

APP-001132

**TEMPORARY CONSUMER FUEL INSTALLATION SUPPLYING
FUEL TO CONSTRUCTION VEHICLES FOR THE UPGRADE OF
THE HENTIES BAY – UIS ROAD, ERONGO REGION
ENVIRONMENTAL CONTINGENCY PLAN**




Prepared by:



Prepared for:

**Heilongjiang
Longyuan
Engineering Namibia
(Pty) Ltd**

March 2023

Project:	TEMPORARY CONSUMER FUEL INSTALLATION SUPPLYING FUEL TO CONSTRUCTION VEHICLES FOR THE UPGRADE OF THE HENTIES BAY – UIS ROAD, ERONGO REGION: ENVIRONMENTAL CONTINGENCY PLAN	
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Report Approval	 2023/03/28 Contingency Plan André Faul Conservation Ecologist	

I, Heilongjiang Longyuan, acting as representative of Heilongjiang Longyuan Engineering 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 Henries bay on the 28 day of March 2023.

Heilongjiang Longyuan Engineering Namibia (pty) Ltd 2021/0978
 Heilongjiang Longyuan Engineering Namibia (Pty) Ltd Business Registration/ID No.

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LIST OF ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
DWA	Department of Water Affairs
EMA	Environmental Management Act No 7 of 2007
HIV	Human Immunodeficiency Virus
IUCN	International Union for Conservation of Nature
mbs	Meters below surface
MEFT	Ministry of Environment, Forestry and Tourism
mm/a	Millimetres per annum
MSDS	Material Safety Data Sheet
NAMPOL	Namibian Police Force
PPE	Personal Protective Equipment
SANS	South African National Standards
SHEQ	Safety, Health, Environment and Quality
WHO	World Health Organization

1 INTRODUCTION

Heilongjiang Longyuan Engineering Namibia (Pty) Ltd (the Proponent) was awarded the contract to upgrade the Henties Bay-Uis section of the C35 Main Road to bitumen standards. In support of the road construction activities, the Proponent has an existing consumer fuel installation used to supply construction vehicles with diesel. The fuel installation is located at their construction camp next to the C35 Main Road, approximately 75 km northeast of Henties Bay (Figure 3-1). The Proponent requested Geo Pollution Technologies (Pty) Ltd to prepare an environmental contingency plan for the consumer fuel installation. The consumer fuel installation is constructed and operated according to South African National Standards (SANS) as prescribed by Namibian legislation. Once road construction is complete, the consumer fuel installation will be decommissioned and all infrastructure and waste removed.

In order to comply with Namibian legislation, and to adhere to all codes and standards applied in their operations, the Proponent wishes to apply for an environmental clearance certificate (ECC) for the fuel installation's operations. In support of the ECC application, the contingency plan will be submitted to the Ministry of Environment, Forestry and Tourism. The contingency plan is designed to mitigate the impacts of natural or human-induced disruptive events on core functions of a facility. It provides management options to ensure corrective action is taken when environmental incidents occur. 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 contingency plan is a tool prescribing corrective take action in the event of a future incident or situation. This document should be available throughout operations and will come into action as soon as an incident occurs. The Proponent must appoint suitable personnel to manage, implement and update the contingency plan as may be required. The contingency plan will be used to apply for an ECC in compliance with Namibia's Environmental Management Act (Act No 7 of 2007).

2 METHODOLOGY

The following methods were used to prepare the contingency plan:

1. Baseline information about the site and its surroundings was obtained from existing secondary information and is briefly described in this document.
2. Potential incidents emanating from the operations and decommissioning of the facility were identified and appropriate corrective action measures listed.
3. Described the emergency preparedness framework including general measures to manage and mitigate possible scenarios involving emergency environmental incidents.

3 FACILITY OPERATIONS AND RELATED ACTIVITIES

The consumer fuel installation consists of one aboveground, steel diesel tank with a capacity of 83 m³. The tank is situated inside a concrete bund area to protect the environment from accidental fuel losses during operations (spills, overfilling, etc.) or an unlikely event of tank failure. The tank is filled by road tankers approximately five times per month.

