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OMUTHIYA SERVICE STATION OMUTHIYA - NAMIBIA

Environmental Impact Assessment on a New
Fuel Retail Facility

EABib 2011

Compiled for:

OMUTHIYA SERVICE STATION
PO Box 19100, Omuthiya, Namibia
Tel: 085-244004
Fax: 085-244004

Compiled by:

NAMIBIA INSTITUTE FOR SOCIAL & ENVIRONMENTAL RESEARCH CC
PO Box 20600, Windhoek, Namibia
Tel: 061-2902090

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Enrico D'Amico

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LIST OF ABBREVIATIONS

EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
SABS	South African Bureau of Standards
UST	Underground Storage Tank

1. BACKGROUND AND INTRODUCTION

1.1. Background and Introduction to the site

Mr. Sheehama livula has commissioned an Environmental Impact Assessment (EIA) on the construction of a new fuel retail facility (Omuthiya Service Station) at Omuthiya, south of the main road B1. The new installation will consist of one 23m³ diesel underground tank, one 23m³ 93 octane lead replacement fuel underground tank and one 23m³ 95 octane unleaded fuel underground tank. Suitable dispensing pumps will also be constructed.

The facility will be supplied with fuel by road. A risk assessment was undertaken to determine the potential impact of hydrocarbon contamination on the environment. The environmental assessment is conducted to determine all environmental, safety, health and social impacts associated with the retail fuel storage facility and to comply to Namibia's Environmental Assessment Policy and with the requirements of the Ministry of Mines and Energy. This facility will be constructed according to SABS standards (or better), with special emphasis on SABS 089:1999.

1.2. Legislative requirements

To protect the environment and achieve sustainable development, all projects deemed to have adverse impacts on the environment require an EIA according to the Namibian legislation. The following legislation governs the process of EIA in the country pertaining to the proposed development:

- Environmental Assessment Policy
- Environmental Management Bill (not yet legally binding, but used as guiding document only)
- Petroleum Products and Energy Act, (Act No. 13 of 1990) and regulations

2. SCOPE OF WORK

The scope of the EIA is to determine the potential environment impacts resulting from the construction and operation of the proposed fuel facility. Relevant environmental data have been compiled by making use of secondary data and reconnaissance site visits. Potential environmental impacts and associated social impacts will be identified and addressed in this report.

3. STUDY APPROACH

Potential impacts on the social and natural environment due to the construction and operations of the new new retail facility was investigated through the use of baseline information about the site and its surroundings; and by obtaining existing secondary information as well as from a site visit. Affected Parties were also consulted with regards to the proposed new facility and their views, comments and opinions were obtained.

Consultation with the public forms an integral component of an EIA investigation and enables Affected Parties *i.e.* neighbouring landowners, local authorities, environmental groups, civic associations and communities, to comment on the potential environmental impacts associated with the proposed development and to identify additional issues which they feel should be addressed in the EIA.

4. THE 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. The SABS 089 standards for the Petroleum Industry were consulted for the baseline assessment (reported on in this section) and subsequent impact assessment (reported on in Section 7) to incorporate all required and pertinent issues in the investigation.

4.1. General description of the study area

The location of the proposed facility is situated at the settlement of Omuthiya, just south of main road B1 (Tsumeb – Ondangwa road). The site itself is situated more on the western outskirts of the settlement. Towards the south and west of the site is open land (open erven). North of the site is main road B1, followed by a residential property. IA cement and building contractors is located directly east of the site.

The construction and/or operation of the retail facility will not have direct negative impacts on any nearby property in any way, however indirect impacts on these properties may occur through groundwater pollution.

4.2. Climate

The site falls within an arid climatic region, typified by summer rainfall and dry southeasterly winds during the summer.

With reference to average temperatures, the area is subjected to annual mean temperatures over 22°C. Located as it is in a summer rainfall region, the area receives the bulk of its mean annual precipitation of between 400-450mm

mainly during the months of January to March. Variations in the annual rainfall are between 30-40%. The area has a very high evaporation rate ranging between 2800 and 3000 mm/a.

4.3. Landscape

The landscape is classified as being in the Kalahari Sandveld region, a flat area with various pans. The site is located within the catchment of the Etosha (Etosha-Ni River) Pan, an ephemeral river, draining in a central direction. No river is present within a kilometre from the site. Drainage is poorly developed and runoff usually collects in depressions in the area, where it forms pans (sonnas). Local drainage takes place to the east.

