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ENVIRONMENTAL SCOPING ASSESSMENT (ESA) STUDY REPORT FOR THE:

PROPOSED CONSTRUCTION & OPERATION OF A FUEL SERVICE STATION AND ASSOCIATED ACTIVITIES IN OKAMAPUKU VILLAGE NEAR OMATJETE IN THE ERONGO REGION: AN APPLICATION FOR ENVIRONMENTAL CLEARANCE CERTIFICATE (ECC)

ECC Application No.: **APP-003834**

Document Version: **Final for Submission**

Proponent: **Porto Marine Solutions CC**

P.O Box 7424 Swakopmund

June 2022

DOCUMENT INFORMATION

Title: Environmental Scoping Assessment Study for the Proposed Construction & Operation of a Fuel Service Station and Associated Activities in Okamapuku Village near Omatjete in the Erongo Region: An Application for Environmental Clearance Certificate (ECC)

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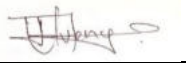
Signature & Date	
Date:	07 June 2022

SERJA' STATEMENT OF INDEPENDENCE AND DISCLAIMER

As the Appointed Environmental Consultant to undertake the Environmental Scoping Assessment (ESA) Study for the Proposed Construction & Operation of a Fuel Service Station and Associated Activities in Okamapuku Village near Omatjete in the Erongo Region, Serja Hydrogeo-Environmental Consultants cc declare that we:

- do not have, to our knowledge, any information or relationship with any member from Porto Marine Solutions CC, the Ministry of Environment, Forestry and Tourism (MEFT)'s Department of Environmental Affairs and Forestry (DEAF) or the Competent Authority (Ministry of Mines and Energy (MME) that may reasonably have potential of influencing the outcome of this Environmental Assessment and the subsequent Environmental Clearance Certificate (ECC) applied for.
- have knowledge of and experience in conducting environmental assessments, the Environmental Management Act (EMA) No. 7 of 2007 and its 2012 Environmental Impact Assessment (EIA) Regulation as well as other relevant national and international legislation, guidelines, policies, and standards that govern the proposed project as presented herein.
- have performed work related to the ECC application in an objective manner, even if the results in views and findings or some of these may not be favorable to the Proponent.
- have complied with the EMA and other relevant regulations, guidelines and other applicable laws as listed in this document.
- declare that we do not have and will not have any involvement or financial interest in the undertaking/implementation of the proposed project, other than remuneration (professional fees) for work performed to conduct the ESA and apply for the ECC in terms of the EIA Regulations' requirement as an Environmental Assessment Practitioner (EAP).

Disclaimer: Serja Hydrogeo-Environmental Consultants will not be held responsible for any omissions and inconsistencies that may result from information that was not available at the time this document was prepared and submitted for evaluation.

……

Signature:

Fredrika N. Shagama: Managing Member & Principal Environmental Assessment Practitioner

Date: 07June 2022

EXECUTIVE SUMMARY

Porto Marine Solutions cc (hereinafter referred to as *The Proponent*) proposes to construct and operate a Fuel Service Station and associated activities in the Okamapuku Village near Omatjete in the Erongo Region. The proposed site is located about 10km southwest of Omatjete and cover an area of about 7,532 square metres (m^2) or 0.75 hectare (Ha).

Proposed Project Activities

The project will cover the following phases that are explained in detail in the Report:

- Planning and design phase: technical design and administrative works in preparation for the construction phase,
- Construction works and associated activities in preparation for operations, and
- Operational and maintenance phase.

Communication with I&APs, and means of Consultation Employed

Regulation 21 of the EIA Regulations details the steps to be taken during a public consultation process and these have been used in guiding this process. Communication with I&APs with regards to the proposed development was facilitated through the following means:

- Project Environmental Assessment notices were published in The Namibia Media Holdings' Market Watch newspapers (*Allgemeine Zeitung, Die Republikein,* and *Namibian Sun*) dated 9 and 16 May 2022, i.e., the ESA notification / advertisement in the newspapers ran for two consecutive weeks.
- A Background Information Document (BID) containing brief information about the proposed project was compiled and hand delivered to MME during the submission of the ECC application and circulated to all the pre-registered stakeholders / Interested and Affected parties (I&APs).
- Obtaining the local and traditional authority contact details through a contact provided by the Proponent and Environmental Consultant from other project consultations in the area. The purpose of this exercise was to initiate consultation and inform the local and traditional leaders of the proposed development and to sensitize the local community prior to the Consultation Meeting.
- A Public Consultation meeting was scheduled and held with the Okamapuku community on the 20th of May 2022 at 14h30 in Okamapuku Village at their local Gathering / Meeting Tree. The Consultation Meeting minutes were taken.
- Three (3) A3 size posters were pasted at the; Zeraeua Traditional Authority Office entrance, local community shop (*Ouwa nomake Shebeen and General Dealer*) in Okamapuku Village and Omatjete Clinic notice board in Omatjete Settlement.

Some key potential positive and negative impacts were identified by the Environmental Consultant and based on some issues raised by the community. These are listed as follows:

Positive impacts: Fuel service and supply convenience and local empowerment through the presence of a fuel service station in the area, socio-economic development through temporary employment creation,

skills transfer leading to a boost in local economic growth and development, Corporate Social Responsibility (CSR) through possible future small and medium community project investment, and increased support for local businesses through the procurement of consumable items such as Personal Protective Equipment (PPE), machinery, etc. Further potential impacts or benefits from the project include nitional economic development and contribution through the payment of taxes and (energy) levies and Investments opportunities into the area due to the Fuel Station presence and operations.

Negative impacts: Potential disturbance of grazing areas, soil disturbance during construction, soil and water pollution, impact on water resources (water abstraction), local biodiversity (fauna and flora), noise (nuisance), air pollution, vehicular traffic, environmental pollution, occupational & community health and safety, and archaeological and cultural heritage impact.

Impact Assessment: The potential negative impacts assessed have a medium rating significance. The effective implementation of the recommended management and mitigation measures accompanied by monitoring will particularly see a reduction in the significance of adverse impacts that cannot be avoided completely (from medium rating to low).

Conclusions

The Environmental Scoping Study for the proposed construction and operational activities of Okamapuku Fuel Service Station was carried out in accordance with the EMA and its 2012 EIA Regulations. As the primary objective of the study, some key potential positive and negative impacts were identified, described, assessed, and appropriate management and mitigation measures were made thereof for implementation by the Proponent.

The public was consulted as required by Section 21 to 24 of the EIA Regulations. This exercise was done by placing notifications in the three newspapers, i.e., *Allgemeine Zeitung, Die Republikein, and Namibian Sun*) dated 9 and 16 May 2022. A community consultation meeting was scheduled, and an invitation was sent to the local leadership for the announcement to the local communities. A Face-to-Face meeting was held with the available community members on the 20th of May 2022 in Okamapuku.

The community made some comments and raised a few issues and most importantly expressed their excitement for a fuel station finally being established in their community, given the current struggle with fuel supply in both the Village and Omatjete. These were noted down, addressed, and incorporated into this Report. For significant environmental and social issues, mitigation measures have been provided thereof to avoid and/or minimize their significance on these components.

Impact Assessment: The potential negative impacts assessed have a medium rating significance. The effective implementation of the recommended management and mitigation measures accompanied by monitoring will particularly see a reduction in the significance of adverse impacts that cannot be avoided completely (from medium rating to low).

The Scoping assessment (ESA) Study was deemed sufficient and concluded that no further detailed assessments are required for the ECC application of the proposed project and its associated activities.

Serja Consultants are confident that the potential negative impacts associated with the proposed project activities can be managed and mitigated by the effective implementation of the recommended management and mitigation measures and with more effort and commitment put on monitoring the implementation.

It is therefore, recommended that the proposed construction and operational activities of the Fuel Service Station be granted an Environmental Clearance Certificate, provided that:

- All the management and mitigation measures provided herein are effectively and progressively implemented.
- All required permits, licenses and approvals for the proposed activities should be obtained as required. These include permits and ensuring compliance with these specific legal requirements.
- The Proponent, their project workers or contractors comply with the legal requirements governing their project and its associated activities and ensure that project permits and or approvals required to undertake specific site activities are obtained and renewed as stipulated by the issuing authorities.
- Disturbed site areas are rehabilitated, as far as practicable. This includes the levelling of stockpiled topsoil, backfilling of construction trenches and holes as well as removal of all waste from site.

