of place' or the specific character of Windhoek; the need to protect open space in Windhoek (includes the river and aquatic systems, as well as the ridgelines, hills and mountains, and natural areas surrounding the city); and the need to protect, manage and conserve sensitive natural vegetation cover.

The project location is considered to have a medium to high environmental sensitivity status. See Figure 5 for the environmental sensitivity map.

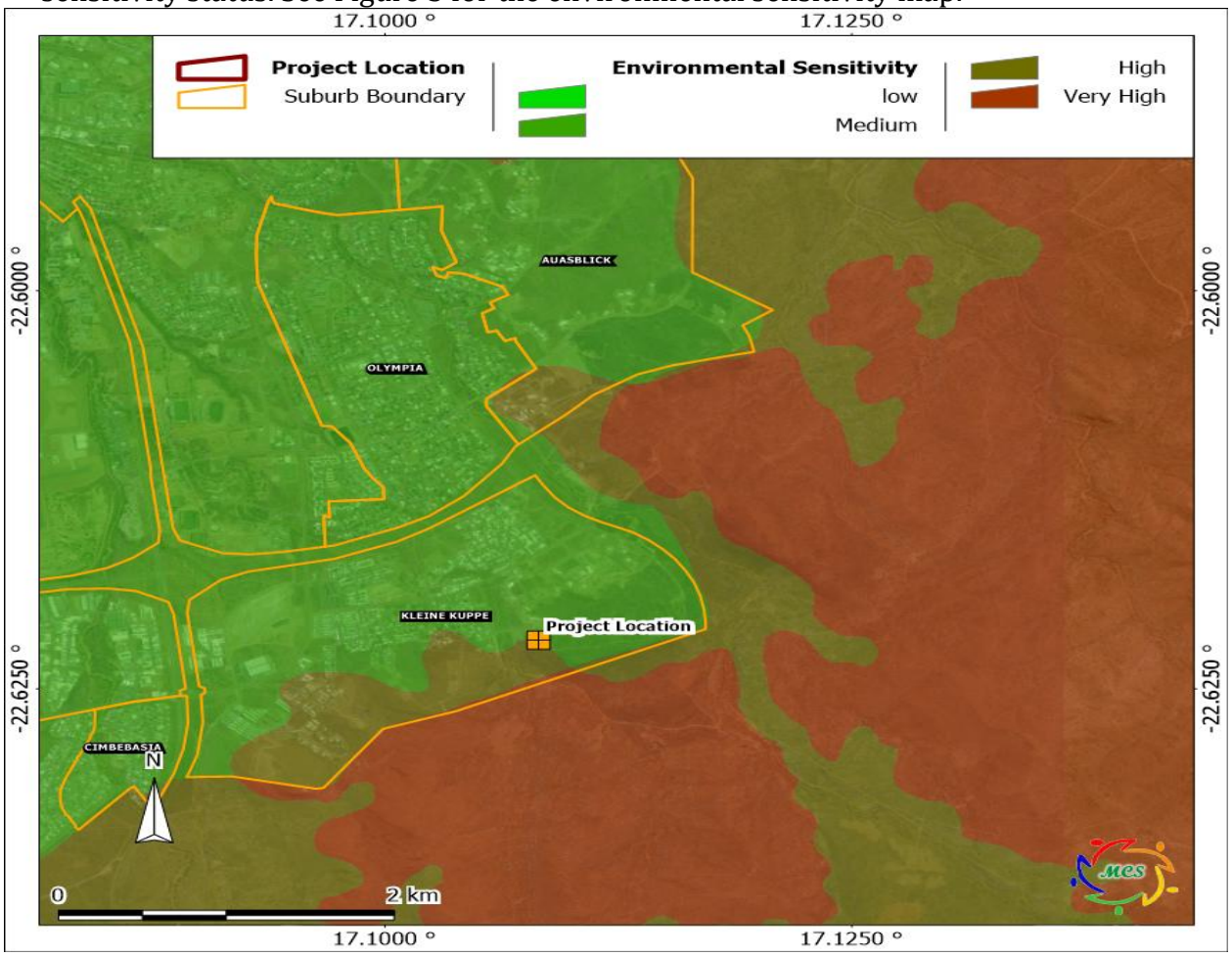

Figure 5. Environmental Sensitivity of the Project Area

11. SOCIO-ECONOMIC ASPECTS

This section provides an overview of socio-economic characteristics of the project area. It provides regional and local information on the, economic activities, population dynamics, vulnerability, and social services currently available in the area.

