

Draft Environmental Management Plan (EMP)

The Proposed Establishment and Operation of a Truck port and Associated Facilities (Ultra City) on Farm Otjiwarongo Townlands South No. 308 in the Otjozondjupa Region



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TABLE OF CONTENTS

LIST OF FIGURES i

LIST OF TABLES i

LIST OF ABBREVIATIONS ii

1 INTRODUCTION 1

 1.1 Project Background and Locality 1

 1.2 The Purpose of the Draft Environmental Management (EMP) 2

2 PROJECT DESCRIPTION: PROPOSED PROJECT ACTIVITIES 4

 2.1 Planning and Design 4

 2.2 Site Establishment and Construction 4

 2.2.1 Installation of Services, Infrastructures and Erection of Structures 4

 2.3 Operational and Maintenance Phase 5

3 LEGAL FRAMEWORK: PERMITTING AND LICENSING 6

4 EMP IMPLEMENTATION ROLES AND RESPONSIBILITIES 9

5 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES 10

 5.1 Identified Key Potential Impacts 10

 5.2 The Environmental Management and Mitigation Measures 11

 5.2.1 Decommissioning and Rehabilitation Measures: Post-project Activities 32

LIST OF FIGURES

Figure 1-1: The locality map of the Truck port and associated facilities (infrastructure) on the Remainder of Portion 20 (Farm Otjiwarongo Townlands South No. 308) 1

LIST OF TABLES

Table 3-1: The list of applicable of legal requirements and permits to the proposed activities 6

Table 4-1: The persons responsible for the Implementation of the Draft EMP 9

Table 5-1: The Environmental Management and Measures for the Planning and design 12

Table 5-2: The Environmental Management and Measures for the Site Establishment & Construction, Operational & Maintenance Phase 15

Table 5-3: Rehabilitation Measures for Post-Project Activities 32

LIST OF ABBREVIATIONS

Abbreviation	Meaning
CV	Curriculum Vitae
DEAF	Department of Environmental Affairs and Forestry
ECC	Environmental Clearance Certificate
ECO	Environmental Control Officer
EDS	Excel Dynamic Solutions
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
ESA	Environmental Scoping Assessment
HDPE	High density Polyethylene
I&APs	Interested and Affected Parties
MAWLR	Ministry of Agriculture, Water and Land Reform
MEFT	Ministry of Environment, Forestry and Tourism
MME	Ministry of Mines and Energy
NTA	Namibia Tourism Board
PPE	Personal Protective Equipment
SANS	South African National Standard (Safety)
SHE Officer	Safety, Health & Environment

1 INTRODUCTION

1.1 Project Background and Locality

Asterisk Investments CC (hereinafter referred to Asterisk Investments or the Proponent) proposes to establish (construct), operate, and maintain a truck port¹ and associated infrastructure (facilities) also known as the *Ultra City* on a six (6) -hectare (ha) area of Remainder of Portion 20 (hereinafter "*the site*"). The Remainder of Portion 20 is situated on the corner of Farm Otjiwarongo Townlands South No. 308 located about 5km south of Otjiwarongo at the corner of B1 and D2515 in the Otjozondjupa Region (please refer to Figure 1-1). The proposed project will include a site/customer filling station (with two fuel tanks), a convenient store, retail (a shopping centre), low-cost accommodation (motel), and ablution facilities with changing rooms for travelers.

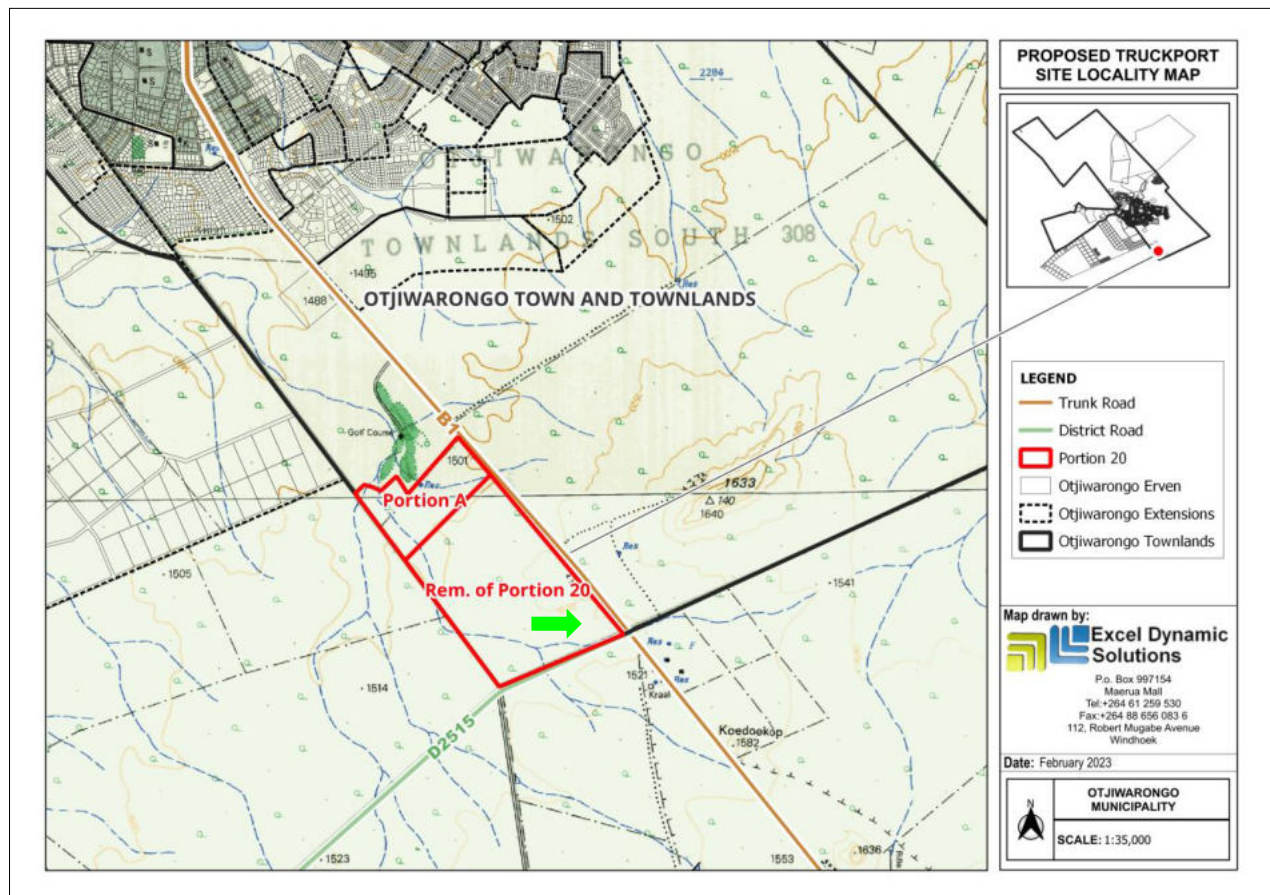


Figure 1-1: The locality map of the Truck port and associated facilities (infrastructure) on the Remainder of Portion 20 (Farm Otjiwarongo Townlands South No. 308)

¹ Truck port: a facility for filling station, vehicle maintenance, selling of spare parts, tourist information, take away shop, café, tourist accommodation, caravan park and rest rooms (source: <https://www.lawinsider.com/dictionary/truck-port>).