To maintain the desirable rating and that the potential impacts are under control, the implementation of management and mitigation measures should be monitored by their Environmental Control Officer (ECO) and audited by an Independent Environmental Consultant on a bi-annual basis. Monitoring the implementation will also be done to ensure that all potential impacts that might arise during implementation are properly identified in time and addressed immediately.

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Appendix A: The Copy of Environmental Clearance Certificate (ECC) Application submitted to the Ministry of Mines and Energy (Competent Authority) and uploaded on the ECC Portal - ***attached hereto***

Appendix B: Draft Environmental Management Plan (EMP) – ***uploaded separately on the Portal as required***

Appendix C: Curricula Vitae (CV's) of the responsible Environmental Assessment Practitioner (EAP) – ***uploaded separately on the Portal as required***

Appendix D: The Site Layouts (Drawings) – ***attached hereto***

Appendix E: List of Interested and Affected Parties (I&APs) / Stakeholders - ***uploaded separately on the Portal as required (under ''Proof of Public Consultation'' file)***

Appendix F: EIA Notifications: *Allgemeine* Zeitung, *Die Republikein* & *Namibian Sun* Newspapers - ***uploaded separately on the Portal as required (under ''Proof of Public Consultation'' file)***

Appendix G: Proof of Project Notification & Meeting Invitation sent to the registered stakeholders / I&APs for the Consultation Meeting - ***uploaded separately on the Portal as required (under ''Proof of Public Consultation'' file)***

Appendix H: Public Consultation Meeting Minutes and Attendance Register - ***uploaded separately on the Portal as required (under ''Proof of Public Consultation'' file)***

LIST OF ABBREVIATIONS

Abbreviation	Meaning
AFQRJOS	Aviation Fuel Quality Requirements for Jointly Operated Systems
ASTM	American Society for Testing and Materials (ASTM International)
BID	Background Information Document
DEAF	Department of Environmental Affairs and Forestry
DEF STA	Defence Standard
DWSSC	Directorate of Water Supply and Sanitation Coordination
EAP	Environmental Assessment Practitioner
ECC	Environmental Clearance Certificate
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
ESA	Environmental Scoping Assessment
GG / GN	Government Gazette / Government Notice
I&AP / IAP	Interested and Affected Parties
ISO	International Organization for Standardization
JIG	Joint Inspection Group
MAWLR	Ministry of Agriculture, Water and Land Reform
MEFT	Ministry of Environment, Forestry and Tourism
MME	Ministry of Mines and Energy
NDP	National Development Plan
PPE	Personal Protective Equipment

Abbreviation	Meaning
Reg	Regulation
S	Section
SABS	South African Bureau of Standards
SANS	South Arican National Standard
USTs	Underground storage tank

KEY TERMS

Alternative: A possible course of action, in place of another that would meet the same purpose and need of the proposal.

Baseline: Work done to collect and interpret information on the condition/trends of the existing environment.

Biophysical: The part of the environment that does not originate with human activities (e.g., biological, physical and chemical processes).

Cumulative Impacts/Effects Assessment: In relation to an activity, means the impact of an activity that in it may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.

Decision-maker: The person(s) entrusted with the responsibility for allocating resources or granting approval to a proposal.

Ecological Processes: Processes which play an essential part in maintaining ecosystem integrity. Four fundamental ecological processes are the cycling of water, the cycling of nutrients, the flow of energy and biological diversity (as an expression of evolution).

Environment: As defined in Environmental Management Act - the complex of natural and anthropogenic factors and elements that are mutually interrelated and affect the ecological equilibrium and the quality of life, including – (a) the natural environment that is land, water, and air; all organic and inorganic matter and living organisms and (b) the human environment that is the landscape and natural, cultural, historical, aesthetic, economic and social heritage and values.

Environmental Management Plan (Draft EMP): As defined in the EIA Regulations (Section 8(j)), a plan that describes how activities that may have significant environments effects are to be mitigated, controlled, and monitored.

Interested and Affected Party (I&AP): In relation to the assessment of a listed activity includes - (a) any person, group of persons or organization interested in or affected by an activity; and (b) any organ of state that may have jurisdiction over any aspect of the activity. Mitigate - practical measures to reduce adverse impacts. Proponent – as defined in the Environmental Management Act, a person who proposes to undertake a listed activity. Significant impact - means an impact that by its magnitude, duration, intensity or probability of occurrence may have a notable effect on one or more aspects of the environment.

Fauna and Flora: The animals and plants found in an area.

Mitigation: The purposeful implementation of decisions or activities that are designed to reduce the undesirable impacts of a proposed action on the affected environment.

Monitoring: Activity involving repeated observation, according to a pre-determined schedule, of one or more elements of the environment to detect their characteristics (status and trends).

Proponent: Organization (private or public sector) or individual intending to implement a development proposal.

Public Consultation / **Involvement**: A range of techniques that can be used to inform, consult or interact with stakeholders affected by the proposed activities.

Protected Area - Refers to a protected area that is proclaimed in the Government Gazette according to the Nature Conservation Ordinance number 4 of 1975, as amended.

Scoping - An early and open activity to identify the impacts that are most likely to be significant and require specialized investigation during the EIA work. Can, also be used to identify alternative project designs/sites to be assessed, obtain local knowledge of site and surroundings, and prepare a plan for public involvement. The results of scoping are frequently used to prepare a Terms of Reference for the specialized input into full EIA.

1 INTRODUCTION

1.1 Project Background and Location

Porto Marine Solutions cc (hereinafter referred to as The *Proponent*) proposes to construct and operate a Fuel Service Station and associated activities in the Okamapuku Village near Omatjete in the Erongo Region. The proposed site is located about 10km southwest of Omatjete and covers an area of about 7,532 square metres (m^2) or 0.75 hectare (Ha). The locality map is shown in **Figure 1** and corner coordinates presented in **Table 1.**

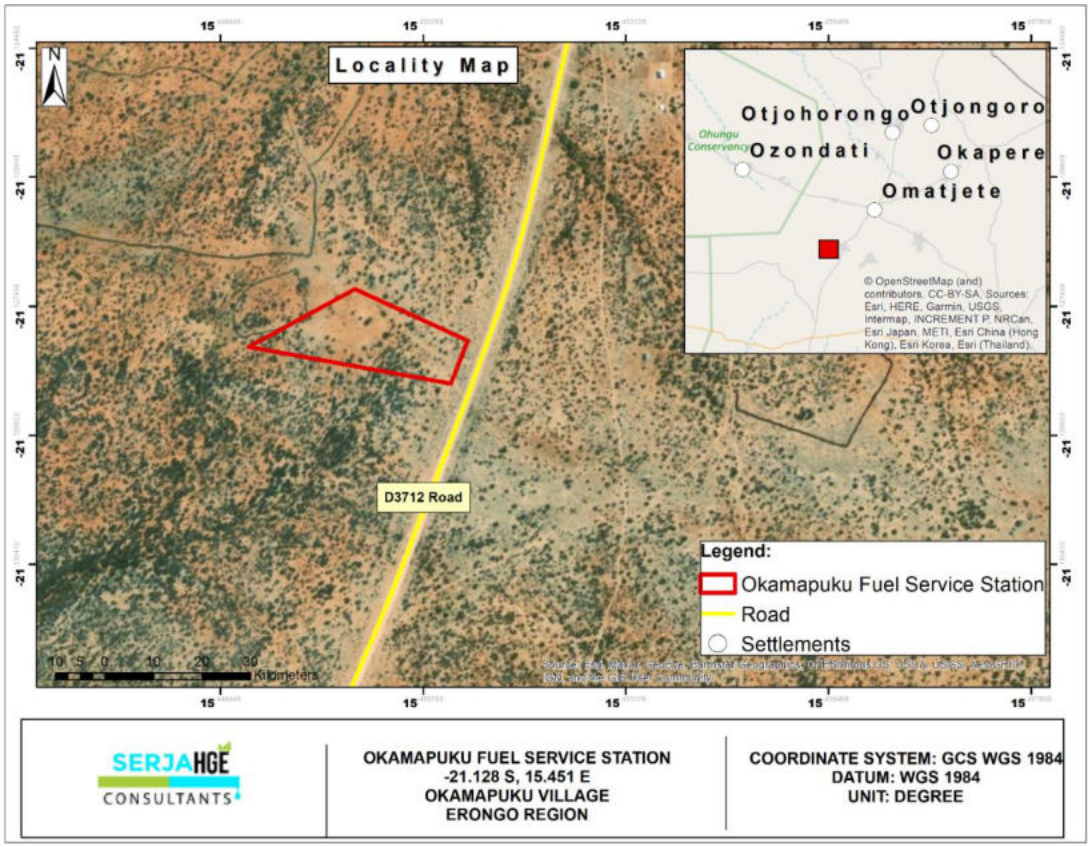

Figure 1: Location of the proposed Fuel Service Station Site in Okamapuku, Erongo Region

Table 1: The GPS Coordinates of the proposed site

Site Corner Point	GPS Coordinates
A	21°07'41.9" S 15°27'04.0" E / -21.128306° 15.451111°
B	21°07'40.4" S 15°27'04.7" E / -21.127889° 15.451306°
C	21°07'38.4" S 15°27'00.21" E / -21.127333° 15.450058°
D	21°07'40.1" S 15°26'59.6" E / -21.127806° 15.449889°

1.2 The Need and Desirability of the Proposed Project

Namibia's Vision 2030, National Development Plans (NDPs), particularly the NDP5 and Harambee Prosperity Plan (HPP) both recognise a need for and place significant value on economic growth and employment creation. The proposed facility will contribute to these priorities at a local, regional, and even national level.

