
Environmental Management Plan (EMP)

To Support an Application for an Environmental Clearance Certificate (ECC)
for the Construction and Operation of a New Fuel Retail Outlet and Related
Amenities

Intersection of D3236 and C35 Gravel Roads
Outjo District

Kunene Region



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INFORMATION SHEET

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ABBREVIATIONS AND ACRONYMS

Acronyms	Expansion
EC	Environmental Commissioner
ECC	Environmental Clearance Certificate
EIA	Environmental Impact Assessment
EMA	Environmental Management Act (Act No. 7 of 2007)
EMP	Environmental Management Plan
EMS	Environmental Management System
FRO	Fuel Retail Outlet
HDPE	High Density Polyethylene
HSSEQC	Health, Safety, Security, Environment, Quality – Management System
IAPs	Interested and Affected Parties
m ³	Cubic meter
MEFT	Ministry of Environment, Forestry and Tourism
MIME	Ministry of Industries, Mines and Energy
MSDS	Material Safety Data Sheet
NamRA	Namibia Revenue Authority
NSI	Namibia Standards Institute
OEC	Office of the Environmental Commissioner
PC	Petroleum Commissioner
PPE	Personal Protective Equipment
PPM	Parts Per Million
PV	Photovoltaic
SANS	South African National Standards
SAR	Scoping Assessment Report
SHE	Safety, Health & Environment
SME	Small and Medium Enterprises
ULP	Unleaded Petrol
USTs	Underground Storage Tank(s)
VOC	Vapour Organic Compounds
WHO	World Health Organisation
WC	Water Closet
UNESCO	United Nations Educational, Scientific and Cultural Organisation

Road Number	Expansion
C35	The tourist route number for the regional road which starts from C34 just north of Henties Bay up to C46 at Ruacana. It covers a distance of ±620 km and passes via the settlements of Uis, Fransfontein, Kamanjab and Omakange. The section between Kamanjab and Ruacana (±300 km) has been tarred. The section between Henties Bay and Uis (±120 km) is about 80% complete. The tender for the section between C39 (just outside Khorixas) and Kamanjab (±105 km) has been awarded. Duration for the construction is ±30 months.
D3236	The district road number for the gravel road starting at the project site, linking C35 to C40 and covering a distance of ±70 km. It provides access to important destinations within the Kunene Region formally known as the Damaraland including the commercial and communal farming communities.
C40	The tourist route number for the road starting at Outjo up to Palmwag Concession passing via Kamanjab and covering a total distance of ±260 km. The section of C40 between Outjo and Kamanjab (±157 km) has been tarred.

DEFINITION OF TERMS

TERM	EXPANSION
Alternatives	Alternatives are different ways to achieve the same project objective, including options for location, design, technology, or scale, along with a 'no-action' alternative.
Construction Phase	The phase of a project which precedes the operational phase, during which project facilities and infrastructure are assembled and installed on their foundations, and connected and tested, to ensure that they operate as designed.
Cumulative Impacts	In relation to a project activity, means how the combined effects /impacts of a particular project interact and accumulate over time and space with other past, present or future actions to affect an ecosystem or community.
Emergency Plan	A plan in writing that on the basis of identified potential incidents at the installation together with their consequences, describes how such incidents, and their consequences should be dealt with, both on site and off site.
Environment	As definite in the Environmental Management Act means the complex of natural and anthropogenic factors and elements that are naturally interrelated and affect the ecological equilibrium and the quality of life, including – (a) the natural environment that is land, water, and air, all organic and inorganic matter and living organism and - (b) the human environment that is the landscape and the natural, cultural, historical, aesthetic, economic and social heritage and values.
Environmental Component/Aspect	An attribute or constituent of the environment (i.e. air quality; waste management, seismicity, soil, groundwater; terrestrial ecology, noise, traffic, socio-economic) that may be impacted by the proposed project.
Environmental Impact	A description of the potential effect or consequence of an aspect of the development on a specified component of the biophysical, social or economic environment within a defined time and space.
Environmental Management Plan (EMP)	A working document which contains site specific plans to ensure that environmental management practices to eliminate and control environmental impacts are followed during the developmental phases of that site, project and or facility and would normally consist of construction phase, operational phase and decommissioning phases.
Environmental Monitoring	Means collection, evaluation and summarization of environmental data by continuous or periodic monitoring of certain qualitative and quantitate indicators characterizing the state of environmental components and their modification as a result of the impact of natural and anthropogenic factors.
Hazardous Waste	Any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical or toxicological characteristics of that waste, have detrimental impact on health and the environment.
Industrial Waste	Means waste generated as a result of business, commerce, trade, wholesale, retail, professional, manufacturing, maintenance, repair, fabricating, processing or dismantling activities, but does not include domestic waste, garden or bulky waste, builders' waste or health care risk waste.
Interested and Affected Parties	All persons who may be affected by the project either directly or indirectly, or who have an interest or stake in the area to be affected by the project, including neighbouring landowners & Road Fund Administration.
Material Safety Data Sheet	According to ISO 11014, a material safety data sheet (MSDS) is a document that contains information on the potential health effects of exposure to chemicals, or other potentially dangerous substances and on safe working procedures when handling chemical products. It is an essential starting point for development of a complete health and safety program. It contains hazard evaluations on the use, storage, handling and emergency procedures related to that material. The MSDS contains much more information about the material than the label and it is prepared by the supplier. It is intended to tell what the hazard of the product are, how to use the product safely, what to expect if the recommendations are not followed, what to do if accidents occur, how to recognise symptoms of overexposure and what to do if such incidents occur.
Mitigation	Measures designed to avoid, reduce or remedy adverse impacts.
Non-compliance	Issues that are in direct non-compliance with the requirements, commitments and/or management measures as approved in the EMP.
Operational Phase	The phase of a project during which the newly constructed facility/tanks, pipelines, gantries and associated facilities are operated.
Proponent	An organisation (private or public) or an individual who intends to implement a development proposal. As definite in the Environmental Management Act, the proponent is a person who proposes to undertake a listed activity.

Risk	Risk is the measure of the consequence of a hazard and the frequency with which it is likely to occur. Risk is expressed mathematically as: Risk = Consequence x Frequency of Occurrence.
Risk Assessment	The risk assessment is the process of collecting, organising, analysing, interpreting, communicating and implementing information in order to identify the probable frequency, magnitude and nature of any major incident which could occur at a major hazard installation, and the measures required to remove, reduce or control the potential causes of such an incident.
Scoping	The preliminary stage during which key environmental issues and impacts of a proposed project are defined. It involves identifying potential effects, deciding which topics need further assessment, and outlining the methodology for the assessment to focus the study on the most significant environmental issues and reduce uncertainty. The results of a scoping are frequently used to prepare Terms of Reference for the specialized input into the full EIA.
Sensitive Area	An area or environment where a unique ecosystem, habitat for plant and animal life, wetlands or conservation activity exists or where there is high potential for ecotourism
Significance Impact	Means an impact that by its magnitude, duration, intensity or probability of occurrence may have a notable effect on one or more aspects of the environment.
Stakeholder	Stakeholders are divided into two classes – statutory stakeholders (i.e. MEFT, Ministry of Labour, etc. and non-statutory stakeholders who could be interested and affected parties (IAPs). IAPs could be those public members whose interests may be positively or negatively affected by the project and/or who are concerned with the project/activities and its consequences.

1 THE ENVIRONMENTAL MANAGEMENT PLAN

1.1 Introduction

This is an Environmental Management Plan (EMP) prepared to serve as a standalone plan to manage, prevent or reasonably avoid adverse environmental impacts and to enhance any positive environmental benefits associated with the construction and operation of a proposed fuel retail outlet (FRO). The EMP has to be read in conjunction with the scoping assessment report prepared to support the application for an Environmental Clearance Certificate (ECC) with the reference number – APP006750.

The management of the FRO is expected to use the EMP as an onsite source document catering for all phases – planning/design, construction, operation (including renovation and routine maintenance) and decommissioning. In this regard, the EMP is to serve as a tool aimed at taking pro-active actions, by addressing potential problems before such problems actually occur.

1.2 Objectives

The goals and objectives of this EMP are, amongst others:

- To establish management objectives for the FRO, to enhance benefits and minimise adverse environmental impacts.
- To describe the actions required to achieve the management objectives, and to outline the roles and functions of institutional stakeholders, the promoter, contractors or any other third party who may be hired to work on any aspect of the FRO.
- To ensure good housekeeping practices, and general neatness of the facility during all its phases – construction, operation and decommissioning (including routine maintenance and renovations).
- To mitigate any possible negative impacts identified in the scoping assessment report.
- To prevent pollution/contamination to the receiving environment that may emanate directly or indirectly from construction and operational activities required for the facility.
- To ensure that all legislative requirements are adhered to by the management /promotor throughout the lifespan of the FRO.

1.3 Project Location

The location of the project is the intersection of the regional road C35 and district road D3236, in the Outjo district in the Kunene region, as more or less depicted on the Google earth image in Figure 1. These two public roads meet on the Farm Orpheus No. 419 owned by the promoter. The FRO is developed on the farmland and not on the road reserve which is protected by servitude rights.

