



RED-DUNE CONSULTING CC

Application No: APP-003627

Contingency Plan for an above ground fuel tank with a capacity of 23 cubic meters at Brakwater, Windhoek, Khomas Region



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CLIENT	MR. DE JAGER LJ
PROJECT CONSULTANT	Mr. Ipeinge Mundjulu
LOCATION	Brakwater, Windhoek, Khomas Region

ACRONYMS

DEA	Department of Environmental Affairs
EA	Environmental Assessment
EAP	Environmental Assessment Practitioner
ECC	Environmental Clearance Certificate
ECO	Environmental Compliance Officer
EIA	Environmental Impact Assessment
EMA	Environmental Management Act (No. 7 of 2007)
EMP	Environmental Management Plan
MET	Ministry of Environment and Tourism
PPE	Personal Protective Equipment
RDC	Red-Dune Consulting CC
SM	Site Manager

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Executive summary

MR. DE JAGER LJ is a Namibian individual with interest in retail, transport and logistics. He owns a fleet of trucks that use diesel for fuel. Like many businesses with fleets of vehicles, or farms, the He intends to install 23 cubic meters above ground diesel fuel tank on its site at Brakwater, Windhoek.

The Environmental Management Act (Act No 7 of 2007) has listed the handling and storage of fuel for volumes of 30 cubic and above an activity that cannot be undertaken without an environmental clearance certificate.

The above diesel tank that MR. DE JAGER LJ is planning to install will have a capacity of 23 cubic meters. Although this capacity is below the threshold as indicate in the EIA Regulation of 30 cubic meters, an environmental management plan is still necessary to cater for the handling of dangerous good.

The aboveground tanks have huge advantages such as easily detectable leaks and quick to contain, frequent maintenance such as painting to prevent corrosion is easily possible, and they can be moved from one place to the other. Despite being safe when it comes to general pollution, they are vulnerable to physical damages such as vandalism, strong winds and lighting.

1. The Contingency Plan

1.1. Purpose of the Contingency Plan

This Contingency Plan (CP) is a risk strategy that contains logical framework, monitoring programme, mitigation measures, and management control strategies to minimize potential Social and Environmental impacts by the operation of the above ground fuel tank. The plan outlines the responsibilities for initiating and coordinating the necessary actions to effect protection and clean – up operations by providing systematic measures that should be implemented by the operator in order to prevent oil spill, fire and explosion and or to adequately respond, in a fastest, safe and effective way to mitigate the impact when a risk occurred. The plan defines the scope, structure and responsibilities in responding to potential risks.

2. Terms of Reference

The development of this CP is based on the The National Oil Spill Contingency Plan (NOSCP) which provides a framework for national response to an oil spill. Furthermore, the plan is anchored in article 95(1) of the Namibian Constitution, the Prevention and Combating Pollution by Oil Act (Act No. 24 of 1991) and guided by international norms and practices.

3. Scope and Applicability

The scope of the CP shall apply to all activities undertaken in the operation of the aboveground fuel tank by MR. DE JAGER LJ, his employees, contractors, sub-contractors and visitor. All person visiting the site must be made aware and adhere to the framework this CP.

4. Policy and Regulatory framework of the CP

Table 1. National and International laws.

Legislation	Summary	Applicability
The Namibian Constitution	The Namibian constitution is the supreme law of the country which is committed to sustainable development. Article 95(1) of the Constitution of Namibia states that:- “The State shall actively promote and maintain the welfare of the people by adopting policies aimed at ... The maintenance of ecosystems, essential ecological processes and biological diversity of Namibia and utilization of living natural resources on a sustainable basis for the benefit of all Namibians, both present and future”.	Contact an EIA to maintain the ecological process and diversity of the project area
The Environmental Management Act	The Environmental Management Act No 7 of 2007 aims to promote the sustainable management of the environment and the use of natural resources and to provides for a process of assessment and control of activities which may have significant effects on the environment; and to provide for incidental matters. The acts provides a list of activities that may not be undertake without an environmental clearance certificate. Further, the Act ensures that; (a) Potential threats are considers timeously	Statutory requirement of the EIA and guidelines