The proposed truck port and associated facilities are listed in the 2012 Environmental Impact Assessment (EIA) Regulation of the Environmental Management Act (EMA) No. 7 of 2007 as activities that may not be undertaken without an Environmental Clearance Certificate (ECC). The listed activities as per EIA Regulations as relevant to the proposed development as associated facilities are listed below:

“LISTED ACTIVITY 9: HAZARDOUS SUBSTANCE TREATMENT, HANDLING AND STORAGE

- 9.1 *The manufacturing, storage, handling or processing of a hazardous substance defined in the Hazardous Substances Ordinance, 1974.*
- 9.4 *The storage and handling of a dangerous goods, including petrol, diesel, liquid petroleum gas or paraffin, in containers with a combined capacity of more than 30 cubic meters at any one location*

LISTED ACTIVITY 6: TOURISM DEVELOPMENT ACTIVITIES

- *The construction of resorts, lodges, hotels or other tourism and hospitality facilities.”*

Associated activities include

“8. WATER RESOURCE DEVELOPMENTS

- 8.1 *The abstraction of ground or surface water for industrial or commercial purposes”.*

Subsequently, to fulfil the EMA requirements, Asterisk Investments appointed Excel Dynamic Solutions (Pty) Ltd (EDS), independent Environmental Consultants, to undertake an environmental scoping assessment (ESA) process.

The ESA process will include undertaking the required ESA process and submitting the ECC application to the Environmental Commissioner at the Department of Environmental Affairs and Forestry (DEAF) of the Ministry of Environment, Forestry & Tourism (MEFT) for evaluation and consideration of the ECC.

1.2 The Purpose of the Draft Environmental Management (EMP)

Regulation 8(j) of the EIA Regulations (2012) requires that a draft Environmental Management Plan (EMP) shall be included as part of the ESA report. A ‘Management Plan’ is defined as:

“...a plan that describes how activities that may have significant environmental effects on the environment are to be mitigated, controlled and monitored.”

An EMP is one of the most important outputs of the EIA/ESA process as it synthesizes all the proposed management & mitigation and monitoring actions, set to a timeline and with specific assigned responsibilities. It provides a link between the impacts identified in the ESA process and the required mitigation measures to be implemented during project implementation. It is important to note that an EMP is a statutory document and a person who contravenes the provisions of this EMP may face imprisonment and/or a fine. This EMP is a living document and can be amended to adapt to address project changes and/or environmental conditions and feedback from compliance monitoring.

The purpose of this document is, therefore, to guide environmental management throughout the different phases of the proposed activities, namely: planning & design, site establishment & construction, and operational as well as maintenance as briefly described below:

- Planning and Design phase - This is the stage of the proposed project during which the Proponent prepares the administrative and technical requirements needed for the project activities. This will include finalization of site design and layouts in preparation for site establishment and construction activities. The planning will also include the process of obtaining the necessary permits/licenses from relevant authorities, and facilitating the recruitment as well as services and required goods procurement processes, etc.
- Site establishment and construction phase - The phase during which the site will be established, cleared and prepared for construction works. This is also the phase during which earthworks will be done to erect the facility structures and install required services and infrastructures in preparation for the operational phase.
- Operational and maintenance phase – This is the phase during which the truck port and its associated facilities are operational. Maintenance will be done by Asterisk or their maintenance contractor(s). Some decommissioning measures are also provided herein.

This Draft EMP will be used by the Proponent, employees and/or contractors to implement management measures to address the environmental impacts identified in the ESA Report. This is done to ensure that adverse impacts on the environment are avoided or limited if they cannot be avoided completely, while maximizing the positive impacts.

The brief description of the proposed activities is provided under Chapter 2.

2 PROJECT DESCRIPTION: PROPOSED PROJECT ACTIVITIES

The proposed activities entail the construction of the truck port with its associated facilities and subsequent operations, as well as the maintenance of the site by the Proponent. The proposed project activities are summarized below and presented in detail under Chapter 2 of the ESA Report.

2.1 Planning and Design

The project commences with the planning and design stage whereby paperwork such as site design and layouts are done in preparation of the site establishment and construction activities.

2.2 Site Establishment and Construction

This is the stage during which the Proponent will prepare the site for the erection of structures and infrastructure as well as, the installation of services. The site preparation will entail earthworks, and where required remove the vegetation that is hindering the site preparation. There will be a movement of light and heavy vehicles associated with construction activities.

Duration: It is anticipated that construction work will take about 15 to 24 months, i.e., 1 year and 3 months to 2 years. The work will be carried out by an appointed construction contractor.

2.2.1 Installation of Services, Infrastructures and Erection of Structures

The construction works onsite will entail the installation and erection of the following services and structures, respectively for in preparation of the Ultra City operations:

- A sufficient number of fuel tanks (unleaded and diesel) fitted with submersible pumps and ancillary equipment (automatic tank gaging etc.) will be installed onsite. The tanks are expected to dispense a minimum of one million (1,000,000) litres or one thousand cubic meters (1,000m³) of fuel per month for site and customers' utilization, i.e., truckers and truck port customers (travelers and tourists alike).
- Fuel dispensing islands inclusive of pump island servicing equipment and forecourt.
- Water/oil separator: for ease of connections, HDPE fuel delivery pipeline system.
- Installation of potable water supply and wastewater disposal pipelines as well as electrical cables for power supply.

- Installation of parking zones / areas for trucks, other customers' vehicles and project related goods and services' loading and offloading zones.
- A localized stormwater drainage system will be installed to capture fugitive leak fuel from the truck port filling area. The leak (waste fuel) will be directed to an oil separator so that it does not enter the storm drain or the environment.
- A 24-hour convenient store to be attached to the truck port that will serve engine oils and lubricants for vehicles.
- Retail: shopping centre with a food court, shopping outlets, tourist curio and deli, grocer, and agri- business outlet.
- Low-cost accommodation: an overnight motel for road users / travelers.
- Ablution and changing rooms to serve road users and tourists. Accommodation, office facilities and other administrative buildings with toilets and washrooms will be connected to the septic tank systems or connections to municipal services.

In terms of Civil and structural design and layout for site, kerb lines, concrete hard standing areas and containment slabs, layer works and appropriate forecourt and surrounding surfacing (where required), road marking, subsurface spill containment drainage system.

The appointed contractor will construct a temporary site boundary wall (most probably using corrugated iron sheets) to limit access to the site and ensuring the safety of both people and animals around the site. Construction waste will be kept on-site during construction and removed on a regular basis to the Otjiwarongo Municipality dumpsite (solid waste management facility).

2.3 Operational and Maintenance Phase

This is the phase during which the Truck port and the associated facilities will be operational and offering services to customers or clients such as tourists and travelers alike. The truck port structure will consist of two fuel tanks (unleaded and diesel) for site and customers' utilization, engine oils and lubricants. The associated facilities will include the following:

- Convenient store: to be attached to the Truck port.
- Retail: shopping centre with a food court, shopping outlets, tourist curio and deli, grocer, and agri- business outlet.
- Low-cost accommodation: an overnight motel for road users / travelers.
- Ablution and changing rooms to serve road users and tourists.

Maintenance of the site will be done by the Proponent’s maintenance team. Alternatively, and where necessary, the maintenance work will be outsourced to an external maintenance contractor.

In terms of permitting/licensing and authorisations, the proposed project and associated activities are governed by certain legal requirements, and these are provided under the next chapter. The full presentation of applicable legal framework is provided in the ESA Report.

3 LEGAL FRAMEWORK: PERMITTING AND LICENSING

The Proponent has the responsibility to ensure that all the project activities conform to the principles of the EMA and other relevant legal requirements as listed in the ESA Report. Table 3-1 below lists the requirements of an EMP as stipulated by Section 8 (e) of the EIA Regulations and associated governing legal requirements, primarily on specific approvals and permits that may be required for the proposed project activities.