The regional road C35 which runs from Henties Bay to Ruacana, covers a total length of ±620 km. At present approximately 400 km of C35 has been tarred, while the tender to tar the ±105 km section between Khorixas and Kamanjab has been awarded this year with a construction duration of ±30 months. Once the upgrade is complete, C35 route will provide the shortest route to northern regions from the coastal towns.

In the long term, the facility at T-junction of D3236 and C35 is therefore strategically located to capture a large portion of the traffic volume on C35 – including communal and commercial farms in the district of Outjo.

1.4 The Development Footprint

The preliminary plan is for the FRO to start with three underground storage tanks (USTs) with the capacities as indicated in Table 1, below. The industry standard requires all FRO to have an overhead canopy and a set of pumps installed on an island. The pumps are connected to a network of pipelines and electrical wiring to aid in the dispersal of fuel. Standard items required include a spill control infrastructure and vent pipes to allow the release of pressure from USTs, preventing the risk of explosion or tank rupture.

Table 1: The Initial Capacity of the FRO

Underground Storage Tanks (USTs)	Product	Capacity (liters)
UST #1	Automobile diesel (ADO) – 10 ppm & 50 ppm	23 000
UST #2	Automobile diesel – 10ppm & 50ppm	23 000
Total for ADO		46 000
UST #3	Unleaded Petrol (ULP)	23 000
Total for ULP		23 000
Total Fuel Combined Storage Capacity		69 000

1.5 Industry Standards

Since Namibia is still developing its standards and specifications for FROs, the construction and operation of the facility will be carried out in compliance with the relevant sections of SANS (South Africa National Standards), e.g. SANS 10089:3.

1.6 Impact Management Outcome

Through effective implementation of the EMP, some of these outcomes may be achieved:

- Planning and layout of construction site is undertaken by professional engineers and carried out in a manner that ensures the protection of the environment.
- Environmental awareness creation and training is undertaken throughout all phases of the FRO development to minimise, reduce, avoid or to eliminate environmental impacts and ensure compliance with relevant legislations and policies.
- Minimal environmental impacts associated with emergency procedures and a safe working environment for contractors/construction workers and the public is provided.
- The construction site is established with minimal environmental impacts.
- Proper management of labour force is undertaken to ensure that:
 - There are no security-related issues or disturbance outside the construction footprint.
 - There is optimal use of local labour.
- Minimise environmental impacts associated with ablution facilities and reduce the generation of waste by changing behaviours of contractors throughout the development by encouraging waste separation, waste re-use, waste recycling thereby decreasing waste disposal volumes and limiting constraints on existing waste landfill sites within the close proximity of the facility.
- Effective and safe management of hazardous and non-hazardous materials on site, in order to minimise the impact of materials on the environment.
- Ensure that all possible causes of pollution are mitigated as far as possible to minimise impacts to the surrounding environment by preventing polluted wastewater from entering the natural environment and contaminating surface and groundwater sources.
- Minimise noise disturbance to surrounding areas and adequate reinstatement and rehabilitation of construction areas.

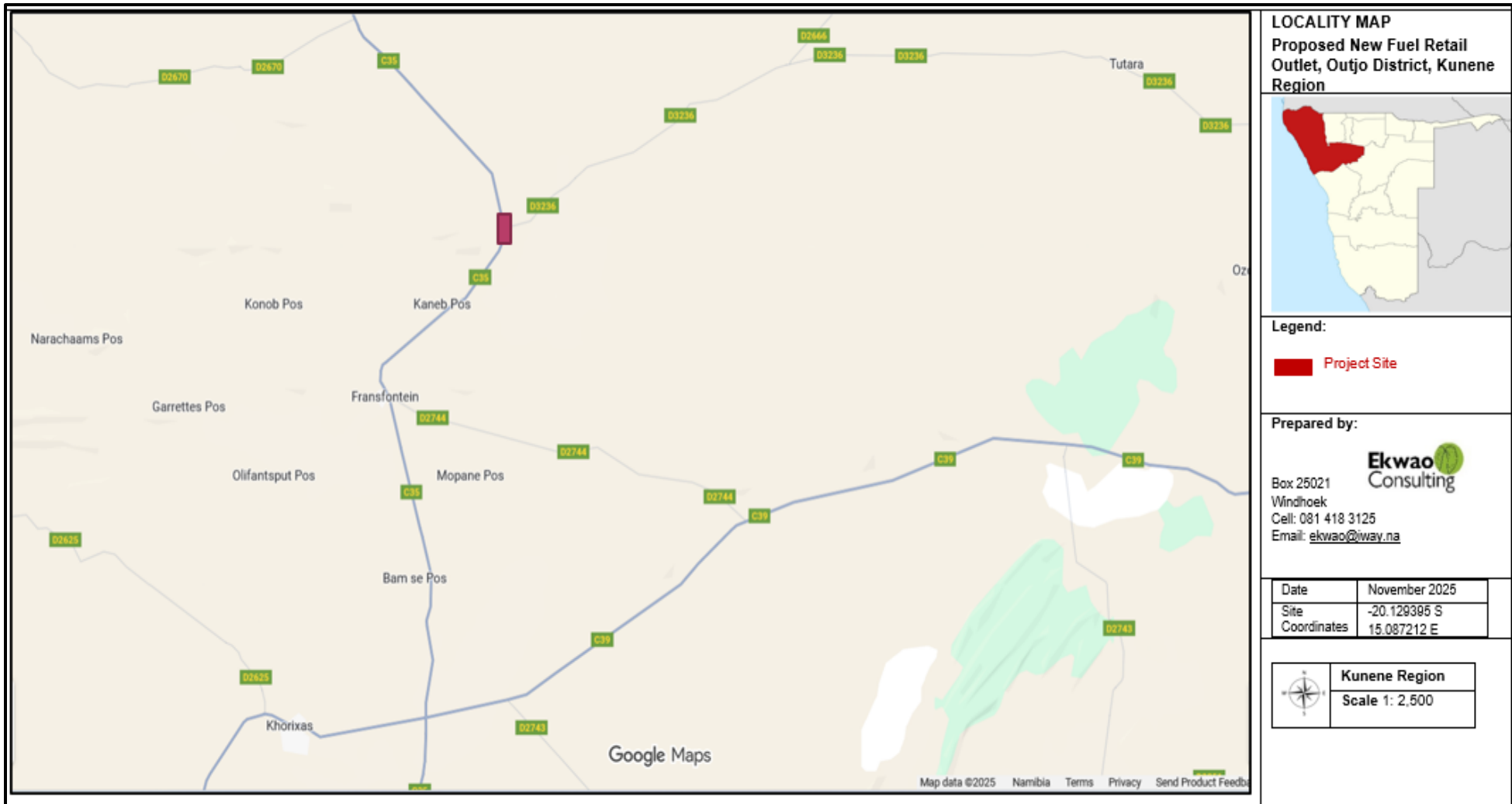


Figure 1: Project Location Map (Google Earth Image)

2 ROLES AND RESPONSIBILITIES

Various role players - statutory and non-statutory have different roles and functions to play throughout the lifespan of the proposed development. Some role players as well as their roles and functions are provided in Tables 2 and 3:

2.1 Roles of Statutory Stakeholders

In Table 2 is the list of statutory stakeholders who have direct bearings on the specific project and some of the functions performed by key officials in such institutions.

Table 2: Roles and Responsibilities of Statutory Stakeholders

Stakeholder/ Party	Functions and Responsibilities
The Environmental Commissioner (EC)	<p>EMA is implemented by the EC within MEFT. Amongst the roles and functions of the EC are to:</p> <ul style="list-style-type: none"> ✚ grant the ECC and renewals thereof; ✚ ensure overall compliance with the provisions of the EMP; ✚ review this document and any revisions thereof; ✚ undertake site audits at their discretion; ✚ review any environmental audit reports submitted to MEFT; ✚ review any major environmental related incidents/accidents, and ✚ enforce the legal mechanisms for contraventions to the EMP.
The Petroleum Commissioner (PC)	<p>The Petroleum Commissioner (PC) is responsible for ensuring the implementation and compliance of the provisions of the Petroleum Products and Energy Act. Amongst the roles and responsibilities of the PC are to:</p> <ul style="list-style-type: none"> ✚ ensure adequate supply of petroleum products to the nation; ✚ minimise negative impact of petroleum resources exploitation to the environment; ✚ grant licenses to role-players in the petroleum subsector; ✚ initiate policies and regulations for the development of petroleum products; ✚ promote and encourage economic activities in the petroleum subsector; ✚ create a conducive investment climate in the petroleum subsector both upstream and downstream; ✚ regulate, adjust and equalise the prices of petroleum products on a regular basis ✚ undertake inspections/visits to fuel service stations at his/her discretion; ✚ ensure that the high standards of safety and health are upheld and maintained throughout the petroleum subsector, and ✚ enforce the legal mechanisms for any contraventions of the Petroleum Products Act.

2.2 Roles and Functions of the Promoter

The roles and responsibilities of the promoter and other stakeholders are presented in **Table 2**. The duties and functions of key personnel in relation to the proposed development, are also presented. It should be noted that the overall responsibility for the execution of the project, in terms of the Environmental Management Act, lies with the promoter and its technical partners.

