



ENVIRONMENTAL MANAGEMENT PLAN (EMP) FOR THE CONTINUED OPERATION OF EXISTING LIQUIDIFIED PETROLEUM GAS (LPG) FACILITY ON ERF 3487, SWAKOPMUND, ERONGO REGION

2024

PREPARED FOR

IBIZA GAS SOLUTION

Reg: CC/2022/08328

P.O. Box 3213 Vineta

Swakopmund

DOCUMENT DESCRIPTION

PROJECT NAME: Continued operation of Liquid Petroleum Gas (LGP) facility on Erf 3487, Swakopmund, Erongo region.

LOCATION: Rakotoka Street, Swakopmund

DOCUMENT: Environmental Management Plan (EMP)

CLIENT: IBIZA GAS SOLUTION

PREPARED BY: Green Gain Consultants cc
P.O. Box 5303, Walvis Bay
Cell: 081 1422927

EAP: Joseph Kondja Amushila

APP: 240723004433

PERIOD: JUNE 2024



Table of content

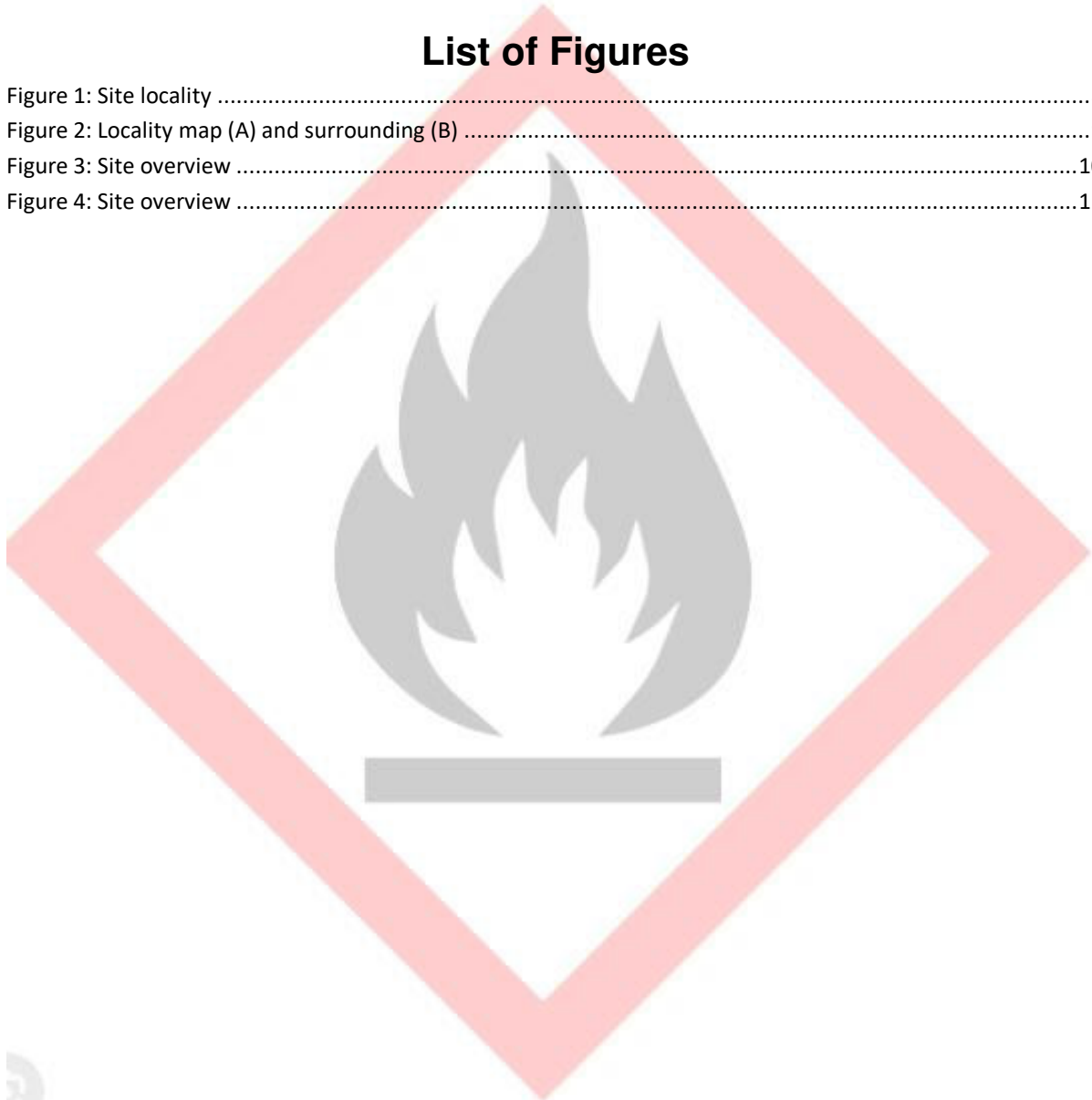
List of Tables	2
List of Figures	2
LIST OF ACRONYMS.....	3
1. INTRODUCTION AND BACKGROUND	4
1.1 Introduction.....	4
1.2 Objectives of the EMP.....	5
1.3 EMP Methodology.....	6
1.4 Project involvement.....	7
2. DESCRIPTION OF THE ACTIVITIES.....	8
2.1 Location	8
2.2 Site zoning.....	9
2.3 Site description.....	10
2.4 Site existing infrastructure	11
2.5 Site operational procedures.....	12
2.6 Facts about the LPG	13
3. EMP Implementation: Roles and Responsibilities	14
3.1. The Proponent: Ibiza Gas Solution	14
3.2 Environmental Control Officer (ECO).....	14
3.3 LPG Supplier: Afrox	15
3.4 Authorities.....	15
a). Local Authority: Municipality of Swakopmund	15
b) Competent Authority: Ministry of Mines and Energy	15
c) Regulatory Authority: Ministry of Environment, Forestry and Tourism (MEFT)	15
4. ENVIRONMENTAL MANAGEMENT REQUIREMENTS.....	16
4.1 Environmental awareness training	16
4.2 Record keeping	16
4.3 Enforcements: Non-compliance and penalties	16
4.4 Environmental Reports	16
5. LEGAL REQUIREMENTS	17
5.1 Environmental Management Requirements	17
5.2 Applicable legislation.....	17
6. MANAGEMENT AND MITIGATION MEASURES	20
7. POSITIVE IMPACTS.....	26
7.1 Identified Positive impacts	26
8. ENVIRONMENTAL MANAGEMENT SYTEM (EMS).....	27
9. DECOMMISSIONING AND REHABILITATION.....	28
9.1 Decommissioning procedures.....	28
9.2 Rehabilitation	28
10. COMPLIANCE MONITORING.....	29
11. EMERGENCY RESPONSE PLAN	30
12. CONCLUSION.....	31
Annexure A: Environmental Compliance Monitoring Checklist	32
Annexure B: Fire response Plan.....	33
Annexure C: LPG Material Safety Data Sheet.....	34

List of Tables

Table 1: Project Involvement	7
Table 2: Applicable National Laws.....	17
Table 3: Proposed Mitigation Measures: Operation phase.....	20
Table 5: Monitoring during operation phase.....	29
Table 6: Emergency response plan	30

List of Figures

Figure 1: Site locality	8
Figure 2: Locality map (A) and surrounding (B)	9
Figure 3: Site overview	10
Figure 4: Site overview	11



LIST OF ACRONYMS

DEA:	Directorate of Environmental Affairs
EAP:	Environmental Assessment Policy
EIA:	Environmental Impact Assessments
EMA:	Environmental Management Act
EMP:	Environmental Management Plan
EMS:	Environmental Management System
I&APs:	Interested and Affected Parties
IBC:	Intermediate Bulk Container
ISO:	International Standards Organisation
MEFT:	Ministry of Environment, Forestry and Tourism
MME:	Ministry of Mines and Energy
MSDS:	Material Safety Data Sheet
PPE:	Personal Protective Equipment
SABS:	South Africa Building Standards
SANS:	South African National Standards
SHE	Safety, Health and Environment
LPG:	Liquid Petroleum Gas

1. INTRODUCTION AND BACKGROUND

1.1 Introduction

The proponent, IBIZA GAS SOLUTION intends to continue with the operations of the existing storage and handling facility for liquid petroleum gas (LPG) on Erf 3487, Swakopmund. The proposed development site is in the Swakopmund Industrial Area and similar activities have been operated in the past.