Table 3-1: The list of applicable of legal requirements and permits to the proposed activities

Legislation/Policy/ Guideline: Custodian	Relevant Provisions	Implications for this project
Environmental Management Act (No. 7 of 2007) 2012 Environmental Impact Assessment (EIA) Regulations: <u>Ministry of Environment, Forestry and Tourism (MEFT)</u>	The EMA has stipulated requirements to complete the required documentation to obtain an Environmental Clearance Certificate (ECC) for permission to undertake certain listed activities.	The ECC should be renewed every 3 years (counting from the date of issuance) at least 3 months before expiry date. The contact details at the Department of Environmental Affairs and Forestry (DEAF), Ministry of Environment, Forestry and Tourism (MEFT), Office of the Environmental Commissioner Mr. Timoteus Mufeti Tel: +264 61 284 2701

Legislation/Policy/ Guideline: Custodian	Relevant Provisions	Implications for this project
Petroleum Products and Energy Act (No. 13 of 1990) Regulations (2001): <u>Ministry of Mines and Energy (MME)</u>	Regulation 3(2)(b) states that “No person shall possess or store any fuel except under authority of a licence or a certificate, excluding a person who possesses or stores such fuel in a quantity of 600 litres or less in any container kept at a place outside a local authority area” A consumer installation certificate is required in terms of Regulation 19 (5) of the Act.	A consumer installation license/certificate to store fuel (in excess of 600 litres) onsite is required. Therefore, this certificate should be applied for from MME's Directorate of Petroleum Affairs.). Mr. Carlo Mcleod (Ministry of Mines and Energy: Acting Director – Petroleum Affairs) Tel: +264 61 284 8291
Forestry Act 12 of 2001, Amended Act 13 of 2005: <u>Ministry of Environment, Forestry and Tourism (MEFT)</u>	Prohibits the removal of any vegetation within 100 m from a watercourse (Forestry Act S22 (1)). The Act prohibits the removal of and transport of various protected plant species.	Should there be protected plant species such as camelthorn trees, and need to be removed, a permit should be obtained from the Forestry office (MEFT) in Otjiwarongo. Otjiwarongo Forestry Office Tel: +264 67 303 307 OR Mr. Johnson Ndokosho (Forestry Director) Tel: +264 61 208 7666
Water Act 54 of 1956: <u>Ministry of Agriculture, Water and Land Reform (MAWLR)</u>	Prohibits the pollution of water and implements the principle that a person disposing of effluent or waste has a duty of care to prevent pollution (S3 (k)). Provides for control and protection of groundwater (S66 (1), (d (ii)). Liability of clean-up costs after closure/abandonment of an activity (S3 (l)). (l)).	The permits and license required thereto should be obtained from MAWLR's relevant Departments and ensure compliance to stipulated conditions and timely renewals.

Legislation/Policy/ Guideline: Custodian	Relevant Provisions	Implications for this project
<p>Water Resources Management Act (No 11 of 2013): <u>Ministry of Agriculture, Water and Land Reform (MAWLR)</u></p>	<p>Ensure that the water resources of Namibia are managed, developed, used, conserved and protected in a manner consistent with, or conducive to, the fundamental principles set out in Section 66 - protection of aquifers, Subsection 1 (d) (iii) provide for preventing the contamination of the aquifer and water pollution control (S68).</p> <p>When required, the Wastewater / Effluent Discharge Permit should be applied from MAWLR.</p>	<p>These permits include Borehole Drilling Permit (if a new borehole will be drilled onsite), Groundwater Abstraction & Use Permit.</p> <p>Contact: Mr. Franciskus Witbooi Division: Water Policy and Water Law Administration Division</p> <p>Tel: +264 61 208 7158</p> <p>Water Environment Division</p> <p>Contact: Ms. Elise Mbandeka Tel: +264 61 208 7167</p>
<p>Namibia Tourism Board Act 21 of 2000: <u>Ministry of Environment, Forestry and Tourism (MEFT)</u></p>	<p>Section 19 (Accommodation establishments to be registered) to 30 should be complied with. The Proponent will need to consult with the Tourism Board on the requirements for the establishment and operation of a Motel at the truck port.</p>	<p>For the registration of the accommodation facility (Motel) and related requirements, Asterisk should consult with the Namibia Tourism at:</p> <p>Mr. Digu //Naobeb (Chief Executive Officer)</p> <p>Tel: +264 61 290 6000</p>
<p>Road Traffic and Transport Act, No. 22 of 1999: <u>Ministry of Works and Transport (MWT) (Roads Authority of Namibia)</u></p>	<p>Mitigation measures should be provided for road use and traffic safety.</p> <p>Provides for the control of traffic on public road and the regulations pertaining to road transport, including the licensing of vehicles and drivers.</p> <p>The <u>site access (road) permit from the B1 or D2515</u> must be applied for and obtained from the Roads Authority</p>	<p>A site access road permit from the B1 (or if the site gate will be on the D2515) should be formalized by applying for it and obtained from the Roads Authority.</p> <p>Mr. Eugene de Paauw: Road legislation Specialist</p> <p>Tel: +264 (0) 61 284 7072</p>

The EMP implementation at the site will be done different parties involved in the project activities, and these roles and responsibilities are provided under the next chapter.

4 EMP IMPLEMENTATION ROLES AND RESPONSIBILITIES

Asterisk Investment is ultimately responsible for the implementation of the EMP (management and mitigation measures provided under the next chapter). However, they (Asterisk Investment) may delegate this responsibility or part of it to someone else at any time, as they deem necessary. The roles and responsibilities of all delegates/parties involved in the effective implementation of this EMP are set in Table 4-1.

Table 4-1: The persons responsible for the Implementation of the Draft EMP

Role (Person and or Institution)	Responsibilities
Asterisk Investment (Proponent)	<ul style="list-style-type: none"> -Managing the implementation of this EMP and updating and maintaining it when necessary. -Management and monitoring of individuals and/ or equipment on-site in terms of compliance with this EMP and issuing fines for contravening EMP provisions.
Project / Site Manager	<p>This individual will be responsible to ensure that all the associated works of the project are completed on time, and therefore, their responsibilities are to:</p> <ul style="list-style-type: none"> -Ensure that relevant commitments contained in the EMP are adhered to. -Ensure relevant staff is trained in procedures entailed in their duties. -Maintain records of all relevant environmental documentation for the project. -Review the EMP annually and amend the document when necessary. -Issue fines to individuals who may be in breach of the EMP provisions and if necessary, remove such individuals from the site. -Cooperate with all relevant interested and affected parties/stakeholders. -Develop and manage schedules for daily activities
Environmental Control Officer / Safety, Health & Environmental (SHE) Officer	<p>The SHE Officer will have the following responsibilities:</p> <ul style="list-style-type: none"> -Management and facilitation of communication between the Proponent, and affected parties or stakeholders regarding this EMP. -Conducting site inspections of all areas with respect to the implementation of this EMP (monitor and audit the implementation of the EMP). -Advising the Proponent or Project / Site Manager on the removal of person(s) and/or equipment not complying with the provisions of this EMP.

Role (Person and or Institution)	Responsibilities
	<ul style="list-style-type: none"> -Making recommendations to the Project Manager with respect to the issuing of fines for contraventions of the EMP. -Undertaking an annual review of the EMP and recommending additions and/or changes to this document.
Public Relations Officer (PRO), if deem necessary	<p>The PRO will be responsible for the following tasks:</p> <ul style="list-style-type: none"> -Liaison between the affected and Interested Parties (I&APs) / stakeholders and Proponent. -Ensure effective communication with stakeholders, local and neighbouring communities, media (if necessary) and the public. -Organising and overseeing public relations activities, and managing public relations issues. -Preparing and submitting public relations reports, if required. -Collaborating with personnel and maintaining project-related open communication among personnel.

The next chapter presents the key impacts identified and for which the management and mitigation measures were prepared for implementation. The measures are provided under subheading 5.2.

5 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

5.1 Identified Key Potential Impacts

The potential positive and negative impacts that have been identified from the proposed truck port and associated facilities and activities are listed below:

Positive impacts	Negative (adverse) impacts
-Socio-economic development: temporary and long-term employment opportunities as well	-Soil disturbance (soil compaction and erosion)

as procurement of locally available goods and services for the project in all phases.

-Boosting of local economic and regional economic development.