11.1 Regional Information

The total Khomas Region population is estimated to be 342,141 (169,672 males and 172,469 females) (NSA, 2011). Ninety-seven percent of the population of the region over 15 years of age are literate. The estimated unemployment rate in Khomas region is 30%. The population density in the region is relatively high at 6.8 persons per km2, compared to the national average of 2 persons per km2.

The life expectancy in Khomas is 56 years in females and 54 years in males. The Human Poverty Index in Khomas region is 17.09, meaning almost a quarter of all people living in Khomas are poverty stricken.

11.2 Kleine Kuppe, Windhoek

11.2.1 Economic Activities

Windhoek is the capital city of Namibia and is often referred to as the cleanest city in Africa. The city is the hub for all economic activities in the Khomas Region and is linked to Namibia's air, rail and road network, making it well situated to service Zambia, Zimbabwe, Botswana, Southern Angola and South Africa.

11.2.2 Employment (Job Opportunities)

The contractor will utilise his own workforce for the operation of the facility, however it is assumed that an external contractor will be utilised for most up-keep and maintanance of the facility. The City is well-equipped with competent small and medium enterprise (SME) companies to conduct any maintanance on the facility. Total Namibia will supply fuel to the facility through its workforce and fuel delivery contractors. The project would also give rise to indirect economic benefits through the procurement of other associated products, materials, and local services.

Some of the services during the operational phase will be outsourced e.g. security services and waste removal. The outsourcing of these services will strengthen existing businesses operating in the area and provide employment to locals. It is therefore recommended that, where feasible, contractors employ local labour by recruiting from local communities; that procurement of materials, goods and services from local suppliers be encouraged.

11.2.3 Tourism

Windhoek is the major tourism gateway to the rest of Namibia. The city itself also attracts a lot of tourists from all over the world, due to its range of attractions in and around the city; and the rich cultural diversity found in the capital.

This tourist city renowned for being one of the cleanest in the world boosts a good waste collection and management system in and around the city. Excessive waste, dust, noise, vibrations and appalling air quality can have negative impacts on the tourism industry in the area, as it can become a nuisance to tourists.

11.2.4 HIV & Prostitution

Namibia has a high incidence of HIV/AIDS, which has a strong and adverse socio-economic impact on livelihoods of people in the region. The HIV prevalence rate is estimated at 19.7% for Namibia (Poverty profile 2007).

The spending powers of locals working for Octagon Construction are likely to increase, and this might be a perfect opportunity for sex workers to explore. Migrant labourers from other regions and expatriates are normally vulnerable and may use the services rendered by the sex workers.

Construction camps often become a focal point for promiscuous sexual activities. Such activities, particularly when carried out without protection, can result in increases in sexually transmitted diseases (STDs) and especially AIDS among neighbouring communities, construction workers and their partners.

Should the HIV prevalence increase, the following consequential issues could arise:

- ✓ Reduced workforce in the Khomas Region.
- ✓ Diversion of income expenditure to medical care.
- ✓ Increase in orphans and households headed by children.
- ✓ Increase in pregnancy related mortality.
- ✓ The current rate of 3,129 people per doctor could increase.

Educate workers and surrounding communities on measures to prevent the spread of HIV/AIDs through awareness campaigns, provision of safety equipment for workers, child labour prohibited.

11.2.6 Infrastructure & Increased Traffic

The traffic in the area is expected to remain the same, as construction vehicles are already busy in the area and frequently access the facility for

fuel. The main access roads (i.e. Ambrose Street and Bandon Street) and all existing tracks to the site will be utilised and no new roads will be created.