The proponent intends to refurbish the site and renew the storage and supply of LPG to residents. The project activities involve minor upgrades, refurbishment of existing storage and handling facilities to ensure the facility meets the industry standards. The proponent will realize income growth following expanded business because of the project. The project also is bound to create employment opportunities during construction, operation and decommissioning phases.

In terms of Section 9.4 & 9.5 of the Environmental Management Act, 2007 the storage and handling as well as the construction of facility for the underground and aboveground storage of dangerous goods such as diesel/petrol, liquid petroleum gas or paraffin may not be carried out without an Environmental Clearance Certificate (ECC) being obtained. Since similar activities have been operated on the sites for many years and that the site is favorably located in the industrial area, an EMP was deemed sufficient.

Green Gain Consultants cc was appointed as an independent Environmental Assessment Practitioner (EAP) to prepare an Environmental Management Plan for the storage and handling of LPG and obtain ECC from the Ministry of Environment, Forestry and Tourism (MEFT).

The EMP is an environmental tool that is used to ensure that undue or reasonably avoidable adverse caused by the proposed project are minimized or prevented and the positive benefits of the project are enhanced. It is important to note that an EMP is a legally binding document and has been drafted in accordance with the Environmental Management Act (No. 7 of 2007) and its Environmental Impact Assessment Regulations (2012).

1.2 Objectives of the EMP

The EMP is therefore important in ensuring that the management actions arising from EIA processes are clearly defined and implemented through all phases of the project life cycle. It is a dynamic document that allows for the evaluation of the success or failure of management actions and to carry out reorientation of the relevant actions if found necessary. The EMP is therefore important in ensuring that the management actions of potential environmental impacts are clearly defined and implemented through all phases of the project life cycle.

The objectives of an EMP are:

- To identify potential impacts of the project on the environment.
- Formulate measures and management actions which will mitigate adverse impacts on various environmental components, protect environmental resources where possible, and enhance the value of environmental components where possible.
- Ensuring compliance with relevant regulatory stipulations and guidelines which may be local, national or international.
- Define details of who, what, where and when environmental management and mitigation measures are to be implemented
- To provide sufficient information to the relevant competent authorities and the Ministry of Environment, Forestry and Tourism to make informed decisions regarding the project and
- Providing feedback for continual improvement in environmental performance.

1.3 EMP Methodology

This Environmental Management Plan (EMP) was prepared in line with Section 8 (j) of the EIA Regulations (GN 30 of February 2012), and the proponent's Terms of Reference. The EMP contains aspects of the proposed management and mitigation measures to be taken to address the negative environmental impacts and enhancement measures for the positive environmental impacts identified in the environmental scoping report. It also addresses the need for compliance monitoring of identified significant environmental impacts.

The following key activities and tasks have been undertaken as part of the EIA and EMP development process, namely to:

- Solicited initial input from relevant stakeholders. This is essential toward the development of a sound plan. Since no resource sits in isolation, an environmental management plan can affect a number of other parties. For the best adherence and acceptance of a plan, input is needed to address concerns early in the planning process.
- Identify the problems and or questions associated with the facility. Clearly defined objectives were identified in order to remain centered on a management plan. Only in this way can the success of this environmental management plan be gauged.
- Made a list of applicable criteria, standards and principles for construction as required by legislation, regulation, policies etc. As standards include criteria to fit various types of projects, much of the information is often irrelevant to anyone. Went through any standards or reference guides to be complied with and marked all requirements applicable to each situation.
- Established the extent of the management plan and what the client must do on its own. It is easy for a management plan to end up in someone's hands and never be executed. Inform the client that creating the plan is an iterative process requiring routine correspondence to tailor it to Project Contractor's specific needs.
- Consultation was ensured with the Local Authority (Swakopmund Municipality) of which a consent letter was obtained. Adjacent property owners were also notified and made aware of the proposed activities. Moreover, similar activities have been operated at the same premises with no complaints received from the neighbors or residents, thus there are no objections to the proposed activities.

This EMP was written to guide short-term goals and decision making and will provide environmental related guidelines. By having this plan in place, the proponent will have means to make good decisions.

1.4 Project involvement

The implementation of the EMP also requires the involvement of role players, each with specific responsibilities to ensure that the development is operated in an environmentally sensitive manner.

Table 1: Project Involvement

NO.	SPECIFIC PROJECT ROLE	ADDRESS AND CONTACTS
1.	Proponent	Ibiza Gas Solution Mrs Lizan Brockerhoff Cell: +264 (081) 2304814 P.O. Box 3213, Vineta, Swakopmund Email: lizanbrokerhoff@gmail.com
2	Supplier	Afrox 
3.	Environmental Assessment Practitioner	Green Gain Consultants cc Mr. Joseph Amushila Cell: +264811422927 Email: info@greengain.com.na 
4.	Local Authority	Municipality of Swakopmund
6	Regulatory Authority	Ministry of Environment and Tourism Department: Environmental Affairs Tell: +264612842746

2. DESCRIPTION OF THE ACTIVITIES

2.1 Location

The project site is located on Erf 3487 along the Rakotoka Street in Swakopmund Industrial Area on the following coordinates -22.66521287661358" S, 14.537759081415707" E



Figure 1: Site locality

2.2 Site zoning

The site is currently zoned “General Industrial” and is surrounded by the industrial properties and bordered on its west by a cemetery.

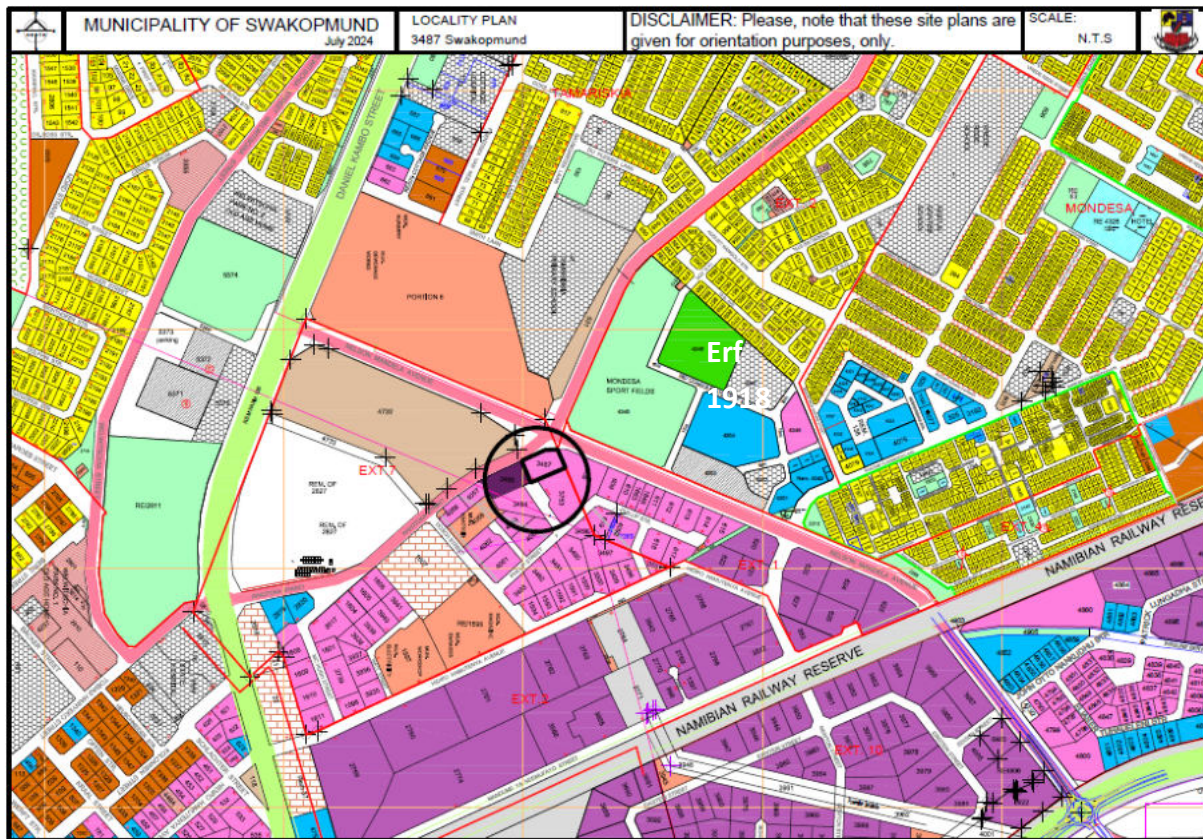


Figure 2: Locality map (A) and surrounding (B)

2.3 Site description

The site measures approximately 2500 m² in extent and is already built up. It is located along the busy road of Rakotoka Street used by many local motorists driving to and from the town Central Business District (CBD). It is also surrounded by properties of industrial nature such as scrap yards, warehouses, garages etc.



