

**ENVIRONMENTAL ASSESSMENT  
FOR  
THE ESTABLISHMENT AND OPERATION OF A  
BULK FUEL STORAGE FACILITY AT ANDIMBA  
TOIVO YA TOIVO AIRPORT IN ONDANGWA,  
OSHANA REGION NAMIBIA**

**FINAL ENVIRONMENTAL MANAGEMENT  
PLAN**

**SEPTEMBER 2022**



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## PROJECT DETAILS

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**TITLE:** Environmental Assessment for the Establishment and Operations of a Bulk Fuel Storage Facility at Andimba Toivo Ya Toivo Airport in Ondangwa, Oshana Region, Namibia

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## **ABBREVIATIONS**

<b>ATYT</b>	Andimba Toivo Ya Toivo
<b>COA</b>	Conditions of Authorisation
<b>DWAF</b>	Department of Water Affairs and Forestry
<b>DEA</b>	Department of Environmental Affairs
<b>EAP</b>	Environmental Assessment Practitioner
<b>ECC</b>	Environmental Clearance Certificate
<b>ECO</b>	Environmental Control Officer
<b>EIA</b>	Environmental Impact Assessment
<b>EMA</b>	Environmental Management Act (No. 7 of 2007)
<b>EMP</b>	Environmental Management Plan
<b>EO</b>	Environmental Officer
<b>GATS</b>	Government Air Transport Services
<b>GIS</b>	Geographic information system
<b>I&amp;APs</b>	Interested and Affected Parties
<b>IFC</b>	International Finance Corporation
<b>MEFT</b>	Ministry of Environment, Forestry & Tourism
<b>MEFT: DEA</b>	Ministry of Environment, Forestry & Tourism: Department of Environmental Affairs
<b>NAC</b>	Namibia Airports Company
<b>NEC</b>	Namibia Environmental Consultants

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# 1 INTRODUCTION

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## 1.1 PURPOSE OF THIS EMP

This Environmental Management Plan (EMP) addresses the management of environmental impacts related to the construction and operation of the proposed development of a bulk Fuel Storage Facility at Andimba Toivo Ya Toivo in Ondangwa. The document should be used as a basis for managing, mitigating and monitoring the environmental impacts associated with the pre-construction (design), construction and operational phases of the Environmental Impact Assessment (EIA) Supplementation study, conducted by Namibia Environmental Consultants (NEC). The Environmental Assessment Report will be valuable as a reference source for understanding this EMP and for placing it into perspective.

The EMP is thus required to protect the natural, social and socio-economic environment during construction. This EMP is intended for the management of the impacts for the construction and/or establishment of the bulk Fuel Storage Facility and operation thereof, rehabilitation and revegetation of affected areas only. This EMP is, therefore, a standalone document, which must be used on site during each phase of the development (planning, construction and operational phases).

This document should be flexible so as to allow Central Oil Namibia (Pty) Ltd to conform to the management commitments without being prescriptive. The management commitments prove that the anticipated risks on the environment will be minimised if they are adhered to consistently. The onus set out in the EMP rests with Central Oil Namibia (Pty) Ltd, main Contractor and subcontractors, which promotes responsibility and commitment. Any parties responsible for transgression of the underlying management measures outlined in this document will be held responsible of non-compliances and will be dealt with accordingly.

## 1.2 OBJECTIVES OF THE EMP

The primary objectives of the EMP are as follows:

- To describe action plans for achieving the mitigation measures described in the EIA.
- To indicate responsibilities, schedules and staff resources regarding the implementation of these action plans.
- To highlight a monitoring programme, that will enable review of the success of the EMP and the provision of such information to the relevant decision-makers.
- To provide specific recommendations and mitigation measures on how to minimise negative impacts and therefore protecting the environment mostly on the biophysical as well as social level.
- In general, the purpose of this EMP is to formulate mitigatory measures that should be made binding to all contractors during construction of the proposed development, as well as measures that should be implemented during the operational phase.
- It should be noted that, this Final Environmental Management Plan (EMP) only serves to provide guidance with regards to possible impacts which may result if the application for the proposed development is successful. This EMP should only be seen as a guideline and should be updated once the exact scope of activities on site has been determined.

In terms of the Environmental Assessment Policy of 1994 and the Environmental Management Act No 7 of 2007 (EMA), certain activities have been identified, which could have a substantially detrimental effect on the environment. These listed activities require an Environmental Clearance Certificate (ECC) from the competent environmental authority, i.e. Ministry of Environment, Forestry and Tourism: Department of Environmental Affairs (MEFT: DEA), prior to commencing. The following activities identified in the EIA Regulations (Table 1) apply to the proposed project:

**Table 1:** List of triggered activities identified in the EIA Regulations which apply to the proposed project

<b>Activity description and No(s):</b>	<b>Description of relevant Activity</b>	<b>The portion of the development as per the project description that relates to the applicable listed activity</b>
<b>Activity 5.1</b> Land Use and Development Activities	The rezoning of land zoned for open space to any other land use	The project area is currently vacant with no infrastructure on it.
<b>Activity 9.1</b> Hazardous Substance Treatment, Handling and Storage	The manufacturing, storage, handling or processing of a hazardous substance defined in the Hazardous Substances Ordinance, 1974.	The project entails handling of hazardous substances (diesel) on site.
<b>Activity 9.4</b> Hazardous Substance Treatment, Handling and Storage	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	The project includes the handling and storage of petrol and diesel in containers.
<b>Activity 9.5</b> Hazardous Substance Treatment, Handling and Storage	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 proposed project includes a storage facility for petrol and diesel in Container Tanks..

### 1.3 PROJECT INFORMATION

Ondangwa is one of the oldest historic towns situated in the North Central Regions (Oshana Region) of the country with a population of 23, 000 inhabitants. The town is regarded as the district capital of the Ondangwa electoral constituency. Central Oil Namibia (Pty) Ltd often referred to as the proponent has been allocated a portion of land by Namibia Airports Company (NAC) with the intention to establish and operate a bulk fuel storage facility.

The proposed site on which the bulk fuel storage facility will be established is currently vacant with no vegetation that is considered to be significant. The shrubs found on site will be cleared to allow for the proposed project to take place. The proposed project area is adjacent to the existing site for PUMA Energy (Pty) Ltd which is currently utilized for the same purposes.

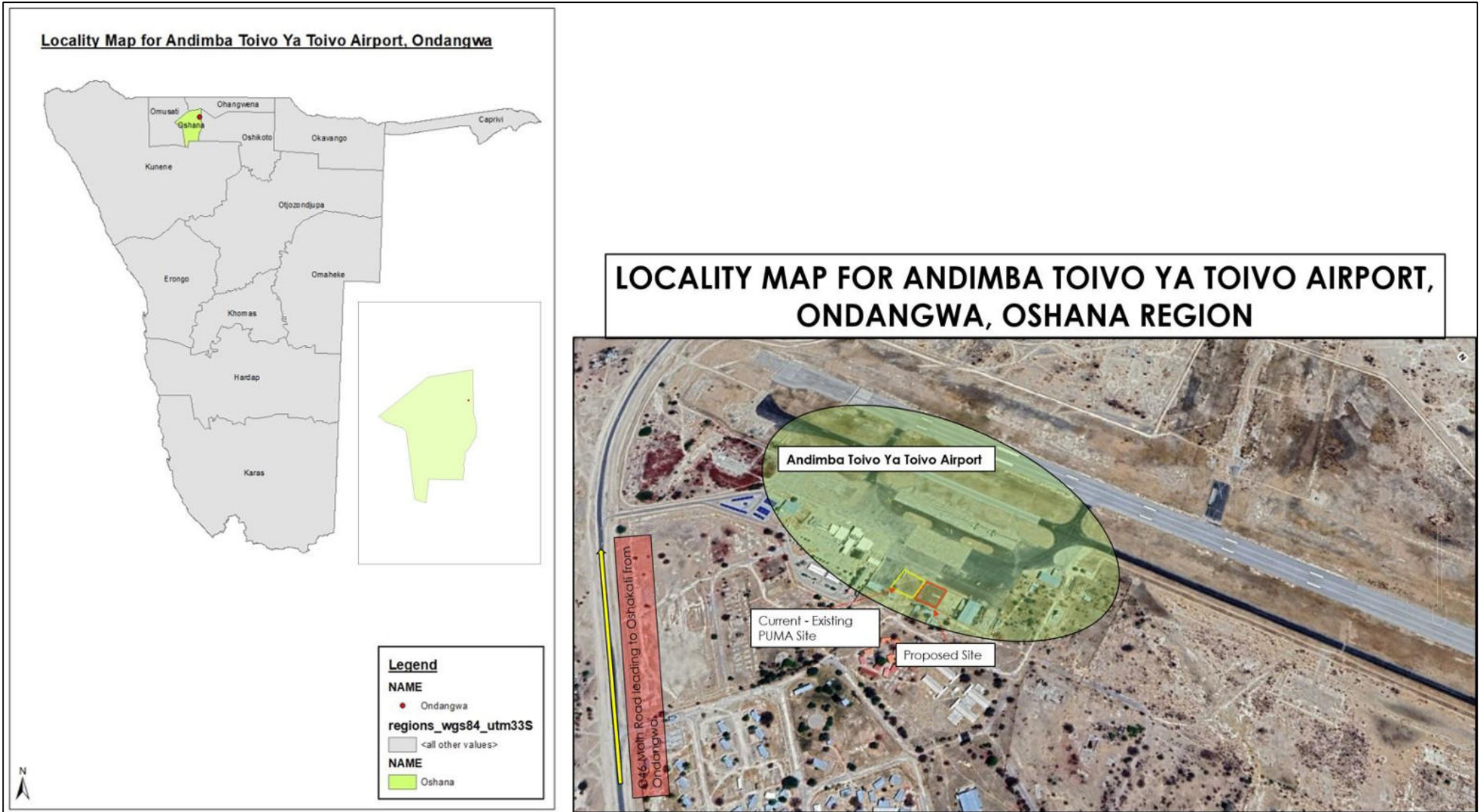
The bulk storage facility will be stored in a Jet-A1 fuel storage Container Tanks that will be installed and erected aboveground. The storage Container Tanks will have a capacity of 29 000 Litres of fuel – sufficient capacity to cater for the aircrafts. The establishment and operation of the bulk fuel storage facility will secure fuel supply to the aircraft operators and also ensure that fuel supply to these operators is readily available to avoid any inconveniences for the operators.

Central Oil Namibia (Pty) Ltd appointed Namibia Environmental Consultants to undertake the Environmental Assessment (EA) in order to obtain an Environmental Clearance Certificate (ECC) for the above activity in Ondangwa. The competent authority is the Ministry of Environment, Forestry and Tourism: Department of Environmental Affairs (MEFT: DEA).

#### **1.4 PROJECT LOCATION**

The proposed project for the establishment and operation of the Bulk Fuel Storage Facility is located at Andimba Toivo Ya Toivo Airport (ATYTA) in Ondangwa, Oshana Region. The proposed project site is located on a vacant portion of land that is adjacent to the existing site of PUMA Energy (Pty) Ltd at the airport. Refer to **Figure 1** below for locality map.





**Figure 1:** Locality Map for the proposed Bulk Fuel Storage Facility at Andimba Toivo Ya Toivo Airport, Ondangwa, Oshana Region

## 1.5 PROJECT DESCRIPTION

Central Oil Namibia (Pty) Ltd (proponent) has been allocated a portion of land by Namibia Airports Company (NAC) with the intention to establish and operate a bulk fuel storage facility at Andimba Toivo Ya Toivo Airport. This is an agreement between the proponent and Namibia Airports Company. The fuel storage facility will be used for fuel dispersion purposes to the aircraft operators at Andimba Toivo Ya Toivo Airport. The site in question is located at the premises of airport and it measures approximately 1600m<sup>2</sup> in extent and it is adjacent to the existing site for PUMA Energy (Pty) Ltd which is currently utilized for the same purposes.

The proposed site is currently zoned for industrial or commercial (business) purposes. The site is currently vacant (refer to **figure 2** below) and it is reserved for future expansion and developments for the airport. The project area is mostly visible from the airport terminal as well as the car rental service providers at the airport.

