

APP-001705
OPERATIONS OF THE FOSSIL FUEL KEETMANSHOOP
SERVICE STATION

ENVIRONMENTAL MANAGEMENT PLAN




Assessed by:



Assessed for:



July 2020

Project:	OPERATIONS OF THE FOSSIL FUEL KEETMANSHOOP SERVICE STATION: ENVIRONMENTAL MANAGEMENT PLAN	
Report: Version/Date:	Final July 2020	
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Report Approval	 André Faul Conservation Ecologist	

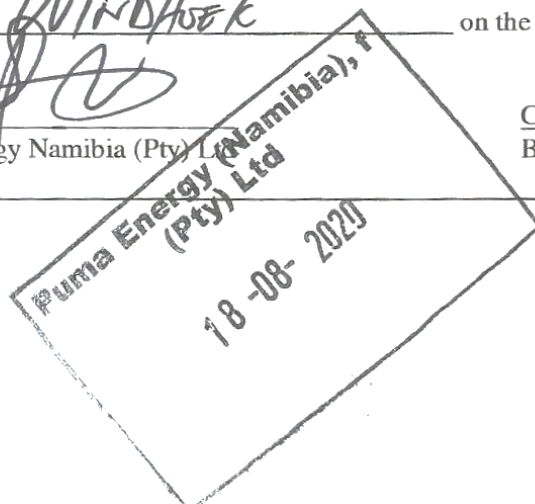
I, BRIAN SHAMALAZA, acting as representative of Puma Energy Namibia (Pty) Ltd, hereby confirm that the project description contained in this report is a true reflection of the information which the Proponent provided to Geo Pollution Technologies. All material information in the possession of the Proponent that reasonably has or may have the potential of influencing any decision or the objectivity of this assessment is fairly represented in this report and the report is hereby approved.

Signed at WINDHOEK on the 18 day of AUGUST 2020.


Puma Energy Namibia (Pty) Ltd

CY/1994/0600

Business Registration/ID Number



EXECUTIVE SUMMARY

Puma Energy Namibia (Pty) Ltd requested Geo Pollution Technologies (Pty) Ltd to prepare an environmental management plan (EMP) for their existing fuel retail facility on erf 1305, at the corner of Sam Nujoma Drive and Swakara Avenue (previously 5th Avenue), in Keetmanshoop. The site has been in operation for more than 15 years. Given relatively old infrastructure, maintenance of the site is ongoing and include replacement of old fuel storage and supply equipment and spill control infrastructure. The facility supplies diesel and unleaded petrol to customers from underground storage tanks via dispensers on a forecourt area.

Potential environmental impacts and associated social impacts were identified and preventative/enhancement and mitigation measures are provided in the form of an EMP in this report. It includes all environmental, safety, health and socio-economic impacts associated with the facility.

The facility is situated in an area with mixed land use, and is surrounded mainly by commercial and residential properties. Due to the nature and location of the facility, limited impacts are expected on the surrounding environment. It is however recommended to regularly monitor environmental performance to ensure regulatory compliance and that corrective measures be taken if necessary. Operations of the fuel retail facility play a positive role in contributing to a reliable supply of fuel to mainly the local community and agricultural industry, but also to a lesser degree, the tourism sector and transport industry.

The major concerns related to the construction and operations of the fuel retail facility are that of potential groundwater, surface water and soil contamination health impacts, traffic and the possibility of fire. This will however be limited by adherence to relevant South African National Standards and Material Safety Data Sheet instructions. Furthermore, noise levels should meet the minimum requirements of the World Health Organisation. By appointing local contractors and employees, and by implementing educational programs, the positive socio-economic impacts can be maximised while mitigating any negative impacts.

The environmental management plan included in Section 7 of this document should be used as an on-site reference document during all phases of the facility. All monitoring and records kept should be included in a report to ensure compliance with the environmental management plan. Parties responsible for transgression of the environmental management plan should be held responsible for any rehabilitation that may need to be undertaken. A health, safety, environment and quality policy should be used in conjunction with the environmental management plan. Operators and responsible personnel must be taught the contents of these documents. Local or national regulations and guidelines must be adhered to and monitored regularly as outlined in the environmental management plan.

TABLE OF CONTENTS

1	BACKGROUND AND INTRODUCTION	1
2	SCOPE	2
3	METHODOLOGY	2
4	PROJECT DESCRIPTION	2
5	ADMINISTRATIVE, LEGAL AND POLICY REQUIREMENTS	3
6	ENVIRONMENTAL CHARACTERISTICS	6
6.1	LOCALITY AND SURROUNDING LAND USE.....	6
6.2	CLIMATE	6
6.3	TOPOGRAPHY AND DRAINAGE	6
6.4	GEOLOGY AND HYDROGEOLOGY.....	6
6.5	PUBLIC WATER SUPPLY	7
6.6	FAUNA AND FLORA.....	7
6.7	DEMOGRAPHIC AND ECONOMIC CHARACTERISTICS	8
7	ENVIRONMENTAL MANAGEMENT PLAN	8
7.1.1	<i>Planning</i>	9
7.1.2	<i>Revenue Generation and Employment</i>	10
7.1.3	<i>Skills, Technology and Development</i>	11
7.1.4	<i>Demographic Profile and Community Health</i>	12
7.1.5	<i>Fuel Supply</i>	13
7.1.6	<i>Traffic</i>	14
7.1.7	<i>Health, Safety and Security</i>	15
7.1.8	<i>Fire</i>	16
7.1.9	<i>Air Quality</i>	17
7.1.10	<i>Noise</i>	18
7.1.11	<i>Waste production</i>	19
7.1.12	<i>Ecosystem and Biodiversity Impact</i>	20
7.1.13	<i>Groundwater, Surface Water and Soil Contamination</i>	21
7.1.14	<i>Visual Impact</i>	22
7.1.15	<i>Cumulative Impact</i>	23
7.2	DECOMMISSIONING AND REHABILITATION	24
7.3	ENVIRONMENTAL MANAGEMENT SYSTEM	24
8	CONCLUSION	24
9	REFERENCES	25

LIST OF APPENDICES

APPENDIX A: CONSULTANTS' CURRICULUM VITAE	26
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LIST OF FIGURES

FIGURE 1-1. PROJECT LOCATION.....	1
FIGURE 4-1. SITE LAYOUT	3
FIGURE 6-1. HYDROGEOLOGY MAP.....	7

LIST OF TABLES

TABLE 4-1. TANK STORAGE DETAILS	2
TABLE 5-1. NAMIBIAN LAW APPLICABLE TO THE FUEL RETAIL FACILITY	3
TABLE 5-2. MUNICIPAL BY-LAWS, GUIDELINES AND REGULATIONS.....	5
TABLE 5-3. RELEVANT MULTILATERAL ENVIRONMENTAL AGREEMENTS FOR NAMIBIA AND THE DEVELOPMENT	5
TABLE 5-4. STANDARDS OR CODES OF PRACTISE	5
TABLE 6-1. SUMMARY OF CLIMATE DATA FOR THE AREA (DIGITAL ATLAS OF NAMIBIA).....	6

1 BACKGROUND AND INTRODUCTION

Geo Pollution Technologies (Pty) Ltd was appointed by Puma Energy Namibia (Pty) Ltd (the Proponent) to prepare an environmental management plan (EMP) for the continued operations of their existing fuel retail facility on erf 1305, Keetmanshoop, in the //Karas Region (Figure 1-1). The facility has been in operation for many years and the Proponent intends to continue supplying fuel to customers. Together with daily operations, some maintenance and upgrades are performed on a regular basis to ensure that the facility remains compliant to industry standards. Operations of the fuel retail facility include:

- ◆ Filling of the storage tanks with fuel from road transport tankers;
- ◆ Dispensing of fuel to customers;
- ◆ Tank dips and fuel volume reconciliation;
- ◆ General operational activities and maintenance procedures associated with the fuel retail facility.