Operators assist in the dispensing of fuel to operational equipment and fleet vehicles. Daily activities include tank dips, fuel reconciliations and cleaning of the site. Regular firefighting drills are also performed and equipment is serviced and tested to ensure their optimum performance. Maintenance continues on a daily basis and may include minor repairs to infrastructure, general upkeep of the consumer fuel installation and associated infrastructure including servicing of equipment, replacement of parts, etc.

Since the consumer fuel installation is a temporary installation, it will be removed once road construction is complete. This will entail removal of the tank and demolition of all concrete structures (bundings). All building rubble and waste will be removed from the site and disposed of at a recognized

waste disposal facility. Any hydrocarbon pollution will be cleaned and contaminated materials disposed of at a registered hazardous waste disposal facility.

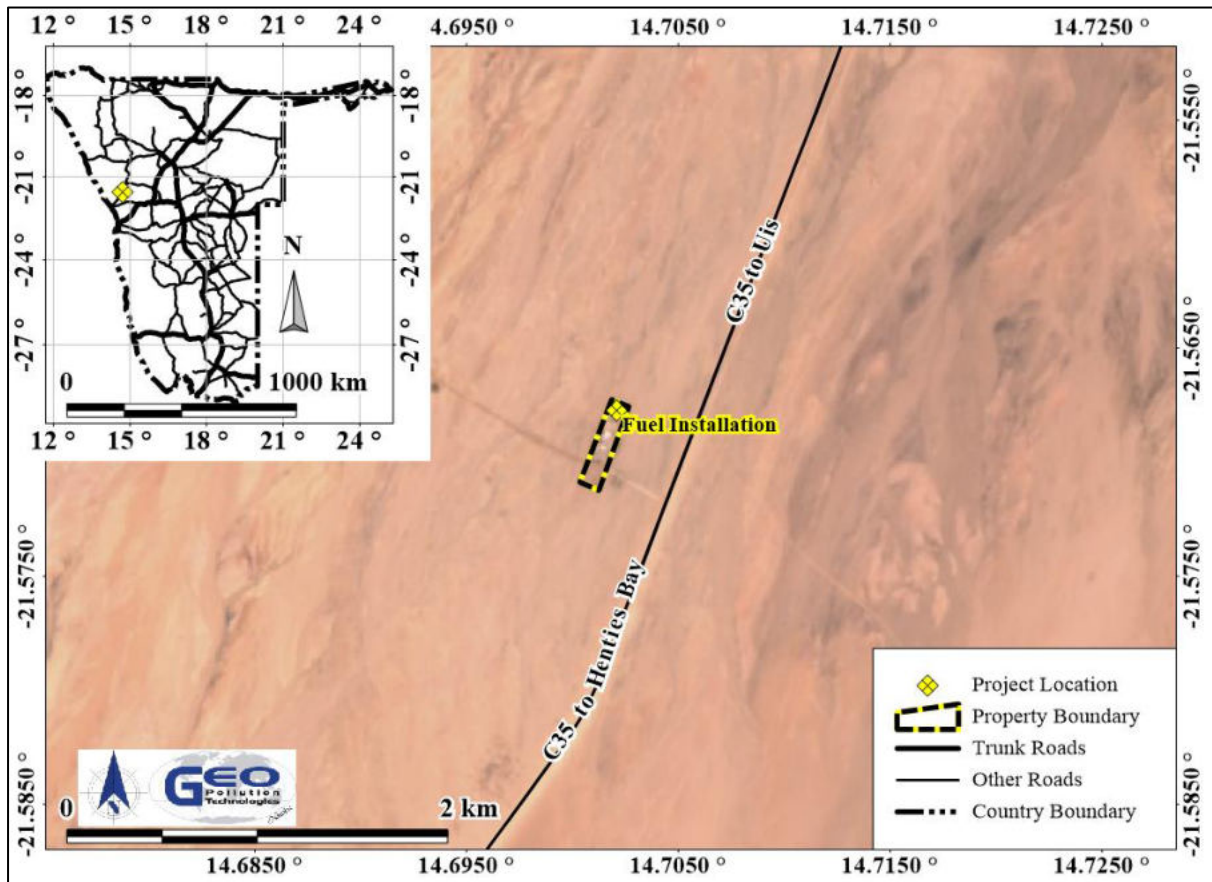


Figure 3-1 Project location



Photo 3-1 Diesel tank in bunding



Photo 3-3 Diesel tank



Photo 3-4 Concrete bunding



Photo 3-2 Warning signs

4 ADMINISTRATIVE, LEGAL AND POLICY REQUIREMENTS

The legislation and standards provided in Table 4-1 to Table 4-3 govern the environmental assessment process in Namibia and/or are relevant to the facilities.