Table 3: Roles and Functions of the Promoter

Person Responsible	Functions and Responsibilities
The Promoter	The promoter has to ensure that:

Person Responsible	Functions and Responsibilities
(Mr DPJ Jansen Van Vuuren)	<ul style="list-style-type: none"> ✦ The necessary environment authorizations and permits are obtained and copies. ✦ The tender for the facility construction is given to a reputable and experienced construction company, and a copy of the EMP is provided. ✦ Adequate training on the EMP is provided to all prospective construction personnel as well as to any third party who may be hired for other trades, i.e. electrician, plumber, etc. ✦ Compliance is kept with all applicable legislations, regulations and policies pertaining to its sphere of operation, i.e. a fuel retail outlet. ✦ A competent Environmental Controller Officer (ECO) is appointed to take charge of all safety, health and environmental aspects of the facility during the construction and operational phase. ✦ Quarterly internal EMP compliance inspections are undertaken by the ECO and annual audits submitted to the OEC. ✦ A competent individual is appointed to handle the operational aspects of the FRO with the designation of a Service Manager (SM). ✦ An Emergency Response Plan for the facility is developed and implemented.
The Main Contractor (MC)	<p>The main contractors (MC) will be responsible for constructing the proposed facility and associated infrastructure. Amongst the responsibilities of the MC are:</p> <ul style="list-style-type: none"> ✦ To take full responsibility of construction activities at the site. ✦ Induct all its personnel including subcontractors on the EMP. ✦ Undertake daily site inspections to monitor environmental performance and compliance with the environmental specification. ✦ Notify the ECO as well as the Promotor immediately in the event of any accident or infringements of the environmental specifications and ensure that appropriate remedial action is taken.
An Environmental Control Officer (ECO)	<p>A competent person is to be appointed to serve as an ECO to oversee the environmental aspects of the project during the construction phases. Some of the roles of the ECO are:</p> <ul style="list-style-type: none"> ✦ To manage the environmental activities during the construction and operational and decommissioning phases of the project. ✦ To record environmental incidents (spills, impacts, legal transgressions, etc.) as well as to take corrective and preventive actions. ✦ To attend to any complaints from stakeholders and or IAPs by recording such complaint and taking corrective action. ✦ To prepare environmental compliance reports (e.g. audit/monitoring/compliance) for submission to OEC.
Fuel Service Manager (FSM)	<p>The duties and functions of a Service Manager (SM) are to take charge of the operational phase (the business phase) of the project:</p> <ul style="list-style-type: none"> ✦ The day-to-day management of the facility which includes the EMP, the human resources and physical assets of the business. ✦ Responsible for the overall activities that take place at the fuel facility and related activities including to plan, develop and implement strategy for the facility operation so as to meet agreed business performance plans within agreed budgets and timescales. ✦ To establish and maintain appropriate systems for measuring output, accuracy, productivity, and operational efficiency of necessary aspects of facility operation management and development. ✦ To direct and monitor the health and safety aspects in the business and to conduct identification of hazards and review of risks of activities, products and services on health and safety programme. ✦ To resolve customer issues related to fuel operations.

3 EMP AWEENESS AND EMERGENCIES

The aspects presented in this section include the following:

- An environmental Awareness plan.
- An Emergence Preparedness Plan.
- Breaches of the EMP.
- EMP review and amendments /updates.

3.1 An Environmental Awareness Plan

An Environmental Awareness Plan (EAP) is a strategy aimed at educating and raising awareness about environmental issues and encouraging the personnel and the general public including company employees to adopt sustainable practices and to protect the natural world that we all share. The EAP for this project has to incorporate training and environmental awareness amongst everyone involved in the execution of the project. Potential incidents to the environment may be effectively minimised through effective training and raising of awareness of the workforce through these methods:

- Toolbox talks (daily).
- Supervisory meetings (weekly).
- Induction training (at inception and thereafter bi-annually).
- External environmental and/or health and safety courses (when applicable).

These methods are briefly elaborated upon below:

3.1.1 TOOLBOX TALK

Toolbox talks are important actions aimed at cultivating a culture of safety amongst employees, especially those involved in workplaces that are hazardous with accidents and injuries able to happen at any time (like construction activities). In the context of this project, topics that can be discussed during toolbox talks are:

- *Hygiene*: Discuss how ablution facilities are to be kept neat and tidy.
- *Protective Equipment*: Discuss the importance of using protective equipment such as safety shoes, hard hats, gloves, and safety glasses.
- *Electrical Safety*: Discuss electrical hazards and how to properly use and maintain electrical equipment.
- *Workplace Hazards*: Identify commonly encountered hazards in the workplace such as unstable ladders, slippery floors, sharp objects, and uneven surfaces.
- *Ladder safety*: Discuss the proper use of ladders and how to prevent falls while working them.
- *Machine Safety*: Discuss proper use of construction machinery and equipment, daily pre-start checks and how to prevent accidents while operating them.
- *Emergency Preparedness*: Discuss the importance of knowing emergency procedures.
- CO₂ emissions of Namibia per capita.

3.1.2 SUPERVISORY MEETINGS

Weekly supervisory meetings are ideal to facilitate awareness of specific environmental dangers pertaining to the construction of the FRO. Various topics may be discussed during these meetings and must be recorded. All attendees at each meeting must sign an attendance register and the records kept on file. These topics can be included for discussions:

- Area specific topics (e.g. excavation, hazardous waste, etc.).
- General environmental awareness.
- Waste handling.
- Spillages and or leaks.
- Water saving measures.

- Diesel /fuel consumption.
- Dust control.
- Noise generation.
- Good Housekeeping practices.
- Complains received.

Should issues be identified by the ECO, these can also be addressed during weekly meetings.

3.1.3 TRAINING OF EMPLOYEES

Some of the topics that can be selected and discussed at training workshops at least before construction work starts are listed below. Training topics may be focused around incidents that are frequently reported during routine construction activities.

- Hydrocarbon spillages.
- Noise/dust control.
- Waste management.
- Theft and/or vandalism of construction materials.
- Monitoring protocols.
- Safety topics.

Workers should be informed that they may refuse work that is harmful to human health and/or the environment.

3.1.4 INDUCTION TRAINING

All new employees are required to undergo induction training prior to commencement of construction activities or operation of the facility. Returning and existing employees must undergo repeat induction training at least bi-annually. Environmental awareness training should form part of the induction training and some of these topics can be discussed at such training sessions:

- The main environmental legislations (EMA, etc.).
- Constitutional right pertaining to the environment.
- Waste management hierarchy.
- Decarbonisation agenda.
- Environmental, social and economic concerns.
- Conflict between wild animals and humans in Namibia, etc.
- Prevention of poaching.

3.2 Emergence Response Plan

This is a generic framework for an Emergence Response Plan prepared to support the facility's specific emergency preparedness plan. Each FRO site operates under unique conditions, and as such, this overarching plan serves only as a foundational guide to ensure compliance. This plan must be supplemented with a site-specific emergency preparedness and response plan, tailored to the physical layout, operational activities, identified risks and environmental sensitivities of the site.

3.2.1 SITE-SPECIFIC EMERGENCY PLAN

Site-specific emergency preparedness and response plans are developed for the site to define these parameters:

- The emergency response arrangements and procedures for the site.
- Roles and responsibilities of designated personnel at the site.
- Specific emergency response equipment required and its locations.
- Site specific evacuation routes and assembly points.

- Contact details for internal personnel and external emergency services.
- Environmental protection measures and control applicable to potential site-specific hazards (fuel spill, chemical leaks, fire incidents, etc.).

3.2.2 POTENTIAL EMERGENCIES

Amongst the emergencies that can occur at the facility are:

- Environmental Incidents:
 - Fuel and hydrocarbon spillages.
 - Sewerage spillages from the ablution facilities and sewer pipelines.
 - Fire hazards.
 - Explosion.
- Safety Incidents:
 - Injuries related to operation of construction plants.
 - Driving related accidents/incidents.
 - Fuel conveying pipeline burst.
 - Criminal incidents such as sabotage, theft or potential violent crime.

3.2.3 EMERGENCE PLAN

A central area on the project site should be identified and demarcated with appropriate signage for gathering of all employees and visitors on the site in the event of an emergency.

3.2.4 EMERGENCY PROCEDURE

To manage potential emergencies effectively these procedures can be compiled and adopted for the FRO:

- Drill and evacuation procedure for emergency related incidents containing information on the following:
 - Reporting structure for all incidents.
 - Emergency contact information (e.g. telephone numbers of fire brigade, ambulance, police, etc.).
 - Procedure to be followed for the specific emergency.
 - First aid information.
- Spillage of fuel and hydrocarbons:
 - Immediate action plan (e.g. use of spill kits) to prevent spill from spreading.
 - Reporting of incident to the facility manager and supervisor to advise on next steps to be taken (Note that any spill in excess of 200 litres is a reportable incident).
- Procedure for theft and crime, e.g. cash heist:
 - Details on security system on site.
 - Emergency response units.
 - Panic alarm.
 - Details of police and community response unit.