The Omatjete Village as the closest growth centre to Okamapuku and surrounding areas has no fuel station nor similar facilities to cater to the vehicle fuel needs for the community and travellers. The vehicles in and around the area are currently fuelled in Omaruru and other nearby equipped places.

In terms of economic activities, the project area is one of the major exploration, mining, tourism, and farming areas in Namibia. Due to these activities, there is owed to be many vehicles in the area, but there is no fuel station. Hence, the need to address this fuel supply need/gap in Okamapuku and nearby areas such as Omatjete.

The Proponent identified this gap in the fuel supply market in the area and intends to address this need. This proposed service station will be a much-needed contribution to the local, regional and national socio-economic development through fuel supply, employment creation and revenue generation.

The need for the service station was also raised by the community members who attended the consultation meeting on the 20th of May 2022 in Okamapuku justified by the following dire needs:

- **There are tourism activities in the area due to the presence of conservancies such as Otjohorongo that the tourists would need to fuel up their vehicles to continue with their trips in the area,**
- **Mining related activities with vehicles and machinery requiring timely fuel supply for operations currently travel to either Omaruru or Uis for fuel,**
- **Essential government services such as the Omatjete Clinic (ambulances requiring fuel that is only available fuel stations in Omaruru, thus delaying and hindering services delivery). This was also confirmed by one of the nurses at the Clinic upon placement of the Public Notice at the Clinic,**
- **MEFT's Park Directorate rangers also struggle to attend to human-wildlife conflicts on time due to the unavailability / lack of fuel in vehicles at times, and**
- **The community members with cars also rely on Omaruru fuel stations, where some of them buy fuel in 25L containers to resell in the village for an additional fee (considering the transport cost).**

1.3 The Need for the ESA and Environmental Clearance Certificate (ECC)

The establishment of fuel service station and storage facilities are some of the listed activities in the Environmental Impact Assessment (EIA) Regulations (2012) of the Environmental Management Act (EMA) No. 7 of 2007 that may not be undertaken without an Environmental Clearance Certificate (ECC). The activities that are relevant to proposed project activities are as follows:

''9. HAZARDOUS SUBSTANCE TREATMENT, HANDLING AND STORAGE

-9.2 Any process or activity which requires a permit, licence or other form of authorisation, or the modification of or changes to existing facilities for any process or activity which requires an amendment of an existing permit, licence or authorisation or which requires a new permit, licence or authorisation in terms of a law governing the generation or release of emissions, pollution, effluent or waste.

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

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

The purpose of the ESA Study and subsequent issuance of the ECC is therefore to ensure that the proposed project activities are undertaken in an environmentally & socially friendly and sustainably manner, through the effective implementations of recommended environmental management measures to minimize the adverse identified impacts while maximizing the positive impacts.

1.4 Appointed Independent Environmental Consultant

To comply with the EMA and its Regulations and ensure environmental management, protection, and sustainability, the Proponent appointed Serja Hydrogeo-Environmental Consultants CC, Independent Environmental Consultants to apply for the ECC and conduct the required Environmental Assessment Process, which includes Public Consultation and prepare the Environmental Assessment Report and Management Plan (EMP).

The ESA process, including public consultation and engagement as well as compilation of the associated documents were conducted and compiled by Ms. Fredrika Shagama. Ms. Shagama is a qualified and experienced Hydrogeologist and Environmental Assessment Practitioner (EAP) by training and experienced with over 6 years' experience in Groundwater and Environmental Management Consulting. Ms. Shagama was assisted by Ms. Linda Uulenga who greatly contributed to the Public Consultation component. The CVs are attached to this Report as **Appendix C**.

1.5 Application for the Environmental Clearance Certificate

The application for the ECC process was done as follows:

- Prepare of prepared Background Information Document (BID) for the proposed project,
- Launching of the ECC application on the ECC Portal of the Ministry of Environment, Forestry and Tourism (MEFT) with the Proponent details (accompanied by the BID) for project registration purposes and obtaining a MEFT application / reference number (APP-003834),
- Completion of the Form 1 (Section 32) of the EIA Regulations with the required project and Proponent information,
- Submission of the printed hard copy of the ECC application (with affixed NAD300 revenues stamps as application fees) to the Ministry of Mines and Energy (MME), as the project Competent Authority. The ECC application to MME is accompanied by BID and submitted on the 19th of May 2022. The MME's date stamped copy of the ECC application (**Appendix A**) is then uploaded on as the Regulatory Authority, for proof of application to the Competent Authority and payment.

The next component of the ECC application is undertaking an Environmental Scoping Assessment (ESA) process, which entails Baseline Assessment of the Biophysical and Social environments as well as Public Consultation & Engagement. The findings of the ESA process are then incorporated into an ESA Report and a Draft EMP is also developed for the mitigation of potential adverse impacts anticipated from the proposed project activities. The two documents and associated documents (appendices) are then submitted to the Environmental Commissioner at MEFT's Department of Environmental Affairs and Forestry (DEAF) for evaluation and consideration of the ECC.

1.6 Scope of Work and Report Contents

This Study has been conducted according to the EMA No. 7 of 2007, and its 2012 EIA Regulations as mentioned in the preceding subsections, i.e., the proposed project may not be undertaken without an ECC. Therefore, the process has been undertaken as required and guided by the Regulations.

This Report has been compiled as a required output of an environmental assessment process after the ECC application has been submitted to the Competent Authority (MME). The ESA Report, together with the EMP and all its appendices will be submitted to the DEAF.

The document (Report) covers the following chapters or sections, in addition to the introductory chapter:

- Project description and associated activities - (**Chapter 2**).
- Project alternatives considered (that were found to be environmentally friendly and technically feasible) - **Chapter 3**).
- The Legal requirements governing the proposed project and its related activities, i.e., the legislations that the proposed project must comply with (**Chapter 4**).

- The Environmental and Social Baseline of the project area - **Chapter 5**.
- The Public Consultation & Engagement Process undertaken to inform, invite and engage the public (stakeholders and interested & affected parties) on the proposed project- **Chapter 6**.
- The Assessment of identified potential impacts associated with the proposed project (**Chapter 7**) - This chapter presents both the positive and negative (adverse) as well as cumulative impacts, assessment methodology and the assessment of the negative impacts. The mitigation measures in the form of management action plans, with timeframe and implementation responsibilities are given in Draft Environmental Management Plan (EMP) under **Appendix B**.
- The recommendations and conclusions to the environmental assessment are presented under **Chapter 8**. The data sources (literature) consulted for the assessment are listed under **Chapter 9**.

Based on the information provided by the Proponent and the EAP's experience, the description of the project activities is presented under the next chapter.

2 DESCRIPTION OF THE PROPOSED PROJECT ACTIVITIES

It should be noted that the proposed project activities will only commence after issuance of the ECC by the Environmental Commissioner and securing of all required permits and or license that need to be obtained prior to implementation.

Upon issuance of the ECC and obtaining the necessary and required documentations (such as fuel retail license and other permits or licenses), the Proponent will then prepare for the actual construction works onsite. The planned project activities in terms of phases, requirements and resources are presented below. The description of these project activities also aids in identifying the potential impacts, particularly the negatives impact for which are the focus of the ESA Study.

For easy follow of information presentation, the project activities are provided based on implementation phases, i.e., the planning & design, construction, post-construction site rehabilitation, operational and maintenance as well as decommissioning. These phases are explained as follows

2.1 Planning and Design Phase

The planning and design phase is aimed at considering key concepts of the project, i.e., the general overview of the study area, the legal framework, and a preliminary assessment of the main aspects affecting the proposed fuel station. This entails the assessment of technical and financial viability of the project. This is done by identifying risks and proposing mitigation measures where possible and highlighting 'fatal flaws' wherever mitigation measures are unavailable or impractical pertaining to the available funds and time.