Table 4-1 Namibian law applicable to the fuel storage facilities

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.
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 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 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.

Law	Key Aspects
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 4-2 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 10131 is specifically aimed at storage and distribution of petroleum products in aboveground storage tanks. <ul style="list-style-type: none"> ○ Provide requirements for spill control infrastructure.

Table 4-3 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.

The project is listed as an activity requiring an ECC as per the following points from Section 9 of Government Notice No. 29 of 2012:

- ◆ 9.1 “The manufacturing, storage, handling or processing of a hazardous substance defined in the Hazardous Substances Ordinance, 1974.”
- ◆ 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.”
- ◆ 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 meters at any one location.”
- ◆ 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.”

5 ENVIRONMENTAL CHARACTERISTICS

This section lists pertinent environmental characteristics of the study area.

5.1 LOCALITY AND SURROUNDING LAND USE

The facility is located on communal land in the Daures Constituency of the Erongo Region (21.566833°S, 14.702975°E) (Figure 3-1). The area forms part of the Tsiseb Conservancy. There are no formal or informal settlements at or near the location of the consumer fuel installation. There are no restrictions of movement or people or goods in the conservancy. All areas are accessible for fuel delivery. The locality and surrounding land use do not pose a significant risk to safe operations of the consumer fuel installation. However, the operations of the facility may have an impact on the traffic flow, which in turn may result in congestion.

5.2 CLIMATE

According to the Köppen-Geiger Climate Classification system, the project is located in a hot desert climate (BWh) (<http://koeppen-geiger.vu-wien.ac.at/present.htm>). This means that the area receives precipitation well below potential evapotranspiration and no more than 200 mm of precipitation annually, with a mean annual temperature of at least 18 °C. General climate data for the project area is presented in Table 5-2 (Atlas of Namibia Project, 2002).

Long term precipitation data was obtained from the CHIRPS-2 database (Funk et al., 2015). The CHIRPS-2 dataset (Climate Hazards Group Infra-Red Precipitation with Station data version 2) consist of long term rainfall data (1981 to near-present) obtained from satellite imagery and in-situ station data and therefore represents more recent data. Data is averaged over an area of roughly 5 km by 5 km. This averaging effect should be kept in mind during data analyses as high rainfall from single thunder storm cells would be averaged out, thereby providing a reduced daily maximum rainfall value.

The average annual rainfall for the last 41 years was calculated as 99 mm/a, with a coefficient of variance of 35%. These values are different from only rainfall data due to the occurrences of fog which contributes to higher (and more frequent) precipitation. Heavier precipitation (single day events) occur between October and April, with a single event of 43.4 mm in December (last 41 years data) being the highest. Daily and seasonal precipitation data (Funk et al., 2015) is presented in Table 5-1 and in Figure 5-1. Seasonal (July to June) total precipitation, centered on the average line for the last 41 years, is presented, with the daily total precipitation and the seasonal cumulative precipitation. From the figure it is clear that 10 out of the last 10 seasons were below the average.