3.2.5 EMERGENCY CONTACT INFORMATION

A list of potential emergency contact numbers specific to the area must be drawn up and displayed on a common notice board for all employees to access. These are:

- Nearest Police Station.
- Emergency Services (Ambulance, Fire Response, etc.).
- Nearest Health Facility/Clinic or Hospital.

The list must be checked and regularly updated to ensure that the information remains up to date.

3.3 ENVIRONMENTAL EMERGENCIES

This incidents/emergencies will constitute environmental emergencies:

3.3.1 WATER LEAKS OR BURST PIPES

- Identify and shut off the water source.
- Remove equipment from flooded areas.
- Shut off electricity where applicable.
- Prevent contaminated water from entering the natural environment.
- Report to management and call a licensed plumber.

3.3.2 OIL, DIESEL, OR FUEL SPILLS FROM VEHICLES

- Use PPE when handling spills.
- Use spill kits for small volumes.
- For larger spills, isolate the area and contact a supervisor.
- Prevent entry into the natural environment; notify authorities if required.
- Ensure all incidents are reported and investigated.

3.3.3 FUEL SPILLAGE (DIESEL, PETROL & OIL)

Small Spills:

- Staff to wear appropriate Personal Protective Equipment (PPE).
- Use the spill kit to absorb and clean up immediately.
- Store contaminated material in leak-proof containers for offsite disposal at a licensed hazardous waste facility.

Large Spills:

- Prevent the spread using absorbent barriers (e.g., sand).
- Prevent entry into the natural environment.
- Employ a contractor/spill cleaning company to manage and clean the spill.
- Inform environmental authorities, if necessary.

Infrastructure Measures:

- Delivery areas should be designed to drain into a fuel/water separator.
- Automatic Tank Gauge (ATG) system prevents tank overfill are to be installed.
- Leak detection systems installed in underground piping and containment areas.

Vehicle Fluid Leaks:

- Examples: engine oil, antifreeze, transmission fluid.
- Absorb small leaks immediately.
- Stop work and report larger leaks.
- Clean-up must follow environmental regulations.

3.4 Natural Disasters

This could take the form of:

3.4.1 FLOODS AND STORMS

- Secure all windows, doors, and loose objects.
- Shut down non-critical systems.
- Assemble employees in a safe location.
- After the event, inspect systems with appropriate PPE before restarting.

3.4.2 EARTHQUAKES

- Take cover under heavy furniture.
- Do not exit the building during initial tremors.
- After shaking stops, evacuate carefully to an open space.
- Shut off gas and electricity.
- Do not re-enter buildings until safe.

3.5 Evacuation Plan

The FRO must ensure that multiple clearly visible copies of the site-specific evacuation plan are displayed at conspicuous places throughout the premises, including but not limited to:

- Staff common areas.
- Convenience store.
- Customer waiting areas.
- Near fuel dispensing zones.
- Entry/exit points.

3.6 Breaches of the EMP

A contractor is expected to bring to the attention of the ECO/Promotor any significant environmental incidents or breaches of the conditions of the EMP. The ECO will then notify the promotor of such an incident, if the environmental incident constitutes a reportable breach of any permit or license condition. The ECO has to monitor employees and contractor's adherence to the EMP by conducting regular EMP compliance audits throughout the construction period of the facility, and will issue the contractor with a notice of non-compliance whenever transgressions are observed.

The ECO will record the nature and magnitude of the non-compliance in a register, the actions taken to discontinue the non-compliance, the actions taken to mitigate its effects and the results of the actions. The contractor should act immediately when a notice of non-compliance is received and implement the agreed corrective action.

Any avoidable non-compliance with the EMP by the contractor or sub-contractor will be considered sufficient grounds for the imposition of a penalty. The value of the penalty to the contractor must equal twice the cost of corrective action. Set penalties should be enforced. Penalties are to be specified in the contract with the Contractor.

3.7 EMP Review and Amendment

This is the first EMP in regard to the application for an ECC by the promotor. Future amendments, additions and changes may be made to the EMP. An adaptive strategy should be followed in terms of the EMP.

4 EMP IMPLEMENTATION

4.1 Introduction

Essentially, impact management is the creation of a series of plans and protocols intended to manage and monitor the identified impacts and risks that may occur over the project lifetime, such as technology failures and natural disasters.

The project site is on a commercial farm and the nearest settlement is Fransfontein (about 14 km away), for this EMP it has been assumed that all persons who will be hired to work at the facility will reside at Fransfontein with free transport provided for the employees to and from work. This is to prevent having to establish a settlement on the farm premises to accommodate the workforce which could lead to social ills and challenges.

Mitigation measures for the environmental impacts related to all phases (planning/design, construction, operation and decommissioning) of the FRO are presented in five (5) tables as follows:

- EMP for the Planning and Design Phase (**Table 4**)
- EMP for the Construction Phase (**Table 5**)
- EMP for Rehabilitation Post-Construction (**Table 6**)
- EMP for the Operational (Renovation and Maintenance) Phase, (**Table 7**), and
- EMP for the Decommissioning (**Table 8**)

Management measures are linked to specific impacts, project activity and the overall environmental management objective. Information of the party responsible for ensuring compliance, and the performance criteria frequency are also provided where applicable.

4.2 EMP for the Planning and Design Phase

A well-planned design has the added benefit of ensuring efficient traffic flow at the site, maximising safety and complying with applicable regulations. From an environmental perspective, there are no impacts involved during the planning and design stage of the project.

The EMP for the planning and design phase is presented in Table 4 and has provided for environmental aspects to be considered at the planning /design stages and the performance criteria.

4.3 EMP for the Construction Phase

The construction phase is the stage where the successful contractor appointed to build the FRO mobilises resources and moves to the construction site to start the physical work. It involves activities like moving the construction machines, equipment and vehicles to the construction site, procurement of building materials (sand, bricks, cement, steel, etc.), preparing a construction campsite, hiring construction workers, site clearing, etc.

The management actions recommended to handle potential environmental impacts associated with this phase of the project are presented in Table 5. The parties responsible for enforcing compliances with the recommended management actions are the promotor, project manager and the contractor.

4.4 EMP for Rehabilitation Post- construction

On completion of construction activities, the contractor is expected to rehabilitate any areas cleared or disturbed during the construction activities, including the removal of its campsite. The contractor is also responsible for repairing any damage caused to any infrastructure as a result of construction activities.

All construction equipment and excess aggregate, stones, gravel, concrete, etc. shall be removed from the site upon completion of the work.

No discarded materials shall be buried on site. Unless agreed with the promotor, only locally indigenous vegetation shall be used for rehabilitation and landscaping. The contractor and the PM should agree for how long the contractor will be responsible for erosion control. The EMP for rehabilitation post construction is presented in Table 6.

4.5 EMP for the Operational Phase

Once construction activities are completed, the site rehabilitated and cleared of all construction plants and equipment – the site is handed over to the promotor to start with the business phase (operational) of the project. The management measures recommended to deal with environmental impacts associated with the operation of a FRO are provided in Table 7. The recommended management measures should be read on conjunction with the scoping assessment report conducted for the facility (APP-006750).

4.6 The EMP for Decommissioning

Decommissioning is an important phase in the project cycle and comes last to wind up the operational activities of a particular project. It refers to the final disposal of the project and associated materials at the end of the project lifespan. If such a stage is reached, the proponent needs to remove all materials resulting from the demolition/decommissioning from the site.

Considering the CapEx (north of N\$20 million) that will be invested, it is not projected for decommissioning to happen within the three years which is the validity period of an ECC. However, the following measures are provided in the event of decommissioning occurring prematurely, by for instances, factors beyond the control of the promotor, such as recession. The EMP for decommissioning is presented in Table 8. For this specific project, decommissioning will cover these aspects:

- Removal of USTs from the site.
- Rehabilitation of the site to pre-construction conditions.
- Landscaping by flattening the mounds of soil and planting indigenous trees.
- Dismantling of all equipment (pipes, pumps, electrical cables, etc.).
- Removal of all dismantled equipment and disposing off in a responsible manner.
- Fencing and signposting unsaved areas until natural stabilisation occurs.
- Retrenching of employees, etc.

5 CONCLUSIONS AND RECOMMENDATION

The capital investments required for the development of the FRO is upwards of N\$20 million and therefore significant at the local and regional levels. The investment will therefore make a significant positive impact, stimulating economic activities with benefits felt at the local (Fransfontein, surrounding farmers both commercial and communal), and at the national levels (payment to NamRA).

During the construction phase, positive impact in the form of employment opportunities is expected to benefit the local residents (Fransfontein & Khorixas and Kamanjab) through training and skills transfer. The operational phase is also expected to create several permanent employment opportunities which is a further long term positive benefit.

Negative impacts that are associated with the construction phase of the development can be successfully mitigated. For the operational phase, the site will be operated as a Bachmus Oil and Fuel franchise and branded as such. Bachmus is a reputable homegrown company with a strong footprint in the local fuel downstream sector.

Noise pollution should at all times be kept under allowed threshold parameters while personnel should be provided with suitable PPEs. Adequate management actions have been provided in the EMP. Any waste produced should be removed from the site and disposed of in a responsible manner. Handling and disposal of hazardous waste must be disposed of, at an approved hazardous waste disposal site.