Figure 3: Site overview

2.4 Site existing infrastructure

The site is covered by a building complex which houses a garage and site offices. It is enclosed in a boundary wall that has an operation yard compartment into a storage facility and loading/offloading area. Other existing LPG storage and handling facilities include empty above ground gas tank, cylinders storage space, firefighting system, LPG cylinders,



Figure 4: Site overview

- A – Cylinder storage and loading/offloading area
- B – Above ground steel storage tank
- C- Entrance and parking area

The proposed work will include the refurbishment of storage tank, cylinder filling plant and piping and pumping systems, marking of loading/offloading points and fire assembly points and as well traffic flow instructions.

2.5 Site operational procedures

The main goal is to refill LPG gas cylinders of various sizes and sell to customers. The LPG will be supplied by a reputable supplier (Afrox) and stored in an above ground steel tank with a capacity of 30,000m³. The gas cylinders will be refilled with a manual filling plant and stored in a storage area or immediately collected by the customer. The site operational activities will be as follows.

i). Supply: LPG will be delivered to the site by Afrox using specified gas transportation vehicles (tanks) and dispensers. The piping and refilling pumping systems system will be fitted and maintained by Afrox at the international industry standards.



ii). Storage and refilling: The LPG will be stored in an above steel tank (30,000m³) onsite (See Figure 2 B). The LPG will be sold in gas cylinders of various sizes (5kg, 10kg, 14kg & 19kg) that will be refilled using a manual operated system. The cylinders will be stored in a storage area enclosed area.



iii). Selling: There is a dedicated offloading and loading area where customers will drop off and pick up their cylinders. There is also a dedicated parking area outside to regulating traffic flow (See Figure 2 A & C).

2.6 Facts about the LPG

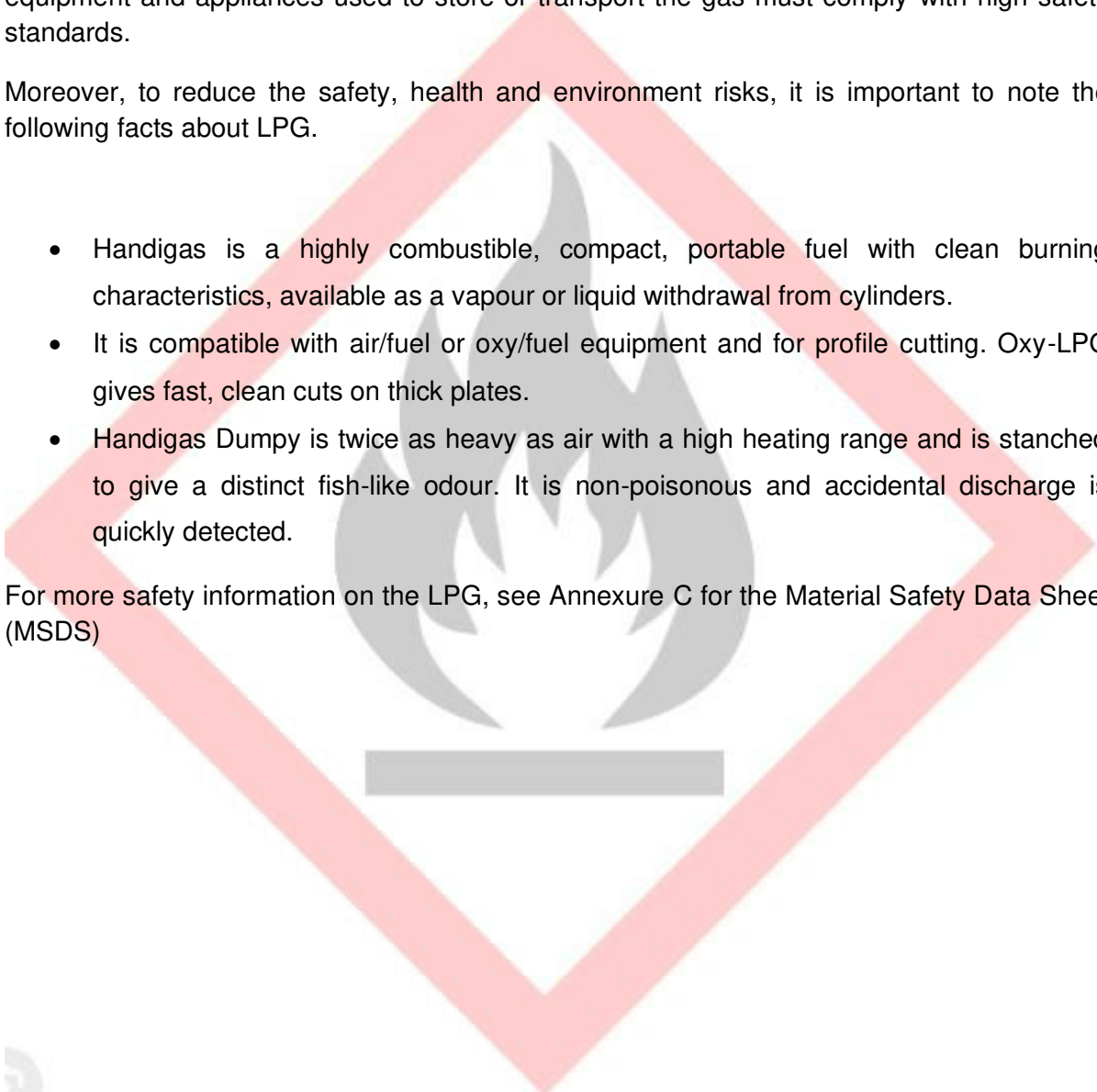
Liquefied Petroleum Gas (LPG) is a blend of light hydrocarbon compounds. It mainly consists of butane (C₄H₁₀) or propane (C₃H₈) or a mixture of both. LPG mainly in the form of butane is usually containerized and used for generally cooking because of the high fuel value per kilogram and it safer to handle. LPG can also be used for cooling and in the Petrochemical industry.

LPG is nontoxic but highly flammable. Therefore, LPG must be handled with care and all equipment and appliances used to store or transport the gas must comply with high safety standards.

Moreover, to reduce the safety, health and environment risks, it is important to note the following facts about LPG.

- Handigas is a highly combustible, compact, portable fuel with clean burning characteristics, available as a vapour or liquid withdrawal from cylinders.
- It is compatible with air/fuel or oxy/fuel equipment and for profile cutting. Oxy-LPG gives fast, clean cuts on thick plates.
- Handigas Dumpy is twice as heavy as air with a high heating range and is stanced to give a distinct fish-like odour. It is non-poisonous and accidental discharge is quickly detected.

For more safety information on the LPG, see Annexure C for the Material Safety Data Sheet (MSDS)



3. EMP Implementation: Roles and Responsibilities

The role players listed in Table 1 above have different responsibilities to play during the operation of the facility as outlined below.

3.1. The Proponent: Ibiza Gas Solution

Responsibilities

The proponent is represented by a Site Foreman who oversees the operation of the site. The Site Foreman on behalf of the proponent should.

- a) Implement the final EMP after approval by DEA and ensure the project complies with the conditions therein.
- b) Ensure environmental training and awareness of the EMP to all contractors, sub-contractors and employees.
- c) Notify MEFT and the Municipality of Swakopmund of any proposed changes to the proposed project.
- d) Ensure that appropriate compliance monitoring is executed
- e) Handle grievances in the prescribed manners as outlined in Section 9.
- f) Appoint an Environmental Control Officer (ECO)

3.2 Environmental Control Officer (ECO)

The proponent should appoint an Environmental Control Officer (ECO) to oversee the implementation of the EMP during the operation phase and possible decommissioning project phase. The ECO can be an employee of the proponent or an outside/independent Environmental Assessment Practitioner (EAP). The ECO should be responsible for the following tasks.