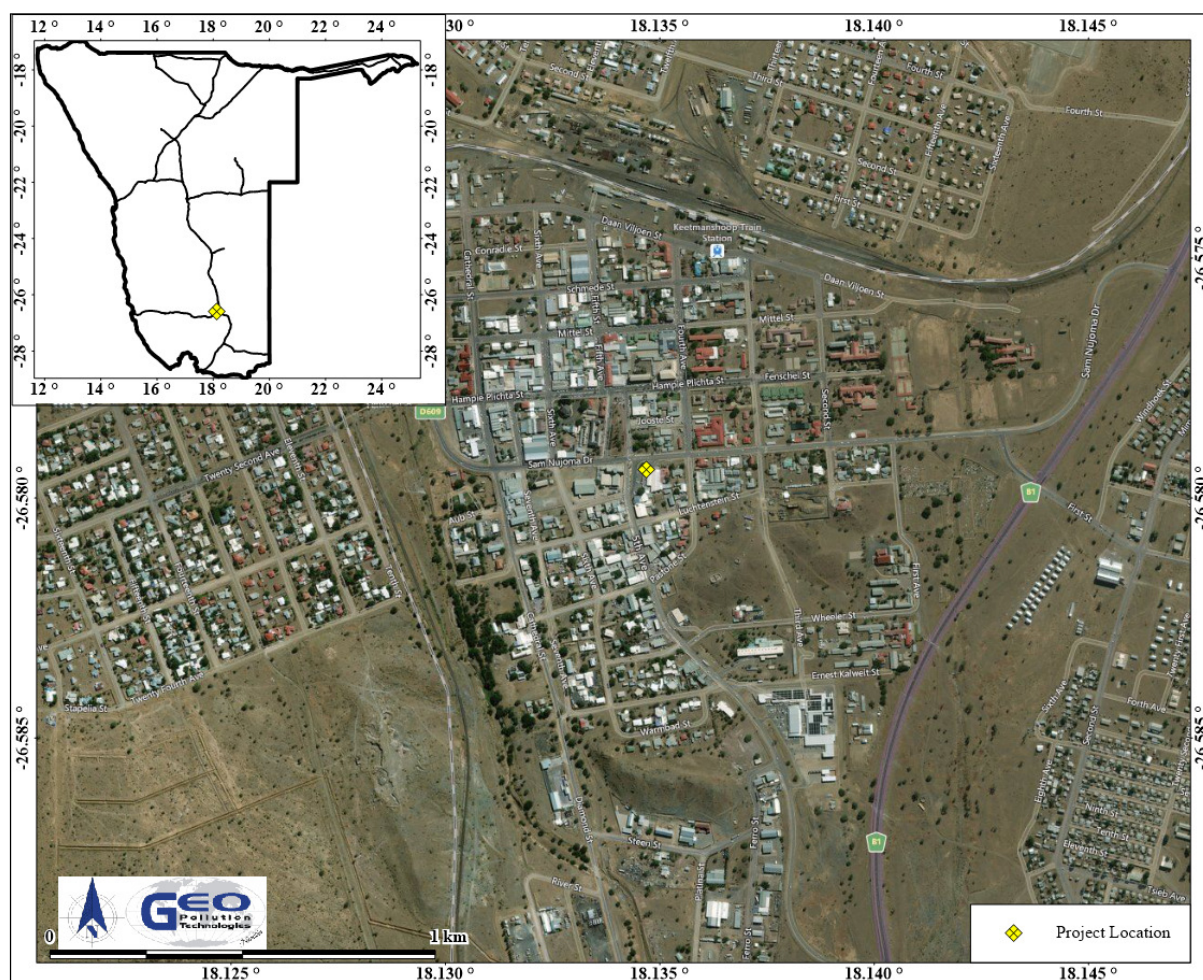


Figure 1-1. Project location

A brief risk assessment was undertaken to determine the potential impacts of the operational and possible decommissioning phases of the facility on the environment. The environment being defined in the Environmental Management Act as “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”.

The assessment was conducted to prepare an EMP to apply for an environmental clearance certificate in compliance with Namibia’s Environmental Management Act (Act No 7 of 2007) (EMA).

Project Justification – The local community including the surrounding farmers, trucking industry, tourists and patrons to the nearby mall make use of the fuel retail facility.

Benefits of the fuel retail facility include:

- ◆ Reliable supply of fuel to the local community and various business sectors,
- ◆ Employment and skills development,
- ◆ Increase in economic resilience in the area through diversified business activities and opportunities.

2 SCOPE

The scope of this assessment is to:

1. Determine the potential environmental impacts emanating from the operational and possible decommissioning activities of the fuel retail facility,
2. Identify a range of management actions which could mitigate the potential adverse impacts to acceptable levels,
3. Comply with the requirements of EMA,
4. Provide sufficient information to the relevant competent authority and Ministry of Environment, Forestry and Tourism (MEFT) to make an informed decision regarding the operations and possible decommissioning of the facility.

3 METHODOLOGY

The following methods were used to investigate the potential impacts of the facility on the social and natural environment:

1. Baseline information about the site and its surroundings was obtained from existing secondary information.
2. Potential environmental impacts emanating from the operations and decommissioning of the facility were determined and possible enhancement measures were listed for positive impacts while mitigation/preventative measures were provided for negative impacts.
3. An environmental management plan was prepared to be submitted to the MEFT.

4 PROJECT DESCRIPTION

The site has been in operation for more than 15 years. Given relatively old infrastructure, maintenance of the site is ongoing and include replacement of old fuel storage and supply equipment and spill control infrastructure.

Operations of the facility entail fuel storage in four 30 m³ underground storage tanks (UST), three for unleaded petrol (ULP) and one for diesel (Table 4-1). Dispensing of fuel takes place underneath an overhead canopy from four dispensing units on four pump islands, as well as from a single dispensing unit on an uncovered pump island (Figure 4-1). All surfaces where fuel is handled, are covered with concrete to prevent fuel from entering the soil and environment. The concrete surfaces have catchment pits to channel any hydrocarbon contaminated liquid to an oil water separator.

Operations include the receipt of fuel from tanker trucks. Fuel is dispensed to customers by pump attendants. Daily tank dips and fuel volume reconciliations are performed in order to detect any product losses and to ensure timely fuel delivery requests.

