If you can't measure it
You can't control it

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DESERT STORAGE CC
EMP Report
for a
BULK STORAGE FACILITY
at Walvis Bay

PROJECT NO: 2021/139/J

Building towards better

Safety
Health
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Quality

Approved Inspection Authority

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STATEMENT PAGE

National Environmental Health Consultants CC is an Approved Inspection Authority in terms of the Occupational Health and Safety Act (85 of 1993). (Certificate No.: CI 057 0H) SA and A.I.A 22/15 Namibia, **Labour Act, 1992 (Act 6 of 1992)** as amended under the **Labour Act 2007, (Act 11 of 2007).**

J. Cornelissen, conducted this EIA on behalf of **National Environmental Health Consultants CC** and hereby declares that the results/findings given in the report are a true reflection of conditions encountered during the survey/observations on site.

Where relevant published and validated methods exist, they are always used in preference to novel methods. If a novel method is applied, a summary of validation and reference to the internal Standard Operating Procedure(s) is provided.

Whilst recommendations offered in this report are made in good faith and every effort made to ensure the professional integrity thereof, the final responsibility lies with the client to ensure the correctness and suitability of these recommendations prior to implementation. **National Environmental Health Consultants CC** or its officers shall in no way be liable for any losses suffered by the client as a result of the implementation of such recommendations.

NEHC CC and its personnel shall not be involved in activities in relation with projects or items surveyed which may adversely influence our independence of judgment and integrity. The company (NEHC CC) is appointment as an Independent Occupational Hygienist or Environmental Practitioner Consultant in terms of an agreement for rendering its expertise services. NEHC CC declare that they will not form lucrative connections with the designated parties, by the forging of relationships with key decision-makers particular, with those in the industry to which the company offers its services.

Possible scenarios shall be reported in time to be prevented and if these may arise through the course of projects, they shall also be reported.

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17 February 2022
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1. ENVIRONMENTAL MANAGEMENT PROGRAMME

1.1 Aims

The aim of the Environmental Management Plan (EMP) is to detail the actions required to effectively implement the mitigation and management measures. These actions are required to minimize or avoid any negative impacts associated with the **Desert Storage CC** storage activities.

1.2 Management and Mitigation Measures to Achieve Objectives

The management and mitigation measures to achieve the objectives relating to the various environmental issues are listed in tabular format, in **Section 2**. The owner of the storage facility is ultimately responsible for the implementation of the EMP. However, all members of the management and construction team are expected to understand the EMP requirements and to implement them.

1.3 Introduction

Please refer to the EIA for more detailed information.

1.3.1 Locality

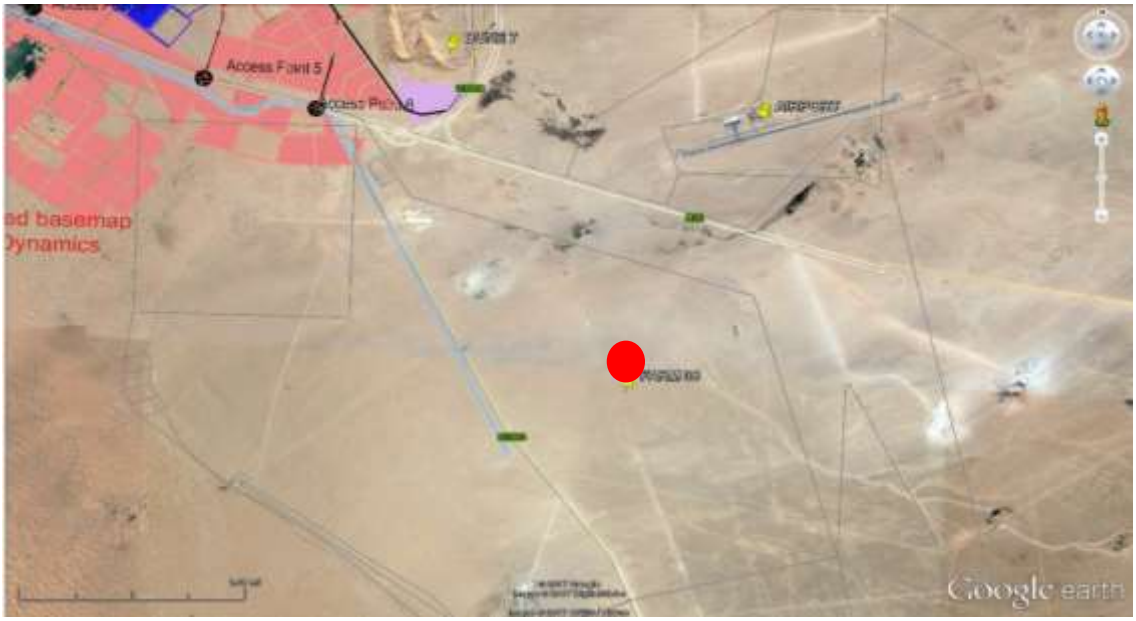

Figure 1: Shows the locality.

1.3.2 Background

National Environmental Health Consultants CC (NEHC CC) has been appointed by **Desert Storage CC** to conduct the Environmental Impact Assessment (EIA) and Environmental Management Process (EMP) in terms of the:

- Environmental Impact Assessments are regulated by the Ministry of Environment and Tourism (MET), in terms of the Environmental Management Act, 7 of 2007, which was promulgated and published in the Government Gazette No. 3966, on 27 December 2007;

- The List of Activities that may not be undertaken without an Environmental Clearance Certificate and the Environmental Impact Assessment Regulations in terms of the Environmental Management Act, 7 of 2007, which were promulgated and published in Government Gazette No. 4878, on 6 February 2012.

Desert Storage CC intends to establish a bulk Ammonium Nitrate Storage Facility within the boundaries of Walvis Bay to serve the local mining industry and exporting to the neighboring SADEC countries. The Ammonium Nitrate bulk bags will be brought in and imported mainly by bulk vessel through NamPort and then transported by road to the proposed site and stored at the site. From the proposed site the Ammonium Nitrate will be exported and transported to the neighboring SADEC countries.

Ammonium Nitrate is an oxidizing agent and in the presence of a hydrocarbon it is a potential explosive hazard. Due to the explosive properties of Ammonium Nitrate, it is classified as a dangerous, hazardous and explosive substance in terms of the Explosives Act, 22 of 1956, thus, a license is required for the operation of the proposed storage facility.

Ammonium Nitrate is commercialized as a raw material for the manufacturing of blasting agents at various mining operations, with different kinds of products that adapt to each client's needs, delivering specific solutions for their applications. There is thus, an increasing and growing demand for Ammonium Nitrate for the manufacturing of explosive agents in the mining and quarrying industry, and **Desert Storage CC** aims to meet these growing and increasing demands in the mining industry.

An Environmental Scoping and EMP report, was performed in respect of the proposed activity, which is the subject of this report, in order to ensure that it will comply with the relevant requirements needed, in order to obtain the approval of the Ministry of Environment and Tourism (MET).

The Environmental Scoping and EMP report were done quantitatively, consisting of descriptions of the operation and the processes. This was followed by the identification of the material hazards, reviewing incident experience and noting tests done. Hazardous events were also analysed, their consequence, severity and cause likelihood, were quantified. A combination of severity and likelihood allowed for the estimation of the risks, which were then compared with acceptability targets, from which the need for further risk treatment was established.

The proposed bulk storage facility will be located on Farm 38, within the Walvis Bay Municipal District.

Product hauling from the site will mainly utilize the C14, D1983 linking the C14 with the B2 to transport their product to their clients. Hauling trucks travelling from NamPort to and from the site along the C14 road to an established gravel access road (±8 km South of Walvis Bay) that links the **Desert Storage CC** site with the C14, will be utilized during bulk product receiving off-loading periods.