In preparation for the construction works, the site layout and works had been drawn by the project's design engineers as shown in **Figure 2** and appended to the Report **(Appendix D).**

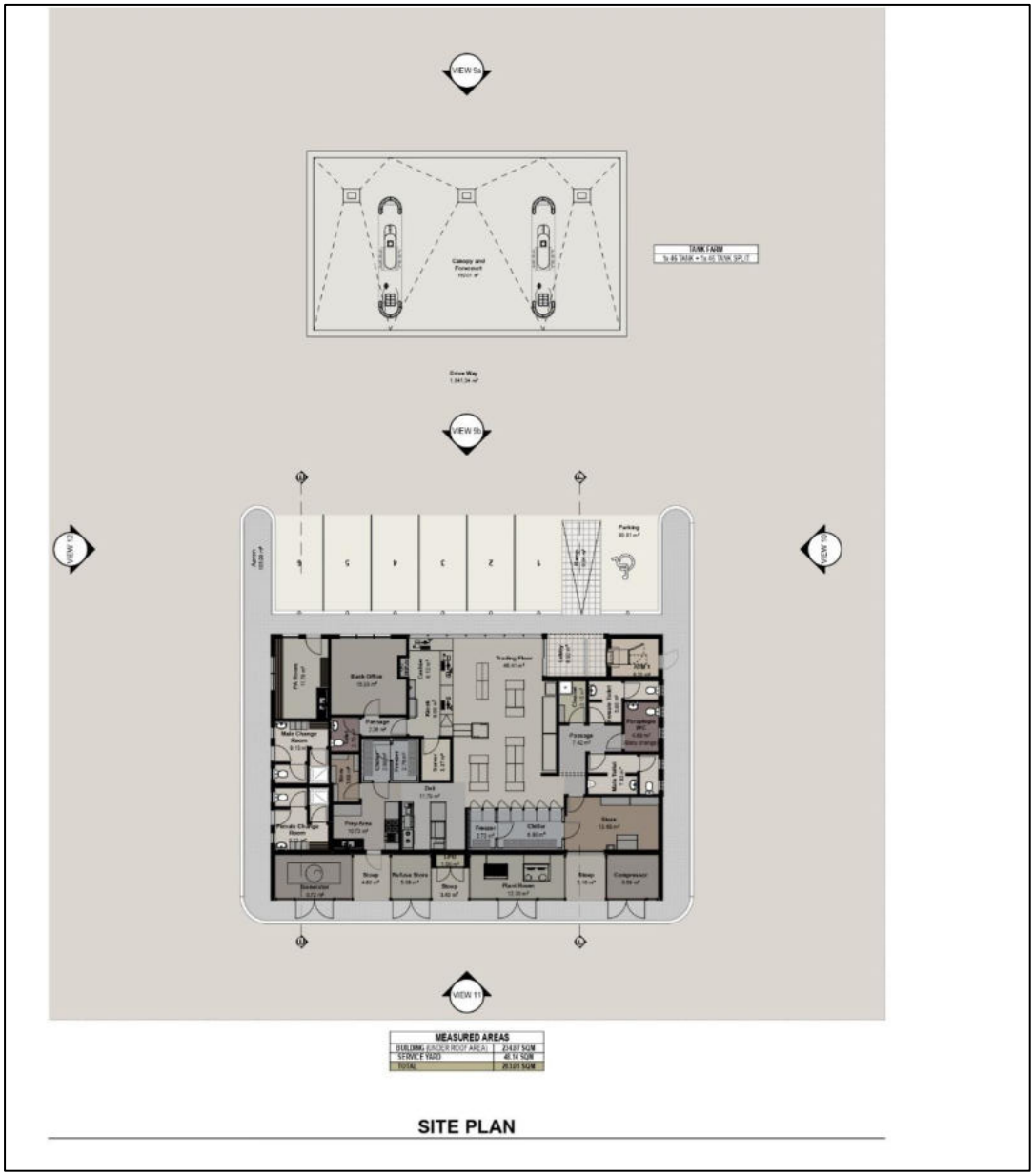

Figure 2: The site drawings (layout) of the proposed fuel service station in Okamapuku (Proponent, 2022)

Once all the planning administrative works and technical designs are finalized and the Proponent is ready, the construction phase will commence.

2.2 Construction Phase

2.2.1 Site Clearance and Earthworks

Based on site observation during site visits, the site is medium to slightly vegetated by shrubs, therefore the vegetation that will be encountered in the footprints of the earthworks will be removed. There are about three trees that will be left untouched to provide shade for the site as well as conservation.

Prior to construction works, bulk earthworks will be required in certain areas of the project site to erect the buildings foundations for:

- Trading areas, site offices and convenient shop,
- Staff changing rooms and ablution facilities,
- Fuel storage and waste (effluent / wastewater and solid waste storage) and management facilities
- Runoff and drainage control, drains,
- Materials loading and offloading zones, access roads, etc., and
- Canopied forecourt with three or four dispensing islands on which pumps for the dispensing of fuel from the tanks. According to the standard industry practice, the area under the canopy should be slightly raised above the level of the remainder of the service area and sealed with an impervious layer.

Earthworks will also be required to necessitate the installation of the necessary services. The earthworks design will depend significantly on the geotechnical information available, as such a study has not yet been commissioned relevant assumptions have been made. Earthworks and overall construction works will also mean the presence of heavy construction vehicles and equipment moving around the site.

2.2.2 Construction Activities

For construction purposes, there will be a need for construction materials such as sand gravel, water, and other required materials. The construction materials will be sourced by the appointed Construction Contractor from the nearest suppliers. The construction materials and equipment of the fuel station will follow the South African National Standards (SANS) 10087-4:2011, Edition 3.

The proposed Fuel Service Station will house two 23,000 litres (23 m^3) of underground fuel tanks (diesel and petrol). For convenience purposes, a 24-hour convenient shop will also be added to the facility. All equipment and infrastructure needed for the operational activities such as fuel dispensing, machinery and vehicles servicing equipment will be constructed on site.

The civil, structural design, layout for site, kerb lines, concrete hard standing areas (interlocks) and containment slabs will be put in place for the facility. There will also be layer works, surrounding surfacing (where required), road markings and subsurface spill containment drainage system.

The following significant activities will take place, in terms of infrastructure and service provision onsite:

- Installation of potable water and fuel pipelines (pipework), pumps and electrical cables,
- Installation of the two underground storage tanks (USTs) with a capacity of 23m^3 (fuel and diesel) each and according to locally and internationally approved standards,
- Installation of a water/oil separator suitably located for ease of connections, high density Polyethylene (HDPE) fuel delivery pipeline system and tanks fitted with submersible pumps and ancillary equipment,
- Construction of administration and technical offices and other amenities required for the facility, such as ablutions, resting rooms, mini kitchen, etc.,
- Construction of materials loading and offloading zones, parking areas, and
- Installation of sewage and wastewater management pipelines.

2.3 Project Resources: Human, Technical Resources and Service & Infrastructure

The project activities will require resources in terms of human and technical resources, service infrastructure, materials, equipment, and vehicles are presented below.

2.3.1 Human resources and Accommodation

Construction phase: About ten (10) to twenty (20) or slightly more people will be employed. This will include both skilled, semi-skilled and unskilled. Priority for semi and unskilled labour opportunities will be given to locals.

Operational phase: the operational phase is likely to require the same number of employees. However, this will depend on the actual workload onsite.

Accommodation of project workers (construction phase): The construction workers will be housed in tented camps during construction for skilled workers from outside Okamapuku. The rest of the workers, skilled, semi-skilled or unskilled who are from the Okamapuku and nearby villages will be commuting to site. However, to reduce time spent on commuting to and from site, all workers may be required to stay onsite during construction. Prior to setting up the accommodation units, an agreement and a consent will need to be reached and signed between the Proponent and the respective landowner / community leader (traditional authority).

Accommodation of project workers (operational and maintenance phase): During the operational phase, the workers will be commuting from their home. Therefore, no onsite accommodation will be required. For maintenance personnel, who will most likely come from outside would not require onsite accommodation as this would be at most a day-job.