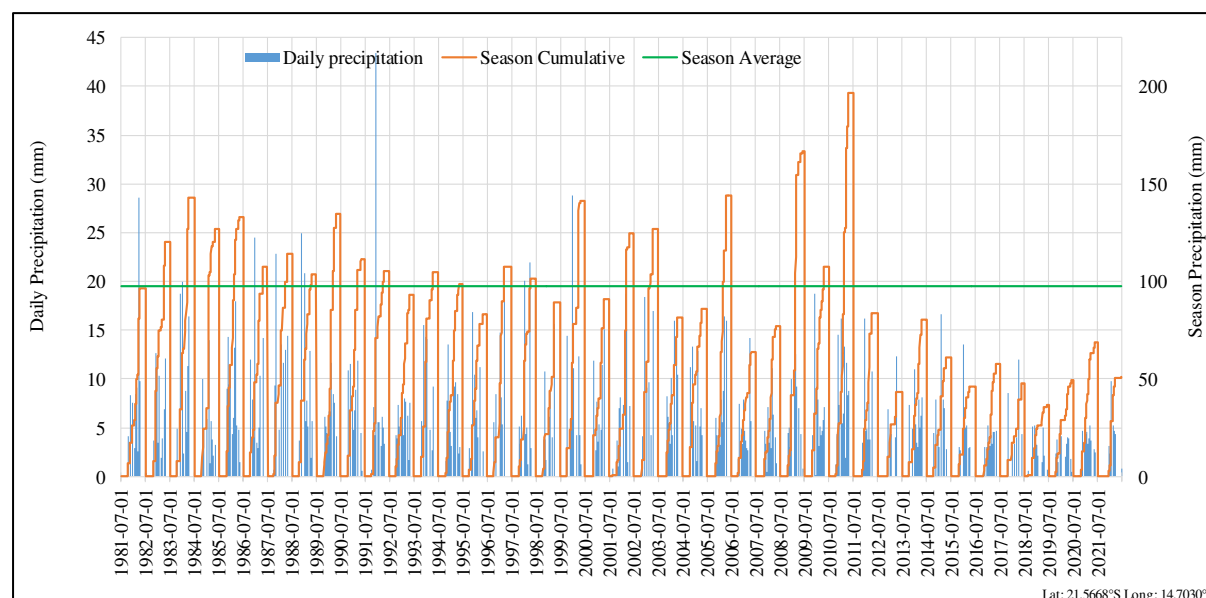
Environmental features which may cause a disruption in normal operations of the facility relate to corrosion of materials / infrastructure involved with the storage and handling of fuel. Excessive wind conditions may present a handling challenges and add to corrosion of structures through sand blasting? None of the environmental features present a significant risk to the operations of the fuel facility.

Table 5-1 Precipitation statistics based on CHIRPS-2 data (Funk et al., 2015)

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Minimum (mm/m)	5.30	0.00	5.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.08	5.50
Maximum (mm/m)	43.57	81.50	51.90	28.21	8.57	1.33	0.40	0.78	1.07	14.97	31.74	43.43
Average (mm/m)	15.3	17.0	18.8	8.7	0.5	0.1	0.0	0.0	0.1	7.7	13.3	16.3
Variability (%)	68.0	92.0	66.0	69.0	332.0	451.0	365.0	436.0	266.0	48.0	48.0	59.0
Daily maximum (mm)	16.6	18.7	28.6	17.0	4.4	0.8	0.4	0.8	0.8	14.4	25.0	43.4
Average rain days	3	4	3	2	0	0	0	0	0	2	2	2
Season July - June average: 99 mm						Season coefficient of variation: 35 %						
Data range	1981-Jul-01 to					2022-Jun-30					Lat: 21.5668°S Long: 14.7030°E	

Table 5-2 Summary of climate data for the project area (Atlas of Namibia Project, 2002)

Average annual rainfall (mm/a)	50-100
Average annual evaporation (mm/a)	3,200-3,400
Water deficit (mm/a)	2,100-2,300
Average annual temperatures (°C)	21-22
Average solar radiation (kWh/m ² /day)	>5.8

**Figure 5-1 Daily and seasonal rainfall from CHIRPS-2 data (Funk et al., 2015)**

5.3 TOPOGRAPHY AND DRAINAGE

Topography of the area can be described as a desert plain with inselbergs. The site is relatively level with a slope of less than 5° to the south. Drainage is therefore to the south into a small drainage line that runs north of and parallel the Omaruru River, towards the Atlantic Ocean. Drainage structures seems to be well developed, despite the relative low gradient of the area. There are no topographical features which will present a risk to operations of fuel facility.