The total lease area for **Desert Storage CC** storage facility is approximately 5 hectares (50 000 m^2).

1.4 Phases of the Project

The aim of this EMP is to derive mitigation measures that should be made binding on all the contractors during the construction phase as well as measures that should be implemented during the operational phase of the proposed project.

The purpose of the EMP is to provide solutions to problems before they may occur. If adhered to, this EMP should limit corrective measures required during the construction and operational phases of the development.

Further mitigation measures will be implemented throughout the different phases of the upgrades, if and when necessary, as required.

The EMP deals with the following phases as detailed below:

1.4.1 The Planning Phase

The EMP renders a fair opportunity to incorporate pro-active environmental management measures in order to achieve sustainable development. A proactive environmental measure reduces the risk of impacts occurring during the construction and operational phase of the proposed project. However, a chance of accidental impacts taking place still does exist; and this can be counter-acted through the incorporation of contingency plans (e.g. this EMP), during the planning phase. Necessary corrective action can be taken to further limit potential impacts that occur during the construction and operation phases.

1.4.2 Pre-construction Phase

Pro-active planning prior to commencement of the construction phase minimizes the chances of impacts occurring during the construction and operational phases.

Actions relating to the pre-construction phase include:

- Appointment of an Environmental Control Officer (ECO) and Environmental Liaison Officer (ELO);

- Planning and on-site briefing sessions between the Developer, Local and Regional Authorities, Contractors, Sub-contractors, ECO and ELO. A copy of the EMP is to be handed to the contractor for compliance during the construction phase;

- Active demarcation of areas to be avoided and/or protected during the construction, which includes:
  - Active identification of areas to be used for the establishment of the construction camp and lay down areas (e.g. stockpiling); and
  - Marking of features outside of the demarcated areas that must be retained.

1.4.3 The Construction Phase

Majority of the impacts during this phase will have a direct and immediate effect (e.g. pollution, noise and dust). Continual monitoring of the site during the construction phase will assist in identifying impacts as and when they occur. These impacts can then be mitigated through the contingency plans identified in the planning phase.

1.4.4 The Operational Phase

Potential environmental impacts arising during the operational phase, can be minimized, by taking proactive measures during the planning and construction phases, and by so, the risk of incidents can be minimized and monitoring may be reduced, but not eliminated.

1.5 Anticipated Environmental Impacts

The anticipated adverse impacts requiring mitigation relating to the biophysical and socio-economic environment for both the construction and operational phases of the proposed development are listed below:

1.5.1 Construction Phase - Adverse Impacts

- Visual intrusion and light pollution;
- Noise pollution;
- Atmosphere pollution and odours;

- Safety and security**;**
- Heavy vehicle traffic increase that could impact negatively on the existing infrastructure;
- Soil erosion**;**
- Soil and groundwater pollution;
- Destruction of fauna and flora;
- Unsupervised and misuse of fire on the site;
- Waste management**;** and
- Increased hard surfaces and storm water run-off.

1.5.2 Operational Phase - Adverse Impacts

- Noise pollution and intrusion;
- Visual intrusion and light pollution;
- Traffic;
- Atmospheric pollution and odours;
- Safety and security;
- Soil and groundwater contamination (surface spillage of fuel);
- Risks of fires and explosions; and
- Waste generation and disposal.

1.6 Responsible Parties

There are several role players participating in the environmental management of the proposed site, namely:

1.6.1 Project Manager

- The Project Manager will be responsible for overseeing the contract from the initiation to completion of the construction on the site.
- The Project Manager will appoint a team of contractors, which will be responsible for the construction of the entire project.
- The Project Manager will be responsible for ensuring that the development is implemented according to the requirements, as set out in the EMP.
- The Project Manager should ensure that sufficient resources are available to the other role players to efficiently perform their tasks in terms of the EMP.
- The Project Manager must appoint an independent Environmental Control Officer (ECO) to ensure strict adherence to the EMP.

1.6.2 Resident Architect/Engineer

- Only the architect/Engineers approved by the Project Manager will be allowed to work on the project and will oversee the individual contracts between the owners of the entire site or portions thereof, and the contractors.

1.6.3 Environmental Control Officer

- The Environmental Control Officer will be appointed at the start of the construction phase and will be mandated to do the following:
  - To ensure that all contractors/subcontractors/employees are fully aware of their respective environmental responsibilities. This will take the form of an initial environmental awareness-training program in which the requirements of this document will be explained.
  - Any damage to the environment must be repaired as soon as possible after consultation between the Environmental Control Officer, the Consulting Engineer and the relevant contractors.
  - The Environmental Control Officer shall monitor their actions to ensure that the developer and/or contractor are adhering to all the stipulations of the EMP.

- The Environmental Control Officer shall be responsible for the monitoring of the construction activities throughout the project by means of site visits and meetings. This should be documented as part of the site meeting minutes.
- The Environmental Control Officer must sign-off and the Project Manager must certify that all clean-up and rehabilitation, or any remedial action required, are completed prior to the transfer of properties.
- A post-construction environmental audit is to be conducted to ensure that all the conditions in the EMP have been adhered to.

1.6.4 Auditing / Inspections

- The appointed Environmental Control Officer, should inspect the site on a regular basis where necessary.
- The Project Manager or the contractor's representative will accompany the Environmental Control Officer on-site inspections.
- The contractor will use the formats presented in this EMP to report to the Project Manager in respect of, compliance with this EMP.
- When, in the opinion of the Environmental Control Officer, a construction activity will result in environmental damage, the Environmental Control Officer will issue instructions to the contractor or Project Manager, who will in turn order the contractor, to halt the activity. Spot fines or penalties may be levied for non-compliance therewith.

1.6.5 Method Statements

- Construction method statements from the contractor, will be required for specific activities in sensitive environments on request of the Authorities or the Environmental Control Officer.
- All method statements will form part of the EMP documentation and are subject to all the terms and conditions contained within the EMP document.
- For each and every instance, wherein it is requested that, the contractor submit a method statement to the satisfaction of the Environmental Control Officer, the format should clearly indicate the following:
  - What - a brief description of the work to be undertaken;
  - How - a detailed description of the process of work, methods and materials;
  - Where - a description / sketch-map of the locality of work; and
  - When - the sequencing or phases of actions, with an estimation of commencement and completion dates.
- The contractor must submit the method statement before any particular construction activity is due to start. Work may not commence until the method statement has been approved by the Environmental Control Officer.

1.6.6 Record Keeping

- All records related to the implementation of the EMP, must be kept together in an office where it is safe. Records should be kept for two years and, at any time be, available for scrutiny by any relevant authority.

1.6.7 Resident Engineer

- A Resident Engineer acts as a direct, on-site resource for all technical aspects related to the development. The Resident Engineer is available on the construction site at all times, overseeing all phases of the construction activities.
- The Resident Engineer will also liaise with the Environmental Control Officer where required to ensure the satisfactory implementation of the EMP.

1.6.8 Consulting Engineers

- The Consulting Engineers are involved during the planning, design and construction period.

- They are not available on site at all times, but are part of the specialist team during the final design and construction stages of the proposed project, to advise on appropriate environmental management and mitigation.

This EMP must be attached as an Appendix to service provider tender documents and referred to in the tender documents as special conditions of the tender.

Desert Storage CC as the developer, ultimately remains responsible for ensuring that the storage facility, is implemented according to the requirements, as set out in the EMP, throughout all the phases of the project and will retain legal accountability.