-Provision of accommodation and associated facilities for tourists and travelers alike.

-Increase the safety of the truckers and cargo (goods being transported) by parking at a designated areas at the truck port. Thus, the presence of the truck port encourages commercial drivers to park at the facility.

-Provision of fuel (unleaded and diesel), engine oils, and lubricants to the site clients/travellers, including tourists.

-Loss of biodiversity through the removal of vegetation within the project footprints.

-Risk of poaching of local wildlife

-Pollution of soil and water resources from wastewater and effluent and hydrocarbons.

-Occupational & community health and safety risks

-Over-abstraction of water resources

-Noise associated with project activities

-Waste generation through mishandling of project related waste

-Vehicular traffic safety

-Dust generation and emissions (impact on local and surrounding air quality).

5.2 The Environmental Management and Mitigation Measures

The management actions are aimed at avoiding the above-listed potential negative impacts, where possible. Where it is impossible to avoid these impacts, measures are provided to reduce the impacts' significance while maximizing the project benefits (positive impacts).

The management and mitigation measures recommended for the potential impacts described and assessed in the ESA Report are provided in Table 5-1 (planning and design),

Table 5-2 (site establishment, construction and operational & maintenance) and Table 5-3 (decommissioning / closure).

Table 5-1: The Environmental Management and Measures for the Planning and design

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
Planning and Design Management & Mitigation Measures					
EMP implementation and training	Lack of EMP awareness and implications thereof	<p>-A Comprehensive Health and Safety Plan for the activities should be compiled.</p> <p>-An EMP non-compliance penalty system should be implemented on site.</p> <p>-Appoint a Safety Health Environmental (SHE) Officer to manage the EMP implementation and monitoring.</p>	<p>-All required EMP implementation plans/ systems are in place.</p> <p>-Bi-Annual Environmental reporting</p> <p>-Appointed SHE Officer</p>	<p>-Proponent</p> <p>-Project / Site Manager</p>	-Pre-site establishment / construction
Authorizations	Lack of Permits/ Licenses	<p>-All the required agreements and licenses / permits should be obtained prior to commencement of activities (and timely renewed as required). The permits, and licenses agreements referred to herein include associated permits such as:</p> <p>(a) Groundwater Abstraction & Use and Wastewater/Effluent Discharge permit from MAWLR</p> <p>(b) Consumer installation permit for onsite fuel storage</p> <p>(c) NTA registration and associated documentations, etc.</p> <p>(d) Site access road permit (connecting to the B1 or D2515) from the Roads Authority.</p>	<p>-Applicable permits and licenses are obtained from relevant authorities.</p> <p>-Agreements/permits signed and obtained on time.</p> <p>-The site access road permit is obtained from the Roads Authority</p>	<p>-Proponent</p> <p>-Project / Site Manager</p>	-Pre-site establishment / construction and when necessary, throughout the project cycle
Facility construction materials,	Poor designs and subsequent failures	-The project construction materials, equipment, machinery as well as vehicles should be properly designed (up-to-standard) and meet international best practise standards to ensure that there are no mechanical failures that could be avoided. These standards include	-Compliance with international best practice for all materials, services and goods	-Proponent (Planning & Design Engineer)	-Pre-site establishment / construction

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
equipment and machinery		<p>the SANS 10131: Above-ground storage tanks for petroleum products as well as the Government Notice No. 69 of the national Petroleum Act.</p> <p>-Construction materials such as sand and gravel should be obtained from sites or a supplier with a valid ECC.</p>	<p>-Construction sand/gravel is sourced from an environmentally certified supplier/site.</p>		
Stormwater	Flooding of the project site and associated facilities	<p>-Stormwater diversion systems should be incorporated into the project layouts, and installed onsite to ensure that rainwater is collected and diverted to specific rainwater collection area (point) and not idle on site.</p> <p>-A runoff diversion ditch must be designed, incorporated and implemented onsite.</p>	<p>-Stormwater systems are in place and monitored during rainy season</p>	<p>-Proponent: Design Engineer</p> <p>-Project / Site Manager</p>	<p>-Stormwater diversion systems installed and maintained</p>
Socio-economy	<p>Creation of employment opportunities:</p> <p>The conflicts and tension arising owing to giving employment opportunities to outsiders over locals</p>	<p>-Opportunities for the training of unskilled and skilled workers from Otjiwarongo and surrounding communities should be maximized and employed for the project.</p> <p>-Minimize the influx of outsiders into the area for works that can be done by the locals by prioritizing the employment of more local people.</p>	<p>-Number of locals employed for the project are mainly from Otjiwarongo and surrounding areas for all the work that they can do.</p> <p>-No complaints of unfair recruitment procedures.</p> <p>-Grievance and response records pertaining recruitment at the project</p>	<p>-Proponent (Human Resources Unit)</p>	<p>-Pre-site establishment / construction, and when necessary, throughout</p>

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
	Procurement of goods and services: The conflicts arising owing to offering opportunities to outsiders over locals for locally available services	<p>-Preference should be given, where practically and economically possible and feasible, to Namibian companies with strong local participation, when procuring goods and services such as site clearing, construction, and maintenance.</p> <p>-The tendering process should be announced and the process of awarding should be done fairly and following transparent procedures.</p> <p>-Awarding of tenders to businesses out of Otjiwarongo or Otjozondjupa Region should be justified. Regardless, a partnership with local/regional business should be encouraged.</p>	<p>-Number of hired contractors.</p> <p>-Record of hired or contracted companies or services providers</p>	<p>-Proponent (Procurement Unit)</p> <p>-Project / Site Manager</p>	-Pre-site establishment / construction
	Corporate Social Responsibility / Investment (CSR)	<p>-A Practical Social Plan for CSR should be drafted and shared with the local authority (stakeholders) for consultation and further implementation advice, if any.</p> <p>-Consider Providing and or donating services to communities in need in the Town or area, where possible.</p>	-Visible involvement in investing in the communities through community project support	<p>-Proponent (CSR Unit)</p> <p>-Project / Site Manager</p>	Throughout the project cycle
National Economic development	Failure to pay taxes, fees and levies	-Ensure compliance with their project's requirements by the Namibia Revenue Agency (on taxes) and NTA as well as MME levies.	<p>-Taxes and levies are correctly paid and accordingly</p> <p>-Visible improvement in contribution to national economy by Asterisk</p>	-Proponent (Finance Unit)	Throughout the project cycle (based on provided periods)

Table 5-2: The Environmental Management and Measures for the Site Establishment & Construction, Operational & Maintenance Phase

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
Site Establishment, Construction, and Operations & Maintenance					
EMP implementation and training	Lack of EMP awareness and implications thereof	<ul style="list-style-type: none"> -EMP trainings should be provided to all workers on site. -All site personnel should be aware of necessary health, safety, and environmental considerations applicable to their respective work. -The ECC should be renewed on time (at least 3 months prior to expiry date). -The implementation of this EMP should be monitored. <p>The site should be inspected, and a compliance audit done throughout <u>the project activities, monthly and EMP implementation auditing done bi-annually.</u></p> <ul style="list-style-type: none"> -Implement an EMP non-compliance penalty system. 	<ul style="list-style-type: none"> -EMP implementation monitoring conducted bi-annually and reported to MEFT. -External EMP audits -The ECC is renewed every 3 years (timely ECC renewal) -Records of EMP training conducted. 	-SHE Officer	Throughout the project cycle
Communication between the Proponent and affected communities / neighbours	Lack of communication (proper liaison) between neighbours and Proponent with regards to land use	<ul style="list-style-type: none"> -The contact details of the PRO or Community Liaison Officer should be provided to the neighbours and Otjiwarongo Municipality for easy communication and receiving of grievances and complaints for addressing. -Compile a clear communication procedure / plan which should include a grievance and response mechanism. 	<ul style="list-style-type: none"> -The PRO is part of the project personnel. -Communities grievances are addressed to satisfaction 	-Project / Site Manager -PRO	Throughout the project cycle