The proponent intends to have two bulk storage facilities (Jet A-1 fuel Storage Containers) in which one will be for Jet A-1 fuel and the other one for AVGAS. The Jet A-1 Fuel will be dispersed mainly to the aircraft with new engines and/or modernized engines and the AVGAS will be mostly dispersed to the aircrafts operating on old model engines.

The bulk fuel Storage Containers for Andimba Toivo Ya Toivo Airport will be 20ft in size and will have a capacity of 29 000 Litres. The operations of fuel dispersion at Andimba Toivo Ya Toivo Airport will not make use of a bowser. It will maintain the same design (site set up) and current operations being implemented by PUMA Energy (Pty) Ltd. The area on which the storage containers will be installed will be paved to avoid and ensure that no possible hazardous leakages through to groundwater sources as well as the environment overall are encountered.

In addition, the site will also have a small administration office for the admin staff on site during the operational phase. No canopy will be constructed on site given that the proponent intends to maintain the same design and/or set up currently being implemented by PUMA Energy (Pty) Ltd.

The proposed project area is currently covered with grass only. The site is free of any significant vegetation (endangered flora species) as well as trees to be considered and/or conserved. The grass that is found on site will be cleared to allow for the development and/or project to take place. Below are some of the pictures of the site.



**Figure 2:** Pictures of the proposed development site at ATYT Airport, Ondangwa

Below is the proposed layout design of the site and the bulk Fuel Storage Facility (Container) to be used by the proponent.





Figure 3: Layout design of the proposed Fuel Storage Facility



**Figure 4:** Layout Design of the Jet A-1 Fuel Container Tank

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## 2 LEGAL ENVIRONMENTAL FRAMEWORK

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*This chapter provides an overview of the legislation and policy framework for the EIA being undertaken. The EIA will be undertaken in compliance with the relevant Namibian environmental legislation as well as taking into account international best practice for impact assessments.*

### 2.1 THE CONSTITUTION OF THE REPUBLIC OF NAMIBIA

There are two clauses contained in the Namibian Constitution that are of particular relevance to sound environmental management practice, viz. articles 91(c) and 95(l). In summary, these refer to:

- Guarding against over-utilisation of biological natural resources;
- Limiting over-exploitation of non-renewable resources;
- Ensuring ecosystem functionality;
- Protecting Namibia's sense of place and character;
- Maintaining biological diversity; and
- Pursuing sustainable natural resource use.

The above therefore commits the State to actively promote and sustain environmental welfare of the nation by formulating and institutionalising policies to accomplish the abovementioned sustainable development objectives.

### 2.2 NAMIBIA'S ENVIRONMENTAL MANAGEMENT ACT (EMA)

In giving effect to articles 91(c) and 95(l) of the Constitution of Namibia, general principles for sound management of the environment and natural resources in an integrated manner have been formulated. This resulted in Namibia's Environmental Assessment Policy of 1994. To give statutory effect to this Policy, the Environmental Management Act was approved in 2007, and gazetted on 27 December 2007 as the Environmental Management Act (Act No. 7 of 2007) (EMA), Government Gazette No. 3966. Part 1 of the Environmental Management Act describes the various rights and obligations that pertain to citizens and the Government alike, including an environment that does not pose threats to human health, proper protection of the environment, broadened locus standi on the part of individuals and communities, and reasonable access to information regarding the state of the environment. Part 2 of the Act sets out 13 principles of environmental management, as follows:

- Renewable resources shall be utilised on a sustainable basis for the benefit of current and future generations of Namibians.
- Community involvement in natural resource management and sharing in the resulting benefits shall be promoted and facilitated.
- Public participation in decisions affecting the environment shall be promoted.
- Fair and equitable access to natural resources shall be promoted.
- Equitable access to sufficient water of acceptable quality and adequate sanitation shall be promoted and the water needs of ecological systems shall be fulfilled to ensure the sustainability of such systems.
- The precautionary principle and the strategy of preventative action shall be applied.

- There shall be prior environmental assessment of projects and proposals which may significantly affect the environment or use of natural resources.
- Sustainable development shall be promoted in land-use planning.
- Namibia's movable and immovable cultural and natural heritage, including its biodiversity, shall be protected and respected for the benefit of current and future generations.
- Generators of waste and polluting substances shall adopt the best practicable environmental option to reduce such generation at source.
- The polluter pays principle shall be applied.
- Reduction, reuse and recycling of waste shall be promoted.
- There shall be no importation of waste into Namibia.
- Promotion of the coordinated and integrated management of the environment;
- The Minister of Environment and Tourism was enabled to give effect to Namibia's obligations under international environmental conventions;
- Certain institutions were established to provide for a Sustainable Development Commission and Environmental Commissioner".

As the organ of state responsible for management and protection of its natural resources, the MEFT: DEA is committed to pursuing these principles of environmental management.

### **2.3 ENVIRONMENTAL GUIDELINES**

*The EMA, under section 5, states that if a proposal is likely to affect people, the following guidelines should be considered in Scoping / EA:*

- The location of the development in relation to interested and affected parties (I&APS), communities or individuals;
- The number of people likely to be involved;
- The reliance of such people on the resources likely to be affected, the resources, time and expertise available for scoping / EA;
- The level of education and literacy of parties to be consulted;
- The socio-economic status of affected communities;
- The level of organisation of affected communities;
- The degree of homogeneity of the public involved;
- History of any previous conflict or lack of consultation;
- Social, cultural or traditional norms within the community; and
- The preferred language used within the community.

The MEFT also released a Draft Procedures and Guidelines for conducting EIAs and compiling EMPs in April 2008. These guidelines outline the procedures and principles that are to be followed. It will be consulted throughout the EIA process to ensure an effective process and an EMP that addresses all identified impacts.

### **2.4 NAMIBIA VISION 2030**

The principles that underpin Vision 2030, a policy framework for Namibia's long-term national development, comprise the following:

- Good governance;
- Partnership;
- Capacity enhancement;



- Comparative advantage;
- Sustainable development;
- Economic growth;
- National sovereignty and human integrity;
- Environment; and
- Peace and security.

Vision 2030 states that natural environments are disappearing quickly. Consequently, the solitude, silence and natural beauty that many areas in Namibia provide are becoming sought after commodities and must be regarded as valuable natural assets. Vision 2030 emphasises the importance of promoting Healthy Living which includes that the majority of Namibians are provided with basic services. The importance of developing Wealth, Livelihood and the Economy is also emphasised by Vision 2030.

## **2.5 BIODIVERSITY LEGISLATION AND POLICIES**

The following policies, aimed at biodiversity, may also be relevant for the proposed project:

- Convention on Biological Diversity (2000)
- Namibian Water Corporation Act (1997)
- Pollution and Waste Management Bill (Draft)
- Soil Conservation Act (1969)
- United Nations Framework Convention on Climate Change (1992)
- Water Resources Management Act (2004)
- Climate Change Policy (Draft with Attorney General's office)

The applicability of the aforementioned policies and legislation has been explored in further detail during this EIA phase, based on the findings of the impact assessment and specialist investigations.

## **2.6 SOCIAL POLICIES**

### **2.6.1 The Ministry of Environment and Tourism (MEFT) Policy on HIV & AIDS**

The relevance of this policy for the proposed project stems from the fact that construction activities may involve the establishment of temporary construction workforce in Ondangwa. Experience with other construction projects in a developing-world context has shown that, where construction workers have the opportunity to interact with local community, a significant risk is created for the development of social conditions and behaviors that contribute to the spread of HIV and AIDS.

In response to the threat the pandemic poses, MEFT has recently developed a policy on HIV and AIDS. This policy, which was developed with support from United States Agency for International Development (USAID), Gesellschaft für Technische Zusammenarbeit (GTZ) and the German Development Fund, provides for a non-discriminatory work environment and for workplace programs managed by a Ministry-wide committee.

## **2.1 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. 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 we do not anticipate the development to generate noxious or offensive gasses, the proponent will ensure that a registration certificate (air pollution permit) is obtained, if required. As duty of care, the proponent should implement the necessary mitigation measures set out in order to limit emissions to air in the form of dust during construction and operation. Emissions could occur during the event of a fire or explosion and then risk mitigation and management measures should be in place.

## **2.2 PETROLEUM PRODUCTS AND ENERGY ACT, 1990 (ACT NO. 13 OF 1990)**

The Act makes provision for impact assessment for new proposed fuel facilities and petroleum products known to have detrimental effects on the environment.

## **2.3 HAZARDOUS SUBSTANCES ORDINANCE NO. 14 OF 1974**

The Ordinance applies to the manufacture, sale, use, disposal and dumping of hazardous substances, as well as their import and export and is administered by the Minister of Health and Social Welfare. Its primary purpose is to prevent hazardous substances from causing injury, ill-health or the death of human beings.

## **2.4 NAMIBIA CIVIL AVIATION REGULATIONS (NAMCAR'S) 139.01.34 (LAND USE IN VICINITY OF AERODROME)**

A person who intends to carry out land use activities in the vicinity of aerodromes which are likely to impact on the operational safety of the aerodrome and the safety of the surrounding communities must, during the planning for such land use activities, consult with the Executive Director and operator of the aerodrome or the operator's personnel.

All land use practices and activities in the vicinity of an aerodrome must conform to the standards prescribed in Document NAM-CATS-AH.

## **2.5 NAMIBIA CIVIL AVIATION REGULATIONS (NAMCAR'S) 139.01.11 (STORAGE OF INFLAMMABLE GOODS)**

Fuel, pyrotechnic stores and all highly inflammable matter at an aerodrome must be stored only in buildings or receptacles which comply with the appropriate standards provided for in any applicable law that regulates the storage of inflammable goods in Namibia.

Fuel storage facility in and around aircraft hangars or any building must comply with the -

- (a) applicable technical standards set out in sub-regulation (1);
- (b) applicable local authority council regulations or by-laws, if any; and
- (c) requirements of any other law that regulates the storage of inflammable goods in Namibia.

## **2.6 NAMIBIA CIVIL AVIATION REGULATIONS (NAMCAR'S) 139.01.12 (SAFETY MEASURES AGAINST FIRE)**

This regulation aims to ensure that, (1) A person may not -

- (a) smoke in or bring an open flame into -
  - (i) any place where such an act is prohibited by a notice displayed;
  - (ii) any place within 30 metres of an aircraft or any aircraft fueling or fuel delivery vehicle, storage area, or dump for liquid fuel or explosives;

- (b) willfully give a false fire alarm;
- (c) tamper or interfere with any fire hose reel, hydrant or any other item or equipment provided for fire-fighting purposes;
- (d) keep, store, discard or discharge any inflammable liquid, gas, signal flares or other like material in an aircraft except in the receptacle appropriate for the purpose or in a place on the aerodrome specifically approved by the aerodrome operator for the purpose; or
- (e) store, stack or use any material or equipment in a manner which constitutes or is likely to constitute a fire hazard.

An aerodrome operator must -

- (f) display in conspicuous places appropriate signage in respect of the acts prohibited under sub-regulation (1);
- (g) establish preventive measures against possible fires on the aerodrome and identify a person or group of persons to maintain a fire prevention programme for the aerodrome and aerodrome buildings; and
- (h) ensure that no unsafe practice is performed on the aerodrome or within its vicinity.

If unsafe practices have to be performed during any day-to-day maintenance of, or on, the aerodrome, the aerodrome operator must alert the rescue and firefighting service concerned to be on standby for the duration of such practices.

## **2.7 NAMIBIA CIVIL AVIATION REGULATIONS (NAMCAR'S) 139.01.26 (SUPPLY OF FUEL TO AIRCRAFT)**

This regulation serves to regulate that, a person may not supply any fuel to an aircraft except at a place and in a manner approved by the aerodrome operator.

The aerodrome operator may require a person approved to supply fuel at an aerodrome in terms of sub-regulation (1) to comply with such conditions as the aerodrome operator may consider necessary for the purpose of safety.

The aerodrome operator must -

- (a) develop procedures to be used for refuelling of aircraft at the aerodrome;
- (b) institute measures to periodically monitor the refuelling processes to ensure compliance with the procedures developed in terms of paragraph are maintained;
- (c) institute measures to record, address and resolve any identified non-conformance with procedures for the supply of fuel to an aircraft;
- (d) ensure that arrangements are in place to summon and facilitate emergency services as may be required during refuelling of aircraft.