Desert Storage CC should thus, appoint suitably qualified personnel, to whom such responsibility could be delegated to, to ensure that the EMP is correctly and adequately implemented, and who will:

- Know the contents and implications of the EIA and monitor the implementations of the EMP findings, whilst using the EMP report;
- Guide, advise, and consult the contractors on environmental issues during the decommissioning of the facility;
- Revise the EMP as required and inform relevant parties of the changes; and
- Protect the environment.

Responsibility of the Service Providers and Contractors during the decommissioning of the **Desert Storage CC** Storage Facility, is to:

- Ensure that all the requirements of the EMP are communicated to, understood and followed by all persons working on the project who may have an impact on the environment;
- Ensure that a procedure exists for reporting incidents and resolving any problems rapidly;
- Keep good records relating to the compliance/non-compliance with the conditions of the authorization. These records must be made available to the relevant authority within seven days of a written request.

- ***The Environmental Control Officer:*** The Environmental Control Officer is appointed by the developer as an independent monitor of the implementation of the EMP. The Environmental Control Officer is responsible for providing feedback on any potential environmental problems associated with the development. The Environmental Control Officer has the right to enter the site and do monitoring and auditing at any time, subject to compliance with health and safety requirements applicable to the site. The Environmental Control Officer will be responsible for a minimum of monthly site audits, followed by an environmental control report, that will detail the status of the environmental compliance, and highlight mitigation. The Environmental Control Officer will be responsible for liaising with authorities, the Ministry of Environment and Tourism (MET) and local authorities. The Environmental Control Officer must submit monthly environmental audit reports to the authorities. The Environmental Control Officer must indicate the necessary corrective action measures to eliminate the cause of the non-conformances. The Environmental Control Officer is also responsible for liaising with contractors, informing them of any decisions that are taken concerning the environmental management, during the construction phase. This would also include informing the contractors of the necessary corrective actions to be taken.

- ***Site Agent:*** The Site Agent is usually a site engineer or project manager who is the developer's most senior representative on site and coordinates the activities on the site. The Site Agent must follow the advice of the Environmental Control Officer with regards to environmental management and ensure that the contractor abides by all the requirements stipulated and set out by the Environmental Control Officer.

- ***Contractor:*** The Contractor as the developer's agent on site, is bound by the Environmental Clearance Certificate and EMP conditions throughout the contract with the developer, and is responsible for ensuring that all the conditions of the EMP are strictly adhered to at all times.

The Contractor must comply with all orders (whether verbal or written) given by the Environmental Control Officer, Project Manager or Site Agent in terms of the EMP.

- ***The Environmental Liaison Officer:*** The Contractor shall submit to the Site Agent a nominated representative of the contractor as an Environmental Liaison Officer to assist with day to day monitoring of the construction activities for the duration of the contract. Issues raised by the Environmental Control Officer will be routed to the Environmental Liaison Officer for the Contractor's attention. The Environmental Liaison Officer shall be permanently on site during the construction phase to ensure daily environmental compliance with the EMP.

- The Environmental Liaison Officer should preferably be a senior and respected member of the construction crew; previous experience revealed that Environmental Liaison Officers who better relate to the workforce are most effective for information transfer and ensuring compliance with the EMP. The Environmental Liaison Officer will report directly to the Environmental Control Officer regarding environmental compliance. The site audits undertaken by the Environmental Control Officer will be undertaken alongside the Environmental Liaison Officer. The Environmental Control Officer will point out areas of concern; the Environmental Liaison Officer will be responsible for ensuring day to day compliance with the EMP. Should any emergencies arise the Environmental Liaison Officer will alert the Environmental Control Officer, who will take action. There shall be an approved Environmental Liaison Officer on site at all times. Before the Contractor commences with each construction activity, the Environmental Liaison Officer shall give to the Site Agent a written statement setting out the following:
  - The type of construction activity;
  - Locality where the activity will take place;
  - Identification of impacts that might result from the activity;
  - Identification of activities or aspects that may cause an impact;
  - Methodology for impact prevention for each activity or aspect;
  - Emergency/disaster incident and reaction procedures has to be demonstrated; and
  - The treatment and continued maintenance of the impacted environment.

- ***Community Liaison Officer:*** The Contractor must appoint a Community Liaison Officer to act as a point of contact between the contracting team and the community, affected by the construction activities. Complaints from the community regarding construction activities should be directed through the Community Liaison Officer. It is the responsibility of the Community Liaison Officer to liaise with the Interested and Affected Parties.

1.7 ENVIRONMENTAL MANAGEMENT PROGRAMME

The following tables form the core of this EMP for the construction and operational phases of the development. This table should be used as a checklist on site, especially during the construction phase. Compliance with this EMP must be audited monthly during the construction phase and once immediately following completion of the construction.

2. IDENTIFICATION OF ENVIRONMENTAL ASPECTS AND IMPACTS

Desert Storage CC activities have the potential to impact the biophysical and socio-economic environment. Environmental aspects and potential impacts were identified during the screening and scoping phases, in consultation with authorities, Interested and Affected Parties and the environmental specialists.

The relevance of the potential impacts ("screening") are also presented in **Table 1 and 2** below to determine if certain aspects need to be assessed in further detail. The potential impacts can also be assessed as part of this process.

Table 1 and 2 below provides a summary of the environmental aspects and impacts associated with **Desert Storage CC** Storage Facility.

Table 1: Pre-Construction Phase.

Table 1	PRE-CONSTRUCTION PHASE:				
TASK/ ENVIRONMENTAL IMPACT	**OBJECTIVE**	**ACTION REQUIRED**	**TARGETS TO MONITOR COMPLIANCE AND REPORTING THEREON**	**RESPONSIBILITY**	**TIME FRAME**
1. Review and approval of EMP	To ensure sound Environmental Management on site	○ The EMP must be reviewed and approved by the deciding authority and any considerations deemed necessary by the said authority must be included.	Approved EMP	Ministry of Environment and Tourism (MET)	Pre-construction phase
2. Duties of the Developer	The developer Remains ultimately responsible for ensuring that the development proceeds according to the requirements of the EMP	○ Include the EMP in the tender documentation so that the appointed contractor is bound to the conditions of the EMP. ○ Take responsibility and the necessary actions required for restoring the environment in the event of negligence, leading to the damage of the environment. ○ Appoint an independent Environmental Control Officer during the pre-construction phase to oversee all the environmental aspects relating to the development from pre-construction until completion of construction. ○ Provide the Environmental Control Officer with all reasonable assistance to facilitate effective monitoring.	Proof of inclusion of EMP in the tender documentation. Proof that financial means for restoration and rehabilitation are available should it be necessary. Appointment letter. Proof that all reasonable requests made by the Environmental Control Officer have been facilitated as far as possible.	Developer and / or Company	Pre-construction and construction phases
3. Appointment and duties of Environmental Control Officer	To ensure monitoring and implementation of the EMP, by an independent third party. To report on the developer's compliance with the EMP.	○ The Developer must appoint an independent Environmental Control Officer who must monitor the Developer and the Contractor's compliance with the EMP, on a continuous basis. ○ The Environmental Control Officer shall report on the findings of the monitoring to the MET on a monthly basis during the construction phases. ○ The Environmental Control Officer shall report on the findings of the monitoring to the MET on a quarterly basis during the operational phase.	Appointment letter. Proof that monthly reports are submitted to the MET. Proof that quarterly reports are submitted to the MET. Proof that EMP is provided to all the relevant role players. Minutes of site meetings to be included in EIA compliance.	Developer, Contractor, and Environmental Control Officer	Pre-construction and construction phases

