



RED-DUNE CONSULTING CC

Application No: APP-001425

**Environmental Management Plan for an aboveground fuel tank
with a capacity of 25 cubic meters at Karibib Town, Erongo
Region**



Photo illustration: Above fuel tank at Karibib Police Station

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DOCUMENT INFORMATION

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PROJECT TITLE	Environmental Management Plan for an above ground fuel tank at Karibib Town, Erongo Region
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PROJECT CONSULTANT	Mr. Ipeinge Mundjulu
LOCATION	Karibib Town, Erongo 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

Kodo Drilling company owns various fleet of vehicles, trucks and machinery that use diesel for fuel. Like many businesses with fleets of vehicles, or farms, the company intends to install an above ground diesel fuel tank on its site at Karibib. 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 Kodo Drilling is planning to install will have a capacity of 25 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 Environmental Management Plan

1.1. Purpose of the EMP

This (EMP) is a risk strategy that contains logical framework, monitoring programme, mitigation measures, and management control strategies to minimize environmental impacts. It further stipulates the roles and responsibility of persons involved in the project. These strategies are developed to reduce the levels of impacts for the projects.

1.2. Compliance to the EMP

This EMP is a legally binding document as given under the provisions of the Environmental Management Act, 2007 (Act No. 7 of 2007). Kodo Drilling and its contractors must adhere to the framework of this document.

1.3. Roles and Responsibilities

1.3.1. Proponent

The proponent (Kodo Drilling), shall take overall responsibility for proper implementation of the EMP. It remains the responsibility of the proponent to appoint key personnel for the implementation of the EMP such e.g. Site Manager and ensure that all employees and contractors are familiar with the EMP.

1.3.2. Site Manager

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

1.3.3. Employees

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

1.3.4. Environmental Compliance Officer

Compliance to EMP is enforce by the Environmental Compliance Officer (ECO) or the environmental inspector as provided for under Environmental Management Act (No. 7 of 2007)

1.3.5. Disciplinary Action

This EMP is a legally binding document, non-compliance to the EMP is punishable in accordance to the provisions of EMA.

2. Policy and legal framework

The operation shall be subject by the following national and international laws (Table 1).

Table 1. Policy and Legal framework governing the project

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>	
Draft Pollution Control and Waste Management Bill	<p>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.</p>	<p>Prevention of oil spills and leakages in order to prevent pollution</p>
Atmospheric Pollution Prevention Ordinance Act No.11 of 1976)	<p>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.</p>	<p>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.</p>

Legislation	Summary	Applicability
<p>The Occupational Safety and Health Act No. 11 of 2007;</p>	<p>Safety: 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: Occupational Health is aimed at the promotion and maintenance of the highest degree of physical, mental and social wellbeing of workers in all occupations. This is done by ensuring that all work-related hazards are prevented and where they occur, managed.</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, adequate sanitary facilities, prevention of inhaling toxic emissions.</p>
<p>Public Health Act No. 36 of 1919</p>	<p>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.</p>	<p>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.</p>
<p>Water Resources Management Act (2004)</p>	<p>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</p>	<p>The prevention of water pollution from run off. Emergency oil spill kit, storm water control and concrete slab.</p>

Legislation	Summary	Applicability
	and associated ecosystems should be protected in alignment with the listed principles.	
Water Act No, 54 of 1956	<p>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;</p> <ul style="list-style-type: none"> (a) Discharge of contaminated into water sources such as pipe, sewer, canal, sea outfall and (b) Disposal of water in a manner that may cause detrimental impact on the water resources 	Prohibition of contaminated water in the water body
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
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.

Legislation	Summary	Applicability
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 Karibib Town Council by laws
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
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> <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>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.</p> <p>In the event of an accident, where spillage may occur, the establishment owner must be responsible to clean up the environment.</p>

3. The EMP table

The EMP is divided into three components; Physical Environment, Biological Environment, and Human Environment. This is to ensure for easy implementation. Please note that, construction phase will only entail the installation of a concrete / metal slab on which the tank will be mounted and an above shade for corrugated iron. The concrete slab will be about 50m² which shall be installed in accordance to Karibib Town Council building standards.

3.1. Operational phase

3.1.1. Human environment

Environmental / Social Impact	Objectives	Proposed Mitigation Measures	Monitoring Indicator	Party Responsible
Employment	To ensure that locals benefit from the employment opportunities. It is not envisioned that project will create extra employment. However, even one employment created is significant.	<ol style="list-style-type: none"> 1. Ensure that all general work is reserved for local people unless in circumstances where specialized skills are required. 2. Fair compensation and labour practises as per Namibian Labour Laws must be followed 	<ul style="list-style-type: none"> • Employees record Labour unrest over unfair compensation • Induction minutes, reports and attendance registers 	Site Manager