The aerodrome operators are provided with emergency cut-off switches that are clearly marked and situated in an accessible place without causing danger to persons or property in the event of an emergency.

## **2.8 NAMIBIA CIVIL AVIATION REGULATIONS (NAMCAR'S) 139.01.41 (SECURITY MEASURES)**

An aerodrome operator must ensure that the security requirements are determined during the design and construction of an aerodrome.

The security measures at an aerodrome must take into account the provisions of Part 111, and the related standards, procedures and practices.

Despite the requirements of sub-regulation (1) and (2), the operator of any aerodrome that has been designated as a security designated aerodrome in accordance with section 130 of the Act, must ensure compliance with the relevant aviation security provisions of the Act and the applicable requirements in Part 111.

## **2.9 NAMIBIA CIVIL AVIATION REGULATIONS (NAMCAR'S) 139.11.2 (ERECTION OF OBSTACLES)**

A person may not cause or permit the erection or growth of an obstacle at, or in the vicinity of, an aerodrome, where the obstacle may prevent an aircraft operation from being conducted safely or the aerodrome from being usable.

The erection of buildings or other objects in the navigable airspace or in the vicinity of an aerodrome or navigation aid must be in accordance with standards prescribed in Document NAM- CATS-AH.

## **2.10 WATER ACT NO.54 OF 1956**

This Act provides for Constitutional demands including pollution prevention, ecological and resource conservation and sustainable utilisation. In terms of this Act, all water resources are the property of the State and the EIA process is used as a fundamental management tool.

A water resource includes a watercourse, surface water, estuary or aquifer, and, where relevant, its bed and banks. A watercourse means a river or spring; a natural channel in which water flows regularly or intermittently; a wetland lake or dam, into which or from which water flows; and any collection of water that the Minister may declare to be a watercourse. Permits are required in terms of the Act for undertaking the following activity relevant to the proposed project:

- Disposal of waste in a manner that may detrimentally impact on a water resource in terms of Section 21 (g).

## **2.11 WATER RESOURCES MANAGEMENT ACT OF NAMIBIA (2004)**

This act repealed the existing South African Water Act No.54 of 1956 which was used by Namibia. This Act ensures that Namibia's water resources are managed, developed, protected, conserved and used in ways which are consistent with fundamental principles depicted in section 3 of this Act. Part IX regulates the control and protection of groundwater resources. Part XI, titled Water Pollution Control, regulates discharge of effluent by permit. Thus developers are required to efficiently plan for sewage disposal.

## **2.12 POLLUTION CONTROL AND WASTE MANAGEMENT BILL (IN PREPARATION)**

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) (below) when it comes into force.

Only Parts 2 and 7 of the Bill applies to the proposed project for the establishment and operations of a Bulk Fuel Storage Facility in Ondangwa.

Part 2 stipulates that no person shall discharge or cause to be discharged any pollutant to the air from a process except under and in accordance with the provisions of an air pollution licence issued under section 23. It further provides for procedures to be followed in licence application, fees to be paid and required terms of conditions for air pollution licences.

Part 7 states that any person who sells, stores, transports or uses any hazardous substances or products containing hazardous substances shall notify the competent authority, in accordance with sub-section (2), of the presence and quantity of those substances.

In terms of water pollution, it will be illegal to discharge of, or dispose of, pollutants into any watercourse without a Water Pollution Licence (apart from certain accepted discharges). Similarly, an Air Quality Licence will be required for any pollution discharged to air above a certain threshold.

The Bill also provides for noise, dust or odour control that may be considered a nuisance. 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.

The proposed development would not entail the discharge to air and or water, but might result in the generation of noise and dust during the construction phase. The potential risk of hazardous substance leakages does occur and should be managed accordingly.

### **2.13 PUBLIC HEALTH ACT 36 OF 1919 AND SUBSEQUENT AMENDMENTS**

The Act, with emphasis to Section 119 prohibits the presence of nuisance on any land occupied. The term nuisance for the purpose of this EIA is specifically relevant specified, where relevant in Section 122 as follows:

- Any area of land kept or permitted to remain in such a state as to be offensive, or liable to cause any infectious, communicable or preventable disease or injury or danger to health; or
- Any other condition whatever which is offensive, injurious or dangerous to health.

Potential impacts associated with the development of the proposed project in Ondangwa are expected to include dust, air quality impacts.

### **2.14 NATIONAL HERITAGE ACT (NO.76 OF 1969)**

The Act calls for the protection and conservation of heritage resources and artefacts. Should any archaeological material, e.g. old weapons, coins, bones found during the construction, work should stop immediately and the National Heritage Council of Namibia must be informed as soon as possible. The Heritage Council will then decide to clear the area or decide to conserve the site or material.

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### 3 RESPONSIBLE PARTIES

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Central Oil Namibia (Pty) Ltd as the proponent will be responsible for the implementation of this Environmental Management Plan (EMP) during the construction and operational phase of the bulk Fuel Storage Facility. This responsibility, in some instances may be delegated to contractors in the employment of Central Oil Namibia (Pty) Ltd for practical purposes, but Central Oil Namibia (Pty) Ltd will retain legal responsibility. In that capacity, Central Oil Namibia (Pty) Ltd should delegate suitably qualified person(s) with the responsibility to ensure implementation of the EMP and will:

- Revise the EMP as required and inform the relevant parties of the changes.
- Protect the environment and rehabilitate the environment as prescribed in the EMP.

The following people are also required during the operation in order to implement various Environmental management related issues.

#### 3.1 ENVIRONMENTAL CONTROL OFFICER

Prior to the commencement of construction and also during the operational phase, a suitably qualified and experienced Environmental Control Officer (ECO) shall be appointed by the Contractor / Proponent to ensure that the mitigation rehabilitation measures are implemented and to ensure compliance with the provisions of the EMP.

##### 3.1.1 Roles and Responsibilities

The role of the ECO is to oversee and monitor compliance with and implementation of the construction and operational phase EMP. The ECO is therefore responsible for the following responsibilities:

- i. Liaison with the community, Central Oil Namibia (Pty) Ltd and Environmental Authorities;
- ii. Monitoring of all the Contractor's activities for compliance with the various environmental requirements contained in this EMP;
- iii. Ensuring that the requisite remedial action is implemented in the event of non-compliance;
- iv. Ensuring the proactive and effective implementation and management of environmental protection measures;
- v. Ensuring that a register of public complaints is maintained by the proponent and that any and all public comments or issues are appropriately reported and addressed;
- vi. Routine recording and reporting of environmental activities on a monthly basis;
- vii. Recording and reporting of environmental incidents;
- viii. Notifying the Environmental Authorities immediately of any events or incidents that may cause significant environmental damage or breach the requirements of the EMP;
- ix. Environmental Awareness Training courses to be conducted to the Contractor's entire team of workers.
- x. Ensure that periodic environmental performance audits are undertaken on the project implementation.

- xi. Take appropriate action if the specifications contained in the EMP are not followed.
- xii. Monitor and verify that environmental impacts are kept to a minimum, as far as possible.
- xiii. Ensure that activities on site comply with all relevant environmental legislation.

### **3.2 CENTRAL OIL NAMIBIA (PTY) LTD (THE COMPANY MANAGER)**

The company manager must undertake to monitor activities on a daily basis and the ultimate responsibility for satisfying the monitoring requirements. The manager is also responsible for ensuring compliance with all aspects of monitoring.

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## 4 MANAGEMENT OBJECTIVES AND PRINCIPLES

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The following objectives provide the framework for the environmental principles for environmental management of the project:

- Minimise the potential for deterioration of air quality during all project phases.
- Avoid “disturbing” noise levels (an increase in the ambient noise level of 7dB (A) or more at the border of the property from which the noise emanates).
- Minimise the use of clean water and avoid water wastage.
- Prevent the contamination of surface and groundwater as a result of the storage facility activities.
- Ensure that an appropriate Emergency Procedure is in place to safeguard the environment, local community and employees.
- Practise the reduction and recycling of waste materials.
- Enhance the creation of direct job opportunities for the surrounding community and contribution of the project to the local economy, especially during labour intensive phases (construction and decommissioning).
- Reduce the disturbance of the surrounding community from site activities to a minimum.
- Maintain transparent relations with the Interested & Affected Parties (IAPs) (including surrounding community, authorities and employees).
- Ensure that the community and employees are not subjected to increased safety hazards.

These guideline principles will form the basis for environmental management on site. Should these principles require modification or additions during the project this should be done at the discretion of the responsible person, who will ensure that any modifications are communicated, explained to and discussed with all affected parties.

The environmental operational procedures and environmental issues are identified and managed, under different phases of the project. The different phases are:

- Pre- Construction (including design)
- Construction Phase
- Operational Phase; and
- Decommissioning Phase



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## 5 CONSTRUCTION AND OPERATIONAL PHASE

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### 5.1 INTRODUCTION

The construction phase EMP is to be **included into all Tender and Contract documentation to ensure that the Contractor is aware of his obligations and is able to price the implementation of these requirements accordingly**. Failure to comply with these requirements could result in penalties or otherwise hold the Contractor accountable for any damages arising from irresponsible behaviour or non-compliance with the requirements. This ensures that identified environmental issues receive adequate attention during the planning and construction phase. This EMP shall be adhered to during the operational phase of the facility. The company manager shall ensure that compliance with this EMP is implemented at all times.

### 5.2 SCOPE

The general principles contained within the EMP shall apply to all construction and operational activities. All construction activities shall observe any relevant environmental legislation and in so doing shall be undertaken in such a manner as to minimise impacts on the natural and social environment.

### 5.3 GENERAL

Central Oil Namibia (Pty) Ltd, as the proponent is responsible for:

- Ensuring that the objectives of the EMP are given effect;
- Ensuring that all environmental impacts are managed in accordance with the EMP;
- Ensuring that all monitoring and compliance auditing occurs in line with the EMP;
- Ensuring that the environment is rehabilitated as far as practicable to its natural state or existing land use practices;
- Any environmental damage, pollution as a result of activities both in and outside the site boundaries.

With regards to the above, the Company manager/Contractor shall conduct his activities so as to cause the least possible disturbance to the existing amenities, whether natural or man-made in accordance with all the current statutory requirements. Special care shall be taken by the Company manager/Contractor to prevent irreversible damage to the environment. The Company manager/Contractor shall take adequate steps to educate all members of his workforce as well as his supervisory staff on the relevant environmental laws and protection requirements. The Company manager/Contractor shall supplement these steps with prominently displayed notices and signs in strategic locations to remind personnel of environmental obligations.

A suitably qualified independent ECO shall be appointed by the company manager to undertake the following tasks:

- Liaison with Contractor, Interested and Affected Parties (I&APs); and Engineer regarding environmental matters;
- Monitoring of all activities for compliance with the various environmental requirements at regular intervals;



- Routine environmental auditing and reporting of the storage facility performance against the EMP;
- Reporting of environmental incidents and routine reporting of environmental issues associated with construction activities and
- Identifying environmental non-conformances and initiating measures to remedy such issues.

The Contractor shall construct and/or implement all the necessary environmental protection measures in each area before any construction work may proceed. The Engineer / ECO may suspend the Works at any time should the Contractor, in the Engineer / ECO's opinion, fail to implement, operate or maintain any of the environmental protection measures adequately. The costs of such suspension shall be to the Contractor's account.

#### **5.4 PLANNING AND DESIGN**

The Design Engineers and/or architects must take cognisance of the outcomes and recommendations of the EMP. Central Oil Namibia (Pty) Ltd and the Engineer must ensure that this EMP is included in the briefing documentation to the Contractor (to be appointed).

**The Engineer must advise the Contractor to familiarise himself with the EMP and ensure that adequate resources are made available to implement the requirements of the EMP.**

#### **5.5 ENVIRONMENTAL AWARENESS**

It is imperative to ensure that all personnel have the appropriate level of environmental awareness and competence to guarantee continued environmental due diligence and ongoing minimisation of environmental harm.

##### **5.5.1 Environmental, Health and Safety Induction Course**

The company manager and the Contractor is responsible for informing employees of their environmental obligations in terms of the EMP and for ensuring that employees are adequately experienced and properly trained in order to execute the works in a manner that will minimise environmental impacts.