Legislation	Summary	Applicability
	<p>(b) A comprehensive stakeholder's consultations is conducted and all Interested and affected parties are given an opportunity to comment on the project</p> <p>(c) Decision are robust by taking into account the above mentioned activities</p>	
Petroleum Product and Energy Act No, 13 of 1990	This Act provides a framework for handling and distribution of petroleum products which may include purchase, sale, supply, acquisition, possession, disposal, storage or transportation thereof.	Safe handling and storage of the fuel
Hazardous Substances Ordinance No. 14 of 1974	This ordinance gives provision to control the handling of hazardous substance in all circumstances, such as manufacturing, imports and exporting of these to ensure human and environmental safety.	Handling of fuel, Fire and explosion risks
Atmospheric Pollution Prevention Ordinance Act No.11 of 1976)	This Ordinance serves to control air pollution from point sources, but it does not consider ambient air quality. This ordinance is being repealed by the proposed Pollution Control and Waste Management Bill. Any person carrying out a 'scheduled process' which are processes resulting in noxious or offensive gases typically pertaining to point source emissions have to obtain a registration certificate from the Department of Health.	Although it not anticipated for the fuel station to generate excessive noxious or offensive gasses, the proponent will ensure that best industry practises are followed.
Prevention and Combating of Pollution of the	To provide for the prevention and combating of pollution of the sea by oil; to determine liability in certain respects for loss or damage caused by the	Provide the basis of the NOSCP

Legislation	Summary	Applicability
Sea by Oil Act No 6 of 1981 (as amended by Act 24 of 1991).	discharge of oil from ships, tankers or offshore installations; and to provide for matters connected therewith.	
Draft Pollution Control and Waste Management Bill	This Bill serves to regulate and prevent the discharge of pollutants to air and water as well as providing for general waste management. The Bill will repeal the Atmospheric Pollution Prevention Ordinance (11 of 1976) when it comes into force. The Bill also provides for noise, dust or odour control that may be considered a nuisance. Further, the Bill advocates for duty of care with respect to waste management affecting humans and the environment and calls for a waste management licence for any activity relating to waste or hazardous waste management.	Prevention of oil spills and leakages in order to prevent pollution
The Occupational Safety and Health Act No. 11 of 2007;	<p>Safety:</p> <p>A safety risk is a statistical concept representing the potential of an accident occurring, owing to unsafe operation and/or environment. In the working context “SAFETY” is regarded as “free from danger” to the health injury and to properties.</p> <p>Health:</p> <p>Occupational Health is aimed at the promotion and maintenance of the highest degree of physical, mental and social wellbeing of workers in all occupations.</p>	<p>Handling of fuel is susceptible to fire and explosion risk</p> <p>In order to maintain good and healthy standards, at the work place, cleanliness,</p>

Legislation	Summary	Applicability
	This is done by ensuring that all work-related hazards are prevented and where they occur, managed.	adequate sanitary facilities, prevention of inhaling toxic emissions.
Public Health Act No. 36 of 1919	The Act serves to protect the public from nuisance and states that no person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health.	The proponent should ensure that the fuel tank is safe, and not dangerous to public health and that any emissions which could be considered a nuisance remain at acceptable levels.
Water Resources Management Act (2004)	This Act provides a framework for managing water resources based on the principles of integrated water resources management. It provides for the management, development, protection, conservation, and use of water resources. Furthermore, any watercourse on/or in close proximity to the site and associated ecosystems should be protected in alignment with the listed principles.	The prevention of water pollution from run off. Emergency oil spill kit, storm water control and concrete slab.
Water Act No, 54 of 1956	This act states that, all water resources belongs to the State. It prevents pollution and promotes the sustainable utilization of the resource. To protect this resources, this act requires that permits are obtained when activities involve the following; (a) Discharge of contaminated into water sources such as pipe, sewer, canal, sea outfall and	Prohibition of contaminated water in the water body