Table 1	PRE-CONSTRUCTION PHASE:				
TASK/ ENVIRONMENTAL IMPACT	**OBJECTIVE**	**ACTION REQUIRED**	**TARGETS TO MONITOR COMPLIANCE AND REPORTING THEREON**	**RESPONSIBILITY**	**TIME FRAME**
4. Appointment and duties of the Environmental Liaison Officer	To attend to the day to day monitoring of construction activities on the site, compliance and cooperation of all personnel	○ The Contractor must appoint an Environmental Liaison Officer. ○ The Environmental Liaison Officer must preferably be fluent in the languages of the work crew.	Appointment letter.	Contractor	Pre-construction phases
5. Review of the Contractor's Health and Safety Plan	To ensure compliance with the regulations of the Labour Act, 6 of 1992, as amended by the Labour Act, 11 of 2007. To ensure a construction site that is safe not only to workers, but also to the surrounding residents and property owners	○ The Contractor must at all times comply with the requirements of the Labour Act, 6 of 1992, as amended by the Labour Act, 11 of 2007, and the regulations promulgated thereunder. ○ The Contractor must prepare and submit a Health and Safety Plan that addresses all aspects, related to maintaining a safe and healthy environment, as per the requirements of the Labour Act, 11 of 2007. ○ The health and safety plan must include a method statement, stipulating the requirements in terms of the fire control and procedures to be followed in the event of a fire, including firefighting and fire training. ○ Emergency procedures must be produced and communicated to all employees on site. This will ensure that accidents are responded to appropriately and the impacts thereof are minimised. This will also ensure that potential liabilities and damage is avoided. ○ The nearest emergency service provider must be identified as well as its capacity and the magnitude of accidents it will be able to handle. ○ The contact details of this emergency center, as well as the police and ambulance service must be available at a prominent location at the construction site. ○ The Contractor must have a basic spill control kit available at the construction site. These kits must include, absorptive material that can handle all forms of hydrocarbon. The contractor shall ensure that at least the site foreman and the Environmental Liaison Officer have received formal training in the use of the spill control kit.	Safety Plan. Method Statements. Training Records. Site office to contain relevant contact details. Spill Control Kit on site and easily accessible and kept in order.	Contractor and Environmental Liaison Officer	Pre-construction and construction phases

Table 1	PRE-CONSTRUCTION PHASE:				
TASK/ ENVIRONMENTAL IMPACT	**OBJECTIVE**	**ACTION REQUIRED**	**TARGETS TO MONITOR COMPLIANCE AND REPORTING THEREON**	**RESPONSIBILITY**	**TIME FRAME**
6. The EMP	To ensure effective environmental management on site during construction and operation	○ This EMP must be made binding to the main contractor as well as to individual sub-contractors and must be included in tender documentation for the construction contract. ○ The contract with Contractor must include penalties in the event of non-compliance with this EMP. A penalty system will be devised prior to the commencement of construction, during the planning phase.	Proof that EMP is included in the tender documentation.	Developer and Contractor	Pre-construction and construction phases
7. Awareness of the workforce	To ensure effective environmental management on site during construction and operation	○ It is the Contractor's responsibility to ensure that the workforce is aware of and conforms to the environmental guidelines that are applicable in the EMP.	Training Records	Contractor	Continuous
8. Record of environmental incidents	To ensure that incidents are recorded and that remedial action is taken, that would restore the environment to acceptable conditions. To ensure quick and appropriate responses to environmental incidents. To ensure adequate recordings of environmental incidents. To prevent the recurrence of similar incidents.	○ The Contractor shall take corrective action to mitigate an incident appropriate to the nature and scale of the incident, immediately after the occurrence of the incident. ○ Residual environmental damage that remains after having taken corrective action shall be rehabilitated. ○ Change operating procedures where necessary to prevent recurrence of similar incident. ○ Record all incidents on an Environmental Incident Register. ○ Report the incident within a 24-hour period after the occurrence thereof. ○ Additional documents, including photos shall be appended to the incident report to provide a comprehensive record of the incident and the corrective and preventative action that was taken. Failure to do so shall result in a penalty. ○ All incidents will be investigated in collaboration with the Environmental Control Officer. The focus of these investigations shall not be to apportion blame to specific employees, but to ascertain the root cause of the incident and to prevent a recurrence of similar incidents.	Environmental Incidents Report	Contractor, Environmental Control Officer, and Project Engineer	Pre-construction and construction phases

Table 1	PRE-CONSTRUCTION PHASE:				
TASK/ ENVIRONMENTAL IMPACT	**OBJECTIVE**	**ACTION REQUIRED**	**TARGETS TO MONITOR COMPLIANCE AND REPORTING THEREON**	**RESPONSIBILITY**	**TIME FRAME**
9. Rehabilitation planning	To limit disturbed areas to the minimum.	○ The Developer and Contractor shall liaise with the Environmental Control Officer during the pre-construction phase to agree on acceptable limits of disturbance. ○ A Landscape Master Plan is to indicate areas where rehabilitation is required as well as the specifications of the rehabilitation.	Landscape Master Plan which includes rehabilitation areas	Developer, Contractor, and Environmental Control Officer	Pre-construction and construction phases
10. Planning and Design	To mitigate the potential visual impact through the appropriate application of form, scale, materials and finishes. To ensure minimal negative impact to the natural environment, fauna and flora.	○ The Site Development Plan is to be amended after ***Desert Storage CC*** approval. ○ The relevant application on the property known as Farm 38, within Walvis Bay Municipal District and must be approved by the competent authority.	Approved Development Plans	Developer, Architect, Town Planner, Project Engineer, and Environmental Control Officer	Pre-construction design and planning phases
11. Implementation of Sustainable Design Principles	To ensure the development is undertaken in a harmonious manner with regards to the environment.	○ Avoid the use of energy intensive, environmentally damaging, waste producing, and/or hazardous materials. **Climate:** • Apply natural conditioning techniques to effect appropriate comfort levels for human activities. • Avoid overdependence on mechanical systems to alter the climate (such dependency signifies inappropriate design, disassociation from the environment, and no sustainable use of resources). **Temperature** (When climate is predominantly too hot for comfort): • Minimize solid enclosure and thermal mass. • Maximize roof ventilation. • Use elongated or fractured floor plans to minimize internal heat gain and maximize exposure for ventilation. • Separate rooms and functions with covered breezeways to maximize wall shading and induce ventilation.	Approved Development Plans	Developer, Architect, Town Planner, and Project Engineer	Pre-Construction design and planning phases

Table 1	PRE-CONSTRUCTION PHASE:				
TASK/ ENVIRONMENTAL IMPACT	**OBJECTIVE**	**ACTION REQUIRED**	**TARGETS TO MONITOR COMPLIANCE AND REPORTING THEREON**	**RESPONSIBILITY**	**TIME FRAME**
		Sun: • The sun can be an asset in cool and cold climates to provide passive heating. • The design must reflect seasonal variations in solar intensity. • When solar gain causes conditions too hot for comfort, use overhangs to shade walls and openings. • Use shading devices such as louvers, covered porches, and trellises with natural vines to block sun without blocking out breezes and natural light use lighter-colored wall and roofing material to reflect solar radiation (be sensitive to resulting glare and impact on natural/cultural setting.) **Wind:** (wind can be an asset in hot, humid climates to provide natural ventilation): • Use natural ventilation wherever feasible; limit air-conditioning to areas requiring special humidity or temperature control. **Lighting:** • Natural lighting should be used wherever possible. • Lighting design should be based on standards of reduced general lighting with task lighting and highlighting for specific functional considerations. **Waste prevention:** • Use products that minimize waste and that are non-toxic. • Promote recycling and re-use. **Site design considerations:** • Plan landscape development according to the surrounding context rather than by overlaying familiar patterns and solutions. • Locate structures to take maximum advantage of passive energy technologies to provide for human comfort. • Provide space for processing all wastes created onsite, so that no hazardous or destructive wastes will be released into the environment. • Develop facilities to integrate selected maintenance functions such as energy conservation, waste reduction, recycling, and resource conservation into structures, native plants into landscaping, and local			