12. STAKEHOLDER PARTICIPATION

Stakeholder consultation forms an integral component of an ESA investigation and enables comments on the potential environmental impacts associated with the proposed development and to identify additional issues which they feel should be addressed in the ESA. The primary aims of public participation were:

- ❖ To inform I&APs and key stakeholders about the proposed development
- ❖ To identify issues and concerns of key stakeholders and I&Aps with regards to the proposed development.
- ❖ To provide information to enable informed decision making
- ❖ To develop a communication structure with stakeholder and I&APs
- ❖ To promote transparency of the project
- ❖ To ensure the public and stakeholders comments are considered for the development.

Decision-making authorities were consulted during the study, and have been engaged throughout the project process. Consultation with the department of Environmental Affairs (MET) included the environmental assessment procedure and application procedure.

A background information document (See Appendix B) was availed to all stakeholders who were consulted and raised no environmental or social concerns regarding the development.

Mr Olavi Makuti (Environmental Specialist) at the City of Windhoek was also consulted via telephone and a BID was forwarded to his office. No environmental objections or concerns regarding the proposed facility were received from his office, however he noted that care should be taken at all cost to avoid pollution to the environment throughout operations of the facility.

At the time of report writing, no further environmental or social concerns regarding the facility was received by the consultant from the general public.

Table 3. Interviewed Stakeholders/I&APS

NAME	ORGANISATION/ERF	DESIGNATION/POSITION
Ms. T. Iyambo	Ministry of Mines and Energy.	EA procedure, Consultation
Ms. S. Angula	Ministry of Environment and Tourism, Directorate of Environmental Affairs.	EA procedure
Mr. P. Ikondja	Total Namibia (Pty) Ltd / Project Manager	Installation Information
Mr. I. Kandele	Octagon Construction (Pty) Ltd / Proponent	Installation Information
Mr. O. Makuti	City of Windhoek / Environmental Specialist	Local Authority

Consultation with the department of Environmental Affairs (MET) included the environmental assessment procedure and application procedure.

13. ENVIRONMENTAL IMPACT EVALUATION

The Environmental Scoping Assessment sets out potential positive and negative environmental impacts associated with the proposed development. The following assessment methodology will be used to examine each impact identified, see Table 4.

Table 4. Impact Evaluation Criterion (DEAT 2006)

Criteria	**Rating (Severity)**	
Impact Type	**+VE**	Positive
	0	No Impact
	-VE	Negative
Significance of impact being either	**L**	Low (Little or no impact)
	M	Medium (Manageable impacts).
	H	High (Adverse impact).

Probability:	**Duration:**
5 - Definite/don't know	5 - Permanent
4 - Highly probable	4 - Long-term (impact ceases
3 - Medium probability	3 - Medium-term (5-15 years)
2 - Low probability	2 - Short-term (0-5 years)
1 – Improbable	1 - Immediate
0 – None	
Scale:	**Magnitude:**
5 – International	10 - Very high/don't know
4 – National	8 - High
3 – Regional	6 - Moderate
2 – Local	4 - Low
1 - Site only	2 - Minor
	0 - None

13.1 Operational Phase (including Maintanance)

13.1.1 Spillages

Spillages are bound to occur during delivery of diesel fuel to the aboveground tank; and during dispensing of diesel to construction vehicles and equipment.

Proposed Mitigation Measures

- Risk of impact from this can be lowered through proper training of staff.
- All fuel delivery and dispensing operations should be conducted on provided spill containment areas around the dispensing points and tank farm.
- Staff must be provided with emergency response procedures which they should be familiar with.
- The storage tank should be kept in the tank containment farm provided throughout the duration of the installation.
- Regular inspection of the storage tank and farm, reticulation pipelines, dispensing pumps and the entire fuel system should be conducted.
- Staff should at all times be aware of the precautions associated with the handling of petroleum / chemical products as described in the relevant Material Safety Data Sheets.