5.4 GEOLOGY AND HYDROGEOLOGY

Surface cover in the area is classified as petric Gypsisols, which refers to a type of soil with substantial secondary accumulation of gypsum (CaSO₄·2H₂O). Geology underlying the site consist of mica schist, calc-silicate rock and / or marble from the Arandis Formation in the Damara Sequence. Water is found in geological structures present in the hard rock formations and groundwater flow would therefore be mainly through secondary porosity.

Groundwater is not utilized in the area, mainly due to the desert environment. No boreholes are known of within a 5 km radius.

Geological features are stable and do not present a risk to the normal operations of the fuel facility. However, incidents of fuel spills may and will affect the geology and hydrogeology. Specific mitigation measures to be implemented to reduce the risks of spills and contamination.

5.5 PUBLIC WATER SUPPLY

The only potable water supply in the area will be from boreholes. However no boreholes are known to be present and used by local communities in the area.

5.6 FAUNA AND FLORA

The site is located within the Nama Karoo biome, with Central-western escarpment and inselbergs vegetation type. The vegetation structure type is classified as sparse shrubland. Higher plant species diversity is low with between 50 and a 100 species, but endemism of both plants and animals is expected to be high. General plant and animal information based on Atlas of Namibia Project (2002) data is presented in Table 5-3 and Table 5-4.

No threats to the operations of the fuel facility are presented by localised fauna and flora. Although human-wildlife conflict may present a small and very unlikely risk. Encounters with snakes and or scorpions may deter operators of the fuel installation from fulfilling their duties, which may in turn pose various risks to the facility. Management measures to reduce risks associated with wild-life should be adopted.

Table 5-3 General flora data (Atlas of Namibia Project, 2002)

Biome	Nama-Karoo
Vegetation type	Central-western escarpment and inselbergs
Vegetation structure type	Sparse shrubland
Diversity of higher plants	Low (Diversity rank = 6 [1 to 7 representing highest to lowest diversity])
Number of plant species	50 - 100
Percentage tree cover	2-10
Tree height (m)	2-5
Percentage shrub cover	2-10
Shrub height (m)	0.5-1
Percentage dwarf shrub cover	2-10
Dwarf shrub height (m)	< 0.5
Percentage grass cover	0.1-1
Grass height (m)	< 0.5
Dominant plant species	<i>Acacia montis-ustii</i> , <i>Acacia robynsiana</i> , <i>Cyphostemma currorii</i> , <i>Sterculia Africana</i> , <i>Calicorema capitata</i> , <i>Orphanthera albida</i>

Table 5-4 General fauna data (Atlas of Namibia Project, 2002)

Mammal Diversity	61 - 75 Species
Rodent Diversity	16 - 19 Species
Bird Diversity	111-140 Species
Reptile Diversity	51 - 60 Species
Snake Diversity	15 - 19 Species
Lizard Diversity	32 - 35 Species
Frog Diversity	1 - 3 Species
Termite Diversity	1 - 6 Genera
Scorpion Diversity	14 - 15 Species

5.7 DEMOGRAPHIC AND ECONOMIC CHARACTERISTICS

The project area falls within Daures Constituency of the Erongo Region. The Daures constituency has a small population size with 11,350 people, which is about 7.5% of the Region's population of 150,809 (Namibia Statistics Agency, 2011). The literacy rate of the Daures Constituency is significantly lower (82%) when compared with that of the Region (96.7%). Similarly, unemployment is very high at 44%, compared to the Region's 22.6% and the National unemployment rate of 33.8%.

The unemployment rate of the area is high and may translate into people being attracted to any type of activity in the hope of obtaining employment. The area is politically stable with no civil unrest of significant vandalism which may present threats to the operations of the facility. Risks related to theft are further present in any society and may present significant threats to the operations of the fuel facility. Specific mitigation measures related to the possible risks should be incorporated into the management of the facility.