Table 4-1. Tank storage details

	T1	T2	T3	T4
Product	Diesel 50 ppm	ULP	ULP	ULP
Capacity (m³)	30	30	30	30
Type	Underground (UST)	Underground (UST)	Underground (UST)	Underground (UST)
Upgrade Installation	2008	2008	2008	2008
Filler Point (FP) No.	FP1	FP2	FP3	FP3

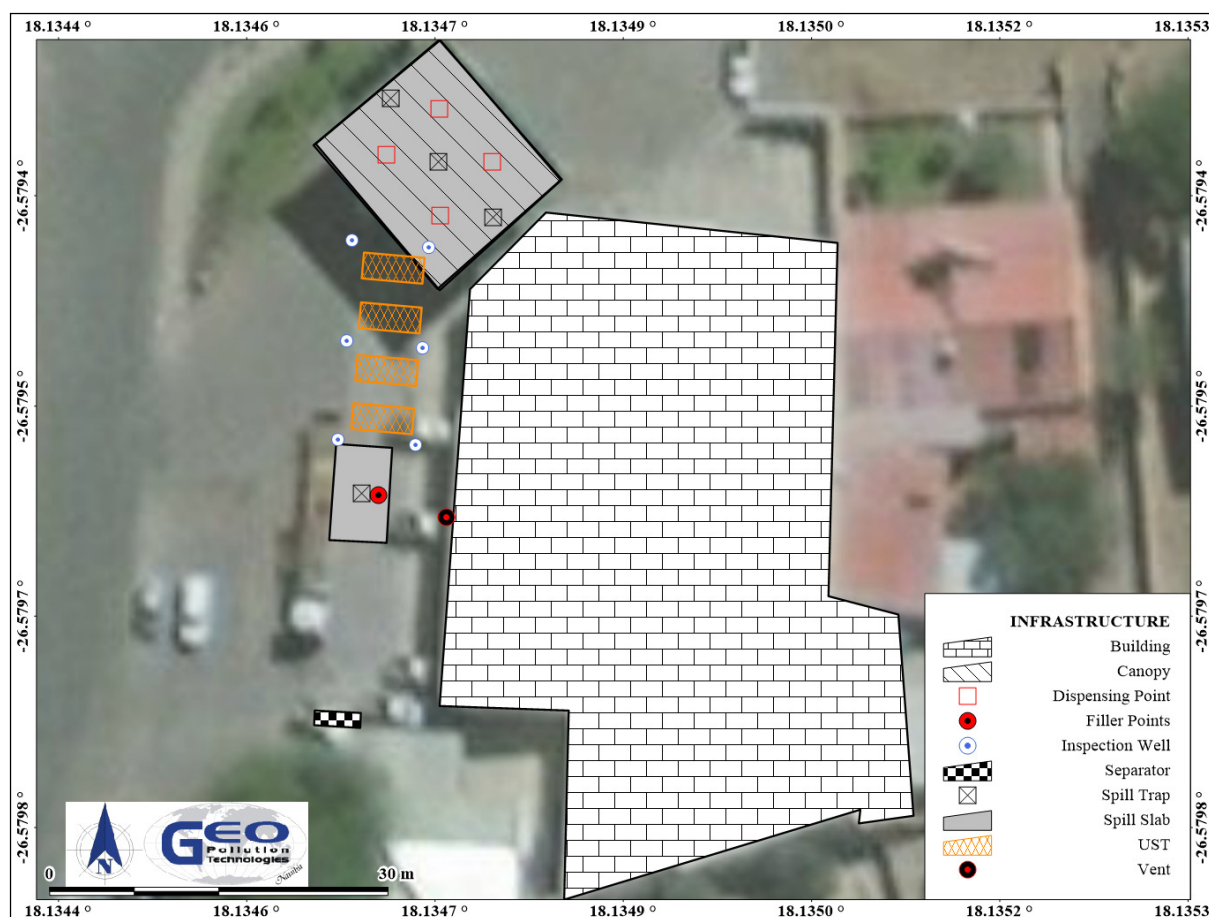


Figure 4-1. Site layout

5 ADMINISTRATIVE, LEGAL AND POLICY REQUIREMENTS

To protect the environment and achieve sustainable development, all projects, plans, programmes and policies deemed to have adverse impacts on the environment require an environmental assessment, as per the Namibian legislation. The legislation and standards provided in Table 5-1 to Table 5-4 govern the environmental assessment process in Namibia and/or are relevant to the facility.

Table 5-1. Namibian law applicable to the fuel retail facility

Law	Key Aspects
The Namibian Constitution	<ul style="list-style-type: none"> ◆ Promote the welfare of people ◆ Incorporates a high level of environmental protection ◆ Incorporates international agreements as part of Namibian law
Environmental Management Act Act No. 7 of 2007, Government Notice No. 232 of 2007	<ul style="list-style-type: none"> ◆ Defines the environment ◆ Promote sustainable management of the environment and the use of natural resources ◆ Provide a process of assessment and control of activities with possible significant effects on the environment
Environmental Management Act Regulations Government Notice No. 28-30 of 2012	<ul style="list-style-type: none"> ◆ Commencement of the Environmental Management Act ◆ List activities that requires an environmental clearance certificate ◆ Provide Environmental Impact Assessment Regulations

Law	Key Aspects
Petroleum Products and Energy Act Act No. 13 of 1990, Government Notice No. 45 of 1990	<ul style="list-style-type: none"> ◆ Regulates petroleum industry ◆ Makes provision for impact assessment ◆ Petroleum Products Regulations (Government Notice No. 155 of 2000) <ul style="list-style-type: none"> ○ Prescribes South African National Standards (SANS) or equivalents for construction, operation and decommissioning of petroleum facilities (refer to Government Notice No. 21 of 2002)
The Water Act Act No. 54 of 1956	<ul style="list-style-type: none"> ◆ Remains in force until the new Water Resources Management Act comes into force ◆ Defines the interests of the state in protecting water resources ◆ Controls water abstraction and the disposal of effluent ◆ Numerous amendments
Water Resources Management Act Act No. 11 of 2013	<ul style="list-style-type: none"> ◆ Provide for management, protection, development, use and conservation of water resources ◆ Prevention of water pollution and assignment of liability ◆ Not in force yet
Local Authorities Act Act No. 23 of 1992, Government Notice No. 116 of 1992	<ul style="list-style-type: none"> ◆ Define the powers, duties and functions of local authority councils ◆ Regulates discharges into sewers
Public Health Act Act No. 36 of 1919	<ul style="list-style-type: none"> ◆ Provides for the protection of health of all people
Public and Environmental Health Act Act No. 1 of 2015, Government Notice No. 86 of 2015	<ul style="list-style-type: none"> ◆ Provides a framework for a structured more uniform public and environmental health system, and for incidental matters ◆ Deals with Integrated Waste Management including waste collection disposal and recycling; waste generation and storage; and sanitation
Labour Act Act No 11 of 2007, Government Notice No. 236 of 2007	<ul style="list-style-type: none"> ◆ Provides for Labour Law and the protection and safety of employees ◆ Labour Act, 1992: Regulations relating to the health and safety of employees at work (Government Notice No. 156 of 1997)
Atmospheric Pollution Prevention Ordinance Ordinance No. 11 of 1976	<ul style="list-style-type: none"> ◆ Governs the control of noxious or offensive gases ◆ Prohibits scheduled process without a registration certificate in a controlled area ◆ Requires best practical means for preventing or reducing the escape into the atmosphere of noxious or offensive gases produced by the scheduled process
Hazardous Substances Ordinance Ordinance No. 14 of 1974	<ul style="list-style-type: none"> ◆ Applies to the manufacture, sale, use, disposal and dumping of hazardous substances as well as their import and export ◆ Aims to prevent hazardous substances from causing injury, ill-health or the death of human beings
Pollution Control and Waste Management Bill (draft document)	<ul style="list-style-type: none"> ◆ Not in force yet ◆ Provides for prevention and control of pollution and waste ◆ Provides for procedures to be followed for licence applications

Table 5-2. Municipal By-laws, Guidelines and Regulations

Municipal By-laws, Guidelines or Regulations	Key Aspects
Keetmanshoop Town Planning Scheme Scheme No. 11	<ul style="list-style-type: none"> ◆ Lists allowed, consent use and restricted activities on erven zoned for different land uses (residential, business, industrial, etc.)