A spill management plan should be written to ensure effective response to spills. Ensure all staff is familiar with the plan and it is regularly updated. The general response to a fuel spill at the consumer facility must be:

- Switch off all pump(s) using the automatic pump cut-off. Switches should be located within easy reach of the console attendant and be clearly marked. Cut-offs at the fuse board is not acceptable;
- If spillage is outside the bund wall containment, use all appropriate measures necessary to contain the spill;
- Use booms or a sand/soil dam to prevent the spill from entering stormwater drains. Use the absorbents in the spill kit to soak up as much fuel as possible;
- Report any spillage more than 200 litres to the relevant authorities and remediation instituted (refer to section 49 of the Petroleum Products and Energy Act, 1990 (Act No. 13 of 1990)).
- Call the local Fire Brigade if a major spill occurs;
- Keep the public away from the spill;

Contact a licensed waste contractor to dispose of the absorbents used in the clean-up operation.

Impact Evaluation:

Aspect	Impact Type	Scale	Duration	Magnitude	Probability	Significance	
						Unmitigated	Mitigated
Spills	-VE	1	3	6	4	M	L

13.1.2 Air Quality

Hydrocarbon vapours will be released during fuel delivery and dispensing, as liquid displaces the gaseous mixture in the tank. In terms of fuel storage tank, the vapours will be released through vent pipe on the tank.

Vapour emissions are wasteful in terms of product loss and also add volatile organic compounds (VOCs) to the atmosphere, which contribute to the formation of photochemical smog. Fuel vapours are also a significant source of benzene, a known carcinogen for humans.

Proposed Mitigation Measures

- The vent pipe should be placed in such a manner as to prevent impact on potential receptors.
- Use vapour recovery equipment and techniques to avoid air pollution and minimise fuel loss.
- Encourage reduction of engine idling at the project site.
- Regular air quality monitoring should be conducted at the facility.
- Keep a complaints register regarding vapour smells at the site; and act on it if becomes a regular complaint.

Impact Evaluation:

Aspect	Impact Type	Scale	Duration	Magnitude	Probability	Significance	
						Unmitigated	Mitigated
Air Quality	-VE	2	4	4	2	L	L

13.1.3 Fire and Explosion Risks

Hydrocarbons are volatile under certain conditions and their vapours in specific concentrations are flammable. If precautions are not taken to prevent their ignition, fire and subsequent safety risks may arise.

Proposed Mitigation Measures

- Emergency response procedures should be in place so as to alert the employees on how to react to fire and explosions incidents.
- An incident reporting procedure should also be implemented to make the employees aware of how, when and to whom to report fire and explosion incidents.
- Regular inspections should be carried out to inspect and test fire fighting equipment and emergency response at the fuel facility.
- Ensure sufficient water is available all the time for fire fighting purposes.
- It is highly recommended that electrical wiring of the facility be installed and approved by a qualified electrician who will issue a Certificate of Compliance.

Impact Evaluation:

Aspect	Impact Type	Scale	Duration	Magnitude	Probability	Significance	
						Unmitigated	Mitigated
Fire & Explosions	-VE	1	4	4	2	M	L

13.1.4 Generation of Waste

Waste such as contaminated soil, litter, empty cans of engine oil and other automotive products will be generated during the operational phase of the consumer facility.

Proposed Mitigation Measures

- General waste must be appropriately collected and disposed off at the Kupferberg landfill and/or nearby Kleine Kuppe waste transfer facility.
- Contamination of soil must be prevented through the use of containment areas as provided.
- Any contaminated soil generated must be properly contained and disposed off at the Kupferberg hazardous waste disposal site (in Windhoek); or bioremediated accordingly.
- Sufficient waste bins must be available at the fuel facility at all times.
- Regular monitoring of contaminated soil and water must be conducted at all times and addressed accordingly.