The company manager and the Contractor shall ensure that all his employees attend an Environmental, Health and Safety Induction Course. This course shall be structured to ensure that attendees:

- Acquire a basic understanding of the key environmental features on the site and its immediate environs;
- Become familiar with the environmental controls contained in the EMP;
- Are made aware of the need to conserve water and minimise waste;
- Receive pertinent, written instructions regarding compliance with the relevant environmental management requirements (viz. typical environmental "do's" and "don'ts");
- Receive detailed training on site health and safety requirements, emergency responses and site evacuation procedures in terms of the Contractor's health and safety plan;
- Are aware that a copy of the EMP is readily available on site and that all site staff are aware of the location and have access to the document;

- Are informed that employee information posters, outlining the environmental “do’s” and “don’ts” (as per the environmental awareness training course) will be placed at prominent locations throughout the site.
- Are made aware of any other environmental matters as deemed necessary by the Engineer / ECO.
- Are aware of the requirements of any approved Method Statements that have bearing on their activities, and where necessary, any specialised training required to ensure compliance with the approved Method Statements has been provided.

The Environmental, Health, and Safety Induction Course should be conducted by the ECO and Contractor’s Health and Safety officer, who shall provide the site staff with an appreciation of the project’s environmental requirements, and how they are to be implemented. All new staff coming onto site after the commencement of construction activities must also attend the Environmental, Health and Safety Induction Course, and refresher courses should be undertaken on a quarterly basis. A detailed record of all training sessions, including a list of attendees must be compiled by the Contractor and submitted to the Project Manager on a regular basis.

The initial Environmental, Health, and Safety Induction Course shall be held within 14 days from the site mobilisation date, and subsequent courses shall be arranged for all new employees arriving after the initial training course.

The Contractor shall provide a suitable venue with necessary facilities and ensure that all employees attend the environmental, health and safety induction course. The course shall be held in the morning during normal working hours. No more than 30 people shall attend each course and the Contractor shall allow for sufficient sessions to train all personnel. The Contractor shall provide proof of attendance by all of his employees in the form of a signed attendance register.

### 5.5.2 Toolbox Talks

Environmental, health and safety issues specific to each area of the works, shall form part of the daily toolbox talks in each area. The foreman responsible will provide feedback to his staff on their day-to-day environmental performance and address issues requiring attention and specific actions required.

A synopsis of the topics discussed at each area shall be recorded on a register and submitted to the ECO on regular (typically weekly) basis. Environmental matters shall be dealt with in toolbox talks on a regular basis (typically at least once a week).

### 5.5.3 Safety of the Public

The Contractor shall take all reasonable measures to ensure the safety of people in the surrounding area. Where the public could be exposed to danger by any of the works or site activities, the Contractor shall provide flagmen, barriers, and/or warning signs in English, all to the approval of the Engineer / ECO.

All unattended open excavations shall be adequately demarcated (fencing shall consist of a minimum of three strands of wire wrapped with danger tape). Adequate protective measures must be implemented to prevent unauthorized access to the Working Area. No firearms shall be permitted on site without the prior approval of the Project Manager.

The Contractor shall implement appropriate measures to limit any adverse social impacts associated with the establishment of a construction camp and/or the accommodation of a construction workforce on the local communities. The following mitigation and management measures are prescribed in this regard:

- Measures to prevent crime:
  - Construction workers should be clearly identifiable by wearing proper construction uniforms displaying the logo of the construction company.
  - Construction workers could also be issued with identification tags in order to gain access to the construction site and campsite area (if any).
  - The Contractor should establish clear rules and regulations for access to the construction site and offices to control loitering. Consultation should occur with the local Ondangwa Namibian Police branch to establish standard operating procedures for the control and/or removal of loiterers.

#### 5.5.4 Human Resource and Opportunities Management

Job creation, inward migration of workers and accommodation of a workforce within a small community have the potential to result in significant social impacts. Central Oil Namibia (Pty) Ltd and the Contractor must approach human resource management in a careful, cooperative and considered fashion so as to enhance the positive impacts, whilst minimising negative impacts associated with construction projects.

Given that Central Oil Namibia (Pty) Ltd will be most affected by the project, it should ensure that their human resource and management is consistent with international best-practice standards (such as the Performance Standards of the IFC) that they should be given special consideration in terms of the benefits arising from the project. In order to enhance the benefits of employment creation for these communities, it is recommended that the following measures be implemented:

- The Contractor shall establish a formal and organised recruitment process.
- The Contractor should be encouraged to employ local labour (i.e. from Ondangwa or northern parts of the country) where possible.
- The Contractor should be encouraged to recruit Namibian labourers.
- Recruiting by the Contractor must be conducted through a central office and no on-site hiring should be allowed.
- The Contractor shall inform job seekers that they are hired for a contract period only.

#### 5.5.5 Working Times

The company manager is expected to adhere to working times of employees during both construction and operational phases. Working shifts must be strictly implemented even on public holidays.

#### 5.5.6 Dust

The Contractor shall take all reasonable measures to minimise the generation of dust as a result of construction activity, to the satisfaction of the Engineer / ECO. Dust suppression measures shall be agreed upon in consultation with the Engineer / ECO. Appropriate dust control measures include the following:

- Dustex may be applied to the construction clearing activities to ensure 50% control efficiency on all the unpaved where applicable;

- Construction vehicles to only use designated roads;
- During high wind conditions the Contractor must make the decision to cease works until the wind has calmed down; and
- Cover any stockpiles with a suitable material, such as plastic or shade-cloth, to minimise windblown dust.

### 5.5.7 Noise

The Contractor shall limit noise levels (e.g. install and maintain silencers on machinery). Appropriate directional and intensity settings are to be maintained on all hooters and sirens and no amplified sound shall be allowed on Site other than in Emergency situations. Drivers and operators are to be instructed to not use their hooters unless absolutely required **(i.e. operators of machinery should not use hooters for the purposes of general communication, which is typically seen on construction sites)**.

## 5.6 METHOD STATEMENTS

Any Method Statements required by the Engineer / ECO or called for by the Project Specification shall be produced within such reasonable time as specified by the Engineer / ECO or as stipulated in the Project Specification. Please refer to **Appendix C** for a generic example of a method statement. The Contractor shall not commence the activity until the Method Statement has been approved, except in the case of emergency activities. The Contractor shall allow the Engineer / ECO a one-week period for the review and approval of the Method Statement. Such approval shall not be unreasonably withheld.

The Engineer / ECO may require changes to a Method Statement if the proposal does not comply with the Specification or if, in the reasonable opinion of the Engineer / ECO, the proposal may result in, or carries a greater risk of, damage to the environment in excess of that which can be tolerated.

Approved Method Statements shall be readily available on the site and shall be communicated to all relevant personnel. The Contractor shall carry out the works in accordance with the approved Method Statement. Approval of the Method Statement shall not absolve the Contractor from any of his obligations or responsibilities in terms of the Contract or any other law.

Method Statements that shall be provided by the Contractor 14 days prior to the mobilisation on site include:

Mobilisation plan, covering:

- a. The location and layout of all offices, storage containers, gates and fences, fuel storage areas and protection bunds, material lay-down areas, ablution facilities, hazardous chemical storage facilities, wash bays, maintenance areas, oil separators and grease traps, storm-water layout, first aid facilities, training, eating and meeting areas, central
- b. Waste storage areas, access / haul roads and any other facilities associated with the Contractor's yard.
- c. Security and access control to the site.
- d. The design and location of all waste storage facilities, in particular the central waste storage area.

- e. The central waste storage area shall include a separate, weather proof, water-tight vessel for the disposal of hazardous waste and contaminated soil recovered during spills.
  - f. The system of collection and disposal of wastes, including the name and location of the point of final disposal, to an appropriately waste disposal site.
  - g. Fuels and fuel spills: Methods of refuelling vehicles and details of methods for fuel spills and clean-up operations.
  - h. Storm water management: Provisions to manage storm water during the construction phase.
2. Operational and rehabilitation plan, covering:
- a. Procedure for the clearing of vegetation, grubbing of the works and handling, stockpiling and disposal of the debris arising from the grubbing operations;
  - b. Measures to be used to protect the topsoil stockpiles against contamination or erosion;
  - c. Measures used to protect cleared areas from erosion, windblown dust and suspended solid contaminated runoff;

## **5.7 ENVIRONMENTAL CONSIDERATIONS PERTAINING TO SITE LAYOUT - WHERE APPLICABLE**

### **5.7.1 Employee Eating and Recess Areas**

The Contractor shall identify a suitable area, which is shaded if possible and away from construction noise and dust, where employees can eat and take work recesses in relative comfort. The eating areas shall be provided with scavenger proof rubbish bins which are to be emptied into the central waste storage vessel daily. Potable water and other sanitary conveniences shall also be located within reasonable range of the designated eating area. The Contractor shall prevent his employees from eating or recessing anywhere else but in the designated eating area.

### **5.7.2 Ablution Facilities**

- During construction, temporary / portable toilets shall be supplied by the Contractor for the workers at a maximum ratio of 1 toilet per 15 workers and be within walking distance of the work area.
- The toilets shall be placed at appropriate locations to the approval of the Engineer / ECO. The toilets shall be located within the construction camp, but not closer than 50 m to water resources (e.g. water bodies or streams).
- Toilets shall not be located in depressed areas where they may be subject to flooding.
- Toilets shall be kept in a good state of repair and shall be serviced at intervals sufficient to ensure that they are kept in clean and sanitary condition.
- The Contractor shall ensure that no spillage occurs when the toilets are cleaned or emptied and that the contents are removed from site.
- Any discharge of waste from toilets into the environment is prohibited. Each toilet shall be stocked with toilet paper at all times.
- All toilets shall be secured to the ground to ensure that they do not overturn during high winds or for any other reason.

- Washing whether of the person or of personal effects and acts of excretion and urination are strictly prohibited other than at the facilities provided.

### 5.7.3 Site Division and Site Demarcation

The Contractor shall restrict all his activities, materials, equipment and personnel to the designated Site. The Contractor shall erect and maintain permanent and/or temporary fences of the type and in the locations directed by the Engineer / ECO. Such fences shall, unless otherwise directed by the Engineer / ECO, be erected before undertaking other designated activities within the fenced-off area. Fences and gates shall be maintained throughout the Contract. All areas outside of the demarcated site shall be deemed as “no-go” areas for all construction personnel and equipment.

The Contractor shall ensure that the clearance of vegetation is restricted only to that required to facilitate the execution of the works. Non-conformances related to over-clearance of vegetation shall be regarded as a serious offence and dealt with to the full extent of these specifications. A preventative approach to rehabilitation is emphasised, site clearance shall occur in a planned manner, over or accidental clearance will be prevented.

The Contractor shall peg the boundaries for the proposed works before commencing with any clearing operations. These demarcations shall be used by the clearing teams as a guide to control and prevent accidental over clearance of vegetation. No clearing of vegetation will commence until the alignment boundaries is finalised and commencement authorised by the ECO / Engineer.

### 5.7.4 Access, Traffic and Haul Roads

The Contractor shall be held responsible for the control of all project related traffic, including that of his suppliers, in ensuring that vehicles associated with the project remain on designated routes and within the designated working times. Construction traffic shall be controlled to ensure minimal disruption to normal road users (at the airport). All existing access roads that may be affected during construction shall be kept open and in a good state of repair, where this is not possible, unobstructed and safe alternative access routes through the works must be provided. The following mitigation measures are further proposed to limit the impact of traffic in the area:

- The absolute minimum new roads / tracks should be established. Vehicles should stay on existing roads / tracks as far as possible.
- Should new roads / tracks need to be established, a plan should be provided for the road before construction commences.
- New roads / tracks should not be constructed if the quality of existing roads deteriorates. Where possible, repair or upgrade existing roads / tracks.
- No off-road driving is allowed except where the clearing route for service infrastructure is planned.
- No operator will operate any equipment when he is under the influence of alcohol.
- Good driving and adherence to safety rules at all times.
- Drivers must have the correct licence for the vehicles they are driving.
- Roads which were constructed for the purposes of this project and will not be required for further use shall be rehabilitated in accordance with the rehabilitation measures.
- The following minimum standards for access roads should be followed:



- Enter and exit roadways and construction areas should be demarcated at the entrances.
- Erect signage to warn motorists about construction activities and heavy vehicle movement where appropriate.
- Use 3-point turns and not U-turns and confine turning to the road.
- Prevent shortcuts between roads.