4.4. Geology and Hydrogeology

Soil cover at the site is from the Kalahari Group (Tk). This Kalahari group of unknown thickness consists mainly of unconsolidated formations, but some degree of consolidation may be present. Groundwater flow would be mostly through primary porosity but flow along fractures, faults (secondary porosity) and other geological structures present within the formations might take place where consolidated layers are present.

According to available geological maps, red mudstone, siltstone, sandstone, grit and conglomerate from the Omingonde Formation – Karoo Sequence underlies the Kalahari cover.

Groundwater flow from the site can be expected in a southerly direction. According to the Department of Water affairs (DWA) database, water is utilized in the area, with 5 known boreholes existing in a 5km radius. The water quality in the area is generally poor, but shallow perched aquifers with better quality water are present. The water table depth in the area is more than 20m below surface. This area does not fall within a Water Control Area, however it should be noted that groundwater belongs to the government of Namibia.

4.5. Potable water at Omuthiya

The settlement of Omuthiya derives most of its water from the Ondangwa - Oshivelo pipeline scheme. The scheme is administered by Namibia Water Corporation Ltd (Namwater). Some boreholes and wells are however present in the area. The groundwater tapped by these boreholes and wells are mostly from perched aquifers that have generally acceptable quality water, but is of limited extend.



Photo 5. South – open land (erven)



Photo 6. West – open land (erven)

6. ASSESSMENT OF IMPACTS

This section describes the most pertinent environmental impacts that are expected from the fuel facility.

6.1. Anticipated effects of the proposed development

Two different activities are associated with the development. Firstly the construction and installation has to take place before operation can commence. This section will look briefly at the different stages of the development as well as at the measures that are taken to mitigate any potential impact.

Potential effects on the environment during construction are expected to be low, although some dust might be generated during the process. Increased noise levels can be expected. These impacts will be short lived, as the installation does not entail major earthworks. Little solid waste will be generated during the construction and its removal will be the responsibility of the building contractor. No wastewater is expected during the construction.

During operation, fuel products will be offloaded from road tanker trucks into the underground storage tanks. In terms of air quality hydrocarbon vapour will be released during delivery as liquid displaces the gaseous mixture in the tanks. These vapours are released through the vent pipes to be installed on the tank. Vent pipes must be placed in such a manner as not to cause an impact on the workers on site and to neighbouring properties as per SABS standards.

Spillages might occur during delivery to the tanks. Risk of impact from this can be lowered through proper training of staff and the installation of suitable containment structures. Overfilling of the tanks may also take place and proper monitoring of the product levels in the tanks must take place to eliminate overfilling. Regular tank and pipeline tightness inspections are advised to eliminate the risk of impact on the environment. Further impact might emanate from the overfilling of vehicles on site. This impact can be reduced by the

installation of spill containment areas around the pumps and through proper training of the operators.

6.2. Potential surface and groundwater pollution

Surface runoff from the site is expected in an easterly direction. Runoff of pollutants from the site is not expected to reach any nearby rivers.

Groundwater is utilized in the area for human consumption. Nearby geological structures may provide preferential pathways to sensitive groundwater sources and this should be protected at all cost. Due to the design of the facility and the absence of surface water nearby, surface water is considered to be at no risk. Proper containment mechanisms installed should contain any release that might take place from spillages during operation of the facility.

Due to the design and volume of the facility and the distance of the project site to the nearest river, it is unlikely that a release of fuel would cause an impact on the surface water. Proper containment mechanisms installed should contain any release that might take place from spillages during loading / offloading of fuel. Any spillage of more than 200litres must be reported to the relevant authorities and remediation instituted.

Prevention of potential leakages and or spillages that could lead to surface water and groundwater pollution

1. All fuelling should be conducted on surfaces provided for this purpose.
2. Spillage control procedures must be in place according to SABS 089-1:1999 and SABS 089-3:1999 standards, or better, including impounding around the loading areas by bunding with appropriate slopes of 1:100.
3. Observation wells must be installed in the tank pits as per SABS 089-3:1999 standards, for monitoring of tank leakages. These observation wells must be inspected on a daily base.
4. Product volume reconciliation should be conducted at least once a day for the detection of possible leakages. Alternatively automatic leak detectors must be installed for the constant monitoring of possible leakages.
5. Separator pits must be inspected daily and cleaned when necessary
6. The procedures followed to prevent environmental damage during service and maintenance, and compliance with these procedures, including the

4.6. Fauna and Flora

The site is located within the Savanna biome, with Cuvelai drainage type vegetation. The vegetation structure type is classified as woodland, with a low diversity of higher plants.