Impact Evaluation:

Aspect	Impact Type	Scale	Duration	Magnitude	Probability	Significance	
						Unmitigated	Mitigated
Waste	-VE	1	1	4	2	L	L

13.1.5 Surface Water

Spillages and/or leakages of contaminants might occur due to failure of the storage tank and/or associated fuel reticulation pipelines. Contaminated soil may pose a risk to surface water.

Proposed Mitigation Measures

- Proper containment mechanisms installed should be able to contain any spillages that may occur during the operation of the facility.
- Use drip trays, linings or concrete floors when evidence of leaks are observed on construction vehicles or equipment.
- Remove or contain leaking vehicles at the project location immediately.
- The presence of an emergency response plan and suitable equipment is advised, so as to react to any spillage or leakages properly and efficiently.
- Ensure all drainage channels are clear of litter or obstructing material.

Impact Evaluation:

Aspect	Impact Type	Scale	Duration	Magnitude	Probability	Significance	
						Unmitigated	Mitigated
Surface water	-VE	2	4	4	2	M	L

13.1.6 Groundwater

Spillages might occur during delivery or off-loading of diesel fuel into the aboveground tank; and overfilling of construction vehicles and equipment at the site.

Proposed Mitigation Measures

- Proper monitoring of the product levels must take place to eliminate overfilling.
- All operational surfaces at the facility must be installed with spill containment areas.
- Ensure that any petroleum products, such as grease, waste oils and lubricants are contained in containment structures (e.g. plastic liners, drip trays etc.).
- Avoid discharge of pollutants (such as hydrocarbons, chemicals, contaminated waste water) into nearby water courses.
- All hazardous wastes generated in the project area should be safely contained, transported and disposed off site.
- Equipment and materials to deal with spill cleanup must be readily available on site and staff must be trained as to how to use the equipment and briefed about reporting procedures.
- Regular tank and pipeline tightness inspections are advised to eliminate the risk of impact on the environment due to leakage.

Other guiding principles to the prevention of potential leakages and/or spillages that could lead to groundwater pollution include:

- Spillage control procedures must be in place according to SANS 10089-1:1999 and SANS 100131-2 standards, or better, including impounding around the loading areas by bunding with appropriate slopes of 1:100, construction of bund walls and floors that are liquid tight and that are not prone to deterioration under the effects of any petroleum product;
- The procedures followed to prevent environmental damage during service and maintenance, and compliance with these procedures, including the correct use of sumps and regular reporting of spillages must be audited and corrections made where necessary;
- The condition of the fuel reticulation system will have to be checked regularly and repaired to prevent leakages;
- Any spillage of more than 200 litres must be reported to the relevant authorities and remediation instituted (refer to section 49 of the Petroleum Products and Energy Act, 1990 (Act No. 13 of 1990)).

Impact Evaluation:

Aspect	Impact Type	Scale	Duration	Magnitude	Probability	Significance	
						Unmitigated	Mitigated
Groundwater	-VE	2	4	4	2	M	L

13.1.7 Health and Safety

The operations of the facility can cause health and safety risks to workers on site. Employees could be exposed through skin contact with fuel and inhalation of fuel particulates during handling of such products.

Safety issues could arise from construction vehicles frequenting the site. Further risk may also emanate from equipment and tools used on site during operational and maintenance activities. This increases the possibility of injuries and all project personnel must be made aware of the potential risks of injuries on site.

Proposed Mitigation Measures

- Staff must be properly trained and made aware of all the MSDS (Material Safety Data Sheets) sheets of all chemicals on site.
- Fire fighting equipment and first aid kit should be made available and must be serviced regularly. Staff should be properly trained in first aid and safety awareness.
- Employees are expected to be trained on how to use all equipment and how to handle petroleum products, and training attendance lists must be kept.
- Contact details of emergency services should be displayed at the facility.
- Demarcate and place signage on any areas around the facility which may pose a safety risk (including open trenches, excavations etc).
- The project personnel are advised to ensure that proper personal protective gear and first aid kits are available at all times.