2.3.2 Equipment, Vehicles and Materials

The construction works and activities will require but not limited to the following equipment, vehicles and materials:

- Excavators and bulldozers to prepare the site for establishing structures and move overburden soils and rocks, respectively.
- Front-end loaders,
- Construction trucks,
- At least 2 pick-up trucks (bakkies),
- Water, fuel and effluent storage tanks water supply,
- Diesel powered generators, etc., and
- Construction materials: (sand, gravel, and others).

2.3.3 Services and Infrastructures

A. Water Supply

Water will be supplied from the local MAWLR's community water storage tank via a pipeline upon obtaining a water supply agreement will need to be obtained from MAWLR's Directorate of Water Supply & Sanitation Coordination (DWSSC).

Alternatively, a project borehole may be sited and drilled onsite and stored in water tanks onsite. The relevant permits (drilling, groundwater abstraction & use) will need to be obtained from MAWLR.

The amount of water required for the construction and operational phases is not known at this stage. The water would be stored onsite in industry standard water storage tanks onsite and refilled as and when necessary. The required water will be used for concrete mixing, cooling and washing of equipment, ablution, and all the project activities in all phases. Potable water will also be made available onsite throughout.

B. Fuel and Electricity (Power) Supply

Construction phase Fuel supply

For personnel use to cook): The Proponent will provide a 10kg liquid gas cylinder to be used for food preparation by the site workers. If traditional cooking is preferred, no firewood will be collected in the area without the traditional authority or community permission.

Fuel Supply (machinery and equipment): Diesel will be used for machinery and equipment and fuel the generator. Portable jerry cans will be used on site to store the fuel.

Electricity (operational phase: The Proponent will apply for grid connection to Erongo Regional Electricity Distributor (ErongoRED) to supply the Fuel Service Station site.

C. Accessibility (roads)

The site is accessed from Omatjete side by the D3712 passing on the eastern side of the proposed Service Station site. There are also existing local unpaved single-track sandy/gravel access roads used by the community. Therefore, the project vehicles will be using these existing roads to access the project site. Given the fact that the site will be linked to the D3712, the Proponent will need to apply for an access permit from the Roads Authority before commencing with the construction works.

D. Waste management

Sewage (wastewater): during construction, portable ablution facilities with septic tanks will be provided on site. For the operational phase, toilet and ablution facilities will be constructed onsite and equipped. The sewage and wastewater will be transported offsite to the nearest waste treatment facility (in Omaruru).

General and domestic waste: The site will be equipped with sufficient waste bins (containers) for waste storage. The bins will be emptied into the main onsite container for disposal at the nearest approved landfill site, upon reaching a waste disposal agreement with the relevant local authority (Omaruru Municipality).

Hazardous waste: All vehicles, machinery and fuel consuming equipment will be provided with drip trays to capture potential fuel spills and waste oils. The waste fuel/oils will be carefully stored in a standardized container until such a time that it can be disposed of at the nearest approved hazardous waste management facility.

2.3.4 Health, Safety and Security

A. Occupational Health and Safety

Adequate and appropriate Personal Protective Equipment (PPE) to be provided to all project personnel and visitors alike, during construction works.

A. First Aid

First aid kits will be readily available onsite during construction in both vehicles and working site areas, and campsite. A minimum of two onsite personnel will be trained on how to administer first aid for minor injuries. Major injuries will need to be attended to further by transporting the injured to the Omatjete Clinic for treatment.

During operational phase, every building and dispensing island (in the forecourt) will be equipped with a fire extinguisher and the relevant employees trained on how to use them in case of fire outbreaks.

B. Site & Community safety and security:

The appointed construction contractor will erect a temporary security boundary wall (using corrugated iron sheets or mesh fence) to provide controlled access to the construction site. During operations, all site areas considered dangerous or require restricted access, will be fenced off.

C. Accidental Fire Outbreaks

A minimum of basic firefighting equipment, i.e., two fire extinguishers will be readily available onsite at the campsite and in the vehicles.

During the operation phase, the fuel station will be sufficiently equipped with fire extinguishers in all the buildings as well fire control measures at the fuel dispensing areas and storage areas.

2.4 Decommissioning and Rehabilitation of Construction Site Areas

Once the construction works and activities are completed, the Proponent will ensure that the utilized and disturbed site areas to enable construction are cleaned and rehabilitated, respectively. To achieve this, the following will be done:

- Dismantling and removal of campsites and associated infrastructures from the project site and area,
- Carrying away all construction equipment and vehicles, and
- Clean up of site working areas and transporting the last generated waste to the nearby approved waste management facility (as per agreement with the facility operator/owner),

The rehabilitation practice onsite will include:

- Backfilling of construction holes, ditches, and trenches to ensure that they do not pose a risk to both people and animals in the area, and
- Levelling of stockpiled topsoil. This will be done to ensure that the disturbed land sites are left close to their original state as much as possible, thus preventing erosion.

2.5 Operational and Maintenance Phase

This is the phase during which the Porto Marine Solutions is operating the Fuel Station and associated site activities. It is also during this phase that site maintenance is carried out either by the Proponent themselves or through a contracted maintenance contractor.

Given the urgent and ever need for a fuel station in the area, it is not anticipated that the Fuel Station will be decommissioned in future, however, should it come to that, the Decommissioning Measures presented under section 2.4 above will be amended for implementation.

The next chapter is the presentation different and relevant alternatives considered for the project activities.

3 ANALYSIS OF PROJECT ALTERNATIVES

Alternatives are defined as the “different means of meeting the general purpose and requirements of the activity” (EMA, 2007). This section will highlight the different ways in which the project can be undertaken and to identify the alternative that will be the most practical, but least damaging to the environment is identified.

Once the alternatives have been established, these are examined by asking the following three questions:

- *What alternatives are technically and economically feasible?*
- *What are the environmental effects associated with the feasible alternatives?*
- *What is the rationale for selecting the preferred alternative?*

The alternatives considered for the proposed project are discussed below.

3.1 The "No-Go" Alternative

The “no action” alternative implies that the status quo remains, and nothing happens. Should the proposed fuel station construction and operational activities on the selected site be discontinued, none of the potential impacts (positive and negative) identified would occur. If the proposed project is to be discontinued, the current land use for the proposed site will remain unchanged.

This option was considered and a comparative assessment of the environmental and socio-economic impacts of the “no action” alternative was undertaken to establish what benefits might be lost if the project is not implemented.

Considering the above losses, the “no-action/go” alternative was not considered a viable option for this project.

3.2 Site Location

The project location was selected based on two possible alternatives. The assessment of the site locations was made and is presented in **Table 2** below.

Table 2: The alternative assessment for the project site location

Location Options	Alternatives Considered	Justification for selected option
A – Okamapuku	The Village has ample space to set up a fuel station, associated activities, and other future business opportunities. The area is relatively flat to accommodate structures, infrastructure, and services. Although Okamapuku does not currently have a functional borehole, it is supplied with water from another village through a pipeline and stored in water tanks located within 2.5km from the site.	Option A was selected due to its ample space for future expansion of the site to include other business ideas / opportunities. There is water supply within reasonable proximity in Okamapuku compared to Omatjete with water supply issues.
B - Omatjete	There has been a space identified in Omatjete but it is not big enough for future business plans associated with the fuel station. There is no reliable water supply in Omatjete, and because of that it experiences a lot of water shortage. The current supply is done via trucked water every two days.	

3.3 Services Infrastructure

Alternatives were considered for the different supporting infrastructures envisaged to ensure that the most feasible options were selected. The technological, economic, and environmental limitations were considered to select the most feasible option. The alternative considered in this regard are presented in **Table 3** below.

Table 3: The presentation of service infrastructure alternatives considered for the project

Category of Service / Infrastructure	Alternatives Considered	Justification for selected option
Ablution facilities	-Install fixed facility with septic tank for the construction and operational phase) -Portable facilities with septic tank (for both project phases)	-For efficiency' sake, the construction workers will use portable toilets while the fixed toilets are being constructed for the operational phase. Therefore, for construction, portable toilets will be used, whereas the fixed and equipped facilities will be constructed for the operational
Water supply	-Pipe water from the community water storage tank -Drill and abstract from a site borehole	-Given the low groundwater potential of the site area (see the groundwater conditions under section 5.1.5 - Figure 12) and the current no supply from the Village borehole, w new borehole onsite may not sustain the project water needs. Therefore, piped water to site would be the best option.
Fuel storage (during construction)	-Trailer mounted diesel tank -Fixed bunded fuel tank	-A trailer mounted diesel tank for fuel storage is opted due to the great mobility and easy removal from site.
Power supply	-Diesel generator set and if considered, solar power. -Powerline (grid) supply	-Diesel power will only be viable for the construction but cannot solely sustain the operational phase. Therefore, during operational phase, the project will be electrifying from ErongoRed grid connection grid. Diesel generators will be used as backup supply during operational phase. The project will also consider complementing grid power with solar panels to save costs.