Table 1	PRE-CONSTRUCTION PHASE:				
TASK/ ENVIRONMENTAL IMPACT	**OBJECTIVE**	**ACTION REQUIRED**	**TARGETS TO MONITOR COMPLIANCE AND REPORTING THEREON**	**RESPONSIBILITY**	**TIME FRAME**
		customs into programs and operations. **Visual Character:** • Natural vistas should be used in design whenever possible. • Creating onsite visual intrusions should be avoided, and views of offsite intrusions should be carefully controlled. • A natural look can be maintained by using native building material, and working with the topography. • Incorporate indigenous materials and crafts.			
BENEFICIAL IMPACTS					
Socio-economic					
1. Skills Development and job opportunities	Increased economic opportunities for local communities	○ As far as reasonably possible people from surrounding communities must be employed by the building contractor and sub-contractors. ○ This should be included in the contract upon appointment of successful tenderer.	Inclusion in the contract	Developer, and Contractor	Planning and Construction phases
2. Removal of exotic plant species and establishment of indigenous vegetation.	To encourage the implementation of indigenous vegetation and to increase biodiversity	○ All classified Invader Species are to be identified, controlled or eradicated. ○ Eradication of exotic invader plant species by means of an appropriate method, as specified by the Environmental Control Officer. ○ Dead weeds/exotic invader species must be discarded and disposed of at a landfill site.	Approved Landscape Development Plan	Contractor, Landscape Architect, Environmental Consultant and Environmental Control Officer	Design, planning, and construction phases
ADVERSE IMPACTS					
Socio-economic					
1. Visual Intrusion and Light Pollution	Minimize visual intrusion and light pollution	○ The site must be managed appropriately and all rubbish and rubble are to be removed to a recognized waste facility. ○ Excess soil and bedrock should be disposed of at an appropriate facility. ○ A certificate of disposal must be obtained for any waste that is disposed of. ○ Waste must not remain on site for more than 2 weeks. ○ Refuse bins must be provided by the Contractor for rubbish to be placed in by staff. ○ Excess concrete must be disposed of correctly and at an appropriate facility.	Installation of screening. Waste and building rubble removal records. Appropriate planning, design and placement of construction camp,	Contractor, Landscape Architect, Environmental Control Officer and Environmental Liaison Officer	Design, planning, and construction phases.

Table 1	PRE-CONSTRUCTION PHASE:				
TASK/ ENVIRONMENTAL IMPACT	**OBJECTIVE**	**ACTION REQUIRED**	**TARGETS TO MONITOR COMPLIANCE AND REPORTING THEREON**	**RESPONSIBILITY**	**TIME FRAME**
		○ No waste may be placed in any excavations on site. ○ The construction camp must be located within an area that will impose the least visual intrusion on the surrounding environment. ○ Advertising signs should blend in with the environment. ○ Construction/management activities must be limited to daylight hours between 7:00am and 5:30pm weekdays; 7:00am and 1:30pm on Saturdays ○ The construction foot print must be minimized. ○ Lighting on site is to be sufficient for safety and security purposes, but shall not be intrusive to neighbouring occupants, community, disturb wildlife, or interfere with road traffic. ○ Should overtime/night work be authorized, the Contractor shall be responsible for ensuring lighting that does not cause undue disturbance to neighboring occupants or communities. In this situation low flux and frequency lighting shall be utilized.	vegetation and trees, advertising and signage, building layout, and lighting.		
2. Noise Pollution	Minimize noise pollution	○ Noise levels shall be kept within acceptable limits, and the construction crew must abide by National Noise Laws and local by-laws regarding noise. ○ If work is to be undertaken outside of normal work hours permission, must be obtained. Prior to commencing any such activity, the Contractor is also to advise the potentially affected neighbouring occupants and community. Notification could include letter-drops. ○ No sound amplification equipment such as sirens, loud hailers or hooters are to be used on site, except in emergencies and no amplified music is permitted on site. ○ Construction/management activities, involving the use of the service vehicle, machinery, hammering etc., must be limited to the hours between 7:00am and 5:30pm weekdays; 7:00am and 1:30pm on Saturdays; and no noisy activities may take place on Sundays or Public Holidays. ○ Activities that may disrupt neighbors, must be preceded by notice being given to the affected neighbors at least 24 hours in advance. ○ Equipment that is fitted with noise reduction facilities, must be used as per the operating instructions and maintained properly during site operations.	Incident reports indicating complaints from neighbouring properties	Contractor	Design, planning, and construction phases

Table 1	PRE-CONSTRUCTION PHASE:				
TASK/ ENVIRONMENTAL IMPACT	**OBJECTIVE**	**ACTION REQUIRED**	**TARGETS TO MONITOR COMPLIANCE AND REPORTING THEREON**	**RESPONSIBILITY**	**TIME FRAME**
3. Atmosphere pollution and odors	Minimize atmosphere pollution and odors	○ Dust generation should be kept to a minimum. ○ Dust must be suppressed on access roads and construction areas during dry periods by the regular application of water or a biodegradable soil stabilization agent. ○ Speed limits must be implemented in all areas to limit the levels of dust pollution. ○ It is recommended that the clearing of vegetation from the site should be selective and done just before construction commences, so as to minimize erosion and dust. ○ Sand stockpiles are to be covered with Hessian, shade cloth or DPC plastic. ○ Where possible stockpiles are to be located in sheltered areas and the usable/cut face orientated away from the direction of the prevailing wind for that season. ○ Excavating, handling or transporting erodible materials in high wind or when dust plumes are visible shall be avoided. ○ All materials transported to site must be transported in such a manner that they do not fly or fall off the vehicle. This may necessitate covering or wetting friable materials. ○ No burning of refuse or vegetation is permitted.	Incident reports Indicating complaints from neighbouring properties	Contractor	Construction phase
4. Safety and Security	Prevent loss of assets of surrounding landowners. To ensure that potential liabilities and damage to life and the environment are avoided.	○ Signs should be erected on all entrance gates indicating that no temporary jobs are available, thereby, limiting opportunistic labourers and crime. ○ The site and crew are to be managed in strict accordance with the Labour Act, 6 of 1992, as amended by the Labour Act, 11 of 2007, as well as the National Building Regulations. ○ Potentially hazardous areas such as trenches, are to be cordoned off and clearly marked at all times. ○ The Contractor is to ensure traffic safety at all times, and shall implement road safety precautions for this purpose when works are undertaken near public roads especially the corner newly build access road to C14, D1983 linking the C14 with the B2 Road. ○ Necessary Personal Protective Equipment (PPE) and safety gear appropriate for the task being undertaken, is to be provided to all site personnel. ○ All vehicles and equipment used on site must be operated by	Safety Plan Incidents Report, including indication of remedial actions to ensure that future incidents do not occur.	Contractor	Construction phase