Impact Evaluation:

Aspect	Impact Type	Scale	Duration	Magnitude	Probability	Significance	
						Unmitigated	Mitigated
Health & Safety	-VE	1	1	4	2	M	L

13.1.8 Traffic

Although negligible, a slight increase in traffic will be experienced along the nearby Ambrose and Bandon streets. This impact will be short-lived (i.e. duration of project), as construction vehicles will be frequenting the site for fuelling.

Proposed Mitigation Measures

- Speed limits and road signs as set out by national traffic regulations and company policies should be adhered to in order to minimise accidents.
- Appropriate road signs should be erected to reduce these impacts and their spin-offs.

Impact Evaluation:

Aspect	Impact Type	Scale	Duration	Magnitude	Probability	Significance	
						Unmitigated	Mitigated
Traffic	-VE	2	4	4	2	M	L

13.1.9 Ecological Impacts

The proposed facility operations will have minimal impacts on fauna and flora.

Proposed Mitigation Measures

- The operational activities would not exceed the demarcated area of the consumer fuel facility.

Impact Evaluation:

Aspect	Impact Type	Scale	Duration	Magnitude	Probability	Significance	
						Unmitigated	Mitigated
Ecology	-VE	1	4	2	2	L	L

13.1.10 Socio-Economic Aspects

The creation of new employment opportunities is considered to be a positive impact. It is not clear how many new employment opportunities will be created but jobs will be created.

Proposed Mitigation Measures

- Suppliers of operational stock should be sourced from the businesses in the City (where feasible).
- Locally source services required during the operations, such as securities, rental of portable toilets, plant hire, etc.

Impact Evaluation:

Aspect	Impact Type	Scale	Duration	Magnitude	Probability	Significance	
						Unmitigated	Mitigated
Socio-economic	-VE	2	4	2	3	L	L

13.1.11 Cummulative Impacts

Potential cumulative impacts associated with the operational phase include increase in traffic and noise pollution around the site. Emissions from construction vehicles visiting the consumer fuel facility are also expected, coupled with the existing emissions from vehicles in the surrounding area, the air quality may be impacted.

Impact Evaluation:

Aspect	Impact Type	Scale	Duration	Magnitude	Probability	Significance	
						Unmitigated	Mitigated
Cummulative impacts	-VE	2	4	4	2	M	L

13.2 Detecting Loss of Product

Leaks and spills of products do not necessarily indicate the potential spill size, however the accuracy of stock monitoring techniques is critical to detecting leaks at an early stage. It follows that a larger quantity of product may leak to soil and groundwater from a long running undetected pipe work leak than from a catastrophic failure of an underground tank. Thus, it's very important to that proper stock management techniques are implemented prior to the operation of the fuel facility.

Dispenser meters should be checked periodically and other sources of loss (e.g. theft, faulty gauge probes etc.) should be considered. The elimination of apparent losses should improve business, performance and improve the leak detection capacity of the systems in use.

13.3 Possible Decommissioning Phase

The impacts associated with this phase will be similar to that of a construction phase. The supplier's guidelines for tank removal must be followed to reduce the risk of spillage and groundwater contamination. A site-specific Environmental Management Plan for this phase will have to be reviewed at the time of decommissioning to cater for changes made to the facility.

13.3.1 Dust Pollution and Air Quality

Dust problems are expected to be site specific and will not pose a nuisance to nearby properties. Dust generated during the decommissioning phase would be minimal due to the size and design of the fuel installation. This might be worse during the winter months when strong winds occur. Dust is regarded as a nuisance as it reduces visibility, affects the human health and retards plant growth.

Release of various particulates and exhaust fumes from construction vehicles and machinery during tank removal activities is also expected to be minimal.

Proposed Mitigation Measures

- Ensure measures are in place to minimise dust generated during the decommissioning phase.
- Use appropriate dust suppression measures when dust generation is unavoidable, e.g. dampening with water.

Impact Evaluation:

Aspect	Impact Type	Scale	Duration	Magnitude	Probability	Significance	
						Unmitigated	Mitigated
Dust	-VE	1	1	4	3	L	L

13.3.2 Noise Impact

Noise pollution due to construction vehicles, machinery and equipment in the area will be generated. It is however not expected that the noise generated during tank removal will impact any third parties very much as it will be minimal and short-lived.