Category of Service / Infrastructure	Alternatives Considered	Justification for selected option
Construction site offices and accommodation	-Erect dismantlable prefabricated units -Fixed structures	-Dismantlable offices are the preferred option due to: (a) Ease of installation, (b) Low installation costs and (c) Ease of dismantling.
Accommodation site	-Setting up tented campsite onsite -Commuting from homes	-The site is within the Village and surrounded by homesteads to its western, northern, and eastern side. Therefore, the local labourers will be commuting from home. The campsite. The out-of-area skilled workers can camp onsite or consider hiring accommodation in Omatjete and commute to site. In the case that a construction campsite is required for efficiency and punctuality, this will need to be discussed and agreed upon with traditional authority prior to setting up the camp.

The following chapter presents the national and international legal requirements that are applicable and relevant to project.

4 APPLICABLE LEGAL FRAMEWORK

The project's activities or some of them may be regulated and governed by certain legal or policies. Therefore, it is necessary to review and consider these legislations and legal requirements. These legal requirements are either on a local (institutional), national (Namibian) and international legislation, policies, guidelines, etc. This review serves to inform the project Proponent, Interested and Affected Parties, and the decision-makers at the DEAF of the requirements and expectations, as laid out in terms of these instruments, to be fulfilled to establish the proposed Fuel Service Station and associated activities.

4.1 Environmental Management Act No. 7 of 2007 and 2012 EIA Regulations

The Environmental Management Act No.7 of 2007 and its 2012 EIA Regulations aims to ensure that the potential impacts of the development on the environment are considered carefully and in good time; that all interested and affected parties have a chance to participate in the environmental assessments and that the findings of the environmental assessments are fully considered before any decisions are made about activities which might affect the environment.

The Act aims at promoting sustainable management of the environment and use of natural resources. The Environmental Management Act (EMA) is broad; it regulates land use development through environmental clearance certification and/or Environmental Impact Assessments. The listed activities in the Regulations that are relevant to the proposed project (development) and its associated activities are as follows***:***

''9. HAZARDOUS SUBSTANCE TREATMENT, HANDLING AND STORAGE

-9.2 Any process or activity which requires a permit, licence or other form of authorisation, or the modification of or changes to existing facilities for any process or activity which requires an amendment of an existing permit, licence or authorisation or which requires a new permit, licence or authorisation in terms of a law governing the generation or release of emissions, pollution, effluent or waste.

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

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

4.2 Petroleum Products and Energy Act (No. 13 of 1990) Regulations (2001)

The Act is aimed at ''*providing measures for the saving of petroleum products and an economy in the cost of the distribution thereof, and for the maintenance of a price therefore; for control of the furnishing of certain information regarding petroleum products; and for the rendering of services of a particular kind, or services of a particular standard, in connection with motor vehicles; for the establishment of the National Energy Fund and for the utilization thereof; for the establishment of the National Energy Council and the functions thereof; for the imposition of levies on energy sources; and to provide for matters incidental thereto*.''

Implication and applicability for the proposed project: The Proponent should carry out an assessment of the impact on the receiving environment. The Proponent should comply with the relevant requirements of the Act, and these include:

- 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". **The Proponent intends to operate with two fuel tanks with a capacity of 23,000 litres, therefore they should apply for and obtain the Fuel Storage Licence from the relevant Directorate at the Ministry of Mines and Energy (MME), the custodian of energy as well as custodian.**
- A Retail License should be applied for and obtained from the MME.

The recent change to the Act is the Government Notice (GN) No. 69 of 2020: '*'Notification of approval of specification and standards of petroleum products: Petroleum Products Regulations, 2000''*. The GN distinctively emphasizes on the following specifications and as detailed in Table 4:

- The code of practice mentioned in Part A applies to the design, construction and maintenance of electrical equipment referred to in the standard and used in connection with any petroleum products.
- The code of practice mentioned in Part B applies to the storage, distribution and handling of petroleum products and the installation of storage tanks and other structures, pipework, pumps and plant referred to in the standard and used in connection with petroleum products.
- The specifications and standards mentioned in Part C applies to the composition of petroleum products referred to in the specifications and standards and imported into or distributed in Namibia by any wholesaler or sold to any consumer by any operator of a retail outlet.

Table 4: The specifications and Code of Practice for the Fuel Station establishment as per Government Notice No. 69 of 2020 Regulations of the Act

Institute	Specification / Code of Practice / Standard Reference	Title / Subject Matter
PART A		
SABS	SABS 089-2: 2000	The Petroleum Industry Part 2: Electrical installations in the distribution and marketing sector
PART B		
SABS	SABS 089-1: 1999	The Petroleum Industry Part 1: Storage and distribution of petroleum products above-ground bulk installations
SABS	SABS 089-3: 1991	The Petroleum Industry Part 3: The installation of underground storage tanks, pumps/dispensers and pipework at service stations and consumer installations

Institute	**Specification / Code of Practice / Standard Reference**	**Title / Subject Matter**
SABS	SABS 0131-1: 1977	The storage and handling of liquid fuel Part 1 – Small consumerinstallations
SABS	SABS 0131-2: 1979	The storage and handling of liquid fuel Part 2 – Large consumer installations
SABS	SABS 0131-3: 1982	The storage and handling of liquid fuel Part 3 – Bulk low-flash-point fuel storage and allied facilities at large consumer installations: Provided that in the event of a conflict between SABS 0131-1: 1977and SABS 089-1: 1999, SABS 089-1: 1999 overrides.
SABS	SABS 0108:	Classification of hazardous locations and the selection of apparatus foruse in such locations

PART C		
SABS	SANS 1774: 2007	Liquefied petroleum gas; commercial butane and commercial propane
SABS	SANS 1913: 2013	Illuminating paraffin
JIG/ AFQRJOS/ DEF STAN/ASTM	DEF STAN 91 – 91 Issue 7 Amdt 3 & ASTM D 1655 – 15 & AFQRJOS Issue28	Jet A1

<table>
<tr><th colspan="3">PART C</th></tr>
<tr><td>SABS</td><td>SANS 1598: 2014</td><td>Unleaded Petrol

Table 3 — Vapour lock index (VLI) limits effective date progression
<table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr><tr><td rowspan="2">Effective date</td><td colspan="2">ULP and LRP (Inland)</td><td colspan="2">ULP and LRP (Coastal)</td><td>Test method</td></tr><tr><td>VLI (summer) [a], max.</td><td>VLI (winter) [b], max.</td><td>VLI (summer) [a], max.</td><td>VLI (winter) [b], max.</td><td></td></tr><tr><td>Current</td><td>930</td><td>980</td><td>990</td><td>1 040</td><td rowspan="8">See 6.5 and annex D</td></tr><tr><td>01-Oct-15</td><td>950</td><td>1 000</td><td>1 010</td><td>1 050</td></tr><tr><td>01-Oct-16</td><td>950</td><td>1 000</td><td>1 010</td><td>1 050</td></tr><tr><td>01-Oct-17</td><td>970</td><td>1 020</td><td>1 030</td><td>1 050</td></tr><tr><td>01-Oct-18</td><td>990</td><td>1 040</td><td>1 050</td><td>1 050</td></tr><tr><td>01-Oct-19</td><td>1 010</td><td>1 050</td><td>1 050</td><td>1 050</td></tr><tr><td>01-Oct-20</td><td>1 030</td><td>1 050</td><td>1 050</td><td>1 050</td></tr><tr><td>01-Oct-21</td><td>1 050</td><td>1 050</td><td>1 050</td><td>1 050</td></tr><tr><td colspan="6">NOTE For calculation see 6.5 for vapour lock index.</td></tr><tr><td colspan="6">[a] Summer = 1 October to 31 March (inclusive).
[b] Winter = 1 April to 30 September (inclusive).</td></tr></table>
Provided further that during the phase-over period of two months before and after the summer and winter periods specified in brackets above in items (a) and (b) both VLI

Maximums specified in that items may be applied.</td></tr>
<tr><td>SABS</td><td>SANS 1164: 2013</td><td>Fuel Ethanol as a blending component with petrol.</td></tr>
<tr><td>SABS</td><td>SANS 1935: 2004

SANS 342: 2016</td><td>Automotive Biodiesel Fuel

Diesel (10 & 50 PPM Sulphur, except Diesel 500 PPM)

(Diesel 500 PPM discontinued as a product)</td></tr>
<tr><td>SABS</td><td>SANS 1935: 2011</td><td>Automotive Biodiesel Fuel – Fatty Acid Methyl Esters (FAME) fordiesel engines.</td></tr>
<tr><td>DEF STAN

91 issue 3</td><td>Defence STD 91 – 90/Issue 3</td><td>AVGAS 80, AVGAS 100, AVGAS 100 LL</td></tr>
<tr><td>SABS</td><td>SANS 1314: 2014</td><td>Industrial fuel oil for burner applications</td></tr>
<tr><td>ISO</td><td>ISO 8217-2012</td><td>Marine fuel specifications</td></tr>
</table>

Other applicable legal framework and policies relevant to the proposed project are presented in **Table 5**.