No new parking bay, haul or access road or passage of any sort shall be opened or be caused to be opened without the prior consent of the Engineer / ECO. **The establishment of new burrow pits are strictly prohibited.** Any contraventions of this clause shall result in penalisation.

### 5.7.5 Solid Waste Management

The company manager/Contractor shall provide sufficient number of rubbish bins with secured lids. Rubbish bins shall always be placed in pairs, to ensure that one is always present while the other is being emptied. Areas where rubbish is likely to be generated in higher quantities shall be equipped with an additional rubbish bins according to the activities occurring there and the volume of waste being generated. Area requiring additional rubbish bin will include for example:

- Canteens and eating areas (4);
- Materials lay down areas;
- Any other area where an accumulation of litter and rubbish is noted or as instructed by the ECO.

No waste materials, including domestic, organic or construction wastes shall be burnt, dumped or buried on the Site. Bins shall be emptied daily or as required. The waste may be stored temporarily on site in a central waste area that is weather and scavenger proof as approved by the Engineer/ECO. The company manager/Contractor shall, at his own cost, make available the time and resources required in recovering any litter or other wastes that have accumulated or have been dispersed as a result of his activities on the site. The central waste storage shall be emptied weekly or as necessary. The ECO shall monitor this strictly and institute strict penalties in the event of non-compliances.

### 5.7.6 Equipment Maintenance and Storage

All vehicles and equipment shall be kept in good working order and shall be operated by designated and competent operators. Leaking or damaged equipment shall be repaired immediately or removed from the site. Where emergency, *in situ* maintenance operations are required, the company manager shall ensure that the soil or vegetation does not become contaminated.

The washing of equipment shall be restricted to urgent or preventative maintenance requirements only during which the use of detergents for washing shall be restricted to low phosphate and nitrate containing, low foaming type detergents.

The Contractor shall ensure that oil and lubricant containers are stored in an area where the ground has been protected. The containers shall be inspected regularly to ensure that no leakage occurs. When oil / lubricants are dispensed, the proper dispensing equipment shall be used, and the storage container shall not be tipped in order to dispense the oil / lubricant.

In the event of oil / lubricant or other hazardous spill, the source of the spillage shall be isolated, and the spillage contained. The company manager/Contractor shall clean up the spill by removing the contaminated soil to the hazardous waste vessel and the application of absorbent material to the affected area. Treatment and remediation of the spill area shall be undertaken to the reasonable satisfaction of the Environmental Authorities.

### 5.7.7 Materials

#### 5.7.7.1 Materials Handling, Use and Storage

The Contractor shall ensure that any delivery drivers are informed of all procedures and restrictions, including “no-go” areas and designated haul routes.

All material shall be stored within the designated Site boundaries and all material stockpiles shall be located no less than 50m from any water resource. The Contractor shall ensure that all material lay-down areas, including temporary lay-down areas within the Works, are kept in a neat and orderly fashion on a daily interval, and to the satisfaction of the Engineer / ECO. The Contractor shall set aside the time and resources required to remedy any contraventions of this clause at his own expense.

Materials shall be appropriately secured and covered to ensure safe passage between destinations. The Contractor shall be responsible for any clean-up resulting from the failure by his employees to properly secure transported materials.

### 5.7.8 Fire Control

The Contractor shall ensure that all liquid fuels are stored in tanks or mobile bowzers with lids that are kept firmly shut. The Contractor shall ensure that there is adequate fire-fighting equipment at the fuel storage areas. The tanks or bowzers shall be situated on a smooth impermeable surface (concrete slab or 250 micron plastic sheeting covered with at least 50 mm of sand) with an earth bund. Provision shall be made for refuelling at the fuel storage area, by protecting the soil with an impermeable surface (similar to that used for the storage area itself).

The Contractor shall prevent unauthorised access to the fuel storage area. No smoking shall be permitted in the vicinity of the fuel storage area. The Contractor shall ensure that there are adequate fire-fighting provisions located at the fuel storage area.

Should a mobile fuel bowser be used during construction, all refuelling shall occur with appropriate measures in place to prevent spillages; these may include the use of drip trays, non-drip dispensing nozzles, and any other similar device. Regardless of the preventative measures in place, all mobile fuel bowzers shall carry a spill-kit that is adequately sized to contain at least a 200 litre spill at all times.

### 5.7.9 Stockpiling and Stockpile Areas

Plant and materials shall be stored within the demarcated construction camp or batching areas. Where this is not feasible, the Engineer / ECO will identify additional sites for stockpiling within the Working Area. Where possible, stockpiled materials shall be stored off the ground on scaffolding and care shall be taken to minimise disturbance to the vegetation and topsoil.

Soil, sand, and gravel stockpiles shall be convex in shape and shall be located so as to cause minimal disturbance. Stockpiles shall be so placed as to occupy the minimum width compatible with the natural angle of repose of the material, and measures shall be taken to prevent the material from being spread over too wide a surface. The Contractor shall ensure that all



stockpiles do not result in the damming of water or run off. Stockpiles shall be placed to not obstructed or pollute any storm water or drainage paths.

#### 5.7.10 Cement and Concrete Batching (If applicable)

The batching of concrete shall take place on a smooth, impermeable surface (plastic) and shall be enclosed with a bund and sloped toward a sump to contain any spillages. Concrete batching shall take place at least 20m away from any water resource to avoid contaminated water and/or sediment entering the resource. All waste water resulting from batching of concrete shall be contained and disposed of appropriately and shall not be discharged into the environment unless treated to acceptable standard, as determined by the Engineer / ECO.

Where concrete trucks are used, the Contractor shall ensure that dumping of the drum-wash does not occur directly onto the ground. If needed, facilities for the handling of the concrete contaminated wash-water shall be established to the satisfaction of the Engineer / ECO. Any spillages of concrete or concrete-truck-drum-wash-water shall be cleaned-up immediately and disposed of through the solid waste disposal system.

The Contractor shall take all reasonable measures to prevent the spillage of cement / concrete during batching and construction operations. During pouring, the soil surface shall be protected using plastic and all visible remains of concrete shall be physically removed on completion of the pour and disposed of as part of the solid waste disposal system. Empty cement bags shall be collected continuously and stored in temporary weatherproof containers, where they are protected from dispersion by wind and shall be disposed of regularly via the solid waste disposal system.

#### 5.7.11 Emergency Procedures

The company manager shall ensure that his employees are aware of the procedure to be followed for dealing with leaks and spills, which shall include notifying the company manager. The company manager shall ensure that the necessary materials and equipment for dealing with leaks and spills are available on Site at all times.

In the event of a hydrocarbon spill, the source of the spillage shall be isolated, and the spillage contained. The company manager shall ensure that there is always sufficient supply of absorbent material on site to absorb / breakdown or encapsulate at least a 200ℓ liquid hydrocarbon spill. Any soil contaminated by such a spill must be removed and disposed of at an appropriately authorized waste disposal site.

Emergency equipment including spill kits and fire extinguishers shall be positioned at accessible locations near to areas or facilities where such emergencies may arise.

#### 5.7.12 Erosion, Water Quality, and Storm Water Control

The company manager shall take all reasonable steps to prevent or remediate damage to the environment resulting from the Works in the form of erosion and sedimentation. The company manager shall immediately remedy any situation that is or has the potential to result in soil erosion, water pollution and sedimentation from the works as a result of storm water flows.

## 5.8 PROTECTION OF NATURAL FEATURES AND HERITAGE RESOURCES

### 5.8.1 Protection of Freshwater Ecosystems

Any possible contaminated runoff from the construction site should be prevented from entering the water courses (if there is any) as far as possible. Where pipelines cross streams, they should do so in a manner that does not impeded or divert the flow in the channels.

The following mitigation measures are proposed for the protection of watercourses:

- Contaminated runoff from the site should be prevented from entering water bodies as far as possible.
- Heavy construction vehicles should be kept out of the seasonal and ephemeral stream channels and the movement of construction vehicles should be limited where possible to the existing roads.
- All materials on the construction site should be properly stored.
- Disposal of waste from the site should be properly managed.
- Construction workers should be given ablution facilities at the construction site that are located at least 30m away from the river system and regularly serviced.

### 5.8.2 Protection of Natural Systems

The company manager and the Contractor shall ensure that the disturbance of vegetation and faunal communities and their habitats is kept to a minimum. The following mitigation and management measures are prescribed in this regard:

- The company manager and the Contractor shall ensure that the disturbance of vegetation is kept to a minimum.
- Vegetation should only be removed where it is absolutely necessary.
- Do not clear cut the entire development site, but rather keep the few individuals and/or clumps of trees/shrubs not directly affecting the developments as part of the landscaping especially important for shade in the hot climate.
- Show overall environmental commitment by adapting a minimalistic damage approach during the construction and operational phase.
- Inform construction contractors/workers regarding the above mentioned issues prior to development and monitor for compliance thereof throughout.

### 5.8.3 Protection of Archaeological and Heritage Context

The Oshana Region like the rest of Namibia is home to many different cultural groups. The rich variety and distinct cultural values and traditions render a unique character to Namibian society that is a human resource to be proud of and a heritage that needs to be protected and enhanced. Culture shapes the destiny of people and stabilizes the lives of the respective groups on a local level.

The proposed project site is deemed to result in a **Very-Low** to **Negligible (negative)** impact on the cultural or heritage resources due to the fact that the area already falls within a proclaimed business area. All earthworks equipment operators shall be informed to cease operating immediately if any artefact is unearthed and to report the finding immediately to the Engineer / ECO and Central Oil Namibia (Pty) Ltd, who in turn shall notify the National Heritage Council.

The Contractor shall take reasonable measures to protect any such find against further damage until its value can be properly assessed. Work in the immediate vicinity of such a find shall also be discontinued until the Engineer / ECO, and the National Heritage Council issues a clearance to recommence.

No known heritage sites are however located within the proposed project area. **If any heritage or cultural significant artefacts are found during the construction of the proposed development, construction must stop and the National Heritage Council of Namibia immediately notified.**

## **5.9 EXITING AND REHABILITATION**

The Contractor shall, on completion of the Contract, ensure that all materials, temporary structures, temporary fences, plant, equipment and waste are completely removed from the Site.

**Rehabilitation operations and re-vegetation of all disturbed areas shall commence as soon as possible and even run concurrently where appropriate.**

For the purposes of this EMP, the landscaping and rehabilitation of disturbed areas shall entail the clearing, shaping, trimming, and scarification of the area, replacement of stockpiled topsoil where relevant, as relevant topped by randomly distributed stone and gravel surface and spraying down with water.

### **5.9.1 Shaping and Trimming**

All slopes which do not form part of the Permanent Works shall be graded so that no slope exceeds a maximum gradient of 1:3 or as otherwise directed by the Engineer. Contour drains may be provided to control erosion where required by the Engineer. Excavation and fills shall be formed in such a manner that the final profile shall appear as a natural extension to the adjacent, undisturbed ground profiles.

Trimming shall consist of bringing the existing or previously shaped ground to a smoothly flowing surface with the final levels generally following the original surface and tying in with adjacent undisturbed areas as directed by the Engineer / ECO.

### **5.9.2 Replacement of soil, stone and gravel**

Following scarification or ripping, and replacement of soil, stone and gravel removed during site clearance shall be replaced in a random pattern or similar to that seen in adjacent, undisturbed areas, subject to the approval of the Engineer / ECO.

## **5.10 COMPLIANCE AND PENALTIES**

### **5.10.1 Compliance**

Environmental management is concerned with the results of the proponent's operations to carry out the control of how the operations of the storage facility are carried out. Tolerance with respect to environmental matters applies not only to the finished product but also to the standards of the day-to-day operations required to complete the works.

It is thus required that the company manager shall comply with the environmental requirements on an on-going basis and any failure to do so will entitle the ECO to certify the imposition of a penalty as detailed below, if such non-compliance is not corrected within a period of one week of notification thereof.

### 5.10.2 Penalties

Penalties will be issued for certain transgressions. Penalties may be issued per incident at the discretion of the ECO. Such penalties will be issued in addition to any remedial cost incurred as a result of the non-compliance with this specification. The ECO will inform the company manager of the contravention and the amount of the penalty and shall be entitled to deduct the amount from the monies due under the Contract.