Legislation	Summary	Applicability
	(b) Disposal of water in a manner that may cause detrimental impact on the water resources	
Labour Act No. 6 of 1992	This Act aims to regulate labour in general and includes the protection of the health, safety and welfare of employees. The 1997 Regulations relating to the Health and Safety of employees at work sets out the duties of the employer, welfare and facilities at the workplace, safety of machinery, hazardous substances, physical hazards, medical provisions, construction safety and electrical safety.	No employer shall require or permit an employee to work in an environment that is deemed unfit without protective measures in place.
Local Authorities Act, 1992 (Act 23 of 1992)	Provide for the determination, for purposes of local government, of local authority councils; the establishment of such local authority councils; and to define the powers, duties and functions of local authority councils; and to provide for incidental matters.	Adherence to Windhoek Municipality by laws
Word's Best Practises	<p><u>Precautionary Approach Principle</u></p> <p>This principle is worldwide accepted when there is a lack of sufficient knowledge and information about the possible threats to the environment. Hence if the anticipated impacts are greater, then precautionary approach is applied. In this project, there are no eminent uncertainty however in cases when they arise, this approach should be applied.</p> <p><u>Polluter Pays Principle</u></p>	Fuel retail facilities are well document in Namibia. However, fuel contains Volatile Organic Compounds (VOCs) which may be cancerous and their amount that causes cancer are poorly documented. Therefore, precaution must be taken when dispensing fuel to vehicles.

Legislation	Summary	Applicability
	<p>This principle ensures that proponents takes responsibility of their actions. Hence in cases of pollution, the proponent bears the full responsibility to clean up the environment.</p>	<p>In the event of an accident, where spillage may occur, the establishment owner must be responsible to clean up the environment.</p>

5. Contingency Plan Administration

The CP administration outlines the roles and responsibility of stakeholder in its implementation.

5.1. Government

The Ministry of Environment Forestry and Tourism is the custodian of the environment that ensure environmental protection. Government, through the MEFT shall be responsible for monitoring and regulating the project operation through time to time inspection. This will be undertaken by the environmental inspector as provided for under Environmental Management Act (No. 7 of 2007)

5.2. Proponent

The proponent (MR. DE JAGER LJ), shall take overall responsibility for proper implementation of the CP. It remains the responsibility of the proponent to appoint key personnel for the implementation of the CP and ensure that all employees, contractors, sub-contractor and people visiting the site are familiar with the CP.

5.3. Site Manager

The Site Manager (SM) represents the proponent on site. He/she shall be responsible for daily activities in ensuring environmental protection. He will be responsible to undertake induction of stakeholders visiting the site. All communication with regard to the implementation of CP must be channelled through the SM.

5.4. Employees

It shall be responsibility of employees to adhere to the provision of CP.

5.5. Disciplinary Action

This CP is a legally binding document, non-compliance to the CP must be punishable under relevant Regulatory provisions.

6. Risk Assessments

The environment and social components relating to the project were identified, evaluated and practical mitigation measures proposed. Three (3) critical impacts were identified; Oil Spill, Fire and Explosion. The risks assessment is outlined below.

6.1. Oil Spill

6.1.1. Potential spill scenarios

Oil spills could accidentally occur during re-fuelling and dispensing of fuel from delivery truck or from fuelling of vehicle on site and through leakage. The following table outlines potential oil spill scenarios and their level of impact.

Table 2. Potential oil spill scenarios

Location	Identity	Spilly Type	Rate of Spill (Litres/Minute)
Bulk Fuel from delivery tank	1	Discharge from Tank-Slow Leak	0.1 -1
	2	Discharge from Tank-Medium Leak	1-10
	3	Discharge from Tank-Catastrophic Failure	Worse case: Entire tank content
	4	Discharge from Tank – Valve left Open	100
On site fuelling of vehicle	1	Fuel Spill due Improper handling of equipment or Nozzle leaks	0.1 - 1

Location	Identity	Spilly Type	Rate of Spill (Litres/Minute)
	2	Fuel Spill due to Equipment Failure	Worse case: Entire tank content
Tank Leakages	1	Fuel storage due to negligence or improper closure of tank	0.1 - 10

6.1.2. Frequency occurrence

The potential scenarios were assessed for the likelihood of occurrence where the highest potential of oil spill is associated from fuel delivery as outlined in the table below. It is expected the risk of occurrence is correlated to the frequency which the task is carried out.