Table 5: List of applicable legislation for the proposed project activities

Legislation / Policy / Guideline	Relevant Provisions	Implications for the project activities
The Constitution of the Republic of Namibia, 1990 as amended	The Constitution of the Republic of Namibia (1990 as amended) addresses matters relating to environmental protection and sustainable development. Article 91(c) defines the functions of the Ombudsman to include: "…the duty to investigate complaints concerning the over-utilisation of living natural resources, the irrational exploitation of non-renewable resources, the degradation and destruction of ecosystems and failure to protect the beauty and character of Namibia…" Article 95(l) commits the state to actively promoting and maintaining the welfare of the people by adopting policies aimed at the: "…Natural resources situated in the soil and on the subsoil, the internal waters, in the sea, in the continental shelf, and in the exclusive economic zone are property of the State."	By implementing the environmental management plan, the establishment will be in conformant to the constitution in terms of environmental management and sustainability. Ecological sustainability will be main priority for the proposed development.
Communal Land Reform Act No. 5 of 2002	With relevance to this project, the Act provides for the allocation of rights in respect of communal land; and the powers of Chiefs and Traditional Authorities and boards in relation to communal land; and to make provision for incidental matters. Some of the applicable sections are: Section 35: Existing rights to occupy communal land Section 44: Erection of fences on communal land	the Proponent should ensure that they have all the land rights documentations and authorisation from the Zeraeua Traditional Authority and Okamapuku Village local leadership.
South African National Standard (SANS) 10087-4:2011 (3rd Edition)	The Standard requires compliance in terms of handling, storage, distribution and maintenance of liquefied petroleum gas in domestic, commercial and industrial installations.	The Proponent should ensure that the Fuel Station construction and operations are in line with the Standards (SABS and SANS).

Legislation / Policy / Guideline	Relevant Provisions	Implications for the project activities
	Part 4: The transportation of LP gas including the design, construction, inspection, fittings, filling, maintenance and repair of LP gas bulk vehicles and rail tank cars	
South African Bureau of Standards (SABS) 089:1999	The installation of the fuel tanks and pipelines at the filling station are to be in line with SABS Standards (SANS 10089: Parts 1-3). In terms of these standards: a) Underground Fuel Storage Tanks (USTs) should be a minimum composite tanks fibre-reinforced resin coated steel tanks b) Installation requirements for USTs as prescribed in terms of the SABS codes c) Filler point containment measures for the containment of spillage during tank filling as prescribed in terms of the SABS codes d) Supply pipeline types, containment measures and installation requirements are specified.	
Nature Conservation Amendment Act, No. 3 of 2017	National Parks are established and gazetted in accordance with the Nature Conservation Ordinance, 1975 (4 of 1975), as amended. The Ordinance provides a legal framework with regards to the permission of entering a state protected area, as well as requirements for individuals damaging objects (geological, ethnological, archaeological, and historical) within a protected area. Though the Ordinance does not specifically refer to mining as an activity within a protected area (PA) or recreational area (RA), it does restrict access to PA's and prohibits certain acts therein as well as the purposes for which permission to enter game parks and nature reserves may be granted.	The Proponent will be required to enhance the conservation of biodiversity and the maintenance of the ecological integrity of protected areas and other State land

Legislation / Policy / Guideline	Relevant Provisions	Implications for the project activities
The Parks and Wildlife Management Bill of 2008	Aims to provide a regulatory framework for the protection, conservation, and rehabilitation of species and ecosystems, the sustainable use and sustainable management of indigenous biological resources, and the management of protected areas, to conserve biodiversity and to contribute to national development.	
Pollution Control and Waste Management Bill (Guideline only)	The relevant parts of this Bill to the proposed project are part 7 and 8. Part 7 states that any person who sells, stores, transports or uses any hazardous substances or products containing hazardous substances shall notify the competent authority, in accordance with sub-section (2), of the presence and quantity of those substances. The competent authority for the purposes of section 74 shall maintain a register of substances notified in accordance with that section and the register shall be maintained in accordance with the provisions. Part 8 provides for emergency preparedness by the person handling hazardous substances, through emergency response plans.	The Proponent should ensure compliance with the Bill requirements throughout the project cycle.
The Regional Councils Act (No. 22 of 1992)	This Act sets out the conditions under which Regional Councils must be elected and administer each delineated region. From a land use and project planning point of view, their duties include, as described in section 28 “to undertake the planning of the development of the region for which it has been established with a view to physical, social and economic characteristics, urbanisation patterns, natural resources, economic development potential, infrastructure, land utilisation pattern and sensitivity of the natural environment.	The relevant Regional Councils are I&APs and must be consulted during the Environmental Assessment (EA) process. The project site falls under the Erongo Regional Council; therefore, they should be consulted.

Legislation / Policy / Guideline	Relevant Provisions	Implications for the project activities
Water Act 54 of 1956	The Water Resources Management Act 11 of 2013 is presently without regulations; therefore, the Water Act No 54 of 1956 is still in force: Prohibits the pollution of water and implements the principle that a person disposing of effluent or waste has a duly 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 protection (both quality and quantity/abstraction) of water resources should be a priority. Relevant permits and or agreements to abstract and use water as well as discharging of effluent into the environment should be applied for and obtained.
Water Resources Management Act (No 11 of 2013)	The Act provides for the management, protection, development, use and conservation of water resources; and provides for the regulation and monitoring of water services and to provide for incidental matters. The objects of this Act are to: 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 (Section 68).	
National Heritage Act No. 27 of 2004	To provide for the protection and conservation of places and objects of heritage significance and the registration of such places and objects; to establish a National Heritage Council; to establish a National Heritage Register; and to provide for incidental matters.	The Proponent should ensure compliance with these Acts requirements. The necessary management measures and related permitting requirements must be taken. This done by the consulting with the National Heritage Council of Namibia. A Chnace Finds Procedure provided to the Draft EMP should be implemented upon discovery of archaeological and heritage resources.
The National Monuments Act (No. 28 of 1969)	The Act enables the proclamation of national monuments and protects archaeological sites.	

Legislation / Policy / Guideline	Relevant Provisions	Implications for the project activities
Soil Conservation Act (No 76 of 1969)	The Act makes provision for the prevention and control of soil erosion and the protection, improvement and conservation of soil, vegetation and water supply sources and resources, through directives declared by the Minister.	Duty of care must be applied to soil conservation and management measures must be included in the EMP.
Forestry Act (Act No. 12 of 2001	The Act provides for the management and use of forests and forest products. Section 22. (1) provides: "Unless otherwise authorised by this Act, or by a licence issued under subsection (3), no person shall on any land which is not part of a surveyed erven of a local authority area as defined in section 1 of the Local Authorities Act, 1992 (Act No. 23 of 1992) cut, destroy or remove - (a) vegetation which is on a sand dune or drifting sand or on a gully unless the cutting, destruction or removal is done for the purpose of stabilising the sand or gully; or (b) any living tree, bush or shrub growing within 100 m of a river, stream or watercourse."	The proponent will apply for the relevant permit under this Act if it becomes necessary.
Public Health Act (No. 36 of 1919)	Section 119 states that "no person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health."	The Proponent and all its employees should ensure compliance with the provisions of these legal instruments.
Public and Environmental Health Act No. 1 of 2015	The Act serves to protect the public from nuisance and states that no person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health.	
Health and Safety Regulations GN 156/1997 (GG 1617)	Details various requirements regarding health and safety of labourers.	