### 5.11 ENVIRONMENTAL INCIDENT REPORTING

All environmental incidents occurring at the proposed site will be recorded. The incident report will have to include time, date, location and nature of the incident, extent of the incident, actions and personnel involved.

All complaints received from the neighbouring community should be directed to the company manager of Central Oil Namibia (Pty) Ltd and channelled to the appointed Environmental Control Officer. In addition, the proponent's management should also be able to respond to the complainant within a week (even if pending further investigation).

It is important that the issues raised are considered and that the complainant feels that their concerns have been addressed to and whenever possible actions taken to address these. All complaints should be entered in the environmental register and all responses and actions taken to address these should be recorded.

### 5.12 ENVIRONMENTAL MONITORING

Periodic environmental monitoring must be taken on a regular basis. Monitoring should be done in order to ensure compliance with all aspects of the EMP. Findings should be liaised with to all responsible officers as chain command.

### 5.13 NON-COMPLIANCE OF THE EMP

Problems may occur in carrying out mitigation measures or monitoring procedures that could result in non-compliance of the EMP. The responsible personnel should encourage staff to comply with the EMP and address acts of non-compliance and penalties.

Central Oil Namibia (Pty) Ltd is responsible for reporting non-conformance with the EMP to the ECO. The proponent's management in consultation with the ECO must thereafter undertake the following activities:

- Investigate and identify the cause of non-conformance.
- Report matters of non-conformance to Central Oil Namibia (Pty) Ltd (depending on the severity of the incident)
- Implement suitable corrective action as well as prevent recurrence of the incident.
- Assign responsibility to corrective and preventative action.
- Any corrective action taken to eliminate the causes of non-conformance shall be appropriate to the magnitude of the problems and commensurate with the environmental impact encountered.

## 5.14 SUMMARY OF CONSTRUCTION AND OPERATIONAL PHASE MANAGEMENT ACTIONS

The table below is only a summary the management actions to be taken in order to minimise negative impacts. Please turn back to the relevant section above for more details on the various management actions to be taken for each impact. Table 3 are management actions for maintenance services for the Container Diesel Tank as stipulated by the supplier.

**Table 2: Planning Phase – Environmental Management Plan for the Proposed Project**

Aspect	Management Actions	Responsibility
Planning	<ul style="list-style-type: none"> <li>It is the duty of the responsible person to ensure that the Minimum Requirements for the operation of the storage facility and the Section 20 permit conditions are applied to the degree equal with its class to the satisfaction of the Department of Environmental Affairs.</li> <li>All construction activities within the perimeters of the storage facility must be limited to daylight hours. Should there be a need to undertake construction at night, such will require approval from the Project Manager and the Environmental Monitoring committee be notified of such intentions.</li> </ul>	Central Oil Namibia (Pty) Ltd
Appointment and Duties of ECO	<ul style="list-style-type: none"> <li>Central Oil Namibia (Pty) Ltd must appoint an independent Environmental Control Officer (ECO) who must monitor the contractor's compliance with the environmental management plan.</li> <li>Central Oil Namibia (Pty) Ltd must provide the ECO and contractor with a copy of the EMP.</li> <li>The priority of the ECO is to maintain the integrity of the development conditions outlined in the EMP and must be enforced and adhered to at all time.</li> <li>The ECO must form part of the project management team and attend all project meetings.</li> <li>The contractor must ensure that the construction crew attend an environmental briefing and training session presented by the ECO prior to commencing activities on site.</li> </ul>	Central Oil Namibia (Pty) Ltd
Environmental Management Plan (EMP)	<ul style="list-style-type: none"> <li>This EMP must be made binding to the main contractor as well as individual contractors and should be included in tender documentation for the construction contract.</li> </ul>	Central Oil Namibia (Pty) Ltd
Environmental Incidents	<ul style="list-style-type: none"> <li>The contractor must take corrective action to mitigate an incident appropriate to the nature and scale of the incident and must also rehabilitate any residual environmental damage caused by the incident or by the mitigation measures themselves.</li> </ul>	Central Oil Namibia (Pty) Ltd

**Table 3: Summarized Construction Phase Management Table**

Aspect	Management Objective	Management actions	Responsibility
General	To ensure overall compliance of the EMP.	<ul style="list-style-type: none"> <li>A maintenance plan for Central Oil Namibia (Pty) Ltd must be developed to ensure that good working order is achieved.</li> </ul>	Central Oil Namibia (Pty) Ltd
Monitoring	To avoid environmental pollution from potential leakages.	<ul style="list-style-type: none"> <li>A monitoring and eradication programme should be put in place whereby the distribution and abundance of alien and invader fauna are monitored through fixed trapping points (If there is any).</li> </ul>	Central Oil Namibia (Pty) Ltd
Responsible management	To ensure that construction activities are carried out so as to cause the least possible disturbance to the existing amenities, whether natural or man-made.	<ul style="list-style-type: none"> <li>The Contractor shall take adequate steps to educate all members of his workforce as well as his supervisory staff on the relevant environmental laws and protection requirements.</li> <li>A suitably qualified independent ECO shall be appointed by the Contractor.</li> <li>The Contractor shall implement all the necessary environmental protection measures in each area before any construction work may proceed.</li> <li>Liaise with the Airport's Manager regarding flight schedules and construction activities.</li> </ul>	Contractor
Site Establishment	To monitor unauthorised movement of construction crew.	<ul style="list-style-type: none"> <li>Any construction camp required by the contractor must be established in an area as agreed with the ECO.</li> <li>The area must be properly demarcated prior to establishment to prevent the construction camp from being unnecessarily large. The camp must be properly fenced.</li> <li>The ECO must liaise with surrounding parties to ensure that the construction camp is not located in an area where it will cause a nuisance.</li> </ul>	
Environmental awareness	To ensure that all employees and Sub-Contractors are informed of their environmental obligations.	The Environmental, Health, and Safety Induction Course should be conducted by the ECO and Contractor's Health and Safety officer.	ECO
		The foreman responsible will provide feedback to his staff on their day-to-day environmental performance and address issues requiring attention and specific actions required.	Contractor
Safety to the public	To reduce the risks posed by the project to the public.	<ul style="list-style-type: none"> <li>Where the public could be exposed to danger by any of the Works or site activities, the Contractor shall provide flagmen, barriers, and/or warning signs in English.</li> <li>No firearms shall be permitted on site without the prior approval of the Project Manager.</li> <li>The Contractor shall implement appropriate measures to limit any adverse social impacts associated with the establishment of a construction camp and/or the accommodation of a construction workforce on the local communities.</li> <li>Ensure that only suitably qualified personnel use construction vehicles</li> <li>Site notices informing the public of the planned activities must be placed at visible locations a few days prior to any blasting.</li> </ul>	Contractor

Aspect	Management Objective	Management actions	Responsibility
		<ul style="list-style-type: none"> <li>Based on the preferred footprint area chosen for the proposed development that certain trees and vegetation may need to be removed. In this case vegetation clearing should only be done where necessary and areas not required for construction should be preserved or avoided.</li> </ul>	
Human resource and opportunities management	To ensure that job creation, inward migration of workers and accommodation of a workforce within a small community does not result in significant social impacts.	In order to enhance the benefits of employment creation for these communities, it is recommended that the Contractor shall establish a formal and organised recruitment process in line with this EMP.	Contractor
	Construction activities shall be restricted to specified hours in order to limit disturbance to the public.	The Contractor shall restrict construction activities to the hours of 06h30 - 17h00 during summer and 07h00 - 17h00 during winter on Mondays to Saturdays and no work will be permitted on Sundays or public holidays.	Contractor
Dust on Air Pollution	To limit dust levels.	<ul style="list-style-type: none"> <li>Appropriate dust control measures must be implemented.</li> <li>Active earth work areas, stockpiles and loads of soil being transported must be watered to reduce dust.</li> <li>Measures must be taken to immediately mitigate a situation in which excessive fugitive dust is observed. Works being undertaken must be undertaken with caution, or phase down while the source is being actively investigated and suppression measures are implemented.</li> <li>Access and other cleared surfaces must be dampened whenever possible and especially in dry and windy conditions to avoid excessive dust.</li> <li>All areas disturbed during construction that are not required for a specific activity must be revegetated.</li> <li>Disturbed soils, slopes and areas of open excavation must be minimised to avoid wind erosion.</li> <li>Stockpiles of sand or construction areas that are likely to cause dust must be made wet after daily construction work (after hours -17h00).</li> <li>Diesel exhaust emissions from heavy machinery on site must be controlled and minimised by regular checks and servicing of vehicles. Any construction vehicle found to be emitting excessive smoke should be stopped from the operations for some mechanical attention before it could continue.</li> </ul>	Contractor
Noise	To limit noise levels.	<ul style="list-style-type: none"> <li>Appropriate measures shall be implemented to limit noise levels.</li> <li>Institute noise control measures throughout the construction phase for all applicable activities, including the construction times.</li> <li>Fit efficient silencers and enclose engine compartments in plant vehicles.</li> <li>Select vehicle routes carefully by means of internalising the roads.</li> </ul>	Contractor



Aspect	Management Objective	Management actions	Responsibility
		<ul style="list-style-type: none"> <li>No amplified sound shall be allowed on site.</li> <li>Construction operations must strictly be between 07h00 – 17h00.</li> </ul>	
Environmental considerations pertaining to site layout	Suitable area identified where employees can eat and take work recess.	<ul style="list-style-type: none"> <li>The Contractor shall identify a suitable area, which is shaded and away from construction noise and dust, where employees can eat and take work recesses in relative comfort.</li> <li>The eating areas shall be provided with scavenger proof rubbish bins, potable water and other sanitary conveniences.</li> </ul>	Contractor
Ablution facilities	Temporary toilets shall be provided by the contractor.	<ul style="list-style-type: none"> <li>Temporary / portable toilets shall be supplied by the Contractor for the workers at a maximum ratio of 1 toilet per 15 workers and be within walking distance of the work area.</li> <li>The toilets shall be placed at appropriate locations to the approval of the Engineer / ECO.</li> <li>Toilets shall be kept in a good state of repair and shall be serviced at intervals sufficient to ensure that they are kept in clean and sanitary condition.</li> </ul>	Contractor
Site demarcation	The Contractor shall restrict all his activities, materials, equipment and personnel to the designated Site.	<ul style="list-style-type: none"> <li>The Contractor shall ensure that the clearance of vegetation is restricted only to that required to facilitate the execution of the works.</li> <li>All temporary structures erected during construction works as well as materials, waste generated are all removed upon completion of the project.</li> <li>Ensure that the construction site is rehabilitated using appropriate indigenous vegetation.</li> </ul>	Contractor
Access, traffic and haul roads	Construction traffic shall be controlled to ensure minimal disruption to normal road users.	<ul style="list-style-type: none"> <li>The Contractor shall be held responsible for the control of all project related traffic, including that of his suppliers, in ensuring that vehicles associated with the project remain on designated routes and within the designated working times.</li> <li>Speed limit and site warning signs must be erected to minimise accidents.</li> <li>Construction vehicles must be tagged with reflective signs or tapes to maximise visibility of the vehicles and avoid accidents.</li> </ul>	Contractor
Solid waste management	To ensure that there is no illegal disposal of waste.	<ul style="list-style-type: none"> <li>The Contractor shall provide sufficient number of rubbish bins with secured lids.</li> <li>No waste materials, including domestic, organic or construction wastes shall be burnt, dumped or buried on the Site.</li> <li>Ensure that no refuse wastes are burnt on the premises or on surrounding premises.</li> <li>No fires will be allowed on site unless in designated areas approved by the ECO.</li> <li>The construction site must be kept in a clean and orderly state at all the times.</li> <li>Ensure that no litter, refuse, wastes, rubbish, rubble, debris and builders wastes generated on the premises be placed, dumped or deposited on adjacent/surrounding properties during or after the construction period of the project are disposed of at dumping site as approved by the Town Council and Airport's Manager.</li> </ul>	Contractor