Table 1	PRE-CONSTRUCTION PHASE:				
TASK/ ENVIRONMENTAL IMPACT	**OBJECTIVE**	**ACTION REQUIRED**	**TARGETS TO MONITOR COMPLIANCE AND REPORTING THEREON**	**RESPONSIBILITY**	**TIME FRAME**
		appropriately trained and/or licensed individuals in compliance with all safety measures as laid out in the Labour Act, 6 of 1992, as amended by the Labour Act, 11 of 2007. o An environmental awareness training programme for all staff members shall be put in place by the Contractor. Before commencing with any work, all staff members shall be appropriately briefed about the EMP and the relevant occupational health and safety issues. o All construction workers shall be issued with ID badges and clearly identifiable uniforms. o Access to equipment stores is to be strictly controlled. o No unauthorized firearms are permitted on site. o Emergency procedures must be in place and communicated to all the employees on site. This will ensure that accidents are responded to appropriately and that the impacts thereof, are minimised. This will also ensure that potential liabilities and damage to life are avoided. o Adequate emergency facilities must be provided for the treatment of any emergency on the site. o The nearest emergency service provider must be identified during all phases of the project as well as its capacity and the magnitude of accidents it will be able to handle. o Emergency contact numbers are to be displayed conspicuously at prominent locations around the construction site and the construction camp at all times. o The Contractor must have a basic spill control kit available at the construction camp and around the construction site.			
5. Possible damage/loss of subterranean artifacts	Prevent damage/ loss of subterranean artifacts	o Should archaeological structures/ artifacts be discovered during the construction phase, these may not be removed, destroyed or interfered with. The area should be cordoned off until it can be investigated by an archaeological specialist or SAHRA. o The Contractor must immediately cease construction activities and inform the archaeological specialist and SAHRA within 24 hours, should they come across any archaeological artifacts/ sites. o In terms of the National Heritage Act, graves older than 60 years (not in a municipal graveyard) are protected. o The relevant heritage resources authority and the archaeologist must be informed as a matter of urgency, should any human remains be exposed	No destruction of Archaeological finds/ removal of artifacts	Developer, Contractor, Environmental Liaison Officer, Environmental Control Officer, Contractor, and Project Engineer	Construction phase

Table 1	PRE-CONSTRUCTION PHASE:				
TASK/ ENVIRONMENTAL IMPACT	**OBJECTIVE**	**ACTION REQUIRED**	**TARGETS TO MONITOR COMPLIANCE AND REPORTING THEREON**	**RESPONSIBILITY**	**TIME FRAME**
		on the terrain. ○ Human remains younger than 60 years should only be handled by a registered undertaker or an institution declared under the Human Tissues Act.			
6. Heavy vehicle increase on C14 / B2, could prove to be a nuisance to commuters, local users and could impact negatively on safety of existing roads.	Minimize impact on traffic flow and visibility on the C14, D1983 linking the C14 with the B2 Road. Excising Gravel road giving access to the proposed site must be maintained.	○ Existing roads must be utilized as far as possible. ○ No unauthorized access is permitted. ○ Access roads for earthmoving equipment and delivery of construction material must be clearly designated. ○ A road safety program will be implemented in order to inform all relevant parties of the possible risks of the construction site, including red flags should be used to warn the public and construction vehicle operators at least 100m before crossing points or access route into the construction area and ensuring adequate and correct road signage in the construction affected. ○ Develop an information campaign regarding the hazards associated with increased heavy vehicle traffic, and precautionary measures to be taken. ○ Ensure adequate and correct road signage in the construction affected area. ○ Limit construction activities strictly to daylight hours. ○ Access routes to be limited.	No evidence of Report of accidents	Contractor, Project Manager, and Project Engineer	Construction phase
Bio-physical					
1. Soil Erosion	Limit loss of soil.	○ Slopes with a gradient exceeding 1:3 should be avoided. ○ Appropriate erosion and storm water management structures must be installed around the construction site. ○ Storm water control measures on site could include: • Berms; • Energy Dissipating Structures; and ○ Contracts with Contractors are to include penalties related to environmental damage caused by such Contractors. ○ Construction schedules to indicate which areas can be cleared for	Regular Inspections by the Environmental Control Officer to ensure compliance	Developer, Environmental Liaison Officer, Environmental Control Officer, Contractor, and Project Engineer	Construction phase

Table 1	PRE-CONSTRUCTION PHASE:				
TASK/ ENVIRONMENTAL IMPACT	**OBJECTIVE**	**ACTION REQUIRED**	**TARGETS TO MONITOR COMPLIANCE AND REPORTING THEREON**	**RESPONSIBILITY**	**TIME FRAME**
		construction work. o Regular inspections are to be conducted by the Environmental Control Officer to ensure compliance with these requirements. o The construction program is to indicate when specific areas may be cleared.			
2. Soil and Groundwater Pollution	Prevent contamination of natural resources	o Where rehabilitation of cleared areas is planned, topsoil should be preserved for this purpose. o The top 20cm of soil must be stripped as fertile top soil and stockpiled at a designated place to be used in the rehabilitation and landscaping of the site in the final phase of construction. o All construction vehicles, facility, machinery and equipment must be properly maintained to prevent leaks. o Vehicles are to be repaired immediately upon developing leaks. Drip trays shall be supplied for all repair work undertaken on machinery on site or campsite area. o Drip trays are to be utilized during daily greasing and refueling of machinery and to catch incidental spills and pollutants. o Drip trays are to be inspected daily for leaks and effectiveness, and emptied when necessary. This is to be closely monitored during rain events to prevent overflow. o Vehicles to be used during the construction phase are to be kept in good working condition and should not be the source of excessive fumes. o General housekeeping and reconciliation of the product stored at the site is crucial to minimize any product spillages and losses. o Surface drainage and spillages on hard surfaces should be channeled daily. o All excavations and foundations must be inspected regularly. o Once earthworks are complete, disturbed areas are to be stabilised with mulch, straw or other approved methods. o Additionally, quality testing (major ions and hydrocarbons) will be useful baseline data for future monitoring protocols.	No evidence of soil contamination or contaminated water resources	Developer, Environmental Liaison Officer, Environmental Control Officer, Contractor, and Project Engineer	Construction phase
3. Destruction of Fauna and Flora	Minimize impact on fauna and flora. Prevention of	o Site clearing is to be limited to only the area necessary for carrying out the specified work. o No littering by construction workers is permitted. Any litter will be collected and removed off-site to a registered waste site.	Containment of construction footprint.	Developer, Contractor, Environmental Liaison Officer,	Construction phase

Table 1	PRE-CONSTRUCTION PHASE:				
TASK/ ENVIRONMENTAL IMPACT	**OBJECTIVE**	**ACTION REQUIRED**	**TARGETS TO MONITOR COMPLIANCE AND REPORTING THEREON**	**RESPONSIBILITY**	**TIME FRAME**
	associated soil loss which could result in dust generation and would impact negatively on the natural environment.	○ No burning of stockpiled vegetation is permitted. ○ No alien plant species may be introduced to the site and they must be controlled. ○ The alien plants on site will be removed during the construction. ○ Alien vegetation re-growth must be controlled throughout the entire site during the construction period. ○ The illegal hunting or capture of wildlife will not be tolerated. Such matters will be handed over to the relevant authorities for prosecution. ○ Rehabilitation and landscaping of the site in the final phase of construction must be done.		Environmental Control Officer and Project Engineer	
4. Unsupervised and misuse of fire on site	To reduce the risk of a fire on site.	○ No smoking is allowed outside of the site camp. ○ Fire extinguishers must be provided at the site camp, where it is easily accessible. ○ Fire extinguishers must be serviced, full and in good working order. ○ The Contractor's Health and Safety Plan must include particulars in respect of firefighting and training.	Implementation of effective fire management practices.	Contractor, Environmental Liaison Officer and Environmental Control Officer	Construction phase
5. Waste management	To minimize/prevent impact on soil and water bodies. To ensure the responsible disposal of waste generated by the Contractor and to prevent the accumulation of litter and waste on site and in the surrounding area.	○ Waste skips are to be fitted with lids to prevent littering. ○ Containers shall be emptied once weekly by a licensed waste contractor and disposed of at a municipal waste site. No solid waste or any materials used may be disposed of on site. ○ Solid construction waste not posing a pollution hazard should be used on site as a filling material. Should no filling material be required, this waste should be disposed of, along with domestic waste. ○ No rubble or discarded building material may remain on site for more than two weeks. ○ No waste material may be burnt on-site. ○ Liquid waste is to be stored in a bunded area. Bunded area is to have a complete seal and a volume equal to 110% of the total volume of liquid stored in the area. ○ Liquid waste is to be disposed of at a class HH site only. ○ Chemical containers and packaging brought onto the site must be removed for disposal at a suitable site. ○ No material may be dumped in the surrounding region. Written proof of disposal at a registered waste disposal site must be given to the Environmental Control Officer on every load of construction waste	Proof of correct waste disposal at registered waste disposal sites and regular inspections by the Environmental Control Officer.	Contractor, Environmental Liaison Officer, and Environmental Control Officer.	Construction phase.