Table 5-3. Relevant multilateral environmental agreements for Namibia and the development

Agreement	Key Aspects
Stockholm Declaration on the Human Environment, Stockholm 1972.	<ul style="list-style-type: none"> ◆ Recognizes the need for a common outlook and common principles to inspire and guide the people of the world in the preservation and enhancement of the human environment
1985 Vienna Convention for the Protection of the Ozone Layer	<ul style="list-style-type: none"> ◆ Aims to protect human health and the environment against adverse effects from modification of the Ozone Layer are considered. ◆ Adopted to regulate levels of greenhouse gas concentration in the atmosphere
United Nations Framework Convention on Climate Change (UNFCCC)	<ul style="list-style-type: none"> ◆ The Convention recognises that developing countries should be accorded appropriate assistance to enable them to fulfil the terms of the Convention.
Convention on Biological Diversity, Rio de Janeiro, 1992	<ul style="list-style-type: none"> ◆ Under article 14 of The Convention, EIAs must be conducted for projects that may negatively affect biological diversity

Table 5-4. Standards or Codes of Practise

Standard or Code	Key Aspects
South African National Standards (SANS)	<ul style="list-style-type: none"> ◆ The Petroleum Products and Energy Act prescribes SANS standards for the construction, operations and demolition of petroleum facilities ◆ SANS 10089-3:2010 is specifically aimed at storage and distribution of petroleum products at fuel retail facilities and consumer installations. <ul style="list-style-type: none"> ○ Provide requirements for spill control infrastructure

The fuel retail facility is listed as an activity requiring an environmental clearance certificate as per the following points from Section 9 of Government Notice No. 29 of 2012:

Hazardous Substance Treatment, Handling and Storage

- ◆ 9.1 “The manufacturing, storage, handling or processing of a hazardous substance defined in the Hazardous Substances Ordinance, 1974.” (The fuel retail facility store and handle hazardous substances in the form of fuel.)
- ◆ 9.2 “Any process or activity which requires a permit, licence or other form of authorisation, or the modification of or changes to existing facilities for any process or activity which requires an amendment of an existing permit, licence or authorisation or which requires a new permit, licence or authorisation in terms of a law governing the generation or release of emissions, pollution, effluent or waste.” (The fuel retail facility store and handle hazardous substances in the form of fuel which is permitted by the Ministry of Mines and Energy.)
- ◆ 9.4 “The storage and handling of a dangerous goods, including petrol, diesel, liquid petroleum gas or paraffin, in containers with a combined capacity of more than 30 cubic metres at any one location.” (The fuel retail facility store and handle more than 30 m³ of fuel.)
- ◆ 9.5 “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 facility is a filling station with petrol and diesel.)

6 ENVIRONMENTAL CHARACTERISTICS

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

6.1 LOCALITY AND SURROUNDING LAND USE

The facility (26. 57940 °S; 018. 13460 °E) is situated on erf 1305 at the corner of San Nujoma Drive and Swakara Avenue (previously 5th Avenue) in Keetmanshoop. The erf is located on one of the main roads in Keetmanshoop with access to the property gained from both streets. The site is surrounded by commercial and governmental properties. North of the site is a memorial site while west governmental buildings including the Social Security Commission. A medical centre comprising various individual practises is located south of the site while the eastern neighbours are also zoned for business use.

6.2 CLIMATE

The project location is situated in a semi-desert climate. Peak rainfall in this region is mostly common between January and March, peaking mostly in March, whilst May to September have little or no rainfall. Low rainfall volumes coupled, with extreme variability in rainfall and high evaporation rates, result in the dry conditions. See Table 6-1 for a summary of climate data.

Table 6-1. Summary of climate data for the area (Digital Atlas of Namibia)

Average annual rainfall (mm/a)	100 - 150
Variation in annual rainfall (%)	70 - 80
Average annual evaporation (mm/a)	>3,800
Water Deficit (mm/a)	>2,501
Average annual temperatures (°C)	20 - 21

6.3 TOPOGRAPHY AND DRAINAGE

Local topography is a flat lying valley with plateau remnants reflecting older land levels. The region is underlain by Nama and Karoo sediments, intruded by dolerite dykes and sills. Keetmanshoop is located within the catchment of the Fish River, an ephemeral river, draining in a southern direction. Site drainage is in a southwesterly direction into a nearby tributary of the Fish River.

6.4 GEOLOGY AND HYDROGEOLOGY

The dominant soil in the project area is eutric Leptosols, a shallow soil with fair to good nutrient status. The soil cover below the site has a maximum thickness of about 3 m. Karoo Sequence deposits make up the geological fabric of Keetmanshoop, see Figure 6-1. Subsurface geology in the project site consists of Jurassic to Cretaceous Age dolerite. This geological unit intruded older Karoo Sequence geology, the Ecca - and Dwyka Group, as sills and dykes. Ecca Group geology consists of shale and mudstone and overlies older Dwyka Group geology of tillite, boulder shale, shale and sandstone. A thin veneer of unconsolidated deposits, such as sand or gravel, occur as surface cover over the rock in some areas. The veneer is not indicated in Figure 6-1 in order to reveal the subsurface geology.

Monitoring boreholes on the project site indicate that the groundwater level is relatively shallow, between 8 and 12 mbs. There are four municipal water supply boreholes within a 5 km radius. These boreholes are located at Westdene, Town Centre, Tseiblaagte and Ileni. According to the Department of Water Affairs borehole database, there are no other known boreholes within a 5 km radius of the project location. Groundwater quality data could therefore not be ascertained for the project area.

The project location falls in the Fish River Groundwater Basin. Groundwater flow is expected to take place through primary porosity in the surface cover, while it is expected to flow along fractures, faults (secondary porosity) and other geological structures present within the

underlying formations (hard rock formations). Groundwater flow from the site can be expected in a southwestern direction. Local flow patterns may vary due to groundwater abstraction. The project falls outside a water control permit area and groundwater remains property of the Government of Namibia.