Aspect	Management Objective	Management actions	Responsibility
Erosion, water quality, surface water, Groundwater and storm water management	<p>To avoid contamination of groundwater and surface water sources from possible leakages.</p> <p>To prevent or remediate damage to the environment resulting from the works in the form of erosion and sedimentation shall be taken.</p>	<ul style="list-style-type: none"> <li>• All waste generated from site must be transported to an authorised landfill site in Ondangwa.</li> <li>• The Contractor shall take reasonable steps to prevent or remediate damage to the environment resulting from works in the form of erosion and sedimentation.</li> <li>• The full length of the works shall not be stripped of vegetation prior to commencing other activities. The time that stripped areas are exposed shall be minimised wherever possible.</li> <li>• Erosion control measures to be implemented in areas sensitive to erosion such as near water supply points, edges of slopes, etc. These measures could include the use of sand bags, hessian sheets, retention or replacement of vegetation.</li> <li>• Stockpiling of soil or any other materials used during the construction phase must not be allowed on or near steep slopes, near a watercourse or water body. This is to prevent pollution or the impediment of surface runoff.</li> <li>• There should be a periodic checking of the site's drainage system to ensure that the water flow is unobstructed.</li> <li>• Storm water outfalls should be designed to reduce flow velocity and avoid stream bank and soil erosion.</li> <li>• <b><u>Construction activities must preferably take place during the dry winter months.</u></b> If construction activities take place in the wet months appropriate measures must be taken to control storm water and implemented to prevent erosion.</li> <li>• Vegetation clearance must be kept to a minimum to reduce the risk of siltation.</li> <li>• Every effort should be made to ensure that any chemicals or hazardous substances do not contaminate the soils or ground water on site.</li> <li>• Care must be taken to ensure that run-off from vehicle or plant washing does not enter the ground water.</li> <li>• Site staff shall not be permitted to use any watercourse or natural water source adjacent to or within the designated site for the purposes of bathing, washing of clothing or for any construction related activities. Municipal water (or another source approved by the Engineer) should instead be used for all activities such as washing of equipment or disposal of any type of waste, dust suppression, concrete mixing, compacting etc.</li> <li>• Construction vehicles are to be maintained in good working order, to reduce the probability of leakage of fuels and lubricants. No servicing of vehicles is to be undertaken in close proximity to watercourses.</li> </ul>	Contractor

Aspect	Management Objective	Management actions	Responsibility
		<ul style="list-style-type: none"> <li>The use of construction machinery should be limited <b>between 06h00 and 18h00 on weekdays</b>. However, if construction activities need to be outside of these times or on weekends, this needs to be <b>approved by the Project Manager and the Authorities must be informed</b>.</li> <li>Any erosion that occurs on site must be repaired as soon as possible to avoid it spreading onto a large scale of the site area.</li> <li>The Contractor shall immediately remedy any situation that is or has the potential to result in soil erosion, water pollution and sedimentation from the works operation as a result of storm water flows.</li> <li>With regards to surface water, all spills should be cleaned up as soon as possible. The presence of an emergency response plan and suitable equipment is advised, so as to react to any spillage or leakages properly and efficiently.</li> <li>Hazardous substances must be stored away from the buffer areas surrounding any water bodies on site to avoid pollution.</li> </ul>	
Fuel and oil	To ensure that all liquid fuels are stored appropriately and adequate firefighting equipment is stored on site.	<ul style="list-style-type: none"> <li>The Contractor shall ensure that all liquid fuels are stored in tanks or mobile bowsers with lids that are kept firmly shut.</li> <li>All tanks and/or mobile bowsers shall be situated in a bunded area.</li> <li>The Contractor shall ensure that there is adequate fire-fighting equipment at the fuel storage areas.</li> </ul>	Contractor
Equipment maintenance and storage	All vehicles and equipment are kept in good working order.	<ul style="list-style-type: none"> <li>Leaking or damaged equipment shall be repaired immediately or removed from the Site.</li> <li>Drip trays shall be provided in construction areas for stationary and parked plant as well as for the emergency servicing of vehicles.</li> </ul>	Contractor
Stockpiling and stockpile areas	All plant and materials shall be stored in designed areas to minimise the disturbance to vegetation and topsoil.	<ul style="list-style-type: none"> <li>Plant and materials shall be stored within the demarcated construction camp or batching areas.</li> <li>The areas where excavated soil will be stockpiled must be bordered by berms to prevent soil loss caused by rain.</li> </ul>	Contractor
Materials handling, use and storage	All delivery drivers are informed of the on-site procedures and restrictions.	<ul style="list-style-type: none"> <li>The Contractor shall ensure that any delivery drivers are informed of all procedures and restrictions, including “no-go” areas and designated haul routes.</li> <li>All material shall be stored within the designated Site boundaries.</li> <li>Stockpiles should not be situated such that they obstruct natural water pathways.</li> <li>Stockpiles should not exceed 2m in height.</li> <li>If stockpiles are exposed to windy conditions or heavy rain, they should be covered either by vegetation or cloth (short timeframe), depending on the duration of the project.</li> </ul>	Contractor

Aspect	Management Objective	Management actions	Responsibility
Hazardous Substances	Any hazardous substances are stored appropriately.	<ul style="list-style-type: none"> <li>• Hazardous chemical substances used during construction shall be stored in secondary containers.</li> <li>• The relevant Material Safety Data Sheets (MSDS) shall be available on site.</li> <li>• Procedures detailed in the MSDS shall be followed in the event of an emergency situation.</li> <li>• No vehicles transporting concrete to the site may be washed on site.</li> <li>• No vehicles transporting, placing or compacting asphalt or any other bituminous product may be washed on site.</li> <li>• Hazardous substances / materials are to be transported in sealed containers or bags.</li> <li>• The storage of oils, materials, chemicals, fuels etc. to be used during the construction phase must not pose a risk to the surrounding environment. Such storage areas must be located out of the 1:100 year flood line of any watercourse in the area and unauthorised access to these areas must be controlled. Temporary bunds must be constructed around chemical or fuel storage areas to contain possible spillages.</li> </ul>	Contractor
Cement and concrete batching	Cement and concrete batching takes place in designated areas.	<ul style="list-style-type: none"> <li>• The batching of concrete shall take place on a smooth, impermeable surface (plastic) and shall be enclosed with a bund and sloped toward a sump to contain any spillages.</li> <li>• The Contractor shall take all reasonable measures to prevent the spillage of cement / concrete during batching and construction operations.</li> </ul>	Contractor
Fire control	To reduce the risk of fires	<ul style="list-style-type: none"> <li>• Fires are only permitted in designated area and shall not be left unattended.</li> <li>• Fire extinguishers shall be readily available.</li> <li>• The Contractor shall take all reasonable and precautionary steps to ensure that uncontrolled fires are not started as a consequence of his activities on site.</li> <li>• The Contractor shall ensure that all site personnel are aware of the fire risks and how to deal with any fires that occur. This shall include, but not be limited to: <ul style="list-style-type: none"> <li>• Regular fire prevention talks</li> <li>• Posting of regular reminders to staff.</li> </ul> </li> </ul>	Contractor
Emergency procedures	All employees are aware of emergency procedures.	<ul style="list-style-type: none"> <li>• The Contractor shall ensure that his employees are aware of the procedure to be followed for dealing with leaks and spills.</li> <li>• The Contractor shall ensure that the necessary materials and equipment for dealing with leaks and spills are available on Site at all times.</li> <li>• The source of the spill shall be isolated and the spillage contained using sand berms, sandbags, sawdust, absorbent material and/or other materials approved by the Site Agent.</li> </ul>	Contractor

Aspect	Management Objective	Management actions	Responsibility
		<ul style="list-style-type: none"> <li>The Contractor shall ensure that there is always a supply of absorbent material readily available to absorb/breakdown the spill.</li> <li>The Contractor shall notify the relevant authorities of any spills that occurs.</li> <li>If potentially hazardous substances are to be stored on site, the Contractor shall provide a Method Statement detailing the substances/materials to be used together with the procedures for the storage, handling and disposal of the materials in a manner which will reduce the risk of pollution that may occur from day to day storage, handling, use and/or from accidental release of any hazardous substances used.</li> <li>The relevant Material Safety Data Sheets (MSDS) shall be available on Site. Procedures detailed in the MSDS shall be followed in the event of an emergency situation.</li> <li>Hazardous chemical substances used during construction shall be stored in secondary containers.</li> <li>The Contractor must ensure that all hazardous chemical substances are labelled, packed, transported and stored in order to avoid the spread of contamination.</li> </ul>	
Protection of natural systems and archaeological sites.	Impacts to natural systems are kept to a minimum.	<ul style="list-style-type: none"> <li>Disturbance of vegetation and faunal communities and their habitats is kept to a minimum.</li> <li>All earthworks equipment operators shall be informed to cease operating immediately if any artefact is unearthed and to report the finding immediately to the Engineer / ECO and Central Oil Namibia (Pty) Ltd, who in turn shall notify the National Heritage Council.</li> </ul>	Contractor
Rehabilitation	On completion of the Contract all materials, temporary structures, temporary fences, plant, equipment and waste are completely removed from the Site.	<ul style="list-style-type: none"> <li>Rehabilitation operations and re-vegetation of all disturbed areas shall commence as soon as possible and even run concurrently where appropriate.</li> </ul>	Contractor
Penalties	To ensure that environmental requirements are strictly adhered to.	Penalties will be issues for certain specified transgressions.	Contractor

**Table 4: Summarized Operational Phase Management Table**

Aspect	Management Objective	Management Actions	Responsibility
Hydrocarbon spills or leakages on the surface or subsurface could contaminate groundwater (soil and groundwater impacts).	To avoid environmental pollution from potential leakages.	<ul style="list-style-type: none"> <li>• The forecourt will be concrete paved to prevent infiltration of fuel into the subsurface soils with surface runoff designed to flow towards a centralized collection point which is connected to an on-site oil/ water separator (trap);</li> <li>• Tanks shall be fitted with an overfill protection system or device. The critical level shall be such that a space remains in the tank to accommodate the delivery hose volume;</li> <li>• An HDPE sheet must be installed in the excavation under the tank, to direct any flow from a leak, towards the monitoring wells.</li> <li>• In the event of a fuel spillage or leaks that have the potential to impact on nearby water resources, the authorities should be informed and the fuel must be extracted and collected in a suitable container and disposed off at an authorized hazardous waste disposal site. The general area should be treated with an absorbing agent.</li> <li>• Monthly visual inspections must be conducted of all above-ground fuel dispensing equipment on the site to check for wear or damage. Visual and olfactory checks for possible product leaks should also be carried out across the site.</li> <li>• Maintenance of dispensing pumps is essential to reduce the likelihood of spills.</li> </ul>	Central Oil Namibia (Pty) Ltd
Storage, handling and transportation of dangerous goods on the site (safety and security impact).	To avoid environmental pollution from potential leakages.	<ul style="list-style-type: none"> <li>• The design and management of the Storage Facility area must conform to the relevant fire safety standards and legislation.</li> <li>• No smoking can be allowed in the vicinity of flammable substances and the relevant signage must be displayed.</li> <li>• Firefighting equipment/ systems must be available at all times and serviced regularly (at least annually).</li> <li>• All employees and sub-contractors on-site must be trained in the implementation of effective Health and Safety policies.</li> <li>• A system must be devised to record any incidents and/ or accidents.</li> </ul>	Central Oil Namibia (Pty) Ltd