Table 1	PRE-CONSTRUCTION PHASE:				
TASK/ ENVIRONMENTAL IMPACT	**OBJECTIVE**	**ACTION REQUIRED**	**TARGETS TO MONITOR COMPLIANCE AND REPORTING THEREON**	**RESPONSIBILITY**	**TIME FRAME**
		removed from the site. ○ Concrete shall be mixed on mixing trays only, not on exposed soil. Concrete shall be mixed only in areas, which have been specially demarcated for this purpose. ○ All concrete that is spilled outside these areas must be promptly removed by the Contractor and taken to an approved dumpsite. ○ After all the concrete mixing is complete, all waste concrete must be removed from the batching area and disposed of at an approved dumpsite. ○ The Contractor must adhere to all the relevant laws and regulations applicable to the disposal of construction waste and rubble. ○ Waste streams generated on the site shall be sent to a waste collection point for sorting and recycling. ○ Bins shall be clearly marked to ease the management of waste and recycling.			
6. Increase in paved areas and storm water run-off	Minimize storm water run-off and prevent pollution of surface and ground water	○ **I**t is important to minimize concentration of storm water run-off and ponding of water to ensure successful storm water design. ○ It is imperative that adequate surface and sub-surface drainage conditions be provided prior or during the development of the site. ○ Channels must have sufficient carrying capacity to cater for the volume of storm water run-off generated. ○ General surface water must be prevented from ponding. ○ Limit hard services and make use of materials that are pervious or absorbent. ○ Soft landscaping is to be used as far as possible. ○ Promote the use of pervious paving.	Implementation as per the Storm water Management Plan	Developer, Engineer, Management, Environmental Control Officer and Environmental Liaison Officer	Planning, construction and operational phases
7. Geotechnical Recommendations	Minimize risks related to soil instability on site	○ It is recommended that the Structural Engineers calculate the best economical foundation option for the proposed development, based on the type of structure, the different available construction methods and the specific foundation conditions in the footprint area of the proposed structures. ○ Good site drainage will be necessary to prevent water infiltration that may cause seasonal perched water tables or wet soil profile conditions. ○ The saturation of the soil profile will also need special site drainage precautions as this may lead to additional collapse settlements under load.	Implementation as per Storm water Management Plan	Developer, Engineer, Management, Environmental Control Officer and Environmental Liaison Officer.	Planning and construction phases

Table 1	PRE-CONSTRUCTION PHASE:				
TASK/ ENVIRONMENTAL IMPACT	**OBJECTIVE**	**ACTION REQUIRED**	**TARGETS TO MONITOR COMPLIANCE AND REPORTING THEREON**	**RESPONSIBILITY**	**TIME FRAME**
		○ Due to the pollution potential from surface spills the surface drainage and prevention of perching will need special attention. Special measures will be needed, to prevent any spillage, if such an event occurs. ○ The soils are expected to be highly corrosive and it will be good practice to use plastic pipes rather than steel pipes for services and supply. ○ Cathodic protection to be used where necessary.			

Table 2: Operational Phase

OPERATIONAL PHASE					
TASK/ ENVIRONMENTAL IMPACT	**OBJECTIVE**	**ACTION REQUIRED**	**TARGETS TO MONITOR COMPLIANCE AND REPORTING THERE ON**	**RESPONSIBILITY**	**TIME FRAME**
BENEFICIAL IMPACTS					
Socio-economic					
1. Job Opportunities and Economic Upliftment	Advantages for local previously disadvantaged communities in terms of employment, empowerment and socio-economic upliftment	▪ Constructing the proposed development will result in direct jobs being created for the construction of the facility. Indirectly, jobs are also created in industries that provide goods, materials and services. ▪ The proposed project will increase skills development and also local employment in the area. Both short-term and long-term employment will be created in this case. ▪ The development will lead to the increase in the number of convenience facilities in the primary market area.	Record of local workers employed	Developer	Operational phase
2. Contribute to the upgrading of the existing infrastructure	Improved municipal services	▪ All recommendations made by the civil, traffic and electrical engineer and approved by the Local Town Council must be installed as per the standard specifications.	Implementation of infrastructure as per approved engineering plans	Developer, Traffic, Engineer, COJMM, and Environmental Control Officer	Construction and operational phases
Bio-physical					
1. Removal of exotic plant species and the establishment of indigenous vegetation.	The removal of exotic plant species and the planting of indigenous vegetation within landscaped areas will increase biodiversity	▪ All classified Invader Species in terms of the said Act must be identified, eradicated and controlled. ▪ The Landscape Development Plan must as far as possible make use	Landscape Development Plan	Contractor, Landscape Architect, Environmental Consultant, and Environmental	Design, planning, and construction phases

OPERATIONAL PHASE					
TASK/ ENVIRONMENTAL IMPACT	**OBJECTIVE**	**ACTION REQUIRED**	**TARGETS TO MONITOR COMPLIANCE AND REPORTING THERE ON**	**RESPONSIBILITY**	**TIME FRAME**
		of indigenous trees and plants. ▪ The use of exotic species must be limited.		Control Officer	
ADVERSE IMPACTS					
Socio-economic					
1. Visual Intrusion and Light Pollution	To mitigate the potential negative impact on *"genius loci"* and visual impact, should architecture not be in line with natural character of the area, through the appropriate application of form, scale, materials and finishes	▪ Light pollution should be minimized. ▪ Littering, rubbish and illegal dumping on the site is not allowed. ▪ Refuse must be contained and disposed of at the municipal land fill site. ▪ Refuse bins must be provided. These must be sufficient in number and must be easily accessible. ▪ The buildings may not be visually intrusive. ▪ The buildings must be painted regularly. ▪ All lights used for non-security purposes should be energy efficient for example compact fluorescent lights (CFL). Fluorescent lamps give five times the light and last up to 10 times as long as ordinary bulbs. ▪ Outside lights will have to be downward shining (eyelid type), low wattage and should not be positioned higher than 1 m above the ground surface ▪ Signs must conform to Local Municipal Standards. ▪ Areas that have been landscaped	No complaints from surrounding property owners	Developer, Architect, Landscape Architect.	Planning and operational phases