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
Water Resources Use	Over-abstraction (water demand and availability)	<p>-Water should be used efficiently, and reuse/recycling methods should be implemented as far as practicable onsite.</p> <p>-If abstracting directly from the site or new drilled borehole, a Groundwater Abstraction & Use Permit should be applied for and obtained from MAWLR</p> <p>-Water conservation awareness and saving measures training should be provided to all the project workers so that they understand the importance of conserving water and become accountable.</p>	<p>-Water supply agreements are in place</p> <p>-Water permits are obtained</p> <p>-inspection of water storage tanks on site</p>	-SHE Officer / ECO	<p>Throughout the project cycle</p> <p>Once off water supply agreement, if any</p>
	Groundwater quality	<p>-Boreholes in and around the site (within a 2km radius) should be incorporated into project's Groundwater Monitoring Network. Water quality monitoring should be done on and around the site on a quarterly basis. The water quality analysis should be recorded into the monitoring database.</p> <p>-External auditing of the Groundwater monitoring program should be done by an external hydrogeologist/geologist on a bi-annual basis.</p>	-There is a Groundwater Monitoring Program and managed as prescribed and or stipulated by the regulatory authorities	-SHE Officer / ECO assisted by a Geologist / Hydrogeologist	Throughout the project cycle, as per the prescribed intervals / frequencies
Biodiversity	Loss of Fauna and Flora	<p><u>Fauna (animals)</u></p> <p>-Refrain from disturbing, snaring, killing or stealing livestock on and around the site, including farm areas.</p> <p>-Avoid the killing of small soil and rock outcrops' species found on site.</p>	<p>-No disturbance to unmarked areas.</p> <p>-No complaints from locals regarding unauthorised vegetation</p>	-SHE Officer / ECO	Throughout the project cycle

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		<p>-Construction trenches and holes should be secured (temporary fencing) and backfilled and capped after activities are completed to prevent injuries to animals after falling in.</p> <p>-Incorporate Environmental awareness and biodiversity preservation into the employment contracts of all workers.</p> <p>-Breeding sites for faunal species that are found within the site and nearby should not be disturbed.</p> <p><u>Flora (vegetation):</u></p> <p>-Avoid unnecessary removal of onsite vegetation, thus, promoting a balance between biodiversity and the project.</p> <p>-Vegetation found on the site, but not within the project footprints of the site areas or access route should be left undisturbed/avoided.</p> <p>-Vehicle movement should be restricted to existing roads and tracks to prevent unnecessary damage to the surrounding vegetation.</p> <p>-No onsite vegetation should be cut or used for firewood.</p> <p>-Access roads should be created in a manner that disturbs minimal vegetation.</p> <p>-Environmental awareness on faunal and floral biodiversity preservation should be provided to the workers and contractors. This should be incorporated into the workers' contracts.</p>	<p>removal or cutting down of trees.</p> <p>-No complaints of wildlife hunted by the project workers.</p> <p>-No intentional disturbance and destruction of site vegetation and faunal species</p> <p>-Barricading tape (to indicate working areas)</p> <p>-Visible preservation of onsite vegetation</p>		

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
Impact on wildlife	Illegal hunting of wildlife	<p>-The Poaching (illegal hunting) or disturbance/harming of wildlife onsite and surrounding farms/areas is strictly prohibited.</p> <p>-A No tolerance to Poaching Policy should be developed and apply to all site personnel (workers) and visitors.</p> <p>-Incorporate a No-tolerance rule for poaching in every employment contract and ensure that the workers understand the seriousness of this. In other words, there is no tolerance for poaching or to wildlife crime.</p>	<p>-There are no incident reports of illegal hunting of wildlife by the project workers.</p> <p>-Contact details of the Anti-poaching Police Unit provided and visible onsite</p>	<p>-Project / Site Manager</p> <p>-SHE Officer / ECO</p>	Throughout the project cycle
Land Use	Conflict between existing land users and project activities	<p>-Project activities should not in any way hinder the existing land uses within and around the site but rather promote co-existence throughout the project operations while respecting other land users such as eco-tourism and game hunting in the area.</p> <p>-The project workers and vehicles should be limited to the project site boundaries, i.e. they should not unnecessarily wander and drive around neighbouring farms.</p> <p>-Ensure that the project activities comply with the conditions set by the competent, regulatory authorities such that the project activities do not severely impact the different existing activities on and around the site.</p>	<p>-Land use consents (leaseholds) with clear conditions</p> <p>-Compliance with conditions set within operational permits by relevant authorities</p> <p>-Little to no complaints of significant interference from neighbouring land users/owners</p>	<p>-Project / Site Manager</p> <p>-PRO</p>	Throughout the project cycle
Occupational & community health and safety	General health and safety associated with handling of machinery and equipment	<p>-Health and safety induction trainings should be provided to all new personnel (workers), site visitors/inspectors and refresher training provided to all project personnel on a quarterly basis, and as needed.</p> <p>-The contact details of ambulance and other extensive health care services should be readily and visibly</p>	<p>-Comprehensive health and safety plan for all activities compiled.</p> <p>-Occupational Health and Safety Personnel</p>	<p>-Project / Site Manager</p> <p>-SHE Officer / ECO</p>	Throughout the project cycle and trainings offered as and when required

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		<p>displayed onsite (in office, site reception, shops and accommodation facility (motel rooms)).</p> <ul style="list-style-type: none"> -First aid kits should always be fully furnished and ensure that 2 or 3 site personnel are trained on administering first aid. -Provide personnel with adequate, appropriate and functional personal protective equipment (PPE) such as coveralls, gloves, safety boots, earplugs, dust masks, safety glasses, etc. -Commit to making provision for annual full medical check-up for all personnel onsite to monitor the impact of project related activities on them. -Heavy vehicle, equipment and fuel storage site should be properly secured, and appropriate warning signage placed where visible. -Provide project personnel with an awareness training of the risks of mishandling equipment and materials on site as well as health and safety risk associated with their respective jobs. -An emergency preparedness plan should be compiled, and all personnel appropriately trained. -Personnel must not be allowed to consume alcohol while working nor allowed onsite when under the influence, as 	<p>Health and Safety Trainings</p> <ul style="list-style-type: none"> -Well-furnished first aid kits -Trained worker to administer first aid 		

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		<p>this may lead to mishandling of equipment which results into injuries and other safety risks.</p> <p>-The Material Safety Data Sheets (MSDS) should be reviewed, and training provided to all site personnel.</p> <p>-The site areas that are considered risks should be equipped with "danger" or "cautionary" signs written in English, and Afrikaans for easy understanding.</p>			
	<p>Potential increase of prevalence of HIV/AIDS, and other sexually transmitted diseases (STDs)</p>	<p>-The workers should be engaged in health talks and training about the dangers of engaging in unprotected sexual relations which results in contracting HIV/AIDS and other sexual related infections.</p> <p>-Provision of condoms and sex education through distribution of pamphlets and health trainings. These pamphlets can be obtained from local health facilities.</p>	<p>-No new infections recorded linked to project workers</p> <p>-Occupational health and safety personnel</p> <p>-Sex and Health Education / Awareness</p>	<p>-Project / Site Manager</p> <p>-SHE Officer / ECO</p>	<p>Throughout the project cycle and trainings offered as and when required</p>
	<p>Accidental fire outbreaks</p>	<p>-Sufficient portable fire extinguishers should be available on site.</p> <p>-The site fire extinguishers should be serviced accordingly, and personnel trained on how to use them.</p> <p>-No open fires to be created both on and offsite in the project area.</p> <p>-All fire precautions and fire control at the site must be in accordance with SANS 089-1, or better. Firefighting</p>	<p>-No wildfires recorded caused by site personnel</p> <p>-Fire extinguishers are readily available and up to date with service</p> <p>-Fire emergency procedures are understood by site personnel and personnel</p>	<p>-Project / Site Manager</p> <p>-SHE Officer / ECO</p>	<p>Throughout the project cycle</p>