Table 3. Risk Assessment – Frequency

Frequency level	Description
1	Occasionally. The likelihood of occurring is very low as the activity is only performed once per month or less. Such as oil spill form as fuel delivery
2	Frequently. The Risk of occurrence is regular in instances where the task is carried out on daily basis. Such as oil spill form fuelling of vehicles

6.1.3. Level of Environmental Impact

The extend of environmental impact from potential spill scenarios was assessed. This ranged from negligible incidental / insignificant daily spill such as nozzle drips of fuel overflowing to severe spill in an event of equipment failure, fire and or explosion herein referred to as catastrophe.

Table 4. Severity on Environmental

Impact level	Description
1	Incidental. Insignificant spill that may happen on daily basis, such as nozzle spill or over-fuelling
2	Minor. The spill is significant but localized. The extend of its impact is often mild and known. Such as Over fill of the storage tank, however the overflow containment of the capacity may be able to contain the spill.
3	Adverse. The spill will be outside the Storage tank which will affect the surrounding environment. This spill may be as a result of delivery tank equipment failure and may require response from services such as police and fire emergency departments.
4	Serious. This spill is referred to as a catastrophe spill with serious detrimental impact to the environment. The operation of the 23cubic litre of diesel may cause severe damage to the environment during instance of severe spill. Storage tank may not necessarily pose a serious risk, however, delivery truck that carries about 90 cubic litres. This would requires adequate clean up and immediate notification to the regulatory authority.

Risk Matrix Level

Risk Level	Description
A	High Risk. Exposure is constant and potential severity is very high.
B	Moderate Risk. Exposure is frequent and an incident could result in serious consequences.
C	Low Risk. Exposure is occasional and incident may result in minor consequences.
D	D Very Low. Risk exposure is limited and consequence is unlikely.

6.1.4. Risk Matrix level

A risk matrix level was developed where environmental impact rating was combined with frequency risk to determine the level of risk. In table below, the vertical numbers represent the environmental impact rating and the horizontal numbers represent the frequency risk rating.

Table 5. Risk Matrix level

Environmental Impact	4	B	A
	3	B	B
	2	D	B
	1	D	C
		1	2
	Frequency level		

Table 6. Spill Risk assessment

Location	Identity	Spilly Type	Frequency	Severity	Risk Level
Bulk Fuel from delivery tank	1	Discharge from Tank- Slow Leak	1	1	D
	2	Discharge from Tank- Medium Leak	1	2	D
	3	Discharge from Tank- Catastrophic Failure	1	4	B
	4	Discharge from Tank – Valve left Open	2	3	B
On site fuelling of vehicle	1	Fuel Spill due Improper handling of equipment or Nozzle leaks	1	1	D
	2	Fuel Spill due to Equipment Failure	1	3	B

Tank Leakages	1	Fuel storage due to negligence or improper closure of tank	1	2	D
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6.2. Mitigation Measure

Mitigation measure are preventative mechanism to avoid risk from occurring. With adequate implementation of preventative measures, the chances of risks occurring will be minimized. The following concise mitigation measures are recommended for implementation to avoid oil spills.

6.2.1. Bulk Fuel from delivery tank

To minimize the potential risks for onsite delivery and storage from delivery truck, the following mitigation measures should be implemented;

- Only use authorised fuel transport companies and individual that meets the required standards to transport fuel
- Transport companies must provide inspection report against tank leakages and all closing ends
- Employees must be properly trained to dispense fuel from the delivery truck into the storage tank
- During dispensing of fuel, the site must be demarcated with a danger tape, and it should be carried out by a competent and experience personnel
- Keep away all flammable objects during dispensing of fuel from the truck to the storage tank
- Punishment for negligence, such as leaving the valve open should be implemented

6.2.2. On site fuelling of vehicle

- Employees must be properly trained to fuel vehicles and handle fuel

- The fuel tank must be placed at concrete bund to prevent spill seepage
- The fuelling pipes nozzle must be fitted with a spill detector
- The concrete / metal containment must be designed to hold 110 percent of the tank liquid volume
- Waste water from the cleaning the surface must be disposed of at appropriated site,
- There must be an oil spill kit on site and train employees on oil spill emergency response such as, oil spill absorbent booms and pads.