- Ensure that all contractor and sub-contractors are complying with the content of this EMP.
- Keep record of incidences during and take corrective actions i.e., issuing of penalties in case of transgressions etc. during project implementation.
- That all environmental impacts are managed according to the environmental principles of avoiding, minimizing, mitigating, and rehabilitation as contained in this EMP.
- Conduct monitoring and review of the on-site environmental management and implementation of the EMP by the Contractor and sub-contractors.
- Audit the implementation of the EMP on a regular basis
- Compile and submit an Environmental Reports (biannually) to the Authority
- To monitor compliance with the regulations on the transport of dangerous goods and prepare any accident reports.
- These reports must be kept for a minimum of 5 years and must be made available to the enforcing authorities upon request.

3.3 LPG Supplier: Afrox

It is expected that various contractors and sub-contractors will be appointed at various stages and for various tasks during different phases of this project. All appointed contractors and sub-contractors involved in the project shall ensure to comply with the EMP and its conditions, thus the proponent must ensure that a copy of the EMP is given to all contractors involved. The contractor upon receiving this EMP should ensure:

- To undertake their activities in an environmentally sensitive manner and within the context of this EMP.
- To undertake good housekeeping practices during duration of their activities; and
- To ensure that adequate environmental awareness training takes place in the language of their employees.

3.4 Authorities

a). Local Authority: Municipality of Swakopmund

Provide authorization for the proposed activities by

- Issuing Consents for the ECC application
- Approve Building Plan and site layout
- Issue Fitness Certification in terms of the Local Authorities Act of 1190
- Conduct monitoring during site establishment and operation phase
- Ensure the operation of the activities are within the Walvis Bay Town Planning Scheme No.35
- Notify the proponent of any changes to land uses thereof and address dispute that may arise between the proponent (occupier) and adjacent properties owners.

b) Competent Authority: Ministry of Mines and Energy

Provide authorization through certifications and issuing permits and renewals thereof, required in terms of the Petroleum Products and Energy Act No. 13 of 1990 and its Regulations.

c) Regulatory Authority: Ministry of Environment, Forestry and Tourism (MEFT)

Issue the Environmental Clearance Certificate for the establishment and operation, conduct compliance monitoring, review biannual reports and renewal of the ECC.

4. ENVIRONMENTAL MANAGEMENT REQUIREMENTS

The successful implementation of this EMP is depends on various factors, training and awareness, a good record keeping, enforcements and monthly reporting.

4.1 Environmental awareness training

All employees, contractors and sub-contractors involved in any work at the project should be briefed on their obligation towards environmental protection and methodologies in terms of the EMP prior to work commencing. The briefing should be done by the proponent prior to any work in the form of an onsite talk. Record of such trainings should be kept.

4.2 Record keeping

There should be an up-to-date filing system for the project whereby method statements, environmental incidents report, training records, audit reports and public complaints register are kept. It is advised that photographs of the site should be taken as a visual reference. These records should be kept for a minimum of **two (2) years**.

4.3 Enforcements: Non-compliance and penalties

This EMP upon approval by MET shall be considered a legally bidding. In cases of transgressions and non-compliance to the EMP, the transgressor should be liable to a penalty fine. Transgressions should be recorded in a dedicated register and be filed. The Proponent shall issue the penalties in terms of the severity of the environmental damages.

Adherence to this EMP during the operation of the project will ensure that the environmental impacts associated with the project will be mitigated to a greater extent thus promoting sustainable development. The commitment and co-operation of the identified responsible person(s) will ensure effective implementation of the EMP.

4.4 Environmental Reports

The proponent shall, in the project completion report, indicate the environmental performance and matter of incidental. The EAP shall conduct regular monitor of project activities during all project phases and keep records. These records may be required by the competent authority when deemed necessary.

5. LEGAL REQUIREMENTS

5.1 Environmental Management Requirements

The activities related to storage and handling of petrol/diesel is part of the activities listed under Schedule 1 of the Environmental Management Act, 2007 that cannot be undertaken without an Environmental Clearance Certificate being obtained as follow.

9.4 The storage and handling of a dangerous goods, including petrol, diesel, liquid petroleum gas or paraffin, in containers with a combined capacity of more than 30 cubic meters at any one location.

9.5 Construction of filling stations or any other facility for the underground and aboveground storage of dangerous goods, including petrol, diesel, liquid, petroleum, gas or paraffin.

5.2 Applicable legislation

As part of implementation of this EMP, the proponent must comply with the requirements of various national legislations and municipal by-laws as outlined in the Scoping Report and also briefly presented below.

Table 2: Applicable National Laws

LEGISLATION	PROVISION AND REQUIREMENTS
Constitution of the Republic of Namibia (1990)	National objectives -Guarding against overutilization of biological natural resources, - Limiting over-exploitation of non-renewable resources, - Ensuring ecosystem functionality, - Maintain biological diversity.
Local Authorities Act, No. 23 of 1992 as amended	Provide for the determination, for purposes of local government, of local authority councils; the establishment of such local authority councils; and to define the powers, duties and functions of local authority councils; and to provide for incidental matters. According to Section 94 of the Act, the collection and disposal of waste is the responsibility of local and regional authorities. The Act also gives power to the Local Authorities to establish by-laws.
Pollution Control and Waste Management Bill, 2003	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 provide framework for a multitude administration on pollution control and waste management in the country. Each authority identified by the bill shall play its respective roles.

<p>Environmental Management Act, No.07 of 2007</p>	<p>Ensuring that the significant effects of activities on the environment are considered carefully and in time. To promote the sustainable management of the environment and the use of natural resources by establishing principles for decision making on matters affecting the environment.</p>
<p>Public Health and Environmental Act, 2015</p>	<p>The objectives of the PHE Act are to;</p> <ul style="list-style-type: none"> • Promote public health and wellbeing • Prevent injuries, diseases and disabilities • Protect individuals and communities from public health risks • Encourage community participation in order to create a healthy environment • Provide for early detection of diseases and public health risks <p>Section 2 requires that a). “Every local authority must take necessary reasonably and applicably measures to maintain its local authority area at all times in a hygienic and clean condition” b). Prevent occurrence of a health nuisance, unhygienic condition, an offensive condition or any condition which could be harmful or dangerous to the health of a person within its local authority or the local authority area of another local authority”</p>
<p>Labour Act (No 11 of 2007)</p>	<p>To establish a comprehensive labour law for all employers and employees; to entrench fundamental labour rights and protections. Regulate basic terms and conditions of employment; ensure the health, safety and welfare of employees; to protect employees from unfair labour practices; to regulate the registration of trade unions and employers’ organisations; to regulate collective labour relations; to provide or the systematic prevention and resolution of labour disputes.</p> <p>Any employment provided whether by the proponent or by contractor at this site i.e., Security Services must be in accordance with the Labour Act.</p>
<p>Employment Service Act, 8 of 2011</p>	<p>To provide for the establishment of the National Employment Service; to impose reporting and other obligations on certain employers and institutions; to provide for the licensure and regulation of private employment agencies; and to deal with matters incidental thereto.</p> <p>Any employment provided whether by the proponent or by contractor at this site must be in accordance with the Labour Act.</p>
<p>Water Resources Management Act 2004</p>	<p>This Act provides provision for the control, conservation and use of water for domestic, agricultural, urban and industrial purposes. In addition, the Act clearly gives provision that pertain with license or permit that required abstracting and using water as well as for discharge of effluent.</p>
<p>Atmospheric Pollution Prevention Ordinance, no. 11 of 1976</p>	<p>To provide for the prevention of the pollution of the atmosphere, and for matters incidental thereto. The Ordinance deals with administrative appointments and their functions; the control of noxious or offensive gases; atmospheric pollution by smoke, dust control, motor vehicle emissions; and general provisions.</p>

	<p>According to the Ordinance, the Local Authority shall control and prevent atmospheric air pollution or emission of noxious or offensive gases by smoke.</p>
<p>Hazardous Substance Ordinance of 1974</p>	<p>This Ordinance provides for the control of toxic substance and thus also relevant for pollution control. It covers for the manufacturing, sale, use, disposal, dumping, importing and exporting of hazardous waste.</p> <p>Any use of hazardous substance must be in compliance with this ordinance</p>
<p>Petroleum Products Regulations (2000)</p>	<p>The code of practice mentioned in Part A applies to the design, construction and maintenance of electrical equipment referred to in the standard and used in connection with any petroleum products.</p> <p>The code of practice mentioned in Part B applies to the storage, distribution and handling of petroleum products and the installation of storage tanks and other structures, pipework, pumps and plant referred to in the standard and used in connection with petroleum products.</p> <p>The specifications and standards mentioned in Part C applies to the composition of petroleum products referred to in the specifications and standards and imported into or distributed in Namibia by any wholesaler or sold to any consumer by any operator.</p>
<p>Swakopmund Planning Scheme</p>	<p>Identify different land use categories, zoning, uses and consent uses.</p> <p>The property is located on the "General Industrial "Area, hence no need for rezoning or alternative sites</p>

6. . MANAGEMENT AND MITIGATION MEASURES

The proponent should play a pivotal role in implementing this EMP. This section provides a way the EMP is to be implemented and also outlining responsibilities of all parties involved perform their respective roles in accordance with this EMP.