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		<p>measures as per the Material Safety Data Sheets of the product should be adhered to.</p> <ul style="list-style-type: none"> -Coupling of hoses should be tight and old perished materials should be replaced before leaks occur. -Use non-sparking tools and explosion-proof equipment. Use in well-ventilated area away from all ignition sources. -Keep hydrocarbons (fuels, oils) away from high-energy ignition sources, heat, sparks, pilot lights, static electricity, and open flames. -The areas within 50m of the fuel tanks should be cleared of any shrubs and grass. This is to prevent the risk of bush fire from spreading which would lead to fire catastrophe. -Warning signs of "NO SMOKING" and "NO THROWING OF USED CIGARETTES on site areas" should be clearly written and pasted around the site. -Potential flammable areas and structures such as fuel storage tanks should be marked as such with clearly visible signage. -The contact details of fire services should be readily and visibly displayed onsite. -All personnel must be sensitised about responsible fire protection measures and good housekeeping such as the removal of flammable materials (e.g., rubbish, dry vegetation, and hydrocarbon-soaked soil) from the vicinity 	<p>trained on responsiveness.</p>		

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		of tank areas. Regular inspections should be carried out to check for these materials onsite.			
Site safety and security	Compromising site security and safety	<ul style="list-style-type: none"> -A high palisade/fence wall should be constructed around the site to upgrade its security. -A security gate and security control point should be installed at the site entrance. -The entrance should be equipped with an alcohol testing device to ensure that no visitor or employee is allowed onsite when under the influence of alcohol or any narcotic substances. -A warning siren should be installed at the site office building to notify the site employees, contractors, and visitors of danger. -The site should be equipped with 24-hour security surveillance in case of opportunistic activities such as theft and vandalism as well as other criminal activities. 	-The site fencing and all security measures are in place	<ul style="list-style-type: none"> -Proponent -Project / Site Manager 	During construction and throughout the project cycle
Noise and vibration	Excessive noise and vibration	<ul style="list-style-type: none"> -Provide appropriate and sufficient PPE (such as earplugs) to protect workers from occupational noise. -Regular maintenance of equipment, machinery and vehicles to reduce noise arising from malfunctioning. -Shut down engine vehicles, blasting/drilling equipment when not in use to reduce noise levels. 	<ul style="list-style-type: none"> -Sufficient and appropriate PPE are provided -Regular servicing of vehicles and equipment -Noise management procedures are in place 	<ul style="list-style-type: none"> -Project / Site Manager -SHE Officer / ECO 	Throughout the project cycle

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		<p>-Conduct noise measurements from different prevailing noise levels and recommending appropriate mitigation measures.</p>			
<p>Littering and waste management (general waste and sanitation)</p>	<p>Environmental Pollution (solid waste)</p>	<p>-Project personnel should be sensitized to dispose of waste in a responsible manner and not to litter.</p> <p>-Ensure that there are no wastes left at the working sites at the end of each day (in all project phases).</p> <p>-All domestic and general operational waste produced daily should be contained onsite until such that time it will be transported for disposal at the nearest designated waste management site (Otjiwarongo Municipality dumpsite).</p> <p>-Burying and burning of waste onsite is prohibited.</p> <p>-Working sites should be equipped with separate waste bins for different waste types.</p> <p>-A penalty system for irresponsible disposal of waste on site and anywhere in the area should be implemented.</p> <p>-An emergency plan should be available for major/minor spills at the site and during the transportation of the product(s) such as fuel to site.</p> <p>-Ensure careful storage and handling of fuels on site.</p>	<p>-No visible litter within and around the working site areas</p> <p>-Provision of sufficient waste storage containers</p> <p>-Waste management awareness</p> <p>-Waste disposal permits from the Otjiwarongo Municipality is obtained</p> <p>-Environmental, Health and Safety Statements and Policy</p>	<p>-SHE Officer / ECO</p>	<p>Throughout the project cycle</p>

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
	<p>Wastewater generated by personnel onsite</p> <p>Storage and handling of hazardous substance (oil, grease, fuels) and waste</p>	<p>-Sewage waste should be stored as per the portable chemical toilets (during construction) supplied onsite and regularly disposed of at the nearest treatment facility.</p> <p>-Wastewater should be contained on site and disposed of in accordance with municipal wastewater discharge standards to prevent groundwater pollution.</p> <p>-Provide sufficient and functioning toilet facilities for workers (mobile/portable chemical toilet).</p> <p>-Open defecation is not allowed on and offsite areas. Make use of provided toilets.</p> <p>-Emptying the chemical toilets according to the manufacturer’s specifications.</p> <p><u>Hazardous substances and waste</u></p> <p>-Pollutants such as hydrocarbons should be contained on site and disposed of in accordance with municipal hazardous disposal standards to prevent groundwater pollution.</p> <p>-The lower area of the above-ground diesel tanks should be covered with a concrete slab (impervious layer) to contain possible spills and leaks.</p> <p>-Containers and tanks used to store hazardous substances should be properly banded and inspected for possible leaks.</p>	<p>-Adequate toilet and basic ablution facilities.</p> <p>-Sewage removal operator</p> <p>-Waste treatment agents/chemicals</p>	<p>-Project / Site Manager</p> <p>-SHE Officer / ECO</p>	<p>Throughout the project cycle</p>

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		-Workers handling hazardous substances and waste should be properly trained.			
Soils	Physical soil disturbance	<p>-Stockpiled topsoil and excavated materials should be used to backfill the disturbed site areas.</p> <p>-The topsoil that was stripped from certain site areas to enable project works and can be returned to its initial position, should be returned. This is to avoid unnecessary stockpiling of site soils which would leave them prone to erosion.</p> <p>-Soils that are not within the intended footprints of the site areas should be left undisturbed and soil conservation implemented as far as possible.</p> <p>-Project vehicles/machinery should stick to access roads provide and not to unnecessarily create further tracks on and around the site by driving everywhere resulting in soil compaction.</p>	<p>No proliferation of informal vehicle tracks.</p> <p>-No new erosion gullies.</p>	<p>-Project / Site Manager</p> <p>-SHE Officer / ECO</p>	Throughout the project cycle
Soils and water resources	Soils and water resources pollution	<p><u>Soil pollution</u></p> <p>-Spill control preventive measures should be in place on site to management soil pollution, thus preventing and or minimizing soil and water resources pollution.</p> <p>-The fuel tanks should be equipped with fuel leakage detectors to ensure that the leak is detected on time to avoid major leakage leading to significant pollution to soil and groundwater.</p>	<p>-No complaints of pollutants on the soils and eventually in the water due to the project.</p> <p>-No visible oil spills on the ground or pollution spots.</p>	<p>-Project / Site Manager</p> <p>-SHE Officer / ECO</p>	Throughout the project cycle

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		<ul style="list-style-type: none"> -Spill control structures and procedures must be in place according to SANS 089-1 and SANS 089-3 standards or better, including impounding around the loading areas by bunding with appropriate slopes of 1:100. -All fuelling should be carried out on dedicated surfaces, i.e., concrete slabs with regularly maintained seals between slabs. -Any spillage of more than 200 litre must be reported as per the Petroleum Products License (MME's Petroleum Affairs Directorate). -Spill clean-up kit must be available on site as per the relevant Material Safety Data Sheets. -Drip trays must be readily available at filling areas and monitored to ensure that accidental fuel spill is cleaned on time (soon after the spill has happened). -Polluted soil must be collected and transported away from the site to an approved and appropriately classified hazardous waste treatment facility. -The oil-water separator should be properly and regularly maintained (drained and cleaned) by a specialized contractor to ensure that the levels of oil in the released water do not go beyond the limits of the pit. -Washing of equipment contaminated hydrocarbons, as well as the washing and servicing of vehicles should take 	<ul style="list-style-type: none"> -Appropriate waste containers provided at project site areas -Non-permeable material to cover the ground surface at areas where hydrocarbons and potential pollutants are utilized. 		