Table 5-5 Demographic characteristics of Daures Constituency, the Erongo Region and Nationally (Namibia Statistics Agency, 2011)

	Daures Constituency	Erongo Region	Namibia
Population (Males)	6,041	79,823	1,021,912
Population (Females)	5,309	70,986	1,091,165
Population (Total)	11,350	150,809	2,113,077
Unemployment (15+ years)	44%	22.6%	33.8%
Literacy (15+ years)	82%	96.7%	87.7%

6 EMERGENCY ENVIRONMENTAL RESPONSE ACTIONS

The general measures provided in the sections below apply to all environmental emergency incident scenarios. These measures will be executed in response to an environmental emergency to:

- ◆ Reduce the threat to human life or injury,
- ◆ Protect against environmental damage; and
- ◆ Preserve infrastructure, product, and equipment.

The general response measures which will be implemented during an environmental emergency will include the following:

- ◆ Evacuate all non-essential personnel.
- ◆ Eliminate (sources of ignition, sparks, etc.).
- ◆ Stop and coordinate (stop source of the incident (e.g. spill) and coordinate shut down of relevant equipment, if possible).
- ◆ Notify (internal and external notifications);
 - a) All emergency environmental incidents must be reported to the site manager or safety health, environment and quality (SHEQ) officer immediately upon discovery; and
 - b) Conduct regulatory or emergency services report, as required.
- ◆ Identify (material (if unknown) and identify PPE, hazards, and response procedures using MSDS).
- ◆ Contain / Isolate (contain released material / incident using emergency response equipment and/or set up perimeter to isolate area).
- ◆ Stabilise and neutralise (neutralise / stabilise spilt material (where relevant), use absorbents to stabilise other released materials etc).
- ◆ Clean up (remove released materials, spill response materials, any affected media etc.).
- ◆ Investigate and remediate (if necessary).
- ◆ Monitor recovery and or remediation.

7 ENVIRONMENTAL CONTINGENCY PLAN

The purpose of this section is to list the most pertinent potential environmental incidents that may occur as a result of operational and future decommissioning activities of the consumer fuel installation. Actions to be initiated for each incident are also listed and an emergency contact sheet is provided that should be completed by the Proponent. Roles, responsibilities and accountability under the environmental contingency plan will be assigned by the Proponent.

Table 7-1 Emergency contact numbers

Department	Name	Contact Number(s)
Site Manager		
Safety, Health, Environment and Quality Officer (SHEQ)		
Fuel Supplier		
Fire		
On-site fire response team leader		
Fire brigade (Henties Bay)		
Medical		
On-site first aid response team leader		
Ambulance/Emergency Services (Henties Bay)		
General Practitioner (Henties Bay)		
Namibian Police Force (NAMPOL) (Henties Bay)		
Pollution Clean-up Specialist		
Hazardous Waste Disposal Facility (Walvis Bay)		
Ministry of Environment, Forestry and Tourism (MEFT)		

Key to the implementation of the contingency plan are the following:

- ◆ Response and management teams – in this instance the Proponent should provide the details of the manager / responsible party on site and ensure that contact details are available to all members of the staff.
- ◆ Emergency preparedness plans related especially to fuel spills and incidents of fire should be made available to all staff. Training of such plans will be made available by the Proponent.
- ◆ Emergency equipment such as fire-fighting equipment and communication systems will be kept and maintained on site.
- ◆ Training on all aspects of the emergency plans will be provided to staff on site.
- ◆ Communication channels internally and externally will be established and a clear understanding by all staff in terms of protocol should be encouraged for example which authority to call during which incident etc.
- ◆ In the event of any incident, environmental recovery should be documented and remediation of any contaminated land reported on (including sampling of soil etc).
- ◆ Incident investigation reports should be kept on record.