The EMP should be used as an onsite reference document for the operations of the facility. Parties responsible for transgressing of the EMP should be held responsible for any restoration that may be required.

It is thus the recommendation of Ekwa Consulting that an ECC be granted for the project to move to the implementation phase provided the management measures as outlined in the EMP are adhered to.

Table 4: EMP for the Design and Planning Phase

Aspects	Environmental Objective(s)	Management Actions/ Mitigation Measures	Performance Criteria	Responsible Party
Compliance Requirements	Obtain all the necessary permits & licenses in a timely manner.	<p>Ensure that all activities pertaining to the construction phase are compliant with applicable regulations and that applicable licenses/permits are secured and in place. As a minimum copies of these the documents/ permits/licenses must be secured and on site:</p> <ul style="list-style-type: none"> ✚ a valid ECC; ✚ an EMP; ✚ a Fuel Retail Licence; ✚ Working drawings for the facility (approved by the relevant authority where applicable). 	<p>All the necessary permits and licenses are obtained.</p> <p>Copies of all licenses, permits, etc. are placed on file.</p>	Promoter
Design Considerations	Have all working drawings for the facility prepared by an experienced person preferably an architect or structural engineer	<ul style="list-style-type: none"> ✚ The fuel storage tanks, conveying pipelines and pumping system must meet local and SANS standards and specifications. ✚ During the design/planning phase, potential environmental matters/issues identified in the scoping and recommendations made in this EMP are taken into account. ✚ The design and layout that result in the least disturbance to the environment must be selected and implemented. 	Approved professional drawings	Promotor Designer / Architect
Decarbonisation Initiatives	Strive to limit the carbon footprint of the fuel facility.	<ul style="list-style-type: none"> ✚ Allow the designer/architect to incorporate decarbonisation initiatives in the design of the FRO so as to limit its carbon footprint on the environment. ✚ Position the structure of facility in a manner that allows easier installation of solar panels on rooftops and the orientation that provides maximum exposure to the sun. ✚ Adopt green technology when selecting equipment for the FRO, i.e. select hybrid systems or those systems that can be powered by solar or wind energy. ✚ Where possible, procure and install solar geysers instead of conversional geysers and or water recycling facilities. 	<p>List of green alternative considered.</p> <p>List of green items selected</p>	Promotor Designer / Architect
Location/layout and lighting at the facility (Visual impacts)	Ensure that the layout and position of the FRO and its lighting do not become a visual intrusion.	<ul style="list-style-type: none"> ✚ Position the FRO in a manner that reduces its visibility from sensitive viewpoints along the D3236 & C35. ✚ Develop the FRO in a manner that minimises the contrast between the building infrastructure and the natural landscape. ✚ Ensure that the layout of the lighting, its extent and intensity do not become a nuisance to the public using adjacent roads (D3236 & C35). ✚ Paint external walls and roofs of building structures with colours that blend in well with the natural environment. 	<p>Lighting layout for the facility</p> <p>Choice of appliances.</p>	Promotor Designer /Architect

Table 5: EMP for the Construction Phase

Aspects	Issues/Concerns /Impacts	Management Action /Mitigation Measures	Indicator / Timing	Responsible Party
Compliance Requirements and Documentation	Non-compliance may lead to penalties, fines, work suspension/ delays, even judicial action.	<p>Licenses</p> <ul style="list-style-type: none"> ✚ Fuel Retail Licence ✚ ECC ✚ Water Abstraction Permit (where applicable) <p>Documents</p> <ul style="list-style-type: none"> ✚ This EMP Report ✚ Working Drawings (approved where applicable), ✚ A Waste Management Plan, ✚ An Emergency Response Plan, ✚ A Spill Procedure Plan, ✚ A Fire Procedure Plan, ✚ An Environmental Awareness Training and, Manual. 	<p>Permits/Licenses on File</p> <p>Documents on Files</p> <p>Throughout the Construction period</p>	<p>Promotor</p> <p>MC</p>
Communication with Stakeholders and IAPs	Misunderstandings; Non communication with or to stakeholders and IAPs leading to delays.	<ul style="list-style-type: none"> ✚ Devise and implement a stakeholder communication and engagement strategy where information is shared. ✚ Record complaints received from IAPs, investigate and take corrective actions. ✚ Keep contact numbers of statutory stakeholders (MIME, EC, Police, etc.) readily available: 	<p>Documents kept on file.</p> <p>Throughout the construction period</p>	<p>MC</p> <p>ECO</p>
Impacts on Fauna	Livestock in the area consuming waste (papers and plastics) from the project site	<ul style="list-style-type: none"> ✚ Develop and implement a waste management plan for the construction phase. ✚ Provide suitable waste bins in which different waste types are temporarily stored prior to disposal. ✚ Provide a secure workplace with the perimeter fenced in or completely screened off from the prying eyes of the public, and with a single access point such that livestock and wildlife on the farm do not gain access. ✚ Pack and store plastics (brick plastic strappings) and papers (cement bags) in secure waste bins. ✚ Construction personnel must have some form of identifications (name tags, etc.) for ease of identification. 	<p>Number of waste bins provided</p> <p>Names of construction personnel inducted.</p> <p>Throughout the construction period</p>	<p>MC</p> <p>ECO</p>
	Killing of livestock including hunting of	<ul style="list-style-type: none"> ✚ Killing of livestock (cattle, goats & sheep) on the farm or on neighbouring farms is strictly forbidden. (Offenders will be prosecuted and sent to prison) 	<p>Daily during toolbox talks</p>	<p>MC</p>

Aspects	Issues/Concerns /Impacts	Management Action /Mitigation Measures	Indicator / Timing	Responsible Party
	wildlife on the farm or on neighbouring farms	<ul style="list-style-type: none"> ✚ Hunting by construction personnel of any faunal species (wildlife, hares, rabbits, guinea fowls) is illegal and strictly forbidden. ✚ No hawking of meat of any kind is allowed by construction personnel on the construction campsite. ✚ No traps of any sort are allowed on the construction site. ✚ All construction personnel must be inducted on the EMP including the regulations pertaining to protection of faunal species. 	Training provided	ECO
	Poor handling of food leftovers at the project site by construction workers	<ul style="list-style-type: none"> ✚ Unsecured waste food items can attract scavengers to the construction site often leading to conflicts between human and animals. ✚ Leftover food items must be placed in bins with lids that cannot be turned over by wild animals to gain access. 	Daily Duration of construction phase	MC ECO
	Disruption or disorientation of nocturnal birds as a result of lights.	<ul style="list-style-type: none"> ✚ Use lights at the construction site for security purposes only and not to disrupt the behaviour and navigation of nocturnal wildlife and migratory birds. ✚ Lights at the construction site must face downwards and all non-essential lights must be switched off at night. 	Throughout the construction period	MC
Impacts on Flora	Clearing of vegetation, plants and trees	<ul style="list-style-type: none"> ✚ Site the contractor's campsite to the area that requires minimal clearance of vegetation or removal of mature trees. ✚ Stockpile bulky construction materials (sand, building stones, etc.) away from any known sensitive areas, and on the area that requires the least vegetation clearance. ✚ Where practical, mature trees on the premises must be spared and not removed to make way for the facility buildings. ✚ Confine excavations and trenching to areas that are clearly demarcated. 	At the start of construction activities	MC ECO
	Cutting down trees for purposes of harvesting firewood.	<ul style="list-style-type: none"> ✚ Prohibit cutting down mature trees on the premises for purposes of harvesting firewood. ✚ Alternative energy sources should be provided to the construction personnel accommodated on the construction site i.e. LPG for cooking or boiling water. 	Throughout the construction period	MC
Soil Contamination	Hydrocarbon spill or leaks from areas where such products are stored/kept has the potential to contaminate the soil profile.	<ul style="list-style-type: none"> ✚ Store hazardous products in a safe and secure place with an impervious floor that is correctly bunded. ✚ Implement spill control measures and train personnel on how to respond in the event of a spill occurring. ✚ Follow correct procedures when using and handling hazardous products. ✚ Toilets must be firmly secured to the ground and fitted with closing mechanisms. Provide adequate sanitation products (toilet papers and hand soap); 	Training provided Duration of construction period	MC ECO