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		<p>place at a dedicated area (impervious surface), where contaminants cannot contaminate soil or water resources.</p> <p><u>Water Pollution</u></p> <ul style="list-style-type: none"> -Any wastewater storage facility onsite should be lined, so that soluble substances from the wastes do not leach into groundwater systems. -Underground fuel storage tanks (petrol, if any) should be equipped with double layer to minimize the pollution of groundwater in case of tank burst or leaks. -Sewage waste should be stored as per the portable chemical toilets or septic tanks' manufacturer's instructions and regularly disposed of at the nearest wastewater treatment facility. -Hydrocarbons, and other potential pollutants associated with the project should be contained on site in designated containers and disposed of at nearby approved wastewater treatment facilities so that they do not get into groundwater bodies (systems). -Site areas where hydrocarbons will be utilized, the surface should be covered with an impermeable plastic liner (e.g., a High-density polyethylene (HDPE) liner), carefully placed to minimize risk of puncturing, to prevent 			

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		<p>any spillages from getting into direct contact with the soils and prevent eventual infiltration into groundwater.</p> <p>-Spill control preventative measures should be put in place to manage soil contamination, thus minimizing the contamination from reaching water bodies via the leaching of hazardous waste.</p> <p>-Should the Proponent consider discharging wastewater/effluent into the environment, they should apply for and obtain an Effluent Discharge Permit from the Water Environment Division of MAWLR prior to discharging the effluent or wastewater into the environment (whether on or offsite).</p>			
Vehicular traffic safety	The risk of road accidents	<p>-The lighting system of vehicles should be properly installed and regularly checked to prevent accidents owing to poor visibility.</p> <p>-Ensure that site access roads are frequently maintained.</p> <p>-Install sufficient and clearly visible traffic signs on and around the site.</p> <p>-The vehicles should be parked at designated zones.</p> <p>-The drivers and operators of different vehicles and machinery should be in possession of valid and appropriate licenses, respectively.</p>	<p>-The vehicular traffic safety measures are in place and adhered to.</p> <p>-All personnel operating the project vehicles and machinery are appropriately licensed and possession of valid driving licenses.</p> <p>-Demarcated areas for parking, offloading, and loading zones are onsite.</p>	<p>-Project / Site Manager</p> <p>-SHE Officer / ECO</p>	Throughout the project cycle

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		<ul style="list-style-type: none"> -No drunk vehicle driver or operator is allowed onsite nor to operate a vehicle or machinery. -Vehicles drivers should adhere to road safety rules. -Drivers should drive 40km/hour onsite and be on the lookout for people and animals on roadsides. -Ensure that access roads are well equipped with temporary road signs conditions to cater for vehicles. -Vehicles should be in a road worthy condition and serviced regularly (accidents from mechanical faults). -To control traffic movement in the area, deliveries from and to site should be done optimally during weekdays between of 8am and 5pm. 	<p>-Very little to no accidents recorded owing to the project activities.</p>		
<p>Air Quality: Dust and fumes</p>	<p>Dust generation, fumes and fuel vapours emission (poor air quality)</p>	<ul style="list-style-type: none"> -Vehicles should only be driven at the authorized site speed to avoid dust generation onsite and surroundings. -Ensure that the arrival and departure of heavy vehicles is limited to working days to minimize heavy vehicle-related dust level in the area from the unpaved/untarred access roads. -Consider using a reasonable amount of water as a dust suppressing agent on gravel roads during windy days while carrying out construction. -The heavy vehicles and fumes generating equipment should not be left idling when not in use. 	<ul style="list-style-type: none"> -No complaints from the public about vehicle emissions and dust generation. -Visible efforts to curb dust 	<ul style="list-style-type: none"> -Project / Site Manager -SHE Officer / ECO 	<p>Throughout the project cycle</p>

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		-The venting systems and procedures at the site fuel tanks should be designed according to South African National Standards to minimize fuel vapour emissions.			
Noise	Nuisance	<p>-Noise from operations' vehicles and equipment on the sites should be at acceptable levels.</p> <p>-The construction activities should not be carried out during the night or before 08h00 in the morning and should be carried out during weekdays only.</p> <p>-Construction activities should be restricted to between 08h00 and 17h00 to avoid noise generated by equipment and the movement of vehicles before or after hours.</p> <p>-Site workers and contractors should be equipped with personal protective equipment (PPE) such as earplugs to reduce exposure to excessive noise.</p>	<p>-No complaints from local communities such as neighbours about excessive noise from site</p> <p>-Noise protective equipment for workers</p>	<p>-Project / Site Manager</p> <p>-SHE Officer / ECO</p>	Throughout the project cycle
Social Nuisance	Flocking of outsiders to Otjiwarongo in search of jobs	<p>-Invest in the training of locals (Otjiwarongo residents) and prioritize their employment for all jobs they can do/be trained for to reduce the number of outsiders in the Town.</p> <p>-Out-of-area personnel who are employed onsite (for their unique work skills) should respect the local values and norms to co-live-in harmony with the local communities.</p>	<p>-Less outsiders employed for the project</p> <p>-Correct and fair recruitment procedures are followed and practised.</p> <p>-More local people are employed for both</p>	-Proponent: Human Resources Unit	Throughout the project cycle

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
			skilled, semi and unskilled works -Out-of-area people only employed for specialized skills that are not locally available.		
Archaeology and heritage resources	Accidental disturbance of archaeological or heritage objects	-On-site personnel and contractor (during construction involving earthworks) must be sensitized to exercise and recognize “Chance Finds Heritage” – Appendix 1. -Adhere to the provisions of Section 55 of the National Heritage Act in event significant heritage and culture features are discovered while conducting site upgrading works. -When the removal of topsoil and subsoil on the site for construction, the site should be monitored for subsurface archaeological materials by Environmental personnel.	-Preservation of all artefacts and objects that are discovered on and around project site during earthworks	-Project / Site Manager -Construction Contractor -SHE Officer / ECO	As and when required, i.e., and during construction works

5.2.1 Decommissioning and Rehabilitation Measures: Post-project Activities

The measures provided in Table 5-3 below are aimed at decommissioning the truck port and associated infrastructure/facilities, when the Proponent can no longer operate the facilities. These measures will be implemented to ensure that the site does not pose any environmental and social risk post its operations. This will entail the decommissioning of structures (buildings), services and infrastructure, as well as the fuel tanks.

It should be noted that Asterisk Investment is solely responsible for the rehabilitation of the site and its associated infrastructure, as deemed necessary.