Environmental / Social Impact	Objectives	Proposed Mitigation Measures	Monitoring Indicator	Party Responsible
		3. All employees must go through an induction course for the provision of the EMP		
HIV/AIDS, Alcohol and Drug Abuse	To sensitise employees about the dangers of alcohol, drugs and HIV/AIDS	<ol style="list-style-type: none"> 1. Provide awareness to the employees on dangers of HIV/AIDS, alcohol and drug abuse 2. Provide condoms to friendly places on site 	<ul style="list-style-type: none"> • Awareness meeting minutes 	Site Manager
Health	To ensure good health and safety of the employees and public. Fuel releases pollutants such as volatile organic compounds (VOCs) which is known to be harmful on human health. A group known as BTEX (benzene, toluene, ethylbenzene and the three isomers of xylene) is hazardous to human health and the environment. The International Agency for Research on Cancer	<ol style="list-style-type: none"> 1. Abide to the Occupational Health and Safety and Labour Act of Namibia and other statutory requirements such as International Labour Practise (ILO) 2. Train employees on the possible health hazards to avoid potential risks 3. To reduce pressure in the fuel tank, appropriate ventilation systems must be installed and properly maintained. This significantly reduce the pressure from the 	<ul style="list-style-type: none"> • Training minutes • Complaints of health issues by employees • Physical inspection 	Site Manager

Environmental / Social Impact	Objectives	Proposed Mitigation Measures	Monitoring Indicator	Party Responsible
	(IARC) classified benzene as “carcinogenic to humans,” as it causes acute myeloid leukaemia (AML)	<p>pump nozzle and consequently reduces the amount inhaled;</p> <p>4. In the absence of vehicle to be refuelled, workers must not rest next to the tank, this helps in reducing long term exposure to the VOCs;</p> <p>5. Employees at the fuel tank must go for annual health checks ups.</p>		
Safety, Fire and explosion risk	Hydrocarbons are highly flammable, hence the risk of fire and explosion.	<ol style="list-style-type: none"> 1. Provide appropriate Personal Protective Equipment (PPE) to employee which includes helmets, overalls, safety shoes, etc 2. Ensure that every employee goes through an induction course about safety 3. Staff must be properly trained on how to react and handle fire 4. Install an automatic fire alarm system 	<ul style="list-style-type: none"> • PPE for all employees • Safety signs on site • Clear emergency toll free numbers (i.e. Police, Fire brigade) 	Site Manager

Environmental / Social Impact	Objectives	Proposed Mitigation Measures	Monitoring Indicator	Party Responsible
		<ul style="list-style-type: none"> 5. Firefighting equipment must be on site 24hours and regularly inspected to ensure that they are working 6. Emergency response numbers must be on clear and visible space 7. Tanks must clearly be labelled 8. The surrounding must have clear hazard signs “NO OPEN FIRE” “NO SMOKING” “SWITCH ENGINE OFF” 9. There must be drills to test staff about their readiness to fight the fire 		

3.1.2. Bio-Physical Environment

Environmental / Social Impact	Objectives	Proposed Mitigation Measures	Monitoring Indicator	Party Responsible
Vandalism	To prevent vandalism of tanks	<ol style="list-style-type: none"> 1. The premises must be fenced 2. Hire security to guard the premises 	<ul style="list-style-type: none"> • Physical inspection 	Site Manager
Wind risk	To prevent to the tank from being blown by the wind	<ol style="list-style-type: none"> 1. Ensure proper tank installation with good quality materials 	<ul style="list-style-type: none"> • Physical inspection 	Site Manager
Lightning risk	To prevent the tank from being struck by a lightning	<ol style="list-style-type: none"> 1. Ensure a competent electrician install an anti-lightning material 	<ul style="list-style-type: none"> • Physical inspection 	
Oil spills	To prevent oil spill which may result in soil and water pollution	<ol style="list-style-type: none"> 1. Staff must be properly trained to fuel vehicles and handle fuel 2. The fueling pipes nozzle must be fitted with a spill detector 3. The fueling tanks must be installed on concrete or metal bund 4. The concrete / metal containment must be designed to hold 110 percent of the tank liquid volume 5. Waste water from the cleaning the surface must be disposed of at appropriated site, 	<ul style="list-style-type: none"> • Physical inspections 	Site Manager

Environmental / Social Impact	Objectives	Proposed Mitigation Measures	Monitoring Indicator	Party Responsible
		6. Provide an oil spill kit on site and train employees on oil spill emergency response such as, oil spill absorbent booms and pads.		
Fuel tanks oil leakage	To prevent fuel leakages from the tank	<ol style="list-style-type: none"> 1. It is recommended to acquire a double walled tank 2. Tanks must have leak detection system 3. Ensure the acquired tank has a lead detection 	<ul style="list-style-type: none"> • Physical inspection 	Site Manager
Storm water contamination	To prevent surface water contamination.	<ol style="list-style-type: none"> 1. The 110 % concrete / metal containment shall collect water during rain. 2. The water must be disposed off at an appropriate place 	Visible concrete containment	Site Manager
Waste Generation	To ensure good housekeeping and prevent littering	<ol style="list-style-type: none"> 1. Provide waste bins for general waste 2. General waste must be separated from hazardous waste; 3. Hazardous waste must be disposed of at an approved site; 	<ul style="list-style-type: none"> • Waste bins on site • Physical inspection 	Site Manager

4. 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;

5. Conclusion and Recommendations

5.1. Conclusions

An aboveground fuel tanks are common for business and farm operation. They are the most safest when it comes to handling of fuel. The proposed tank capacity is relatively small at 25 cubic meters. The aspect of oil spill, fire risk, tank leakage and land /water pollution are well addressed in the EMP. Henceforth, with the adequate implementation of this EMP, the operation of the proposed fuel tank will not pose any environmental threat.

5.2. Recommendations

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

6. References:

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