Aspects	Issues/Concerns /Impacts	Management Action /Mitigation Measures	Indicator / Timing	Responsible Party
		<ul style="list-style-type: none"> ✚ Ensure that no spillage occurs when toilets are cleaned, serviced or emptied of their contents. ✚ Discharging of waste into the natural environment and/or burying of waste on the construction site is strictly forbidden. ✚ Conduct repairs and servicing of construction equipment and vehicles at a designated place with an impermeable floor. ✚ Designate an area to serve as wash bay area where construction vehicles and equipment are washed and cleaned. ✚ Provide suitable and adequate drip trays and emergency spill kits at the repair/maintenance area. ✚ Leaking equipment to be repaired immediately or removed from the site; 		
Soil Erosion	Areas disturbed by construction activities have the potential to lead to soil erosion.	<ul style="list-style-type: none"> ✚ Provide soil conservation measures on the areas prone to soil erosion so as to reduce potential impact of soil erosion. ✚ Confine excavation activities to areas that are clearly demarcated and visible to the workers executing such activities. ✚ Rehabilitate excavated and exposed areas promptly after work is finished so as to avoid soil erosion especially when construction is carried out during the rainy season. ✚ Unused concrete must not be buried on the property, but must be disposed of in a responsible manner. 	<p>Beginning of construction activities</p> <p>Duration of construction phase</p>	<p>MC</p> <p>ECO</p>
Contamination of Surface and Groundwater	Discharge of total suspended solids due to soil erosion and transport of sediments from disturbed construction areas to surface water sources	<p>Use best management practices such as:</p> <ul style="list-style-type: none"> ✚ Engineering designs/solutions that contain erosion and sediment transport on the construction site premises. ✚ Minimise soil disturbance by phasing construction activities outside the rainy season. ✚ Implement a multi-layered approach of prevention and runoff control through sediment ponds or traps and use of natural vegetation covers. 	<p>At the beginning of the construction phase</p> <p>Throughout the construction period</p>	<p>MC</p> <p>ECO</p>
	Poor handling and storage of hazardous products (fuel, oil, thinners, paint, etc.) used in the construction activities has the potential to contaminate surface and groundwater sources through spills and or leaking	<ul style="list-style-type: none"> ✚ Store hazardous products in a safe and secure place with an impervious floor and is correctly banded. ✚ Follow correct procedures when using and handling hazardous products. ✚ Toilets must be firmly secured to the ground and fitted with closing mechanisms. Provide adequate sanitation products (toilet papers and hand soap). ✚ Ensure that no spillage occurs when toilets are cleaned, serviced or emptied of their contents. ✚ Discharging of waste into the natural environment and/or burying of waste on the property is strictly prohibited. 	<p>Banded areas</p> <p>Drainage and or channels on site</p> <p>Oil/Water separator or filter</p> <p>Training provided</p>	<p>MC</p> <p>ECO</p>

Aspects	Issues/Concerns /Impacts	Management Action /Mitigation Measures	Indicator / Timing	Responsible Party
		<ul style="list-style-type: none"> ✚ Conduct repairs and servicing of construction equipment and vehicles at a designated place with an impermeable floor. ✚ Designate an area to serve as wash bay area where construction vehicles and equipment are washed and cleaned. ✚ Provide suitable and adequate drip trays and emergency spill kits at the repair/maintenance area. ✚ Leaking equipment to be repaired immediately or removed from the site. 		
Air Quality	Fugitive dust emissions	<p>Use dust best management practices such as:</p> <ul style="list-style-type: none"> ✚ Water down dusty prone areas. ✚ Stop construction activities during heavy wind conditions. ✚ Site stockpiles for bulky construction materials (sand, gravel, etc.) away from known wind directions. ✚ Provide construction personnel with suitable PPEs. 	<p>At the beginning of the construction phase</p> <p>Duration of the construction phase</p>	<p>MC</p> <p>ECO</p>
	Dust from construction activities	<ul style="list-style-type: none"> ✚ Avoid mixing cement during heavy wind conditions or in open air. ✚ Enforce a speed limit of 20 km/h on the construction premises. ✚ Spray water to suppress dust on excavated areas especially during strong windy conditions. ✚ Where practical, large cleared areas may not be left exposed for longer periods than necessary. 	<p>Amount of dust generated</p> <p>PPEs provided</p> <p>Number of complainants recorded</p>	<p>MC</p> <p>ECO</p>
	Exhaust emissions from construction equipment, machinery & vehicles	<ul style="list-style-type: none"> ✚ Prohibit long idling of construction vehicles and machines. ✚ Ensure that construction vehicles and machinery are regularly serviced to prevent excessive gaseous emissions. ✚ Where feasible make use of diesel with a low sulphur content, i.e. 10 ppm instead of 50 ppm. 	<p>Daily</p> <p>Duration of construction phase</p>	<p>MC</p> <p>ECO</p>
Noise Pollution	Construction noise	<ul style="list-style-type: none"> ✚ Ensure that construction related noise is maintained within the threshold of WHO and SANS recommended guidelines of maximum daytime exposure of 75 dBA. ✚ Confine construction activities between sunset and sunrise. ✚ Construction plants, vehicles and equipment are to be switched off when not in use, and well maintained and regularly serviced with defective silencers replaced. ✚ Make use of noise reduction methods, i.e. no unnecessary hooting, no loud music equipment on the premises, etc. and ✚ Provide employees working in areas where noise levels are elevated with suitable PPEs (e.g. ear muffs). 	<p>Daily during toolbox talks</p> <p>Throughout the construction period</p>	<p>MC</p> <p>ECO</p>

Aspects	Issues/Concerns /Impacts	Management Action /Mitigation Measures	Indicator / Timing	Responsible Party
Solid Waste	Poor waste handling and collection from the settlement leading odour, eyesore and public nuisance	<ul style="list-style-type: none"> ✚ Develop and implement a waste management plan for the construction phase. ✚ Consider recycling and re-using of construction building rubble. ✚ Excavation waste must be re-used, backfilled or used for landscaping. ✚ Where rubble is stored on site, it should be stored on a designated area and suitably covered. ✚ Store domestic waste in containers with lockable lids that must be emptied on a weekly basis or frequently before reaching safe holding capacity. ✚ No waste shall be buried or burned anywhere on the construction site. ✚ Waste may not cause any nuisance to employees or guests visiting the construction site, (e.g. rotten smell or odour). ✚ The construction site must remain litter free and regular inspections for litter must be carried out. ✚ Cement bags must be kept in sealed containers and disposed of in a responsible manner. 	<p>Amount of waste on site</p> <p>Presence of well-maintained waste receptacles and central collection point</p>	<p>MC</p> <p>ECO</p>
Fuel Spills and Leaks	Serious risks including fire hazard, severe health effects from fume inhalation and environmental contamination may occur.	<ul style="list-style-type: none"> ✚ Inspect construction vehicles and plants daily for oil leaks. When detected, leaks must be fixed immediately. ✚ An area should be identified and designated for the parking, servicing and/ or repairing of construction vehicles & plants. ✚ Dip trays and spill kits should be available at such an area where machinery/vehicles are parked or stored. ✚ Store all oil products in an onsite store with controlled access. ✚ Contain leaks that may occur as soon as possible. 	<p>Spill kits</p> <p>Contents of spill kits</p> <p>Training provided</p>	<p>MC</p> <p>ECO</p>
Traffic Impacts	Increased traffic around the construction site may lead to incidents or accidents, congestion on adjacent roads.	<ul style="list-style-type: none"> ✚ Provide adequate signage to alert the public using adjacent roads of heavy construction vehicles that may be crossing the roads. ✚ Any complainants received regarding traffic violations should be investigated and corrective measures taken. ✚ Construction machines and vehicles operated on public roads must have their headlights switched on at all times. ✚ Clear signage with respect to access point and exit point to the construction site should be clearly displayed. ✚ Apply a speed limit on the construction site and enforce traffic rules – no overloading, no driving under the influence of alcohol, etc. 	<p>Speed limit signs on site</p> <p>Clearly marked parking bays</p> <p>Adequate signage at the premises showing exit and access points</p>	<p>MC</p> <p>ECO</p>

Aspects	Issues/Concerns /Impacts	Management Action /Mitigation Measures	Indicator / Timing	Responsible Party
Health and Safety Risks	Potential for fire and/ or explosion from flammable chemicals used in construction, accidental falls and slips, including ergonomic hazards	<ul style="list-style-type: none"> ✚ Control and limit access to the construction site to workers who have received an induction training on the EMP. ✚ Store and handle all chemicals for use at the construction site in accordance with MSDS instructions. ✚ Select a few employees and train them on how to provide First Aid in the event of an accident/incident occurring. Provide First Aid kits that are adequately stocked. ✚ Provide materials and equipment to deal with any spills and leaks of hazardous products that may occur at the project site. ✚ Keep details of persons to be notified in case of a major spillage or accidents on site handy. These are the nearest police, ambulance, local clinic, fire brigade, etc. ✚ Apply and adhere to all industry specific health and safety procedures and regulations applicable to the fuel sector. 	<p>Training provided</p> <p>A written (documented) Emergency Plan</p> <p>Vital contact numbers</p> <p>First Aid kit</p> <p>Fire extinguishers</p>	<p>MC</p> <p>ECO</p>
Fire Risks	Fire can occur from welding activities, electrical faults, poor handling of flammable materials and or arson or vandalism.	<ul style="list-style-type: none"> ✚ Adhere to all fire safety measures, guidelines and standards. ✚ It is advisable for the successful construction company awarded the tender to take out a short term fire risk protection insurance for the duration of the construction phase. ✚ Ensure that all electrical installations are carried out by qualified persons. Employees to ensure that power tools and sockets are switched off when not in use, and that any faulty equipment is removed from the site immediately. ✚ Designate an area for food preparation (cooking) and eating meals at the construction site. ✚ Fire control mechanisms (firefighting equipment) must be available and routinely inspected to ensure their functionality. ✚ Burning of waste on the construction site is not permitted. ✚ A designated area for smoking with special bins for discarding cigarette butts should be provided. 	<p>Fire extinguishers</p> <p>A layout of fire-extinguisher location</p> <p>Fire escape route</p>	<p>MC</p> <p>ECO</p>
Site Security Risks	Theft and possible vandalism of construction equipment, tools and accessories.	<ul style="list-style-type: none"> ✚ The construction site must be secured and fenced in with a single access point. ✚ All visitors/guests are to report at the site office on arrival, then undergo a brief safety induction, sign an indemnity form unless in possession of correct PPEs. ✚ Secure the construction site so as to reduce the opportunity of criminal activities occurring including theft and or vandalism. ✚ No drugs, alcohol, fire arms or dangerous weapons of any kind are allowed on the construction site. Only security personnel is allowed to carry fire arms. ✚ Security personnel must be appointed to man the site at all times. 	<p>Site access entry registry</p> <p>Training provided</p> <p>PPEs</p>	<p>MC</p> <p>ECO</p>