Table 3: Proposed Mitigation Measures: Operation phase

Source of impacts	Potential impacts to be avoided	Mitigation Measures	Responsibilities
Legal compliance	Not meeting certain requirements will make the business non-compliance	Meet the legal requirements by obtaining the following <ul style="list-style-type: none"> • Fitness Certificate from Swakopmund Municipality • Environmental Clearance Certificate from MEFT 	Proponent (Line Manager/owner)
Transportation	<ul style="list-style-type: none"> • Safety, health and 	<ul style="list-style-type: none"> • The transport vehicle suitable for the task, of adequate strength and in good condition. • Permit the cylinders to be transported in the upright position. • Be open (preferred) or have adequate ventilation. • Drivers and members of the vehicle crew are not permitted to smoke in or near any vehicle that is being loaded or unloaded with or transporting LPG cylinders. 	Supplier/Customer
Storage	<ul style="list-style-type: none"> • Vapourised liquefied petroleum gas can form explosive mixtures with air. 	<ul style="list-style-type: none"> • Sufficient space should be left in gas tanks to allow gas expansion and to prevent leakage of gas from any underground tanks. • Storing the cylinder outdoors in a well-ventilated area. 	Supplier

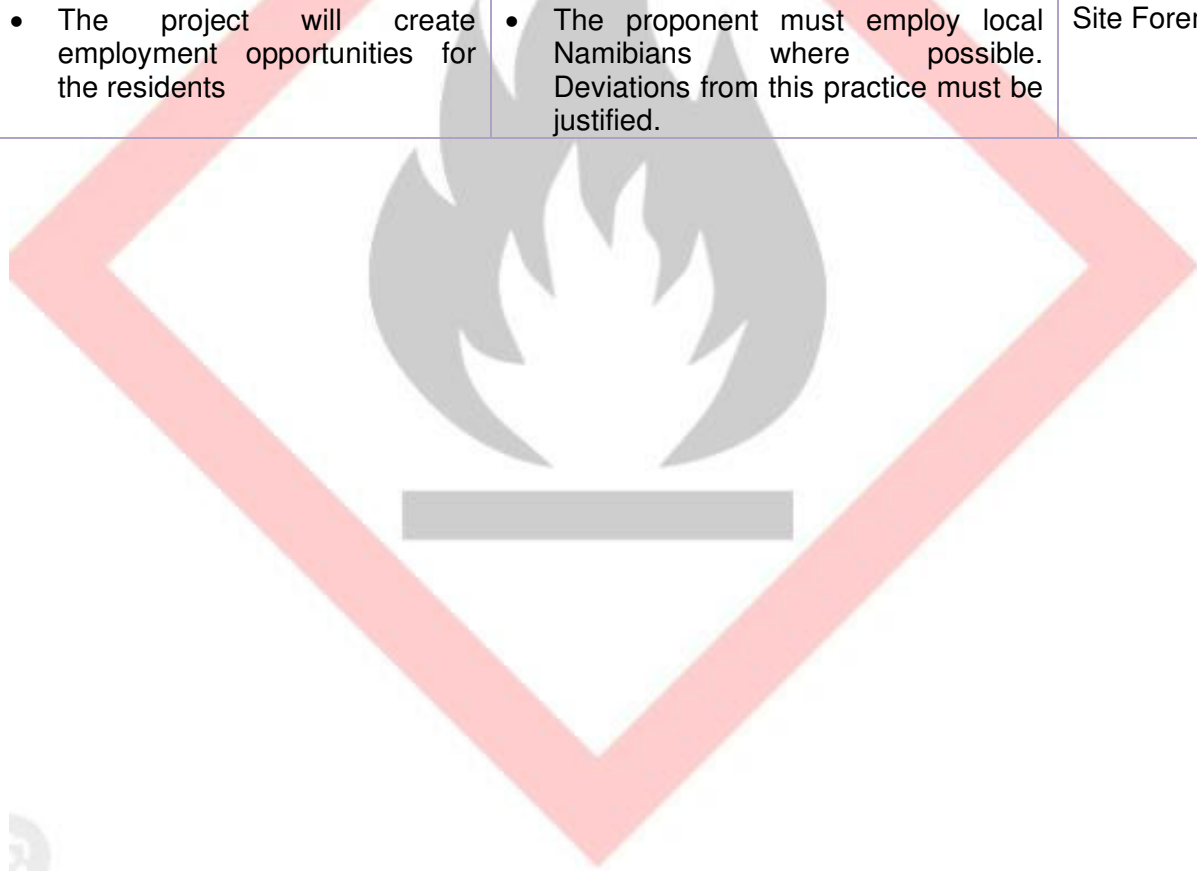
		<ul style="list-style-type: none"> • LPG gas cylinder storage must always be upright with valves closed, when not in use. • Propane gas cylinders must be prevented from falling and protected from impact and damage. • The gas cylinders storage (LPG cylinder storage) should always be kept away from high traffic areas to minimise any chance of accidental impacts. • The gas cylinders should not be allowed to remain in standing water. • The valve should always be kept closed, even if you believe the cylinder to be empty. 	
<p>Occupational health and safety</p>	<ul style="list-style-type: none"> • The liquefied petroleum gases are non-toxic. Prolonged inhalation of high concentrations has an anaesthetic effect. • The liquid can cause severe burn-like injuries. Contact with the liquid phase can cause severe burnlike injuries 	<ul style="list-style-type: none"> • Staff at the site and contractors should be educated and informed of their environmental obligations. • Means of ignition, i.e. cigarette lighters, lanterns, portable cooking stoves, etc are not permitted to be carried or operated on or in the storage or handling area. • Moreover, the surrounding area should also be free of any flammable materials. • Prompt medical attention is mandatory in all cases of overexposure to vapourised liquefied petroleum gas. • Self-contained breathing apparatus should always be worn when entering area where oxygen depletion may 	<p>Site Forman</p>

		<p>have occurred.</p> <ul style="list-style-type: none"> Always wear PPE such as loose-fitting overalls, safety goggles, gloves and shoes, or boots, when handling containers. 	
Fire control and management	<ul style="list-style-type: none"> Vapourised liquefied petroleum gas is highly flammable. 	<ul style="list-style-type: none"> A holistic fire protection and prevention plan is needed. This plan must include an emergency response plan, firefighting plan and spill recovery plan. Do not extinguish fire unless the leakage can be stopped. DO NOT USE WATER JET. Use dry chemical, CO2 or foam. Maintain firefighting equipment, good housekeeping and personnel training (firefighting, fire prevention and responsible housekeeping practices). Ensure all chemicals are stored according to MSDS and SANS instructions. Maintain regular site, mechanical and electrical inspections and maintenance. Clean all spills / leaks. Follow SANS standards for operation and maintenance of the facility. All dispensers must be equipped with devices that cut gas supply during fires. 	Site Foremen
Public Health and Safety	<ul style="list-style-type: none"> The liquefied petroleum gases are non-toxic but prolonged inhalation of high concentrations has an 	<ul style="list-style-type: none"> Ensure general cleanliness of the building, most importantly the sanitary facilities Selected personnel should be trained 	Site Foremen

	anaesthetic effect.	<p>in first aid and a first aid kit must be available on site.</p> <ul style="list-style-type: none"> • The contact details of all emergency services must be readily available. • Implement and maintain an integrated health and safety management system, to act as a monitoring and mitigating tool, which includes: colour coding of pipes, operational, safe work and medical procedures, permits to work, emergency response plans, housekeeping rules, MSDS's and signage requirements (PPE, flammable etc.). • Security procedures and proper security measures must be in place to protect workers and clients. 	
Water and Energy demand	<ul style="list-style-type: none"> • The operation of the facility will contribute to the local energy and water demand 	<ul style="list-style-type: none"> • Ensure supply of potable water • Enforce energy and water conservation measures 	Site Foremen
Air Quality	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Personnel issued with appropriate masks where excessive gas or vapours are present. • Employees should be coached on the dangers of gas vapours. • Vent pipes must be properly placed as per SANS requirements. 	Site Foremen
Waste generation	<ul style="list-style-type: none"> • The operation of the facility will result in generation of different types of waste 	<ul style="list-style-type: none"> • Waste should be disposed of regularly and at appropriately classified disposal facilities, this includes hazardous material (empty chemical containers, contaminated rugs, paper, water and soil). 	Site Foremen