Table 7-2 Contingency plan

Risk	Probability	Preparation	Action
Fuel reserves depleted Resulting in temporary disruption of road construction activities	Low	<ul style="list-style-type: none"> ● Develop a fuel management system with daily tank dips and fuel volume reconciliations. ● Set minimum fuel volume threshold to indicate when diesel deliveries must be requested: ● Minimum volume threshold: _____m³. ● Develop disciplinary code and procedures. 	<ul style="list-style-type: none"> ● Request diesel delivery once fuel volume reach a minimum threshold.
Socially deviant behaviour E.g. alcohol or drug abuse by workers.	Low	<ul style="list-style-type: none"> ● Emergency contact numbers and procedures on file. 	<ul style="list-style-type: none"> ● Notify SHEQ / human resources manager of incident. ● Take disciplinary action in line with the company's disciplinary code and procedures.
Traffic – Accidents Internal involving only the Proponent's vehicles visiting the fuel installation or accidents involving the proponent's vehicles and general traffic using the C35 Main Road	Medium		<ul style="list-style-type: none"> ● Notify SHEQ of accident. ● Contact emergency services and/or NAMPOL if applicable. ● Implement traffic management to prevent additional incidents. ● Move damaged vehicles away from site once injured people have been evacuated and/or NAMPOL was onsite (if applicable due to magnitude of accident).
Traffic – Congestion Due to fuel deliveries or construction vehicles accessing the fuel installation	Low	<ul style="list-style-type: none"> ● Traffic management procedures include proper signage and operations. 	<ul style="list-style-type: none"> ● Direct traffic via detours or implement “stop and go” procedures. ● Ensure staff are trained and understand what to do during possible traffic congestion. ● Ensure working communication equipment for traffic management (such as two-way radio).
Injuries Falling from heights (e.g. during tank dips), exposure to hazardous substances, or other injuries related to operations of the fuel installation	Medium	<ul style="list-style-type: none"> ● Emergency response procedures with emergency contact numbers on file. ● First aid training of selected employees. ● First aid kits on site. 	<ul style="list-style-type: none"> ● Notify SHEQ of accident/incident. ● Assess severity of injury. ● For minor injuries apply first aid. ● For major injuries apply first aid and contact emergency services.
Security Theft (e.g. of fuel)	Low	<ul style="list-style-type: none"> ● Trained security personnel. ● Develop disciplinary code and procedures. ● Ensure access control to fuel facility. 	<ul style="list-style-type: none"> ● Notify SHEQ of incident. ● Investigate incident.

<p>Fire Flammable product (diesel) is stored on site</p>	Low	<ul style="list-style-type: none"> ● Personnel trained in fire fighting. ● Fire fighting and evacuation plan. ● Fire fighting equipment on site and in fuel delivery vehicles. ● Fire extinguisher servicing schedule. 	<ul style="list-style-type: none"> ● Take disciplinary action in line with the company's disciplinary code and procedures. ● Contact the Namibian Police in case of theft. ● Sound fire alarm ● Notify emergency contact for fire related incidents and SHEQ. ● Activate emergency stops of pumps if safe to do so. ● Attempt to extinguish fire by trained personnel if safe to do so. ● If not safe to extinguish fire or attempts to extinguish fire fail, evacuate the area.
<p>Noise E.g. when decommission the installation and demolishing concrete structures)</p>	Medium	<ul style="list-style-type: none"> ● Hearing protectors available on site. 	<ul style="list-style-type: none"> ● Issue hearing protectors to personnel in noisy environments.
<p>Waste Domestic and or decommissioning waste (building rubble)</p>	Medium	<ul style="list-style-type: none"> ● Waste management plan with adequate waste storage facilities. ● Dedicated hazardous waste area (temporary storage area). 	<ul style="list-style-type: none"> ● Dispose of waste at an approved facility. ● Collect waste not properly stored and contained. ● Use concrete resulting from decommissioning to backfill old quarries (cover concrete with soil).
<p>Pollution Soil and groundwater pollution from spills and leaks of fuel</p>	Medium	<ul style="list-style-type: none"> ● Emergency contact details of pollution clean-up specialist on file. ● MSDS for product on file. ● Spill kits with absorbent material on site. 	<ul style="list-style-type: none"> ● Close any open valves or stop pumps that may be responsible for a spill. ● Deploy drip trays if spill is from leaks. ● Notify emergency contact for and SHEQ of any spills not contained. ● Use spill kits and apply absorbents to prevent spread of fuel. ● Clean spills as soon as possible and remove polluted soil and absorbent material and dispose of at a hazardous waste disposal facility. ● Conduct a pollution assessment to ensure the spill is cleaned and all contaminated soil removed. ● Report spills of more than 200 litres (regarded as a major spill) to the Ministry of Mines and Energy on the form provided in Appendix A).
<p>Biodiversity Impact Poaching or illegal collection of plants/animals by staff</p>	Low	<ul style="list-style-type: none"> ● Develop disciplinary code and procedures. 	<ul style="list-style-type: none"> ● Notify SHEQ / human resources manager of incident. ● Take disciplinary action in line with the company's disciplinary code and procedures.