Table 5-3: Rehabilitation Measures for Post-Project Activities

Aspect	Management and Mitigation Measure(s)	Implementation Responsibility	Timeline
Overall truck port facility and associated services and structures			
Finance and technical resources: Lack of funds and technical planning for closure	-Provision of both financial and technical resources for progressive rehabilitation and post-project activities should be made.	-Asterisk Investment	Throughout the project cycle
Electrical cables	-Cables should be carefully dismantled and appropriately storage at designated facilities	-Asterisk Investment	Post-operations / upon closure
Water and fuel supply systems	-Water and fuel supply pipelines and tanks should be carefully disconnected for transportation for storage and disposal at appropriate facilities, respectively.	-Asterisk Investment	Post-operations / upon closure
Solid waste, sewage and fuel storage tanks	-All waste created leading to the last day of project operations should be taken to the nearest respective waste management and treatment facilities. -Upon demolition of buildings and concrete, the rubble must be removed from the property and taken to an	-Asterisk Investment	Post-operations / upon closure

Aspect	Management and Mitigation Measure(s)	Implementation Responsibility	Timeline
	approved dumpsite designated by the Otjiwarongo Municipality.		
Project infrastructures: buildings (offices, motel rooms, shops, ablution facilities, etc.) and services	<p><u>Infrastructure for Potential Beneficial re-use</u></p> <ul style="list-style-type: none"> -Compile an inventory of infrastructure and equipment to potentially remain at closure, aligning to end land use plan. -Obtain legal authorisations for infrastructure to remain and be transferred, and finalise agreements with landowner, along with transfer schedule. <p><u>Service infrastructure to be removed</u></p> <ul style="list-style-type: none"> -Remove all equipment that can be profitably removed for salvage or resale. -Dismantle/demolish infrastructures such as offices, tanks, ablution container; water storage container/tank. -Decontaminate hazardous waste storage tanks and containers at a dedicated decontamination bay in the nearest town with capable facilities. -Demolish and excavate concrete foundations to 1m below ground level. Alternatively, and in appropriate instances, the concrete slabs of “clean” infrastructure can be covered with a 1,000mm soil cover as part of site re-profiling and integrated into the surrounding topography. -Backfill excavations of disturbed infrastructure footprint areas through a cut to fill action. 	-Asterisk Investment	<p>Post-operations</p> <p>Progressively after closure</p>

Aspect	Management and Mitigation Measure(s)	Implementation Responsibility	Timeline
	<p>-Shape and profile the disturbed site areas to match surrounding topography and to ensure free drainage, thus limiting run-off erosion.</p> <p><u>Measures relating to transport Infrastructure</u></p> <p>-Agreements will be put in place between the Proponent, farm owner and Otjiwarongo Municipality for roads to remain post closure for beneficial use by locals.</p> <p>-Roads that will no longer be used by locals post-closure will be closed off to avoid re-creation of tracks over such areas, re-establish natural drainage, including the removal of culverts and/or trenching, and profile to be free draining and emulating the surrounding topography.</p>		
<p>Fuel tanks</p>	<p>1. <u>Abandoning tanks in-situ:</u>²</p> <p>Any tank to be abandoned in place should be rendered safe by one of the following methods:</p> <p>-by filling with cement slurry using the following procedure:</p> <p>-drain back all pipelines associated with the tank and remove all residual petrol the tank must then be bottomed out which involves the removal of that quantity of petrol and deposits which remain below the pump suction pipeline, using a hand pump or a flame-proof electrical pump. This procedure should be performed by a specialist contractor.</p>	<p>-Asterisk Investment</p> <p>(By appointing a specialized contractor for decommissioning fuel tanks)</p>	<p>Upon cessation of operations</p>

² DP Fuel Tank Services. (2016). Methods of Fuel Tank Decommissioning: <https://dptanks.co.uk/methods-fuel-tank-decommissioning/>

Aspect	Management and Mitigation Measure(s)	Implementation Responsibility	Timeline
	<p>-disconnect all pipework entering the tank via the tank lid. Flush through and cap at each end all pipelines previously connected to the tank or compartment</p> <p>-remove the tank lid. (It should be remembered that this can be a hazardous exercise unless great care is taken.) In the case of old tanks without tank lids the suction pipe should be unscrewed leaving a hole approximately 75mm through which slurry of a thin consistency can be poured</p> <p>-the area surrounding the tank as far as boundaries permit should normally be classed as a hazardous area whilst filling the tank is taking place and all necessary precautions should be taken to prevent any source of ignition</p> <p>-fill the tank with 20 to 1 mix of concrete slurry. Wherever possible the slurry should be assisted to the extremities of the tanks by means of a vibrating device. (It is important to remember the previous point). It is essential that a Petroleum Officer of the Trading Standards Service is in attendance when the slurry fill takes place. Only when the slurry filling has been completed to the satisfaction of the Petroleum Officer is the manhole chamber to be filled with concrete.</p> <p><u>2. Removal of tanks</u></p> <p>Before excavation work starts, any tank to be removed from the ground should be rendered safe.</p> <p><u>For a tank without leaks the following initial procedure should be followed:</u></p> <p>-drain all pipelines associated with the tank and remove all residual petrol</p>		

Aspect	Management and Mitigation Measure(s)	Implementation Responsibility	Timeline
	<p>-the tank must then be bottomed out which involves the removal of that quantity of petrol and deposits which remain below the pump suction pipeline, using a hand pump or a flame-proof electrical pump. This procedure should be performed by a specialist contractor</p> <p>-fill the tank or compartment with water to ensure a liquid seal</p> <p>-disconnect all pipelines (except vent pipes) and add water to the tank or compartment until clear water appears at the vent pipe opening</p> <p>-cap or blank off all openings to the tank or compartment flush through and cap at each end all pipelines previously connected to the tank or compartment.</p>		
<p>Disposal of fuel tanks</p>	<p>-Any tank which has been removed from its excavation should be disposed of safely as soon as possible. Preparation for and removal by road should be in accordance with the provisions of the current legislation in force at the time.</p> <p>-Cleaning or demolition of any tank on site should not take place without the agreement of the appropriate authority.</p> <p>-The location of any abandoned tank should be recorded in the site register and brought to the attention of any person who subsequently becomes responsible for the site.</p> <p>-Further, the Trading Standards Service (in this case MME's Petroleum Affairs Directorate) should be made aware of the destination of any tank which has been removed from the ground.</p>	<p>-Asterisk Investment (By appointing a specialized contractor for decommissioning fuel tanks)</p>	<p>Upon cessation of operations</p>

Appendix 1: Chance Finds Procedure (CFP) After Kinahan, 2020

Areas of proposed activities are subject to heritage survey and assessment at the planning stage. These surveys are based on surface indications alone, and it is therefore possible that sites or items of heritage significance will be found during development work. The procedure set out here covers the reporting and management of such finds.

Scope: The “*chance finds*” procedure covers the actions to be taken from the discovery of a heritage site or item to its investigation and assessment by a trained archaeologist or other appropriately qualified person.

Compliance: The “chance finds” procedure is intended to ensure compliance with relevant provisions of the National Heritage Act (27 of 2004), especially Section 55 (4): “*a person who discovers any archaeological objectmust as soon as practicable report the discovery to the Council*”. The procedure of reporting set out below must be observed so that heritage remains reported to the NHC are correctly identified in the field.

Manager/Supervisor must report the finding to the following competent authorities:

- **National Heritage Council (NHC) of Namibia: +264 61 244 375**
- **NHC of Namibia (Technical Office): +264 61 301 903**
- **National Museum: +264 61 276 800**
- **National Forensic Laboratory: +264 61 240 461.**

Archaeological material must NOT be touched. Tempering with the materials is an offence under the Heritage act and punishable upon conviction by the law.

Responsibility:

Operator: To exercise due caution if archaeological remains are found

Foreman: To secure site and advise management timeously

Superintendent: To determine safe working boundary and request inspection

Archaeologist: To inspect, identify, advise management, and recover remains

Procedure:

Action by person identifying archaeological or heritage material:

- a) If operating machinery or equipment stop work
- b) Identify the site with flag tape

- c) Determine GPS position if possible
- d) Report findings to foreman

Action by foreman

- a) Report findings, site location and actions taken to superintendent
- b) Cease any works in immediate vicinity

Action by superintendent

- a) Visit site and determine whether work can proceed without damage to findings
- b) Determine and mark exclusion boundary
- c) Site location and details to be added to project GIS for field confirmation by archaeologist

Action by Archaeologist

- a) Inspect site and confirm addition to project GIS
- b) Advise NHC and request written permission to remove findings from work area
- c) Recovery, packaging and labelling of findings for transfer to National Museum

In the event of discovering human remains

- a) Actions as above
- b) Field inspection by archaeologist to confirm that remains are human
- c) Advise and liaise with NHC and Police
- d) Recovery of remains and removal to National Museum or National Forensic Laboratory, as directed.