Proposed Mitigation Measures

- Ensure proper maintenance is conducted on tank removal vehicles to ensure the reduction of noise emission.
- Audio equipment (if any) should not be played at levels considered intrusive by others.
- Decommissioning activities should be limited to a period between 08h00 and 17h00.

Impact Evaluation:

Aspect	Impact Type	Scale	Duration	Magnitude	Probability	Significance	
						Unmitigated	Mitigated
Noise	-VE	1	1	4	3	L	L

13.3.3 Safety & Security

Safety issues could arise from the construction vehicles, earthmoving equipment and tools that will be used on site during the decommissioning phase. This increases the possibility of injuries and the contractor must ensure that all staff members are made aware of the potential risks of injuries on site.

Proposed Mitigation Measures

- Demarcate and barricade any areas which may pose a safety risk (including hazardous substances, excavations etc).
- Proper barricading or fencing around the work sites should be erected to avoid entrance of unauthorized persons.
- Enforce the use of appropriate Personal Protective Equipment (PPE) for the right task or duties at all times.
- Prevent illegal access to the work site by implementing appropriate security measures.
- Sensitize operators of earthmoving equipment and tools to switch off engines of vehicles or machinery not being used.
- The contractor is advised to ensure that the team is equipped with first aid kits and that they are available on site, at all times.

Impact Evaluation:

Aspect	Impact Type	Scale	Duration	Magnitude	Probability	Significance	
						Unmitigated	Mitigated
Safety	-VE	1	1	2	2	M	L

13.3.4 Traffic

Construction vehicles will access the project location from Ambrose and Bandon streets. Decommissioning related activities are expected to have a minimal impact

on the movement of traffic along these roads, due to the fact that tank removal activities will be short-lived.

No diversion of traffic or closure of the road is expected, however a slight nuisance might be experienced by motorists using the same roads. This will most likely be caused by slow moving vehicles frequenting the construction site. It is however expected to be short-lived.

Proposed Mitigation Measures

- The general speed limit regulations must be adhered to minimise accidents.
- Tank removal vehicles and machinery must be tagged with reflective signs or tapes to maximise visibility and avoid accidents.
- Construction vehicles should not be allowed to obstruct the road, hence no stopping in the road, wholly or partially, but rather pull off the road or park on the roadside.

Impact Evaluation:

Aspect	Impact Type	Scale	Duration	Magnitude	Probability	Significance	
						Unmitigated	Mitigated
Traffic	-VE	2	2	2	2	L	L

13.3.5 Groundwater

Groundwater quality could be impacted through leachate of petroleum, chemical, harmful and hazardous substances. In particular, oil leakages, diesel, lubricants and grease from construction vehicles, equipment and machinery utilised during the decommissioning phase may occur. Care must be taken to avoid contamination of soil and groundwater.

Proposed Mitigation Measures

- Prevent spillages of any chemicals and petroleum products (i.e. oils, lubricants, petrol and diesel). Use drip trays, linings or concrete floors when evidence of leaks are observed on vehicles or equipment.
- Spillage control procedures must be in place according to relevant SANS standards or better.
- Proper environmental awareness and remedial response training of operators must be conducted prior to decommissioning activities.

Impact Evaluation:

Aspect	Impact Type	Scale	Duration	Magnitude	Probability	Significance	
						Unmitigated	Mitigated
Groundwater	-VE	2	2	4	2	L	L

13.3.6 Surface Water

Drainage from the site is well developed and runoff takes place north-northwest wards. Contamination of surface water might occur through petroleum, chemical and hazardous substances during tank removal and associated infrastructure.

Contaminants in the form of oil leakages, diesel, lubricants and grease from the construction vehicles may also occur during decommissioning activities.