		<ul style="list-style-type: none"> • The spill catchment traps, and oil water separator should be cleaned regularly, and waste disposed of appropriately. Surfactants (soap) may not be allowed to enter the oil water separator. • See the material safety data sheets available from suppliers for disposal of contaminated products and empty containers. • All hazardous waste should be transported to Walvis Bay for proper handling • Waste reduction measures should be implemented and all waste that can be re-used /recycled must be kept separate. • Ensure adequate disposal storage facilities are available. 	
Traffic Impact	<ul style="list-style-type: none"> • Traffic impacts will result from delivery vehicles and customer vehicles moving in and out of the site 	<ul style="list-style-type: none"> • Erect clear signage regarding access and exit points at the facility. Clear indications of gas deliveries and related down-time communicated to motorists. • Tanker trucks delivering gas should not be allowed to obstruct any traffic in surrounding streets. • Have parking spaces for motorists utilizing the shop and offices. • The placement of signs to warn and direct traffic will mitigate traffic impacts. 	Site Foremen
Skills, technology and Development	<ul style="list-style-type: none"> • The project will create opportunity for skill 	<ul style="list-style-type: none"> • If the skills exist locally, contractors must first be sourced locally, then the 	Site Foremen

	development and skill transfer in the gas industry	<p>region and then nationally. Deviations from this practice must be justified.</p> <ul style="list-style-type: none"> • Skills development and improvement programs to be made available as identified during performance assessments. • Employees to be informed about parameters and requirements for references upon employment. Give priority to local people 	
Employment opportunities	<ul style="list-style-type: none"> • The project will create employment opportunities for the residents 	<ul style="list-style-type: none"> • The proponent must employ local Namibians where possible. Deviations from this practice must be justified. 	Site Foremen

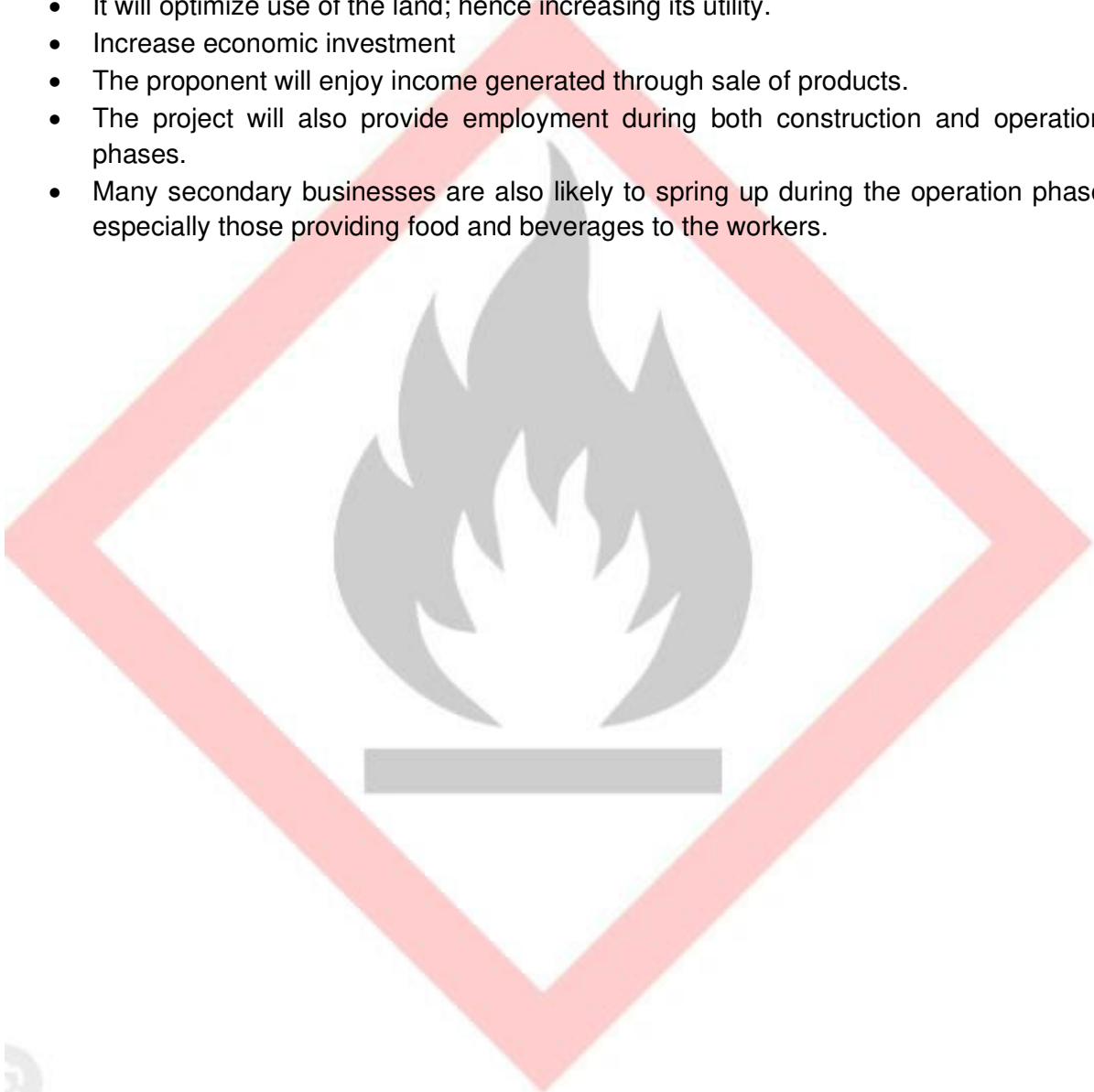


7. POSITIVE IMPACTS

7.1 Identified Positive impacts

The project has potential to give rise to a number of socio-economic positive impacts to the town of Swakopmund as follows.

- Provision of a convenient LPG refilling facility
- It will optimize use of the land; hence increasing its utility.
- Increase economic investment
- The proponent will enjoy income generated through sale of products.
- The project will also provide employment during both construction and operation phases.
- Many secondary businesses are also likely to spring up during the operation phase especially those providing food and beverages to the workers.



8. ENVIRONMENTAL MANAGEMENT SYTEM (EMS)

The Environmental Management System (EMS) is an internationally recognized and certified management system the organization's environmental programs in a comprehensive, systematic, planned and documented manner. The proponent should develop and implement an EMS for the operations of the proposed storage and handling facility. The EMS ensures ongoing incorporation of environmental constraints. With the aim to improve the environmental performance with resulting increases in operational efficiency, financial savings and reduction in environmental, health and safety risks.

The key elements of an effective EMS are:

- The development of an Environmental Policy, which is a statement of a company's commitment to the environment and can be used as a framework for planning and action.
- An assessment of corporate activities, products, processes and services that might affect the environment.
- Details of environmental regulations and legislation that apply to the business and how to comply with these.
- Written procedures to control and document activities that could have a significant environmental impact.
- An environmental improvement programme, including policies and procedures to manage waste and resources.
- Defined environmental roles and responsibilities for staff.
- A formal and recorded staff training and environmental awareness programme;
- Systems for internal and external communications on environmental management issues.
- A record of environmental performance against set targets.
- Systems to identify and correct problems and prevent their recurrence.
- Emergency procedures to follow and contact numbers in the event of an environmental incident.
- Periodic audit to verify that the EMS is operating as intended; and
- Formal review by senior management with a view to adapting and improving the EMS as necessary.
- A spill kit must be available onsite at all times

9. DECOMMISSIONING AND REHABILITATION

9.1 Decommissioning procedures

There is an inherent environmental risk with storage and handling of LPG, therefore the removal of redundant infrastructure should be done expeditiously. The decommissioning of the LPG storage tank is the responsibility of the gas supplier. It is its flammability that makes LPG potentially dangerous if improperly handled. The empty LPG tank will still contain LPG in vapour form and is thus potentially dangerous. The gas supplier will follow the necessary procedures such as.