6.2.3. Tank Leakages

- It is recommended to acquire a double walled tank
- Tanks must have leak detection system
- Ensure the acquired tank has a lead detection

6.2.4. Fire and Explosion Risk Assessment

Fire and explosion are worse case instantaneous risks in the operation fuel which are highly flammable. Consequently, fire and highly oxidant products must be kept far.

- Staff must be properly trained on how to react and handle fire
- There must be automatic fire alarm system installed at the site
- Firefighting equipment must be on site 24hours and regularly inspected to ensure that they are working
- Emergency response numbers must be on clear and visible space
- There must be clear hazard signs “NO OPEN FIRE” “NO SMOKING” “SWITCH ENGINE OFF”

6.3. Response measures

6.3.1. Minor Spill

- Clean up using oil spill kid provided and report the spill management

6.3.2. Instantaneous Major Spill

- Assess and ensure personal safety on an isolated distance
- Identity the source and cause of spill
- Eliminate all source of heat / fire
- Call the Emergency Response Numbers
- If possible, secure flow at source of spill
- Encircle the site with spill absorbent booms and pads
- In case of fire, use fire extinguisher to put out the fire
- Inform management
- Take proper record of the amount spilled
- Inform Ministry of Environment Forestry and Tourism & Ministry of Mines and Energy and City of Windhoek Municipality

6.3.3. Tank leakages

Leakages are normally minor. After establishing storage tank leakages the following response mechanisms should be undertaken;

- Use oil spill kit to clean up the leakages
- Inform management to replace work out valves
- Close all valves as required

7. Response Emergency numbers

Services Name	Telephone Number
Headquarters Fire Station	211 111
Maxuilili Fire Station	212 265
Otjomuise Fire Station	061 - 290 3381
Diaz Street Fire Station	250 084 / 250 446
Namibian Police	10 111
State Hospital	203 9111
City Police Emergency	302 302 (Toll Free)

	290 2239 / 290 2454 / 3/ SMS 444
Electricity Failure	222 658 (All Hours)
Protection	209 5375
Rescue 911	222 255
Disaster / Emergency	081278368
Coordinator-Khomas Regional Council	

8. Monitoring and Inspection

Monitoring of all equipment is important. Ensure that fire extinguisher are working normally, Storm water system are not blocked, valve are closing properly and the tank is not showing sign or erosion. There must be a daily log book to record risk activities that occurred which outline the extent of severity, causes and action taken to contain the risks. Furthermore, inspection should be carried out as the regulatory requirements.

9. Closure / Decommissioning Plan

Closure of an above fuel tank is simple and straight forward as it requires the removal of the tanks from the steel where it is mounted. The following procedures are critical during tank removal.

1. Prior to decommissioning, the proponent must inform the office of the Environmental Commissioner;
2. Ensure that the tank is completely empty of fuel
3. If the tank is being relocated, ensure its proper transportation
4. If the tank is not going to be used, contact authorised scrap yard to collect it for dismantling
5. All work must be supervised by qualified personnel.
6. Workers must be provided with all necessary PPE;
7. All wasted generated must be disposed of approved sites;

10. Conclusion

An aboveground fuel tanks are common for business operation with fleets of vehicles as especially. They are the safest when it comes to handling of fuel. The proposed tank capacity is relatively small at 23 cubic litres. The mitigation and response measures of oil spill, fire risk and tank leakage are developed for implementation to minimize the impacts.

11. Recommendations

This study recommends to the approving authority for the project to be approved and be issued with an environmental clearance certificate.

12. References:

1. South African National Standards (SANS)
2. Purdue University, Above ground petroleum tanks (A pictorial guide)