<p>Human Wildlife Conflict Encounters with venomous or potentially dangerous animals</p>	<p>Low</p>	<ul style="list-style-type: none"> ● Training staff to avoid and not kill animals encountered on site. ● Emergency contacts for removal of potentially dangerous animals from site on file. 	<ul style="list-style-type: none"> ● Avoid any potentially dangerous animals (e.g. snakes, scorpions, etc.) and allow them to move away from site. ● Contact SHEQ for problem animals persisting on site. ● Contact MEFT for extraordinary encounters with wildlife or when dangerous situations involving animals occur.
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8 CONCLUSION

The upgraded road will ultimately have a positive impact on the region as well as on Namibia and its northern neighbours. It will provide an alternative, shorter route between northern Namibia and Angola and the Port of Walvis Bay. During the road upgrade phase employment is created and investments made in the local business sector. The project is in turn supported by the consumer fuel installation through the provision of a safe and reliable supply of diesel to construction vehicles for the duration of the project.

Potential negative impacts of the consumer fuel installation mainly pertains to possible pollution of the environment, exposure of employees to hydrocarbon fuels and potential injuries on site. Negative impacts can be successfully mitigated. SANS standards relating to the petroleum industry and prescribed by Namibian law must be followed during all operations of the fuel storage and handing facility. Spill control should be readily available at all times, and staff should be trained on spill control procedures. Noise pollution should at all times meet the prescribed Health and Safety Regulations of the Labour Act requirements to prevent hearing loss among workers on site. 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.

Once the road upgrade is complete the site must be cleared of all equipment and infrastructure and the site rehabilitated. Any hydrocarbon polluted soil that may be present on site at that stage must be removed and disposed of at an appropriate facility or remediated where possible. Demolished concrete may be used to backfill the quarries used for purposes of road building.

The EMP should be used as an on-site reference document for the operations of the facilities. 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 environmental management plan. All operational personnel must be taught the contents of these documents.

9 REFERENCES

- Atlas of Namibia Project. 2002. 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.
- Funk, C., Peterson, P., Landsfeld, M., Pedreros, D., Verdin, J., Shukla, S., Husak, G., Rowland, J., Harrison, L., Hoell, A. and Michaelsen, J., (2015) The climate hazards group infrared precipitation with stations - A new environmental record for monitoring extremes. *Scientific Data*, 2, 150066. <https://doi.org/10.1038/sdata.2015.66>.
- Namibia Statistics Agency. 2011. Namibia household Income and Expenditure Survey 2009/2010.
- Namibia Statistics Agency. 2011. Namibia 2011 Population and Housing Census Main Report.
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Appendix A: Major Petroleum Spill Report Form

FORM PP/11

MINISTRY OF MINES AND ENERGY

PETROLEUM PRODUCTS AND ENERGY ACT, 1990
PETROLEUM PRODUCTS REGULATIONS (2000)

REPORTING OF MAJOR PETROLEUM PRODUCT SPILL

(Regulation 49(1))

(Please note that where form is completed by hand it must be completed in capital letters)

1. Name of licence/certificate-holder/person

(*Delete whichever is not applicable)

2. Postal address

3. Physical address

4. Telephone Number (including code)

5. Facsimile Number (including code)

6. Licence/certificate* number and date of issue, if applicable

(*Delete whichever is not applicable)

7. Date of petroleum product spill

8. Location of petroleum product spill

9. Reasons for petroleum product spill

Appendix B: Consultant's 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 175 environmental impact assessments including assessments for 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	:	22
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/Biochemistry	:	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	OSH-Med, 2022
Basic Fire Fighting	OSH-Med, 2022

PROFESSIONAL SOCIETY AFFILIATION:

Environmental Assessment Professionals of Namibia (Practitioner)

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	+175
Research Reports & Manuals:	5
Conference Presentations:	1