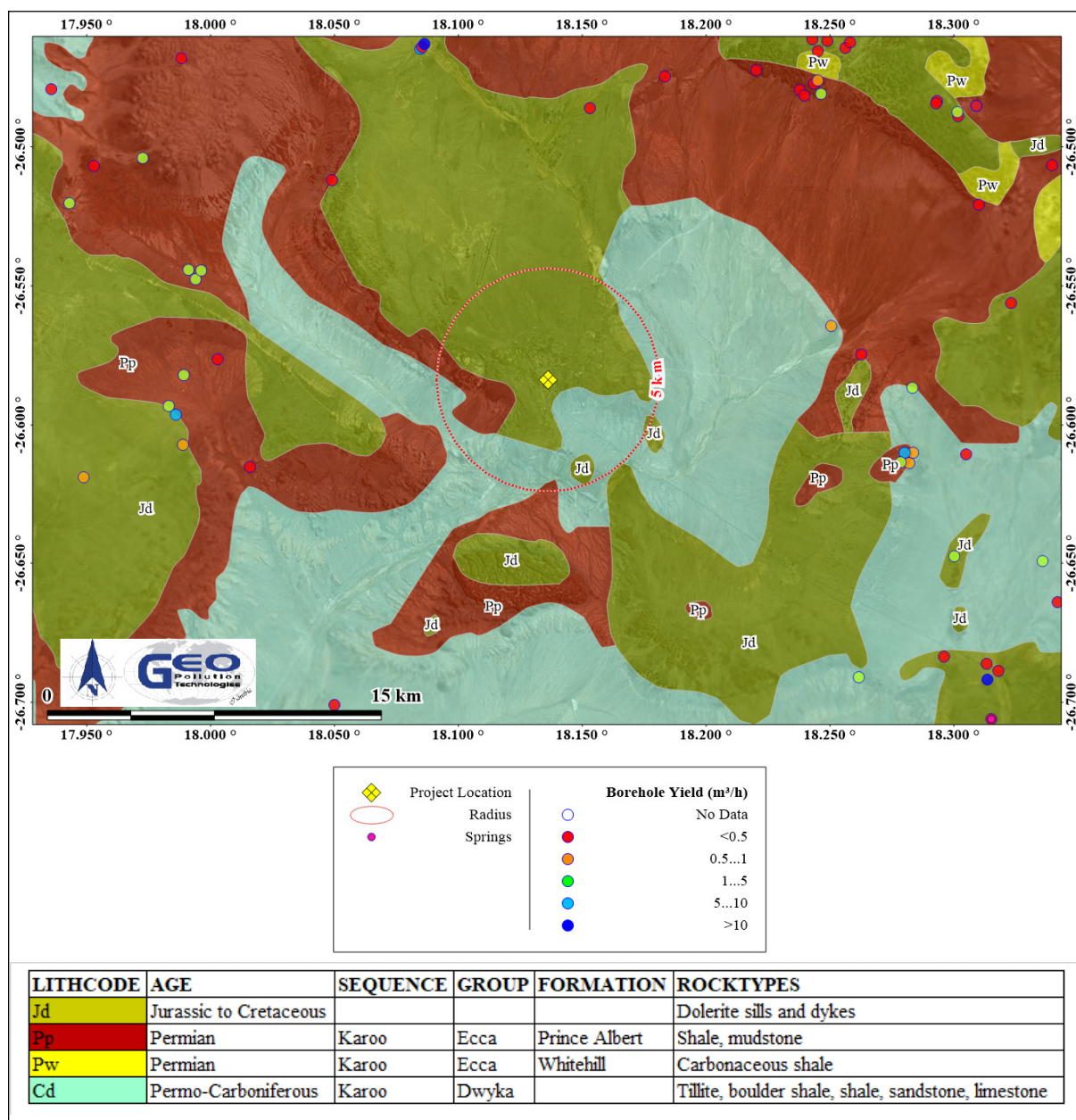


Figure 6-1. Hydrogeology map

6.5 PUBLIC WATER SUPPLY

Keetmanshoop’s main potable water source is Naute Dam which is located 50 km west of the town. The water is purified and chlorinated in a treatment plant at the dam and pumped via a pipeline to reservoirs in town. There are four municipal water supply boreholes in the town which supply water for the fire brigade, town maintenance and irrigation.

6.6 FAUNA AND FLORA

The project location lies in the Nama-Karoo Biome with a Karas dwarf shrubland vegetation type. Vegetation is sparse (just more than 8%) and comprises mostly of grasses and shrubs, while trees cover less than 1% of the area. Diversity is low to medium with about 100 to 150 species of

plants. Animal diversity is also low and with low endemism. The erf of the fuel retail facility is devoid of vegetation.

6.7 DEMOGRAPHIC AND ECONOMIC CHARACTERISTICS

Keetmanshoop is an important hub for the agriculture community in the //Karas Region with economic opportunities in the form of manufacturing/industry, real estate, hospitality/tourism and educational services. The newly constructed Neckertal Dam promises for further growth prospects in the town. Keetmanshoop has an estimated population of 30,000 and an unemployment rate of about 27% (Municipality of Keetmanshoop, 2018). The //Karas Region has about 75,000 people (2011 census) and an unemployment rate of 32.9% (Namibia Statistics Agency, 2011).

7 ENVIRONMENTAL MANAGEMENT PLAN

The EMP provides management options to ensure impacts of the facility are minimised. An EMP is a tool used to take pro-active action by addressing potential problems before they occur. This should limit the corrective measures needed, although additional mitigation measures might be included if necessary. The environmental management measures are provided in the tables and descriptions below. These management measures should be adhered to during the various phases of the operations of the facility. All personnel taking part in the operations of the facility should be made aware of the contents in this section, so as to plan the operations accordingly and in an environmentally sound manner.

The objectives of the EMP are:

- ◆ to include all components of operations, maintenance and possible decommissioning of the facility;
- ◆ to prescribe the best practicable control methods to lessen the environmental impacts associated with the project;
- ◆ to monitor and audit the performance of operational personnel in applying such controls; and
- ◆ to ensure that appropriate environmental training is provided to responsible operational personnel.

Various potential and definite impacts will emanate from the operations, maintenance and possible future decommissioning phases. The majority of these impacts can be mitigated or prevented. The impacts with prevention and mitigation measures are listed below. Impacts related to the operational phase are expected to mostly be of medium to low significance and can mostly be mitigated to have a low significance. The extent of impacts are mostly site specific to local and are not of a permanent nature. Due to the nature of the surrounding areas, cumulative impacts are possible and include groundwater contamination and traffic impacts.

7.1.1 Planning

During the phases of planning for continued operations and possible future decommissioning of the facility, it is the responsibility of Proponent to ensure they are and remain compliant with all legal requirements. The Proponent must also ensure that all required management measures are in place prior to, and during all phases, to ensure potential impacts and risks are minimised. The following actions are recommended for the planning phase and should continue during various other phases of the project:

- ◆ Ensure that all necessary permits from the various ministries, local authorities and any other bodies that governs the operations of the facility are in place and remains valid. This includes the petroleum products licence.
- ◆ Ensure all appointed contractors and employees enter into an agreement which includes the EMP. Ensure that the contents of the EMP are understood by the contractors, sub-contractors, employees and all personnel present or who will be present on site.
- ◆ Make provisions to have a health, safety and environmental (HSE) coordinator to implement the EMP and oversee occupational health and safety as well as general environmental related compliance at the site.
- ◆ Have the following emergency plans, equipment and personnel on site where reasonable to deal with all potential emergencies:
 - EMP/risk management/mitigation/emergency response plan and HSE Manuals
 - Adequate protection and indemnity insurance cover for incidents;
 - Comply with the provisions of all relevant safety standards;
 - Procedures, equipment and materials required for emergencies.
- ◆ If one has not already been established, establish and maintain a fund for future restoration of the project site should project activities cease and the site is decommissioned and environmental restoration or pollution remediation is required.
- ◆ Establish and/or maintain a bi-annual reporting system to report on aspects of construction activities, operations and decommissioning as outlined in the EMP.
- ◆ Submit bi-annual reports to the MEFT to allow for environmental clearance certificate renewal after three years. This is a requirement by MEFT.
- ◆ Appoint a specialist environmental consultant to update the EMP and apply for renewal of the environmental clearance certificate prior to expiry.