Aspects	Issues/Concerns /Impacts	Management Action /Mitigation Measures	Indicator / Timing	Responsible Party
Visual Intrusion and Sense of Place	Old and unsightly construction equipment used in the construction as well as accumulation of waste at the site including windblown papers and plastics	<ul style="list-style-type: none"> ✚ Employ techniques to suppress dust especially during strong wind conditions. ✚ Where possible, use suitable screening during the construction to minimise visual impacts. ✚ Specific activities that are prone to generating excessive dust should be suspended during high windy conditions or avoided altogether. ✚ Use light for the construction site security purposes only, and such light should face inwards where it is required, and not outward to offend motorists using adjacent roads. ✚ Maintain a high standard of housekeeping with zero tolerance on littering and waste. 	Number of lights and their positions	MC
			Complains received	ECO
Heritage and Cultural Resources	Potential damages to cultural and heritage resources during construction activities.	<ul style="list-style-type: none"> ✚ Protect items of cultural and heritage nature if found during earthwork excavations. ✚ Should any archaeological item or cultural site or object be unearthed during the construction excavations, these steps should be followed: <ul style="list-style-type: none"> ○ If operating a machine stop immediately and inform the supervisor or foreman. ○ Supervisor and foreman proceed to secure the area immediately. ○ Area remains out of bound until a qualified archaeologist visits the site and gives instruction on how to proceed. ○ The GPS coordinates are to be recorded and sent to the NHC for transferring on the archaeological map. 	Training provided to construction personnel	MC
			Records kept at the office	ECO
Socio-Economic	Creation of employment opportunities	<ul style="list-style-type: none"> ✚ Recruitment must be done in line with the labour laws of Namibia; ✚ Employment opportunities should be offered without prejudice but with preference given the locals (from the neighbouring settlement of Fransfontein or Khorixas) who have the necessary skills and experience. ✚ No hiring of personnel on the construction site is allowed. All hiring should be done in urban areas (Fransfontein, Khorixas, Outjo or Kamanjab). ✚ Women, people with disabilities and those from marginalized communities should also be considered for employment. ✚ Hiring of non-Namibians for low skilled jobs is forbidden and acceptable justification must be provided to the authorities. 	Number of people employed	MC
	Training and skills transfer	<ul style="list-style-type: none"> ✚ Ensure all employees are inducted on the EMP. ✚ Empower employees through on the job training and skills transfer. ✚ Inform employees about the parameters and requirements for references on their employment. 	Training provided and list of attendees	MC
				ECO

Aspects	Issues/Concerns /Impacts	Management Action /Mitigation Measures	Indicator / Timing	Responsible Party
	Support to the settlement and regional income	<ul style="list-style-type: none"> ✚ Source and procure goods and services for the development from local businesses. ✚ Use local transport companies to transport goods required for building materials (cement, bricks, fuel, etc.) as well as other professional service providers, i.e. local security company to guard the premises and to collect money for banking. ✚ Provide business opportunities to local companies so as to contribute to the socio-economic stability of the settlement and the constituency. 	Local businesses providing services Taxes paid to NamRA	MC ECO
	Community Health, Demographic Profile, & Social impacts	<ul style="list-style-type: none"> ✚ Ensure that construction work does not attract people to establish and erect shacks around the construction site. ✚ Hire a local civil contraction company which is experienced and reputable to build the FRO. ✚ Provide a safety and hazardous free working environment. ✚ Adhere to all regulations relating to environmental health which includes sanitation requirements and hazardous waste. ✚ Develop a policy on employees' well-being, educating them on the dangers of social ills such as alcohol abuse, use of drugs and HIV infections. 		MC ECO

Table 6: EMP for Rehabilitation Post -construction

Environmental Aspects / Impacts	Issues/Concerns or Impacts	Management Measures/ Mitigation Actions	Responsible Party
Rehabilitation of the Construction Camp	Common issues are injuries, release of dust, noise from welding & cutting, potential for spill and or leaks	<ul style="list-style-type: none"> ✚ Clear and completely remove from the site all construction plant, equipment and any storage containers, etc. ✚ Dismantle and remove all erected structures, fencing, barriers, temporarily services and fixtures. ✚ Check the area for any spills of substances such as oil, paint and fuel which should be cleaned up. ✚ All hardened surfaces within the construction site should be ripped, all imported materials removed and the area top-soiled, and where warranted re-vegetated. 	<p style="text-align: center;">CM</p> <p style="text-align: center;">ECO</p>
Land Rehabilitation	Contamination of the environment, safety issues, waste, soil contamination, soil erosion, etc.)	<ul style="list-style-type: none"> ✚ All surfaces hardened due to construction activities are to be ripped up and imported materials thereon removed. ✚ All building rubble is to be removed from the site and transported to an approved landfill. ✚ Burying of any rubble on site or anywhere outside the premises is prohibited. ✚ Access roads utilised during the construction phase that are not required for the operational phase are to be rehabilitated to pre-construction conditions and revegetated. ✚ The site is to be cleared of all litters and building rubbles to the satisfaction of the ECO. 	<p style="text-align: center;">CM</p> <p style="text-align: center;">OCE</p>
Removal of Construction Materials	Physical hazards in the form of leftover debris, broken glasses, broken metals, sharp objects, nails, etc.,	<ul style="list-style-type: none"> ✚ Fences, barriers and demarcations associated with the construction phase are to be removed from the site unless agreed otherwise with the promoter. ✚ All residual stockpiles are to be removed from the site and transported to an approved landfill site. ✚ All leftover building materials (sand, aggregate, bricks, paving, steel, corrugated iron sheet, cement, etc.) must be removed from the site unless agreed otherwise with the promoter. ✚ Waste materials of any description including receptacles, scrap, rubble and tires are to be removed and disposed of at an offsite landfill. 	<p style="text-align: center;">CM</p> <p style="text-align: center;">ECO</p>

Table 7: EMP for the Operational Phase

Potential Impacts/Aspects	Environmental Objective(s)	Management Measures	Responsible Party
Compliance Requirements and Documentation	Comply with all applicable statutory requirements	Same as for the Construction Phase	Promotor
Communication with statutory stakeholders and IAPs	Provide regular communication to stakeholders and IAPs.	Same as for the Construction Phase	Promotor
Underground fuel storage and handling (Spills, leaks, contamination of surface & groundwater sources, etc.)	Prevent potential contamination of soil and water sources	<ul style="list-style-type: none"> ✚ Monitor fuel volumes in the USTs on a daily basis to detect unexplained losses due to leakages. ✚ Inspect the condition of the tanks, piping and pumping systems on a regular basis. ✚ Test tanks integrity at least five (5) years after installation, with repetition on a 5-year cycle thereafter. ✚ The forecourt area and the filling points have to be concreted and graded so that any effluent run-off does not enter the natural environment, but passes through an oil water separator sump/s before discharging into a collection ditch. ✚ The oil/water separator sump/s must be checked regularly and kept clean to prevent blockage and overflow. Regular monitoring and clearing of oil/water separator sump/s will prevent hydrocarbon liquids from discharging onto stormwater system. ✚ Ensure no spill or leaks occur during fuel offloading into USTs and during dispensing. ✚ Waste from the separator must be disposed of at an approved offsite licensed facility. 	SM ECO
Fire Risk and Preparedness (Potential impacts: asset destruction, personal injuries, loss of income, etc.)	Prevent property damage, possibly injury to persons and financial losses caused by uncontrolled fires	<ul style="list-style-type: none"> ✚ Develop a firefighting emergence response plan and train all employees accordingly. ✚ Carry out firefighting drill on a regularly basis. ✚ Ensure adequate firefighting equipment is provided, regularly maintained, serviced and inspected. ✚ Ensure that all hazardous substances are stored and handled in accordance with MSDS and SANS specifications. ✚ Fire hazard signs and directions to emergency exit, route to follow and assembly point in case of any fire incident. ✚ All electrical appliances at the facility must be regularly inspected and repaired by a qualified electrician. ✚ Any spills and or leaks that occur must be cleaned up with suitable tool kit equipment. 	SM ECO