- Ensure an isolating valve is in place/activated
- Cut through or disconnect the connecting pipes
- Cut through or remove the retaining clamps or straps
- Remove the tank to safe storage
- Consider the health and safety aspects as follow
 - LPG tanks should never be drilled or pierced to remove the LPG
 - Consideration must be given to the hazard of working in an explosive atmosphere
 - only approved equipment should be used
 - Only suitably trained personnel should be allowed to work on LPG vehicles before the LPG tank is removed

9.2 Rehabilitation

Rehabilitation is defined as the process of taking all the necessary actions to repair the damaged environment in-order to make the land suitable for other uses or to simply beautify the affected area. In this case, the rehabilitation will entail the following.

- Removal of all waste produced to be disposed of appropriately. All general waste should be collected and disposed of at the Swakopmund dumpsite.
- All hazardous waste should be transported to Walvis Bay Landfill site
- Clean up all spills and leave the area safe and tidy.
- Recyclables should be collected and send to local scrap yards

10. COMPLIANCE MONITORING

To ensure continual improvement in environmental performance and reduce adversity of potential negative impacts, it is advisable to keep monitoring the identified environmental receptors. The proponent must ensure that compliance monitoring is conducted at different intervals/frequencies throughout the operational life span as indicated in the table below.

Table 4: Monitoring during operation phase

The issue to be monitored	Monitoring Objectives	What needs to be monitored	Frequency and means of Monitoring
Leaks	Prevent environmental pollution	-Overflows, leakages, etc.	Daily inspections and meter reading
Public Health risks	Operate the project in an environmentally friendly and socially acceptable manner.	Chemical exposure and presence of health hazards	Daily inspections and physical observation.
Occupational health risks	Ensure health and safe working condition	Chemical exposure and presence of health hazards	Daily physical observations.
Waste management	Prevent environmental pollution and contamination.	Litter chemical storage & handling, cleanliness, Chemical composition of sludge.	Daily inspections and physical observation. -quarterly chemical testing
Implementation of the EMP	Ensure compliance to this EMP and adherence to the regulative measures during the operation, maintenance, and decommissioning phase	Implementation of specified measures and compliance to the EMP and other relevant legal requirements.	Biannual environmental report to MEFT.

11. EMERGENCY RESPONSE PLAN

Emergencies can occur at any time or place either during the construction and operation of the proposed facility. Some of the emergencies which are associated with the proposed project are as follows.

- Substance spillage i.e., oil, gas, chemicals, etc.
- Fire outbreak
- Accidents

Table 5: Emergency response plan

NO.	Type of Emergency	Response actions	Responsible
1.	Spills and leakages	<ul style="list-style-type: none"> • Stop and control the spill at the source first. • Contain the spill/leakage with appropriate containers i.e., drip trays, sumps, etc., and in an approved manner to the satisfaction of the ECO • Clean the affected area with water or an approved cleaning product. • Follow the MSDS (Annexure C) • The contaminated soil should be removed and disposed of at the Walvis Bay landfill site. • Repair vehicle or machinery with leakage. • If it cannot be repaired, such vehicle or machinery should not be used until it is safe to do so. • Report the incident to the RE and record it in the logbook. 	Site Foreman
2.	Fire outbreak	<ul style="list-style-type: none"> • Follow the holistic Fire Approach as presented in Annexure B 	Site Foreman
3.	Accident i.e., injury to a person	<ul style="list-style-type: none"> • The priority after an accident should be to get medical attention for an injured person. • Assess the injured person's situation by checking breath, pulse. • Follow the MSDS (Annexure C) • Notify the First Aid Person • Assist the First Aid Personnel • Record in the incident report form. • Report incident to the Line Manager 	Site Foreman

12. CONCLUSION

The preparation of this EMP is based on the current information provided, any changes or deviation with regards to the proposed pipeline route and /or the proposed ground level reservoir site shall trigger changes to this EMP. If all mitigation measures are implemented as outlined in the EMP, it is anticipated that the consequences and/or probability of the predicted negative impacts will be managed/reduced.

The proponent should play a pivotal role in the implementation of this EMP and should ensure proper coordination with other stakeholder and provide training to all employees, contractors and sub-contractors. The proponent should also ensure to avail necessary resources (i.e., human, financial etc.) and synergies to enable the implementation of this EMP.

The implementation of the EMP can be combined with the company Health, Safety and Environmental (SHE) Policy. Monitoring of certain environmental parameters must be conducted regularly as outlined in this EMP. Environmental biannual reports must be kept available for possible submissions to the MEFT and ensure the renewal of the project's ECC.

Upon approval by the MEFT, this EMP should be used as an on-site reference document for the project, during the operation, maintenance, and decommissioning phase, thus a copy of this EMP shall be always kept onsite. It is a legally binding document, thus, any deviation or transgression from this EMP is punishable by law as per the Environmental Management Act 07 of 2007. Parties responsible for transgressing may be held responsible for any rehabilitation that may need to be undertaken.

Annexure A: Environmental Compliance Monitoring Checklist

PART 1: ADMINISTRATIVE INFORMATION

Project Title:		Date:
Project location:	Reporting period	Individual Preparing Checklist:
Region:		Department:
Line Manager		Phone No.:

PART 2: ENVIRONMENTAL ASPECTS

ENVIRONMENTAL ASPECT/IMPACT	ENVIRONMENTAL COMPLIANCE (AS PER EMP REQUIREMENT?)		<i>Remarks (specify the location, a good practice observed, causes of non-conformity, and proposed action)</i>
	YES	NO	

PART 3: RECOMMENDATION

FOR EACH ITEM CHECKED IN PART 2, DESCRIBE THE CORRESPONDING CONTROLS TO BE IMPLEMENTED TO REDUCE POTENTIAL ENVIRONMENTAL IMPACTS (e.g., spill prevention, erosion controls, air emission controls including dust suppression, selection of materials, etc.). Provide details of the activities and impacts for each box and the proposed mitigations. Include attachments where appropriate. Use the same number system for your input.

ECO: Signature: _____ Date: _____

Line Manager Signature: _____ Date: _____

Annexure B: Fire response Plan



STEP 1

- Do not panic
- Press the nearest alarm button
- Rescue any person in immediate danger, if safe to do so



STEP 2

- If possible, commence fighting the fire
- Call fire brigade



STEP 3

- Leave the building by the nearest emergency exit
- Ensure all other personnel are warned along the way
- Do not stop to collect personal belongings
- Do not use lifts, use stair ways



STEP 4

- Report to the assembly point
- Do not return to the building until authorized to do so

Annexure C: LPG Material Safety Data Sheet



MATERIAL SAFETY DATA SHEET (MSDS)

SAFETY GAS

Please ensure that this MSDS is received by the appropriate person

DATE: December 2017

Version 3

Ref. No.: MS111

1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT IDENTIFICATION

Product Name: SAFETY GAS (LIQUEFIED PETROLEUM GAS)
Chemical Formula: C3H8 PLUS C4 H10 PLUS C3 H6
Trade name: Safetygas
Colour Coding: Plascon Dark Admiralty Grey (SABS 1091 – G.12) body, with a Handigas decal affixed to the cylinder. All cylinders fitted with an internal eductor tube for liquid withdrawal shall be clearly marked with two Yellow (B.49) stripes painted diametrically opposite each other along the length of the cylinder.
Valve: Brass 5/8 inch BSP left hand female, either single or two-way outlet.
Company Identification: African Oxygen Limited
 23 Webber Street
 Selby, Johannesburg
 South Africa
 Tel. No: (011) 490 0400
 Fax. No: (011) 490 0506

EMERGENCY NUMBER 0860 020202 or 011) 873 4382 (24 hours)

2 COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name Butane / Propane / Propylene
Chemical Family Aliphatic Hydrocarbon
CAS NO. BUTANE 106-97-8 UN NO.1075
 Propane 74-98-6 UN No. 1978
 Propylene 115-07-01 UN No. 1077
UN No. 1075
ERG No. 115
Hazchem Warning 2A Flammable gas

3 HAZARDS IDENTIFICATION

Vapourised liquefied petroleum gas is highly flammable and can form explosive mixtures with air. The vapourised liquid does not support life. It can act as a simple asphyxiant by diluting the concentration of oxygen in the air below the levels necessary to support life. It can act as a simple asphyxiant.