OPERATIONAL PHASE					
TASK/ ENVIRONMENTAL IMPACT	**OBJECTIVE**	**ACTION REQUIRED**	**TARGETS TO MONITOR COMPLIANCE AND REPORTING THERE ON**	**RESPONSIBILITY**	**TIME FRAME**
		must be maintained. ▪ The site boundary will be erected around the site, thereby, securing the activities of the proposed Bulk Storage Facility from the adjoining sites.			
2. Traffic	Possible increased pedestrian hazard and increased road damage	▪ Access to the site is from an exciting gravel road (currently not maintained) connecting the site to the C14 Road. The proposed access arrangements must be based on the standards contained in the applicable legislation. ▪ Road surfaces in the immediate vicinity of the site should be monitored. If the road is damaged the relevant authority must be notified. ▪ If advertising boards are erected, it must not block the visibility to the C14 road to and from the proposed site. ▪ Access to and from the site must not have a negative impact on the traffic on the C14. ▪ All requirements by the Traffic Engineer and Provincial and Local Traffic Department must be adhered to.	No complaints from road users	Developer and Traffic Engineer	Planning, design and operational phases
3. Noise	To minimize the impact of noise on surrounding properties and the environment	▪ Noise levels shall be kept within the acceptable limits, and forecourt staff must abide by National Noise Laws and local by-laws regarding noise. ▪ If any equipment mechanical	No complaints from surrounding property residents	Developer, Contractor Management	Construction and operational phases

OPERATIONAL PHASE					
TASK/ ENVIRONMENTAL IMPACT	**OBJECTIVE**	**ACTION REQUIRED**	**TARGETS TO MONITOR COMPLIANCE AND REPORTING THERE ON**	**RESPONSIBILITY**	**TIME FRAME**
		equipment are used, noise reduction facilities must be used as per the operating instructions and maintained properly. ▪ Noise levels should comply with the SANS Code of Practice 100103-0994 for recommended noise levels.			
4. Atmospheric Pollution and Odors	Minimize atmospheric pollution and odors	▪ Emissions from the proposed Bulk Storage Facility and associated infrastructure will be low level and thus, disperse into the atmosphere. ▪ The emissions from the proposed Bulk Storage Facility and associated infrastructure would be dispersed according to the prevailing wind direction, with increased distance the concentration of the emitted particles will decrease. ▪ All general waste areas are to be maintained in a neat and orderly manner and bins must have secure lids.	No reports of negative health incidents or complaints from surrounding property residents	Developer, Contractor, Management	Construction and operational phases
5. Safety and Security	Ensure safety and security of staff and users of the facility	▪ Appropriate measures should be in place for the correct storage and handling of products as well as the procedures for dealing with dangerous situations. ▪ Staff should be adequately trained with respect to dealing with crime. ▪ Equipment and materials must be handled by staff that have been supervised and adequately trained. ▪ Staff must be regularly updated	Record of regular training for staff	Developer, Contractor, Management.	Construction and operational phases

OPERATIONAL PHASE					
TASK/ ENVIRONMENTAL IMPACT	**OBJECTIVE**	**ACTION REQUIRED**	**TARGETS TO MONITOR COMPLIANCE AND REPORTING THERE ON**	**RESPONSIBILITY**	**TIME FRAME**
		about the safety procedures. ▪ Emergency facilities must be available and adequately supplied for the use by staff and customers. ▪ Emergency contact details for the police, Security Company and fire department must be readily available.			
Bio-physical					
1. Soil and Groundwater Contamination	Prevent soil and groundwater contamination	▪ All erected storage facility equipment must be located on a hardened surface to contain spillages. ▪ All erected storage facility equipment and forecourt areas should all be located on a hardened surface. ▪ Strict procedures for the management of the site must be developed and adhered to. ▪ Staff must be trained to prevent spillages during loading and off-loading of the product.	Approved Spill Contingency Plan. Record of regular training of staff	Developer, Management, Environmental Control Officer	Planning, construction and operational phases
2. Subsurface leaks	Prevent soil and groundwater contamination	▪ Staff must be trained adequately so as to identify and minimize the impacts of leaks. ▪ Cathodic protection will prevent corrosion in pipelines. ▪ A proper management and monitoring program must be implemented to ensure that the groundwater resources are protected. ▪ Product and raw material stocks must be reconciled on a monthly	Approved Spill Contingency Plan Record of regular training of staff Record of regular monitoring	Developer, Engineer, Environmental Control Officer	Operational phase.

OPERATIONAL PHASE					
TASK/ ENVIRONMENTAL IMPACT	**OBJECTIVE**	**ACTION REQUIRED**	**TARGETS TO MONITOR COMPLIANCE AND REPORTING THERE ON**	**RESPONSIBILITY**	**TIME FRAME**
		basis.			
3. Risks of Fires and Explosions	Prevent emergency incidents	▪ The design and construction of the proposed Bulk Storage Facility and associated infrastructure must conform to the following fire safety standards and legislation: ➢ The manufacturing, storage, handling or processing of a hazardous substance, as defined in the Hazardous Substances Ordinance, 14 of 1974. ➢ The Labour Act, 6 of 1992, as amended by the Labour Act, 11 of 2007. ➢ Fire Services Act, 99 of 1956. ➢ National Building Regulations Act, 103 of 1977 – Fire extinguishers must be easily accessible. ➢ Environmental Management Act, 7 of 2007, and its corresponding regulations. ▪ The following signs must be installed in accordance with the Walvis Bay Municipalities' Fire Department: ➢ "NO SMOKING" ➢ "NO NAKED FLAME" ➢ "NO CELLPHONES" ▪ Staff must be trained adequately so as to identify and minimize the impacts of leaks and to deal with fires.	Approved Emergency Response Plan. Record of regular training of staff. Record of regular monitoring.	Developer, Engineer, COJMM, Proposed Bulk Storage Facility and associated infrastructure Management, Environmental Control Officer	Planning, construction and operational phases

OPERATIONAL PHASE					
TASK/ ENVIRONMENTAL IMPACT	**OBJECTIVE**	**ACTION REQUIRED**	**TARGETS TO MONITOR COMPLIANCE AND REPORTING THERE ON**	**RESPONSIBILITY**	**TIME FRAME**
4. Waste Generation and Disposal	Prevent pollution of ground and surface water and the environment as a whole.	▪ Solid waste generated needs to be collected at a central point. This waste will be disposed of as normal domestic waste at the closest municipal waste disposal site, in this case being in Walvis Bay. ▪ The Waste Management and Pollution Control Act covers all aspects relating to waste management and must be adhered to at all times. Any other relevant legislation must also be adhered to. ▪ Waste management at the proposed Bulk Storage Facility and associated infrastructure shall be strictly controlled and monitored. Only approved waste disposal methods shall be allowed. ▪ Management of the proposed Bulk Storage Facility and associated infrastructure shall ensure that all personnel are instructed in the proper disposal of all waste. ▪ Staff training should be undertaken every six months to capacitate staff in terms of waste minimisation, waste disposal. ▪ No burning, on-site burying or dumping of waste shall occur. ▪ Hazardous waste will only be produced during emergency situations such as a spill that has been cleaned up with an absorbent material. This will be disposed of at a registered hazardous landfill site. ▪ These materials may be removed	Removal of waste to certified land fill sites.	Developer, COJMM, Waste Removal Contractor, Engineer, and Environmental Control Officer	Operational phase

OPERATIONAL PHASE					
TASK/ ENVIRONMENTAL IMPACT	**OBJECTIVE**	**ACTION REQUIRED**	**TARGETS TO MONITOR COMPLIANCE AND REPORTING THERE ON**	**RESPONSIBILITY**	**TIME FRAME**
		by an appropriate hazardous waste Contractor. Proof of appropriate disposal must be obtained from the Contractor.			

ANNEXURE A: ENVIRONMENTAL INCIDENT LOG

Date	Incident	Comments *(Include any possible explanations for current condition and possible responsible parties. Include photographs, records etc. if available)*	Mitigation Measure *(Give details and attach documentation as far as possible)*	ECO Signature

ANNEXURE B: COMPLAINTS RECORD SHEET

RECORD OF COMPLAINTS	PAGE OF	DATE: / /
Complainant:		
Capacity of complainant:		
Complaint recorded by:		
Complaint:		
Corrective measure:		
ECO:	Date:	
Notes by ECO:		