Potential Impacts/Aspects	Environmental Objective(s)	Management Measures	Responsible Party
Waste (Solid and Hazardous) (Impacts: littering, pollution, contamination, health issues, nuisance, odour, etc.)	Protect amenity values by ensuring waste (solid & hazardous) is managed properly.	<ul style="list-style-type: none"> ✚ Develop a Waste Management Plan for the facility and enforce its compliance. ✚ Promote good waste management practices of prevention (or reduction), re-use, recycle, recovery and disposal. ✚ Store domestic waste in containers that are labelled, properly secured and covered to prevent scavengers from tipping them over. ✚ Vermin / weatherproof bins to be provided in sufficient numbers and capacity to store domestic waste. ✚ Store solid waste in a designated general waste storage area which is enclosed and impermeable. ✚ Adequate refuse collection must occur to avoid build-up of refuse occurring at the facility. ✚ Paved surfaces coming in contact with vehicles must be bunded such that stormwater flows into an oil/water separator, to allow for treatment of hydrocarbons. ✚ Sludge from the oil separator must be disposed of at an offsite licensed landfill site. ✚ All product spills within the bunded area must be effectively cleaned up. ✚ No waste shall be buried or burned anywhere on the fuel premises. 	SM ECO
Stormwater, Sewage & Wastewater	Protect amenity values by ensuring that no impacts emanate from stormwater, sewage and wastewater	<ul style="list-style-type: none"> ✚ Develop and implement a plan to deal with stormwater and sewage at the facility. ✚ Stormwater runoff from paved areas should be diverted into a stormwater treatment system or device capable of removing litter, sediments, and or oil products. ✚ At first sign of erosion, correct procedure must be undertaken to manage, resolve and prevent from occurring. ✚ Conduct inspections on ablution facilities and associated piping system for leakages, blockages or damage and have them fixed. ✚ All waste generated from the site should be discharged into the onsite sewage system. 	SM ECO
Air Pollution (Impact: prolonged exposure to VOC can cause cancer, etc.)	Promote amenity values and minimise gaseous emissions	<ul style="list-style-type: none"> ✚ Fuel vapours are released into the atmosphere during dispensing into vehicles of patrons and during offloading from road tankers into USTs – prolonged exposure can have detrimental and harmful effects. ✚ Vent pipes should be properly placed as per SANS specifications and regularly checked and inspected. ✚ Install Volatile Organic Compound (VOC) vapour recovery system onto fuel dispensing nozzles at the refuelling and forecourt areas. ✚ Provide suitable PPEs to personnel handling refuelling at the facility. ✚ All equipment used must be manufactured to limit VOC vapour emissions. ✚ Operational refuelling procedures must be put in place to limit vapour emissions during refuelling of vehicles and storage tanks. ✚ Monitor gaseous emissions on a yearly basis measuring these parameters: 	SM ECO

Potential Impacts/Aspects	Environmental Objective(s)	Management Measures	Responsible Party
		<ul style="list-style-type: none"> o Particulate Matter (PM₁₀), o Sulphur dioxide (SO₂), o Nitrogen dioxide (NO₂), and o Carbon monoxide (CO); <p>✚ Any complain received about air pollution must be recorded and investigated.</p>	
Noise Pollution	Protect amenity values by ensuring that noise generated at the facility is kept below industry threshold;	<ul style="list-style-type: none"> ✚ Establish noise level threshold consistent with WHO guidelines and comply accordingly. ✚ The facility is located on a commercial farm in a rural setting in which ambient noise levels are quite low and this should be maintained. ✚ Equipment (pumps, etc.) used at the facility must comply with the manufacture's specifications on acceptable noise levels. ✚ Air conditioners should be well maintained and regularly serviced to ensure minimal noise generation. ✚ Workers must not produce any unnecessary noise, e.g. no loud music to be played, no whistles to be used, etc. ✚ Display signs such "No hooting", 'No idling' and 'No Loud Noise' to inform patrons to comply. 	SM ECO
Visual Intrusion	Protect amenity values by minimising aesthetic impacts associated with the facility	<ul style="list-style-type: none"> ✚ Cleaning, waste disposal, maintenance of the plants and landscaped surrounds will give the facility a good visually appeal. ✚ Good housekeeping which includes routine maintenance of infrastructure will improve the aesthetic appeal of the facility. ✚ Lights at the facility must be used for security purposes only and must point inwards and not outwards. ✚ Lights may not offend the public using the adjacent roads or to disorientate birds that fly at night. 	SM ECO
Health, Safety and Security Risks	Maintain a high standard of housekeeping so as to prevent injuries to personnel and or theft.	<ul style="list-style-type: none"> ✚ Develop a health and safety management plan for the facility in compliance with industry specifications and standards. ✚ Train workers on personal safety and disaster preparedness. ✚ Provide sufficient and suitable sanitary conveniences which should be kept clean. ✚ Maintain a well-stocked First Aid kit on the premises and have a qualified person on each shift in case of an accident or incident occurring. ✚ Ensure that adequate lighting and an alarm system are installed at strategic points. ✚ Smoking should be prohibited in the vicinity of all flammable substances and adequate signage should be displayed. ✚ Records of all environmental and/or health and safety related incidents must be maintained and reported to the relevant authority. ✚ A selected employees should be trained on First Aid. A trained First Aider must be present on site at all times. First Aid Kits that are adequately stocked must be available. ✚ Conduct an annual Health, Safety and Security Audit. 	SM ECO

Potential Impacts/Aspects	Environmental Objective(s)	Management Measures	Responsible Party
Management of Resources	Manage resources wisely and sparingly	<p>The measures recommended are:</p> <p>✚ Electricity:</p> <ul style="list-style-type: none"> ○ Use electricity sparingly. ○ Use natural ventilation from windows and doors. ○ Measure electricity consumption monthly. <p>✚ Water:</p> <ul style="list-style-type: none"> ○ Use water sparing and wisely. ○ Detect leaking pipes and taps and get them fixed. ○ Enforce water saving strategies which include recycling and reuse. ○ Consider installing water conserving taps that turn off immediately when water is not in use. ○ Measure water consumption on a monthly basis. <p>✚ Sanitation:</p> <ul style="list-style-type: none"> ○ Monitor consumption. ○ Guard against misuse. ○ Maintain a high standard of housekeeping. 	SM ECO
	Socio-economic Environments	Ensure that local communities benefit from the facility	✚ Same as for the Construction phase
	Offer employment opportunities in a transparent and open manner	<p>✚ Recruitment should be done in line with the labour laws of Namibia.</p> <p>✚ Offer employment opportunities without prejudice, giving preference to women, people with disabilities and those from the marginalized communities.</p> <p>✚ Where possible preference should be given to jobseekers from within Walvis Bay.</p> <p>✚ Develop a policy on employees' well-being, educating them on the dangers of social-ills such alcohol abuse, use of drugs and HIV infections.</p>	SM

Table 8: EMP for Decommissioning Phase

Potential Impacts/Aspects	Environmental Objective(s)	Management Measures	Responsible Party
Communication	Provide information on decommissioning to relevant statutory stakeholders	<ul style="list-style-type: none"> ✚ Inform the relevant government ministries and agencies (MIME, MEFT, Labour, NamRA, SSC, etc.) of the planned decommissioning. ✚ Inform third parties creditors including the bulk fuel supplier. ✚ Inform affected employees and their trade union representative giving notices as provided for in the Labour Act. ✚ Hire a reputable company to carry out the decommissioning. 	SM Or Promotor
Disturbed physical environmental	Protect amenity and limit disturbance to the physical environment	<ul style="list-style-type: none"> ✚ Develop a Decommissioning Plan. ✚ Assign the work to a reputable company with a track record of dismantling hazardous plants. ✚ Undertake a complete environmental restoration programme. 	SM Promotor
Fuel Tanks	Protect amenity values by ensuring no harm results from the retrieval of USTs.	<ul style="list-style-type: none"> ✚ Ensure there is no spillage of any residual fuel during the emptying and removal of USTs. ✚ Pumps and associated equipment to be removed by qualified personnel to ensure their safety. ✚ Any fuel removed from the tanks and surrounding soil that maybe contaminated must be removed and disposed of at a licensed landfill site. 	Contractor ECO
Noise and air Pollution	Keep noise levels within allowed standards	<ul style="list-style-type: none"> ✚ Maintain plant and equipment well during the decommissioning phase. ✚ Demolition works to be carried out during daytime only. ✚ Provide demolition personnel working in noisy areas with suitable PPEs. ✚ Spray dusty areas. ✚ Install dust trappers around the site where warranted. 	Contractor ECO
Solid Waste	Strive to minimise waste generation	<ul style="list-style-type: none"> ✚ Demolished debris should be stored in a secure place and disposed of in a responsible manner. ✚ Demolished waste should be re-used or backfilled. ✚ All waste generated should be collected by a waste collection company. 	Contractor
Occupational Health and Safety	Maintain a high standard of housekeeping	<ul style="list-style-type: none"> ✚ Provide suitable PPEs to employees. ✚ Train the workers on personal safety and on how to handle equipment and machines. ✚ Provide suitable sanitary conveniences which should be kept tidy and clean. 	SM ECO Contractor
Loss of Employment	Strive to limit social impacts by helping employees get rehired	<ul style="list-style-type: none"> ✚ The safety of personnel should surpass all other objectives during the decommissioning process. ✚ Adapt a project completion policy – identifying key issues to be considered. ✚ Compensate the retrenched workers and assist them in seeking opportunities elsewhere. 	SM