Aspect	Management Objective	Management Actions	Responsibility
Solid Waste Management	To ensure that there is no illegal disposal of waste.	<ul style="list-style-type: none"> <li>Waste must be separated into items which can be reused, composted or recycled and send the remaining portion to the general waste stream for disposal at the landfill site.</li> <li>All staff should be made aware of the aim to recycle waste by means of posters, training and staff meetings.</li> <li>Between collection periods, all waste/recyclable materials generated upon the site shall be kept in enclosed bins with securely fitting lids so that the contents are not able to leak or overflow and blown away by the wind.</li> <li>Waste must be removed and disposed off at an authorised landfill site in Ondangwa by Ondangwa Town Council or the proponent's waste removal contractors.</li> <li>Waste skips must be emptied on a daily basis and must be coded.</li> <li>Arrangements must be in place for the regular maintenance and cleaning of waste/recycling storage areas.</li> </ul>	Central Oil Namibia (Pty) Ltd
Increased activity on the site and minor increase in traffic (noise impact).	To limit noise levels on site.	<ul style="list-style-type: none"> <li>Noise levels shall be kept within acceptable limits, and all staff must abide by the relevant Noise Control Regulations.</li> </ul>	Central Oil Namibia (Pty) Ltd
Transformation of the site from an undeveloped site to a Bulk Fuel Storage Facility (visual impact)	To maintain the aesthetic values of the site.	<ul style="list-style-type: none"> <li>Sufficient refuse bins must be provided on site and littering and illegal dumping must not be allowed;</li> <li>Buildings and other structures should not be visually intrusive and should be maintained on a regular basis;</li> <li>Landscaped areas must be maintained;</li> <li>Signs must conform to the national and municipal standards of for outdoor advertising.</li> </ul>	Central Oil Namibia (Pty) Ltd
Traffic flow and safety impacts	Operational traffic shall be controlled to ensure minimal disruption to normal road users.	<ul style="list-style-type: none"> <li>Road surfaces in the immediate vicinity of the site should be monitored and the relevant authority should be notified of any unsafe situation;</li> <li>Access to the site and the other site activities should be clearly indicated;</li> <li>Speed limit of not more than 5 km/h should be applied in the forecourt area of the site;</li> </ul>	Central Oil Namibia (Pty) Ltd



Aspect	Management Objective	Management Actions	Responsibility
		<ul style="list-style-type: none"> <li>The proposed development must provide adequate onsite parking, loading facilities and maneuvering space for the light and heavy vehicles as well as trucks delivering to the shop.</li> </ul>	
Air Quality	To limit air quality impacts.	<ul style="list-style-type: none"> <li>During windy or dry periods, dust suppression techniques should be implemented.</li> </ul>	Central Oil Namibia (Pty) Ltd
Ecological Impacts	To minimize the disturbance of flora and fauna found within the site area	<ul style="list-style-type: none"> <li>Minimize the area of disturbance by restricting movement to the designated working areas during maintenance.</li> <li>Prevent illegal removal of protected vegetation (if there is any).</li> <li>Keep surrounding vegetation and shrubs to create a screen that reduces flood impacts.</li> </ul>	Central Oil Namibia (Pty) Ltd
Emergency Procedures	All employees are aware of emergency procedures.	<ul style="list-style-type: none"> <li>The company manager shall ensure that his employees area of the procedure to be followed for dealing with leaks and spills.</li> <li>The company manager shall ensure that the necessary materials and equipment for dealing with leaks and spills are available on the site at all times.</li> </ul>	Central Oil Namibia (Pty) Ltd
Erosion, water quality, surface water, Groundwater and storm water management	<p>To prevent or remediate damage to the environment resulting from the works in the form of erosion and sedimentation shall be taken.</p> <p>To avoid contamination of groundwater and surface water sources from possible leakages.</p>	<ul style="list-style-type: none"> <li>The company manager shall take reasonable steps to prevent or remediate damage to the environment resulting from works in the form of erosion and sedimentation.</li> <li>The company manager shall immediately remedy any situation that is or has the potential to result in soil erosion, water pollution and sedimentation from the works operation as a result of storm water flows.</li> <li>With regards to surface water, all spills should be cleaned up as soon as possible. The presence of an emergency response plan and suitable equipment is advised, so as to react to any spillage or leakages properly and efficiently.</li> <li>Hazardous substances must be stored away from the buffer areas surrounding any water bodies on site to avoid pollution.</li> </ul>	Central Oil Namibia (Pty) Ltd

Aspect	Management Objective	Management Actions	Responsibility
Protection of natural systems on site	Impacts to natural systems are kept to a minimum.	<ul style="list-style-type: none"> <li>All effort must be made to minimize the disturbance of fauna on and within the close vicinity of the site.</li> <li>Develop a procedure for dealing with animals encountered on site including dangerous animals and vermin. Where necessary, call in professionals to remove the animals. Personnel re to be instructed on the presence of dangerous fauna and the appropriate behavior and safety upon encountering such fauna.</li> </ul>	Central Oil Namibia (Pty) Ltd
Rehabilitation	On completion of Contract, all material, temporary structures, temporary fences, plant, equipment and wastes are completely removed from the site.	<ul style="list-style-type: none"> <li>Rehabilitation operations and re-vegetation of all disturbed areas shall commence as soon as possible and even run concurrently where appropriate.</li> </ul>	Central Oil Namibia (Pty) Ltd
Penalties	To ensure that environmental requirements are strictly adhered to.	Penalties will be issues for certain specified transgressions.	Central Oil Namibia (Pty) Ltd

**Table 5:** PETRO On-Site Tank Maintenance Service

Management Actions	Responsibility
<b><u>REFUELLING THE MACHINERY WITH CONTAMINATED FUEL CAN BE CATASTROPHIC</u></b>	
Allow our qualified PETRO maintenance staff to maintain and service.	PETRO INDUSTRIAL (Fluids Management) / Central Oil Namibia (Pty) Ltd
Inspect tank structural integrity and signs of damage.	PETRO INDUSTRIAL (Fluids Management) / Central Oil Namibia (Pty) Ltd
Test tank contents for water.	PETRO INDUSTRIAL (Fluids Management) / Central Oil Namibia (Pty) Ltd
Inspect all tank accessories and maintain as required.	PETRO INDUSTRIAL (Fluids Management) / Central Oil Namibia (Pty) Ltd
Inspect and service pumping equipment and filtration screens in pumps and nozzles.	PETRO INDUSTRIAL (Fluids Management) / Central Oil Namibia (Pty) Ltd
Check and calibrate flow meters –flow rates up to 120lpm-commercial.	PETRO INDUSTRIAL (Fluids Management) / Central Oil Namibia (Pty) Ltd
Remove vent and perform operational inspection.	PETRO INDUSTRIAL (Fluids Management) / Central Oil Namibia (Pty) Ltd
Tighten all bolts and fittings and inspect for leakage.	PETRO INDUSTRIAL (Fluids Management) / Central Oil Namibia (Pty) Ltd
Clean/drain tank pump bay bund.	PETRO INDUSTRIAL (Fluids Management) / Central Oil Namibia (Pty) Ltd
Calibrate tank gauging.	PETRO INDUSTRIAL (Fluids Management) / Central Oil Namibia (Pty) Ltd
Full PETRO maintenance service report should be provided.	PETRO INDUSTRIAL (Fluids Management) / Central Oil Namibia (Pty) Ltd

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## 6 DECOMMISSIONING PHASE

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Given the nature and purpose of the infrastructure, it is unlikely that this infrastructure will be decommissioned in the foreseeable future. In the unlikely event that use of the infrastructure is discontinued by Central Oil Namibia (Pty) Ltd, the infrastructure should be “mothballed” or made available or sold to the surrounding land users. Removal of the infrastructure is likely to cause more environmental harm than its abandonment.

### 6.1 MONITORING, REPORTING AND AUDITING

**Quarterly and/or Bi-annual Environmental Monitoring/Compliance reports are to be prepared by the ECO and submitted to the developer, and competent authority – Ministry of Environment & Tourism: Department of Environmental Affairs.** Monitoring measures during the operational phase is as follows:

- As per SABS standards, monitoring wells (piezometers) (if applicable) must be installed around the UST’s for early detection of leaks. These should be checked on a regular (quarterly) basis for the presence of hydrocarbons using a hydrocarbon interface probe;
- Monthly visual inspections must be conducted of all above-ground fuel dispensing equipment on the site to check for wear or damage. Visual and olfactory checks for possible product leaks should also be carried out across the site.

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## 7 CONCLUSION

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In conclusion it should be noted that this EMP should be regarded as a living document and changes should be made to the EMP as required by project evolution while retaining the underlying principles and objectives on which the document is based.

The compilation of the EMP has incorporated impacts and mitigation measures from the Environmental Assessment Report, as well as incorporating principles of best practice in terms of environmental management.

In addition, provided this project is mitigated, as per the EMP, the project will result in impacts that should not negatively affect the environment. It is the applicant's responsibility to ensure that this EMP is made binding on the contractor by including the EMP in the contract documentation. The contractor should thoroughly familiarise himself with the requirements of the EMP and appoint an environmental Control Officer (ECO) to oversee the implementation of the EMP on a day-to-day basis.

Parties responsible for transgression of this EMP should be held responsible for any rehabilitation that may need to be undertaken. Parties responsible for environmental degradation through irresponsible behaviour/negligence should receive penalties.

# **APPENDIX A**

## **Curriculum Vitae of Environmental Assessment Practitioner**



# **APPENDIX B**

## **Engineering Designs for the Bulk Fuel Storage Facility / Container**

## **APPENDIX C**

### **Example - Generic Method Statement**

## **INFORMATION ON METHOD STATEMENTS**

Method Statements are to be completed by the person undertaking the work (i.e. the Contractor). The Method Statement will enable the potential negative environmental impacts associated with the proposed activity to be assessed and potentially significant environmental aspects mitigated at the planning stage.

The Method Statement can only be implemented once approved by the ECO.

The Contractor (and, where relevant, any Sub-Contractors) must also sign the Method Statement, thereby indicating that the works will be carried out according to the methodology contained in the approved Method Statement.

The ECO will use the Method Statement to audit compliance by the Contractor with the requirements of the approved Method Statement.

Changes to the way the works are to be carried out must be reflected by amendments to the original approved Method Statement; amendments require the signature of the ECO, denoting that the changed methodology or works are necessary for the successful completion of the works, and are environmentally acceptable. The Contractor will also be required to sign the amended Method Statement thereby committing him/herself to the amended Method Statement.

This Method Statement **MUST** contain sufficient information and detail to enable the ECO to apply their minds to the potential impacts of the works on the environment. The Contractor will also need to thoroughly understand what is required of him/her in order to undertake the works. A method statement should clearly answer to following:

- What does the activity entail;
- Why is the activity required;
- When will it commence and how long;
- Where will the activity be undertaken;
- How will the activity be undertaken
  - What equipment and machinery will be required;
  - What materials (Chemicals) will be used in the process;
- What are the potential environmental, health and safety concerns associated with this activity and what mitigation measures will be employed to manage these risks.

The time taken to provide a thorough, detailed method statement is time well spent. Insufficient detail will result in delays to the works while the method statement is rewritten to ECO's satisfaction. The page overleaf provides a pro forma method statement sheet, which needs to be completed for each activity requiring a method statement in terms of the EMP.

**EXAMPLE OF METHOD STATEMENT**

**CONTRACT:** ..... **DATE:** .....

**PROPOSED ACTIVITY** (give title of Method Statement and reference number):

**WHAT WORK IS TO BE UNDERTAKEN** (give a brief description of the works):

**WHERE ARE THE WORKS TO BE UNDERTAKEN** (where possible, provide an annotated plan and a full description of the extent of the works):

**START AND END DATE OF THE WORKS FOR WHICH THE METHOD STATEMENT IS REQUIRED:**

Start Date:

End Date:

**HOW ARE THE WORKS TO BE UNDERTAKEN** (provide as much detail as possible, including annotated maps and plans where possible): Note: please attach extra pages if more space is required

## DECLARATIONS

### 1) ENVIRONMENTAL CONTROL OFFICER

The work described in this Method Statement, if carried out according to the methodology described, is satisfactorily mitigated to prevent avoidable environmental harm:

\_\_\_\_\_  
*(Signed)*

\_\_\_\_\_  
*(Print name)*

\_\_\_\_\_  
*Date:*

### 2) PERSON UNDERTAKING THE WORKS

I understand the contents of this Method Statement and the scope of the works required of me. I further understand that this Method Statement may be amended on application to other signatories and that the ECO will audit my compliance with the contents of this Method Statement:

\_\_\_\_\_  
*(Signed)*

\_\_\_\_\_  
*(Print name)*

\_\_\_\_\_  
*Date:*

### 3) ENGINEER

The works described in this Method Statement are approved:

\_\_\_\_\_  
*(Signed)*

\_\_\_\_\_  
*(Print name)*

\_\_\_\_\_  
*Date:*

### 4) APPROVING AUTHORITY

The works described in this Method Statement are approved:

\_\_\_\_\_  
*(Signed)*

\_\_\_\_\_  
*(Print name)*

\_\_\_\_\_  
*Date:*