At the site itself the vegetation consists of weeds and grasses, with a few camel thorn trees. Most of the vegetation has been removed from the site. No known conservation worthy vegetation exists on site and its immediate area. No wildlife has been observed in the vicinity of the study area, thus no wildlife is expected to be influenced by this development. Domestic animals do pass the site.



Photo 1. Grasses and weedy species on site



Photo 2. Camel thorn trees on site

5. CONSULTATION OF AFFECTED PARTIES

North of the site is the main road B1, followed by isolated residential properties (traditional houses). A cement and building contractors (business property) is located to the east. West and south of the site is open land.

Mrs. Namutenya Awala, the owner of the residence north of the site was consulted, to inform her of the proposed development and to obtain her consent. The business to the east, was also consulted. No concerns were reported and the construction of the fuel retail facility was welcomed.

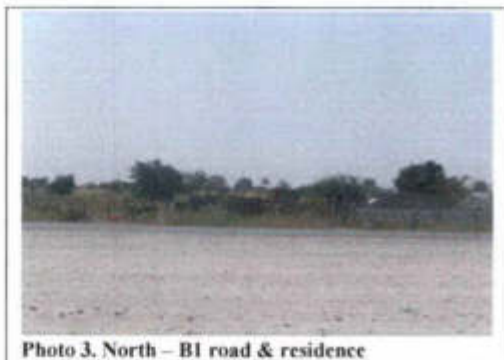


Photo 3. North – B1 road & residence



Photo 4. East – Business property

correct use of sumps and regular reporting of spillages must be audited and corrections made where necessary.

7. The condition of the fuel reticulation system will have to be checked regularly and repaired if necessary to prevent leakages.
8. Proper training of operators must be conducted on a regular basis.
9. Any spillage of more than 200litres must be reported to the relevant authorities and remediation instituted.
10. Spill cleanup means must be available on site.

6.3. Safety Issues

6.3.1. Fire hazard

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.

It must be assured that sufficient water is available for fire fighting purposes. The developer should ensure that with future expansion of additional facilities, this volume of water remains adequate for fire protection and are according to the SABS 089-1:1999 specifications.

In addition to this, all personnel have to be sensitised about responsible fire protection measures and good housekeeping such as the removal of flammable materials including rubbish, dry vegetation, and hydrocarbon-soaked soil from the vicinity of the installation. Regular inspections should be carried out to check for these materials at the site.

All fire precautions and fire control at the new site must be in accordance with SABS 089-1:1999, or better.

6.3.2. Other safety and protection issues

The handling of the fuel during operation also deserves consideration. Regulations related to receiving bulk cargoes from tank vehicles and dispensing thereof are of importance. These include all regulations in the International Safety Guide for Oil Tankers and Terminals, those of the fire authorities and the Health and Safety Regulations.

The operations of a fuel tank facility can cause serious health and safety risks to workers on site. For this reason adequate measures must be

brought in place to ensure safety and compliance with Health and Safety Regulations, including:

1. Proper training of operators
2. First aid treatment
3. Medical assistance
4. Emergency treatment
5. Prevention of inhalation of fumes
6. Protective clothing, footwear, gloves and belts; safety goggles and shields.

To prevent contact with fuel, correct handling of materials and packages should be in place and monitoring should be carried out, including accident reports and material safety data sheets.

7. ENVIRONMENTAL MANAGEMENT PLAN

The purpose of this section is to provide management options to ensure impacts of the development are minimised. The Environmental Management Plan (EMP) is to take pro-active route by addressing potential problems before they occur. This should limit the corrective measures needed, although additional mitigation measures might be included if necessary. The EMP acts as a stand-alone document, which can be used on the site during the various phases (planning, construction, operational and decommissioning) of the development. All contractors and sub-contractors taking part in the construction of the proposed fuel facility should be made aware of the contents of the EMP, so as to plan their activities accordingly in an environmentally sound manner.

An Environment Management System must created and used as the EMP for the proposed upgrade. It is recommended that the relevant parties agree on the role and responsibilities of the management of this facility and related activities and that contracts to that affect be drawn up and signed.

8. CONCLUSIONS

The proposed retail facility would pose limited environmental risks. The facility would serve as development for the area and create much-needed jobs.

The site is generally suitable for the fuel storage and retail facility. All environmental risks can be minimised and managed through implementing preventative measures and sound management systems. It is recommended that environmental performance be monitored regularly to ensure compliance and that corrective measures be taken if

necessary. Fire prevention should be adequate, as specified by the SABS 089 standards.