7.1.2 Revenue Generation and Employment

Maintenance of the facility is hinged on employment. Skilled and unskilled labourers will be employed for various maintenance tasks including upgrade and replacement of infrastructure. Unskilled labour may be sourced locally while it is expected that skilled contractors within Namibia will be used for specialised work. The maintenance and upgrades will therefore contribute to create employment in the unskilled labour sector while contributing to sustaining employment of the skilled sector. The fuel retail facility contributes to revenue which is paid to the national treasury while also contributing to the local economy in terms of operational labour requirements.

Desired Outcome: Contribution to national treasury and provision of employment to local Namibians.

Actions

Mitigation:

- ◆ The Proponent must employ local Namibians where possible.
- ◆ If the skills exist locally, employees must first be sourced from the town, then the region and then nationally.
- ◆ Deviations from this practice must be justified.

Responsible Body:

- ◆ Proponent

Data Sources and Monitoring:

- ◆ Bi-annual summary report based on employee records.

7.1.3 Skills, Technology and Development

During operations of the facility, training will be provided to a portion of the workforce to be able to operate various features of the fuel retail facility according to the required standards. Skills will be transferred to an unskilled workforce for general tasks. Development of people and technology are key to economic development.

Desired Outcome: To see an increase in skills of local Namibians, as well as development and technology advancements in the fuel retail industry.

Actions

Mitigation:

- ◆ If the skills exist locally, contractors and employees must first be sourced from the town, region, and then nationally. Deviations from this practice must be justified.
- ◆ Skills development and improvement programs to be made available as identified during performance assessments.
- ◆ Employees to be informed about parameters and requirements for references upon employment.

Responsible Body:

- ◆ Proponent

Data Sources and Monitoring:

- ◆ Record should be kept of training provided.
- ◆ Ensure that all training is certified or managerial reference provided (proof provided to the employees) inclusive of training attendance, completion and implementation.
- ◆ Bi-annual summary reports on all training conducted.

7.1.4 Demographic Profile and Community Health

The facility relies on labour for operations. The scale of the project is limited and it is not foreseen that it will in future create a change in the demographic profile of the local community. Exposure to factors such as communicable disease like HIV/AIDS as well as alcoholism/drug abuse may impact the local community. Spills and leaks may present risks to members of the public.

Desired Outcome: To prevent the in-migration and growth in informal settlements and to prevent the spread of diseases such as HIV/AIDS.

Actions:

Prevention:

- ◆ Employ only local people from the area, deviations from this practice should be justified appropriately.
- ◆ Adhere to all municipal by-laws relating to environmental health which includes, but is not limited to, sand and grease traps for the various facilities and sanitation requirements.

Mitigation:

- ◆ Educational programmes for employees on HIV/AIDSs and general upliftment of employees' social status.
- ◆ Appointment of reputable contractors.

Responsible Body:

- ◆ Proponent

Data Sources and Monitoring:

- ◆ Facility inspection sheet for all areas which may present environmental health risks, kept on file.
- ◆ Bi-annual summary report based on educational programmes and training conducted.
- ◆ Bi-annual report and review of employee demographics.

7.1.5 Fuel Supply

The facility contributes to ensuring a reliable supply of fuel to the local community, mall patrons, tourists, trucking industry and surrounding farmers.

Desired Outcome: Ensure a secure fuel supply remains available to the area.

Actions

Mitigation:

- ◆ Ensure compliance to the petroleum regulations of Namibia.
- ◆ Proper management to ensure constant supply.
- ◆ Record supply problems and take corrective actions.

Responsible Body:

- ◆ Proponent

Data Sources and Monitoring:

- ◆ Record supply problems and corrective actions taken and compile a bi-annual summary report.

7.1.6 Traffic

The presence of the facility increases traffic flow to the site through the provision of fuel. This may increase the risk of incidents and accidents especially during the delivery of fuel via large tankers requiring access to the site. It is however a well-established site and no extra-ordinary additional traffic is expected.

Desired Outcome: Minimum impact on traffic and no transport or traffic related incidents.

Actions

Prevention:

- ◆ Erect clear signage regarding access and exit points at the facility.

Mitigation:

- ◆ Tanker trucks delivering fuel should not be allowed to obstruct any traffic.
- ◆ If any traffic impacts are expected, traffic management should be performed to prevent these.

Responsible Body:

- ◆ Proponent

Data Sources and Monitoring:

- ◆ Any complaints received regarding traffic issues should be recorded together with action taken to prevent impacts from repeating itself.
- ◆ A report should be compiled every 6 months of all incidents reported, complaints received, and action taken.

7.1.7 Health, Safety and Security

Activities associated with the operational phase are reliant on human labour and therefore will expose them to health and safety risks. Handling of hazardous chemicals (inhalation and carcinogenic effect of some petroleum products), will pose the main risks to employees. Security risks will be related to unauthorized entry, theft and sabotage.

Desired Outcome: To prevent injury, health impacts and theft.

Actions

Prevention:

- ◆ Clearly label dangerous and restricted areas as well as dangerous equipment and products.
- ◆ Equipment that will be locked away on site must be placed in a way that does not encourage criminal activities (e.g. theft).
- ◆ Provide all employees with required and adequate personal protective equipment (PPE).
- ◆ Ensure that all personnel receive adequate training on operation of equipment/handling of hazardous substances.
- ◆ All health and safety standards specified in the Labour Act should be complied with.
- ◆ Implementation of maintenance register for all equipment and fuel/hazardous substance storage areas.
- ◆ Selected personnel should be trained in first aid and a first aid kit must be available on site. The contact details of all emergency services must be readily available.
- ◆ Implement and maintain an integrated health and safety management system, to act as a monitoring and mitigating tool, which includes: colour coding of pipes, operational, safe work and medical procedures, permits to work, emergency response plans, housekeeping rules, MSDS's and signage requirements (PPE, flammable etc.).
- ◆ Security procedures and proper security measures must be in place to protect workers and clients, especially during cash in transit activities.
- ◆ Reduce the amount of cash kept on site to reduce the risk of robberies.
- ◆ Strict security that prevents unauthorised entry during construction phases.

Responsible Body:

- ◆ Proponent

Data Sources and Monitoring:

- ◆ Any incidents must be recorded with action taken to prevent future occurrences.
- ◆ A report should be compiled every 6 months of all incidents reported. The report should contain dates when training were conducted and when safety equipment and structures were inspected and maintained.

7.1.8 Fire

Operational activities may increase the risk of the occurrence of fires. Fuel, especially unleaded petrol, is highly flammable and therefore presents a fire and explosion risk.

Desired Outcome: To prevent property damage, possible injury and impacts caused by uncontrolled fires.