Proposed Mitigation Measures

- Use drip trays, linings or concrete floors when evidence of leaks are observed on construction vehicles or equipment.
- Any spillage of diesel fuel and/or hazardous substances including oil or grease must be cleaned up immediately and disposed off at a designated disposal facility.
- Prevent discharge of any pollutants, such as cements, concrete, lime, chemicals, and hydrocarbons into the nearby water course.
- Prevent illegal washing out of containers in nearby water course.
- Stabilise cleared areas as soon as possible to prevent and control surface erosion.
- Proper environmental awareness and remedial response training of operators must be conducted prior to decommissioning activities.

Impact Evaluation:

Aspect	Impact Type	Scale	Duration	Magnitude	Probability	Significance	
						Unmitigated	Mitigated
Surface water	-VE	2	2	4	2	M	L

13.3.7 Generation of Waste

Waste material will be generated during the decommissioning activities of the facility. Waste in the form of rock cuttings, pipe cuttings, electrical cuttings, oil spills or leakages of petroleum products may occur.

Proposed Mitigation Measures

- The Contractor shall institute a waste control and removal system for the site. All waste shall be disposed off site at an approved landfill site.
- No disposal of, burying and burning of waste on site should be conducted.
- Separate hazardous wastes from general waste, clearly marked, and stored in appropriate containers.
- Solid and liquid hazardous waste shall be stored in separate containers.
- The hazardous waste storage is to be clearly marked to indicate the presence of hazardous substances, and the protocols associated with handling of such hazardous wastes shall be known by all relevant staff members.
- Awareness of the hazardous nature of various types of waste should be enforced.

Impact Evaluation:

Aspect	Impact Type	Scale	Duration	Magnitude	Probability	Significance	
						Unmitigated	Mitigated
Waste	-VE	1	2	4	3	M	L

Summary of all potential impacts during the decommissioning phase:

In general, considering the magnitude and location of the project, impacts are expected to be low, mostly short lived and site specific. Mitigation options recommended in the Environmental Management Plan (EMP) will guide and ensure that the impacts of the site decommissioning activities are minimised. It is further advised that traffic signs and barricades be installed around the work site to ensure safety.

The appointed contractor should be made aware of the content and environmental requirements of this report through proper induction training.

14. ENVIRONMENTAL MANAGEMENT PLAN

The Environmental Management Plan (**EMP**) provides management options to ensure impacts of the proposed development are minimised. An EMP is an environmental management tool used to ensure that undue or reasonably avoidable adverse impacts of the construction, operation and decommissioning of a project are prevented, and the positive benefits of the projects are enhanced.

The objectives of the EMP are:

- ✓ to include all components of the development;
- ✓ to prescribe the best practicable control methods to lessen the environmental impacts associated with the construction of the development;
- ✓ to monitor and audit the performance of construction personnel in applying such controls; and
- ✓ to ensure that appropriate environmental training is provided to responsible construction personnel.

The EMP acts as a stand-alone document, which can be used during the various phases of the proposed consumer fuel facility. All contractors taking part in the construction of the facility should be made aware of the contents of the EMP. An EMP for the construction, operational and decommissioning phases of the proposed consumer fuel facility has been developed and is attached as Appendix A.

15. CONCLUSIONS

In general, the proposed continued operations of the existing consumer fuel facility would pose limited environmental and social risks.

All environmental risks can be minimised and managed through implementing preventative measures and sound management systems. It is recommended that this information be made available to the community on a regular basis.

The Environmental Management Plan should be used as an on-site tool during all phases of the fuel facility. Future environmental audits should be carried out to

ensure compliance of the EMP and environmental regulations of Namibia. Parties responsible for non-conformances of the EMP will be held responsible for any rehabilitation that may need to be undertaken.

The environmental clearance is valid for 3 years only, as per the environmental management act No.7 of 2007, thus it is the responsibility of the proponent to commission an application for renewal of the permit by submitting an updated EIA/EMP document before it expires.

Matrix Consulting Services

M. Shippiki
Principal Hydrogeologist / Environmental Practitioner
July 2020

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