Health and safety regulations should be adhered to in accordance with the Regulations pertaining to Health and Safety. With future expansion of the fuel storage facility, compliance with environmental, health and safety issues must again be checked and improved where necessary.

9. REFERENCES

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

Geiss, W; 1971; 'n Voorlopige plantegroekaart van SWA. Dintera. Volume 4. Scientific Society.

SABS 089 – 1:1999; The Petroleum Industry. Part 1: Storage and distribution of petroleum products in above-ground bulk installations.

SABS 089 – 3:1999; The Petroleum Industry. Part 3: The installation of underground storage tanks, pumps/dispensers and pipework at service station and consumer installations.

Appendix A

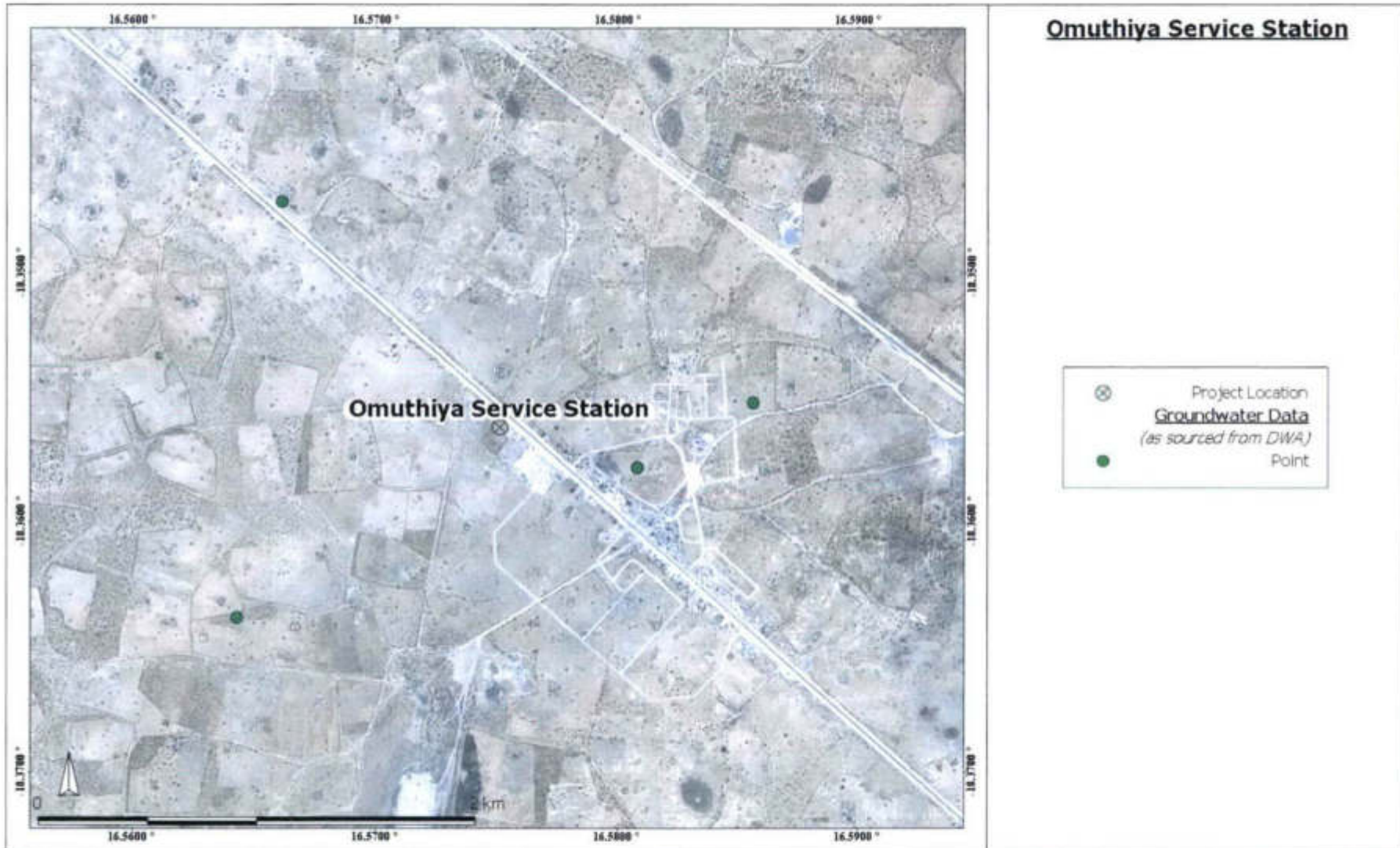


Figure B. Hydrogeology Map