Adverse Health effects

The liquefied petroleum gases are non-toxic. Prolonged inhalation of high concentrations has an anaesthetic effect

Chemical Hazards

Propane and butane (known as extensively in commercial and popular terms as Lpgas or LPG) have an extremely wide range of domestic, industrial, commercial, agricultural and internal combustion engine uses. It is estimated that two gases, un-mixed and in mixtures, have several thousand industrial applications and many more in other fields. Their very broad application stems from their occurrences as hydrocarbons between natural gas and natural gasoline, and from their corresponding properties. As a result of their wide application, misuse could result in serious chemical hazards.

Biological Hazards.

Contact with the liquid phase of liquefied petroleum gases with the skin can result in frostbite.

Vapour Inhalation

As the vapourised liquid act as a simple asphyxiant death may result from errors in judgement, confusion, or loss of consciousness which prevents self-rescue. At low oxygen concentrations, unconsciousness and death may occur in seconds without warning.

Eye Contact The liquid can cause severe burn-like injuries.
Skin Contact Contact with the liquid phase can cause severe burn-like injuries.
Ingestion No known effect

Hazard Category

1



Danger
Extremely flammable gas

4 FIRST AID MEASURES

Prompt medical attention is mandatory in all cases of overexposure to vapourised liquefied petroleum gas. Rescue personnel should be equipped with self-contained breathing apparatus. In the case of frostbite from contact with the liquid phase, place the frost bitten part in warm water, about 40 –42 °C. If warm water is not available. Or is impractical to use, wrap the affected part gently in blankets. Encourage the patient to exercise the affected part whilst it is being warmed. Do not remove clothing whilst frosted. Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Unconscious persons should be removed to an uncontaminated area, and given mouth-to-mouth resuscitation and supplemental oxygen.

Eye contact (with liquid phase)

Eye contact Immediately flush with large quantities of tepid water, or with sterile saline solution. Seek medical attention

Skin Contact See above for handling of frostbite

Ingestion No known effect

Precautionary Statements:

P210: Keep away from heat/ sparks/open flames/ hot surface.
 No Smoking

P377: leaking gas fire: Do not extinguish, unless leak can be stopped safely.

P381: Eliminate all ignition sources if safe to do so.

P403: Store in a well-ventilated place.

Hazard Statements:

H220: Extremely flammable gas.

5 FIRE FIGHTING MEASURES

Extinguish media

Do not extinguish fire unless the leakage can be stopped. DO NOT USE WATER JET. Use dry chemical, CO2 or foam.

Specific Hazards

The rupturing of cylinders or bulk containers due to excessive exposure to fire could result in a BLEVE (Boiling Liquid expanding Vapour Explosion), with disastrous effects. As the flammability limits in the air for the main constituents of liquefied petroleum gas vary between approximately 2 and 11% by vol, extreme care must be taken when handling leaks.

Emergency actions

If possible shut off the source of spillage. Evacuate area. Post notices "No Naked lights – No Smoking". Prevent liquid or vapour from entering sewers, basements and workpits. Keep cylinders or bulk vessels cool by spraying with water if exposed to fire. If tanker has overturned, do not attempt to right or move it. CONTACT THE NEAREST AFROX BRANCH.

Protective Clothing

Self contained breathing apparatus. Safety gloves and shoes, or boots, should be worn when handling containers.

Environmental precautions.

Vapourised liquefied petroleum gas is heavier than air and could form pockets of oxygen-deficient atmosphere in low lying areas.

6 ACCIDENTAL RELEASE MEASURES

Personal Precautions

Do not enter any area where liquefied petroleum gas has been spilled unless tests have shown that it is safe to do so.

Environmental Precautions.

The danger of widespread formation of explosive LPG/Air mixtures should be taken into account. Accidental ignition could result in massive explosion.

Small spills

DO NOT extinguish the fire unless the leakage can be stopped immediately. Once the fire has been extinguished and all spills have been stopped, ventilate the area.

Large spills

MATERIAL SAFETY DATA SHEET (MSDS)

SAFETY GAS

Please ensure that this MSDS is received by the appropriate person

Stop the source if it can be done without risk. Contain the leaking liquid, with sand or earth, or disperse with special water/fog spray nozzle. Allow to evaporate. Restrict access to the area until completion of the clean-up procedure. Ventilate the area using forced-draught if necessary. All electrical equipment must be flameproof.

7 HANDLING AND STORAGE

Cylinders containing liquefied petroleum gas should only be handled and stored in the vertical position. Cylinders should never be rolled. Do not allow cylinders to slide or come into contact with sharp edges and they should be handled carefully. Ensure that cylinders are stored away from oxidants. Comply with local legislation..

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Hazards.

As vaporised LPG is a simple asphyxiant, avoid any areas where spillage has taken place.

Engineering control measures.

Engineering control measures are preferred to reduce exposure to Oxygen-depleted atmospheres. General methods include forced-draught ventilation, separate from other exhaust ventilation, separate from other exhaust ventilation systems. Ensure that all electrical equipment is flameproof.

Personal Protection.

Self-contained breathing apparatus should always be worn when entering area where oxygen depletion may have occurred. Safety goggles, gloves and shoes, or boots, should be worn when handling containers.

Skin. Wear loose-fitting overalls, preferably without pockets.

9 PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Specific Volume @ 20°C & 101,325 kPa	471ml/g
Auto ignition temperature	450°C
Relative density (Air=1) @101,325kPa	+1,75
Flammability in air	2,2-9,5%
Colour – Liquid	Clear
Taste	None
Odour	EthylMercaptan
Specification	SANS 1174

10 STABILITY AND REACTIVITY

Conditions to avoid

The dilution of the oxygen concentration in the atmosphere to levels which cannot support life. The formation of explosive gas/air mixtures.

Incompatible Materials

Any common, commercially available metal may be used with commercial (or higher) grades of liquefied petroleum gases because they are non-corrosive, though installations must be designed to withstand the pressure involved and must comply with all state local regulations.

Hazardous Decomposition Products.

The constituents of liquefied petroleum gas are relatively stable. However, on combustion, toxic compositions, typically carbon monoxide, may be formed, depending on conditions.

11 TOXICOLOGICAL INFORMATION

Acute Toxicity	TLV 1000 VPM
Skin & eye contact	No known effect.
Carcinogenicity	Severe cold burns can result in carcinoma

(For Further information see Section3.Adverse Health Effects)

12 ECOLOGICAL INFORMATION

Vapourised liquefied petroleum gas is heavier than air, and can cause pockets of oxygen-depleted atmosphere in low-lying areas. It does not pose a hazard to the ecology, unless the gas/air is ignited.

13 DISPOSAL CONSIDERATIONS

Disposal Methods Disposal of Propane, as with other flammable gases, should be undertaken only by personnel familiar with the gas and the procedures for disposal. Contact the supplier for instructions. In general, should it become necessary to dispose of Propane, the best procedure, as for other flammable gases, is to burn them in suitable burning unit available in the plant. This should be done in accordance with appropriate regulations.

Disposal of packaging The disposal of cylinders must only be handled by the gas supplier.

14 TRANSPORT INFORMATION

ROAD TRANSPORTATION

Road Transportation	
UN No.	1075
ERG No.	115
Hazchem warning	2A-Flammable gas

SEA TRANSPORTATION

IMDG	1075
Label	Flammable gas

AIR TRANSPORTATION

ICAO/IATA Code	1075
Class	2.1
Packaging group	Cargo 200
Packaging instructions	Passenger Forbidden
Maximum Quantity allowed	Cargo 150kg
	Passenger Forbidden

15 REGULATORY INFORMATION

EEC Hazard class Non-flammable
 National legislation OHSact and Regulations 85 of 1993
 Reference SANS 10234 and its supplement.

16 OTHER INFORMATION

Bibliography
 Handbook of Compressed Gases - 3rd Edition
 Matheson. Matheson Gas Data Book - 6th Edition
 Supplement to SANS 10234 – List of classification and labelling of chemicals in accordance with Globally Harmonized System (GHS)

EXCLUSION OF LIABILITY

Whilst AFROX made best endeavour to ensure that the information contained in this publication is accurate at the date of publication, AFROX does not accept liability for an inaccuracy or liability arising from the use of this information, or the use, application, adaptation or process of any products described herein.