Actions:

Prevention:

- ◆ Ensure all chemicals are stored according to MSDS and SANS instructions.
- ◆ Maintain regular site, mechanical and electrical inspections and maintenance.
- ◆ Clean all spills/leaks immediately.
- ◆ Special note must be taken of the regulations stipulated in sections 47 and 48 of the Petroleum Products and Energy Act, 1990 (Act No. 13 of 1990).
- ◆ Follow SANS standards for operation and maintenance of the facility.
- ◆ All dispensers must be equipped with devices that cut fuel supply during fires.
- ◆ A holistic fire protection and prevention plan is needed. This plan must include an emergency response plan, firefighting plan and spill recovery plan.
- ◆ Maintain firefighting equipment and promote good housekeeping.
- ◆ Personnel training (firefighting, fire prevention and responsible housekeeping practices).

Responsible Body:

- ◆ Proponent

Data Sources and Monitoring:

- ◆ A register of all incidents must be maintained on a daily basis. This should include measures taken to ensure that such incidents do not repeat themselves.
- ◆ A report should be compiled every 6 months of all incidents reported. The report should contain dates when fire drills were conducted and when fire equipment was tested and training given.

7.1.9 Air Quality

The operational phase release fuel vapours into the air during refuelling of bulk storage tanks as well as at dispensing points. Prolonged exposure may have carcinogenic effects.

Desired Outcome: To prevent health impacts related to reduced air quality.

Actions

Mitigation:

- ◆ Employees should be informed about the dangers of fuel vapours.
- ◆ Vent pipes must be properly placed as per SANS requirements.

Responsible Body:

- ◆ Proponent

Data Sources and Monitoring:

- ◆ Any complaints received regarding fuel vapours should be recorded with notes on action taken.
- ◆ All information and reporting to be included in a bi-annual report.

7.1.10 Noise

Noise pollution may be generated due to heavy and light motor vehicles accessing the site to offload fuel or refuel. A fuel retail facility is a 24 hour operation which means that vehicle noise is generated throughout the day and night and may become a nuisance to nearby residents.

Desired Outcome: To prevent any nuisance and hearing loss due to noise generated.

Actions

Prevention:

- ◆ Follow World Health Organization (WHO) guidelines on maximum noise levels (Guidelines for Community Noise, 1999) to prevent hearing impairment and a nuisance at nearby receptors.
- ◆ All machinery must be regularly serviced to ensure minimal noise production.
- ◆ Manage noise caused by clients – loud music etc.

Mitigation:

- ◆ Hearing protectors as standard PPE for workers in situations with elevated noise levels.

Responsible Body:

- ◆ Proponent

Data Sources and Monitoring:

- ◆ WHO guidelines
- ◆ Maintain a complaints register.
- ◆ Bi-annual report on complaints and actions taken to address complaints and prevent future occurrences.

7.1.11 Waste production

Waste is produced during the operational phase. Waste may include hazardous waste associated with the handling of hydrocarbon products. Construction waste may include building rubble and discarded equipment contaminated by hydrocarbon products. Contaminated soil and water is considered as hazardous waste. Domestic waste will be generated by the facility and related operations. Waste presents a contamination risk and when not removed regularly may become a fire hazard.

Desired Outcome: To reduce the amount of waste produced and prevent pollution and littering.

Actions

Prevention:

- ◆ Waste reduction measures should be implemented and all waste that can be re-used/recycled must be kept separate.
- ◆ Ensure adequate waste storage facilities are available.
- ◆ Ensure waste cannot be blown away by wind.
- ◆ Prevent scavenging (human and non-human) of stored waste.

Mitigation:

- ◆ Waste should be disposed of regularly and at appropriately classified disposal facilities, this includes hazardous material (empty chemical containers, contaminated rugs, paper water and soil).
- ◆ See the MSDS available from suppliers for disposal of contaminated products and empty containers.
- ◆ The spill catchment traps and oil water separator should be cleaned regularly and waste disposed of appropriately. Surfactants (soap) may not be allowed to enter the oil water separator.
- ◆ Liaise with the town council regarding waste and handling of hazardous waste.

Responsible Body:

- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

- ◆ A register of hazardous waste disposal should be kept. This should include type of waste, volume as well as disposal method/facility.
- ◆ Any complaints received regarding waste should be recorded with notes on action taken.
- ◆ The oil water separator must be regularly inspected and all hydrocarbons removed once detected. Outflow water must comply with effluent quality standards.
- ◆ All information and reporting to be included in a bi-annual report.

7.1.12 Ecosystem and Biodiversity Impact

The site has previously been developed and is devoid of vegetation. The nature of the operational activities is such that the probability of creating a habitat for flora and fauna to establish is low. Ecosystem or biodiversity impacts are mostly associated with pollution of the environment.

Desired Outcome: To avoid pollution of, and impacts on, the ecological environment.

Actions.

Prevention:

- ◆ Educate all contracted and permanent employees on the value of biodiversity.

Mitigation:

- ◆ Contain construction material and activities on site.
- ◆ Report any extraordinary animal sightings to the MEFT.
- ◆ Mitigation measures related to waste handling and the prevention of groundwater, surface water and soil contamination should limit ecosystem and biodiversity impacts.
- ◆ Avoid scavenging of waste by fauna.
- ◆ The establishment of habitats and nesting sites at the facility should be avoided where possible.

Responsible Body:

- ◆ Proponent

Data Sources and Monitoring:

- ◆ All information and reporting to be included in a bi-annual report.

7.1.13 Groundwater, Surface Water and Soil Contamination

Operations will entail the storage and handling of various hydrocarbons (such as fuels and lubricants). Such material may contaminate surface water, soil and groundwater. Contamination may either result from failing storage facilities and reticulation, or spills and leaks associated with fuel handling such as overfills, spills and leakages.

Desired Outcome: To prevent the contamination of water and soil.

Actions

Prevention:

- ◆ All construction and or maintenance machines should be maintained to be in a good working condition during operation.
- ◆ Employ drip trays and spill kits during construction when onsite servicing/repairs of equipment are needed.
- ◆ Spill control structures and procedures must be in place according to SANS standards or better and connection of all surfaces where fuel is handled, with an oil water separator.
- ◆ All fuelling should be conducted on surfaces provided for this purpose. E.g. Concrete slabs with regularly maintained seals between slabs.
- ◆ The procedures followed to prevent environmental damage during service and maintenance, and compliance with these procedures, must be audited and corrections made where necessary.
- ◆ Proper training of operators must be conducted on a regular basis (fuel handling, spill detection, spill control).

Mitigation:

- ◆ Any spillage of more than 200 litre must be reported to the Ministry of Mines and Energy.
- ◆ Spill clean-up means must be readily available on site as per the relevant MSDS and all spills must be cleaned up immediately.
- ◆ Surfactants (soap) may not be allowed to enter the oil water separator e.g. soap usage on spill control surfaces.

Responsible Body:

- ◆ Proponent

Data Sources and Monitoring:

- ◆ Daily tank dips and fuel volume reconciliation in order to detect product loss due to leaks as soon as possible.
- ◆ A report should be compiled bi-annually of all spills or leakages reported. The report should contain the following information: date and duration of spill, product spilled, volume of spill, remedial action taken, comparison of pre-exposure baseline data (previous pollution conditions survey results) with post remediation data (e.g. soil/groundwater hydrocarbon concentrations) and a copy of documentation in which spill was reported to Ministry of Mines and Energy.

7.1.14 Visual Impact

This is an impact that not only affects the aesthetic appearance, but also the integrity of the facility. Bright lighting used at night may negatively impact nearby residents.

Desired Outcome: To minimise aesthetic impacts associated with the facility and prevent lighting from being a visual disturbance.

Actions

Mitigation:

- ◆ Regular waste disposal, good housekeeping and routine maintenance on infrastructure will ensure that the longevity of structures are maximised and a low visual impact is maintained.
- ◆ Lighting should be directed towards the facility and away from residents where possible.
- ◆ Minimum lighting necessary for operations to be used at night. The installation of auto-dimming lights when no movement is detected are desirable.

Responsible Body:

- ◆ Proponent

Data Sources and Monitoring:

- ◆ A report should be compiled every 6 months of all complaints received and actions taken.

7.1.15 Cumulative Impact

Possible cumulative impacts associated with the operational phase include increased traffic, dust and noise in the area.

Desired Outcome: To minimise all cumulative impacts associated with the facility.

Actions

Mitigation:

- ◆ Addressing each of the individual impacts as discussed and recommended in the EMP would reduce the cumulative impact.
- ◆ Reviewing biannual and annual reports for any new or re-occurring impacts or problems would aid in identifying cumulative impacts and help in planning if the existing mitigations are insufficient

Responsible Body:

- ◆ Proponent

Data Sources and Monitoring:

- ◆ Annual summary report based on all other impacts must be created to give an overall assessment of the impact of the operational phase.

7.2 DECOMMISSIONING AND REHABILITATION

Decommissioning is not foreseen during the validity of the environmental clearance certificate. Decommissioning was however assessed. Should decommissioning occur at any stage, rehabilitation of the area may be required. Decommissioning will entail the complete removal of all infrastructure including buildings and underground infrastructure. Any pollution present on the site must be remediated. A tank pit survey should be conducted prior to closure of the tank pits. The impacts associated with this phase include noise and waste production as structures are dismantled. Noise must be kept within WHO standards and waste should be contained and disposed of at an appropriately classified and approved waste facility and not dumped in the surrounding areas. Future land use after decommissioning should be assessed prior to decommissioning and rehabilitation initiated if the land will not be used for similar future purposes. The EMP for the facility will have to be reviewed at the time of decommissioning to cater for changes made to the site and to implement guidelines and mitigation measures.

7.3 ENVIRONMENTAL MANAGEMENT SYSTEM

The Proponent could implement an Environmental Management System (EMS) for their operations. An EMS is an internationally recognized and certified management system that will ensure ongoing incorporation of environmental constraints. At the heart of an EMS is the concept of continual 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 elements:

- ◆ 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, lines of communication and resources needed to implement the EMS;
- ◆ Identification of environmental, safety and health training needs;
- ◆ An environmental program(s) stipulating environmental objectives and targets to be met, and work instructions and controls to be applied in order to achieve compliance with the environmental policy; and
- ◆ Periodic (internal and external) audits and reviews of environmental performance and the effectiveness of the EMS.
- ◆ The EMP.

8 CONCLUSION

The fuel retail facility has a positive impact on the various sectors operational in the vicinity and the area as a whole. In addition to reliable and convenient fuel supply, the fuel retail facility contribute locally to skills transfer and training which in turn develops the local workforce during operations of the facility.

Negative impacts can successfully be mitigated. SANS standards relating to the petroleum industry and prescribed by Namibian law must be followed during all operations of the fuel retail facility. Noise pollution should at all times meet the prescribed WHO and municipal requirements to prevent hearing loss and not to cause a nuisance. Fire prevention should be adequate, and health and safety regulations should be adhered to in accordance with the regulations pertaining to relevant laws and internationally accepted standards of operation. Any waste produced must be removed from site and disposed of at an appropriate facility or re-used or recycled where possible. Hazardous waste must be disposed of at an approved hazardous waste disposal site.

The EMP should be used as an on-site reference document for the operations of the facility. Parties responsible for transgressing of the EMP should be held responsible for any rehabilitation that may need to be undertaken. The Proponent could use an in-house Health, Safety, Security and Environment Management System in conjunction with the EMP. All operational personnel must be taught the contents of these documents.

Should the Directorate of Environmental Affairs (DEA) of the MEFT find that the impacts and related mitigation measures, which have been proposed in this report, are acceptable, an environmental clearance certificate may be granted to the Proponent. The environmental clearance certificate issued, based on this document, will render it a legally binding document which should be adhered to.

9 REFERENCES

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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Namibia Statistics Agency. Namibia 2011 Population and Housing Census Main Report.

Appendix A: Consultants' Curriculum Vitae

ENVIRONMENTAL SCIENTIST**André Faul**

André entered the environmental assessment profession at the beginning of 2013 and since then has worked on more than 130 Environmental Impact Assessments including assessments of the petroleum industry, harbour expansions, irrigation schemes, township establishment and power generation and transmission. André's post graduate studies focussed on zoological and ecological sciences and he holds a M.Sc. in Conservation Ecology and a Ph.D. in Medical Bioscience. His expertise is in ecotoxicological related studies focussing specifically on endocrine disrupting chemicals. His Ph.D. thesis title was The Assessment of Namibian Water Resources for Endocrine Disruptors. Before joining the environmental assessment profession he worked for 12 years in the Environmental Section of the Department of Biological Sciences at the University of Namibia, first as laboratory technician and then as lecturer in biological and ecological sciences.

CURRICULUM VITAE ANDRÉ FAUL

Name of Firm	:	Geo Pollution Technologies (Pty) Ltd.
Name of Staff	:	ANDRÉ FAUL
Profession	:	Environmental Scientist
Years' Experience	:	18
Nationality	:	Namibian
Position	:	Environmental Scientist
Specialisation	:	Environmental Toxicology
Languages	:	Afrikaans – speaking, reading, writing – excellent English – speaking, reading, writing – excellent

EDUCATION AND PROFESSIONAL STATUS:

B.Sc. Zoology	:	University of Stellenbosch, 1999
B.Sc. (Hons.) Zoology	:	University of Stellenbosch, 2000
M.Sc. (Conservation Ecology)	:	University of Stellenbosch, 2005
Ph.D. (Medical Bioscience)	:	University of the Western Cape, 2018

First Aid Class A	EMTSS, 2017
Basic Fire Fighting	EMTSS, 2017

PROFESSIONAL SOCIETY AFFILIATION:

Environmental Assessment Professionals of Namibia (Practitioner and Committee Member)

AREAS OF EXPERTISE:

Knowledge and expertise in:

- ◆ Water Sampling, Extractions and Analysis
- ◆ Biomonitoring and Bioassays
- ◆ Biodiversity Assessment
- ◆ Toxicology
- ◆ Restoration Ecology

EMPLOYMENT:

2013-Date	:	Geo Pollution Technologies – Environmental Scientist
2005-2012	:	Lecturer, University of Namibia
2001-2004	:	Laboratory Technician, University of Namibia

PUBLICATIONS:

Publications:	5
Contract Reports	+130
Research Reports & Manuals:	5
Conference Presentations:	1