Legislation / Policy / Guideline	Relevant Provisions	Implications for the project activities
Atmospheric Pollution Prevention Ordinance (1976)	This ordinance provides for the prevention of air pollution and is affected by the Health Act 21 of 1988. Under this ordinance, the entire area of Namibia, apart from East Caprivi, is proclaimed as a controlled area for the purposes of section 4(1) (a) of the ordinance.	The proposed project and related activities should be undertaken in such a way that they do not pollute or compromise the surrounding air quality. Mitigation measures should be put in place and implemented.
Hazardous Substance Ordinance, No. 14 of 1974	The ordinance provides for the control of toxic substances. It covers manufacture, sale, use, disposal and dumping as well as import and export. Although the environmental aspects are not explicitly stated, the ordinance provides for the importing, storage, and handling.	The Proponent should handle and manage the storage and use of hazardous substances on site so that they do not harm or compromise the site environment
Road Traffic and Transport Act, No. 22 of 1999	The Act provides for the establishment of the Transportation Commission of Namibia; for the control of traffic on public roads, the licensing of drivers, the registration and licensing of vehicles, the control and regulation of road transport across Namibia's borders; and for matters incidental thereto.	Mitigation measures should be provided for, if the roads and traffic impact cannot be avoided, the relevant permits must be applied for. The access road permit from D3712 (to connect the site to the existing road) should be applied for from the Roads Authority.
Labour Act (No. 6 of 1992)	Ministry of Labour, Industrial Relations and Employment Creation is aimed at ensuring harmonious labour relations through promoting social justice, occupational health and safety and enhanced labour market services for the benefit of all Namibians. This ministry insures effective implementation of the Labour Act No. 6 of 1992.	The Proponent should ensure that the project activities do not compromise the safety and welfare of workers.

In addition to the project description, alternatives, and legal framework, it is also important to note that the proposed project activities will be undertaken in a specific environment, in terms of biophysical and social. Therefore, understanding these existing environmental features before the project activities, is crucial for the assessment of the potential impacts stemming from the project activities on the features.

5 ENVIRONMENTAL AND SOCIAL BASELINE

The baseline information presented below was collected from the site visit conducted on the 20th of May 2022, complemented by data sources such as online books, data sites and published research information on the area.

The project baseline that is deemed necessary to the project activities are as follows.

5.1 The Physical and Biological Environment

5.1.1 Climate

The climatic conditions of the project site are based on the available data on the Omatjete area which is less than 10km from the site. The climate information as sourced from World Weather Online (2022) is presented under the next subsections.

A. Temperatures

The project area experiences average high temperatures of 32°C in April, May and July and low average temperature 10°C in November and December (Chyba! Nenalezen zdroj odkazů.).

Figure 3: The monthly average temperatures for the project area (World Weather Online, 2021)

The project area has average maximum temperatures ranging between 21°C in June and 33°C in October. The average minimum temperatures are between 8°C in June and 21°C in January. **Figure 4** below shows minimum and maximum temperatures for a 12 year-period, i.e., 2009 to 2021. The average annual temperature is 25°C.

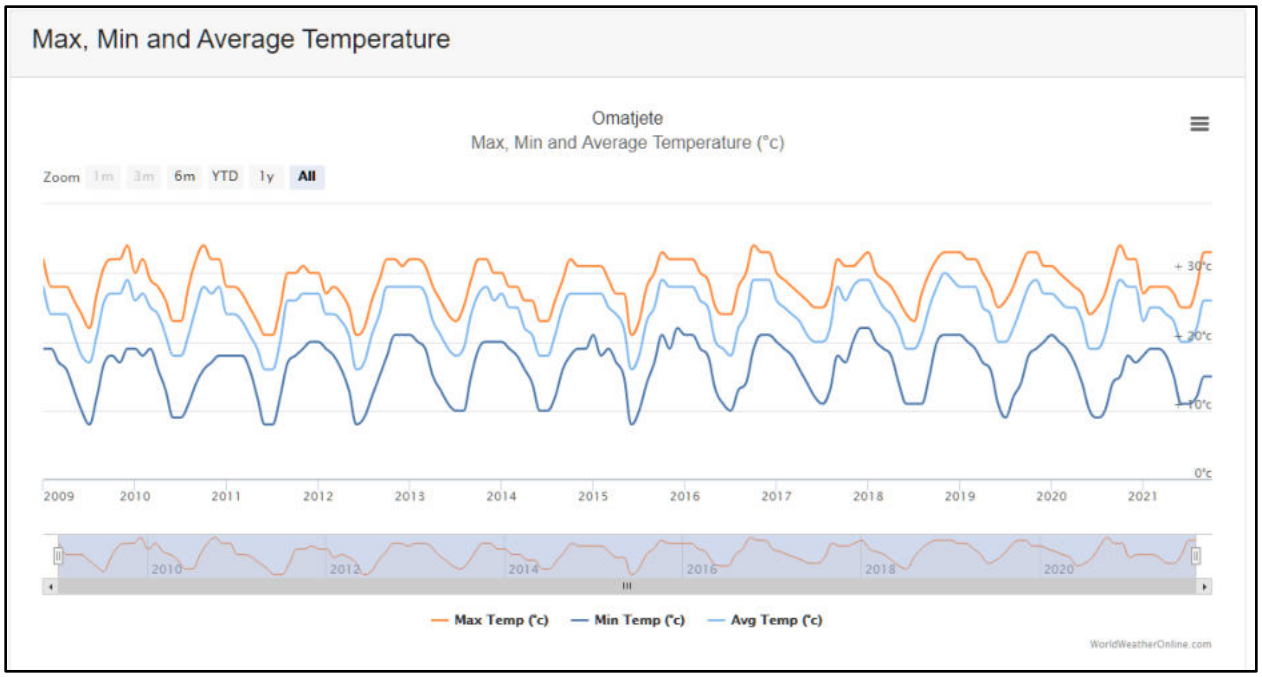

Figure 4: Maximum, minimum, and average temperatures for the project area (World Weather Online, 2021)

5.1.2 Rainfall

The average rainfall for Omatjete over a period of twelve (12) years, i.e., from 2009 to 2021 are shown in **Figure 5**. The lowest rainfall recorded over this period was less than 8.1 mm in September 2014 with the highest recorded in February 2012 at 557 mm. The monthly average rainfall of the area is shown in **Figure 6** with the highest average rainfall recording at 39mm in January.

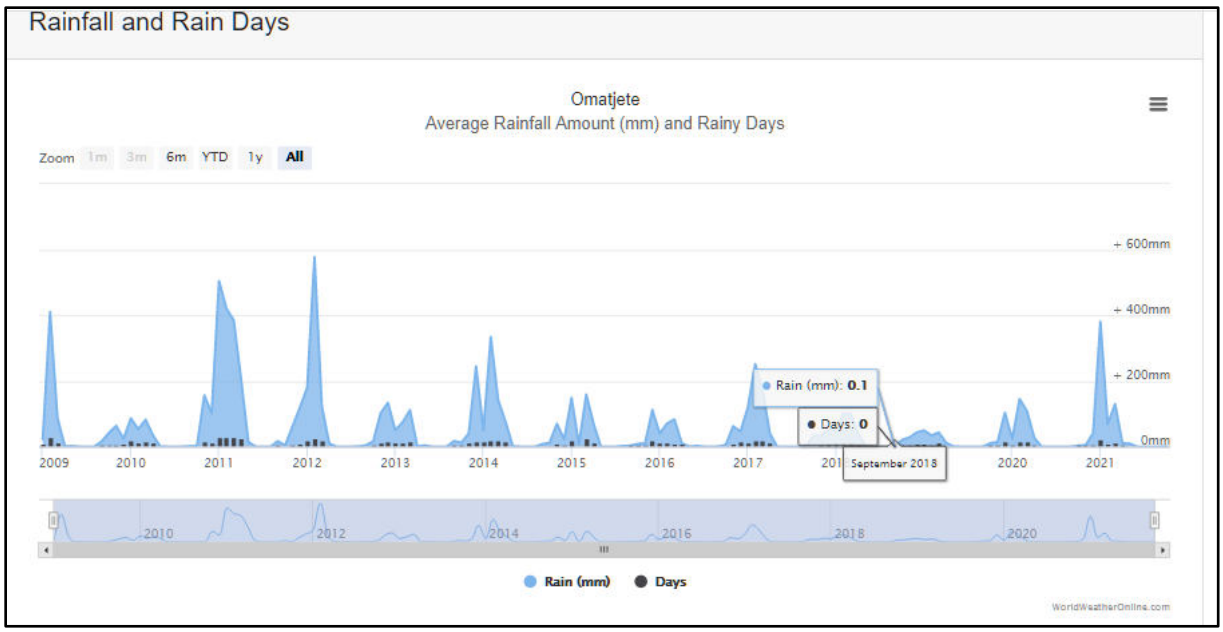

Figure 5: The rainfall & rainy days of the project area (World Weather Online, 2021)

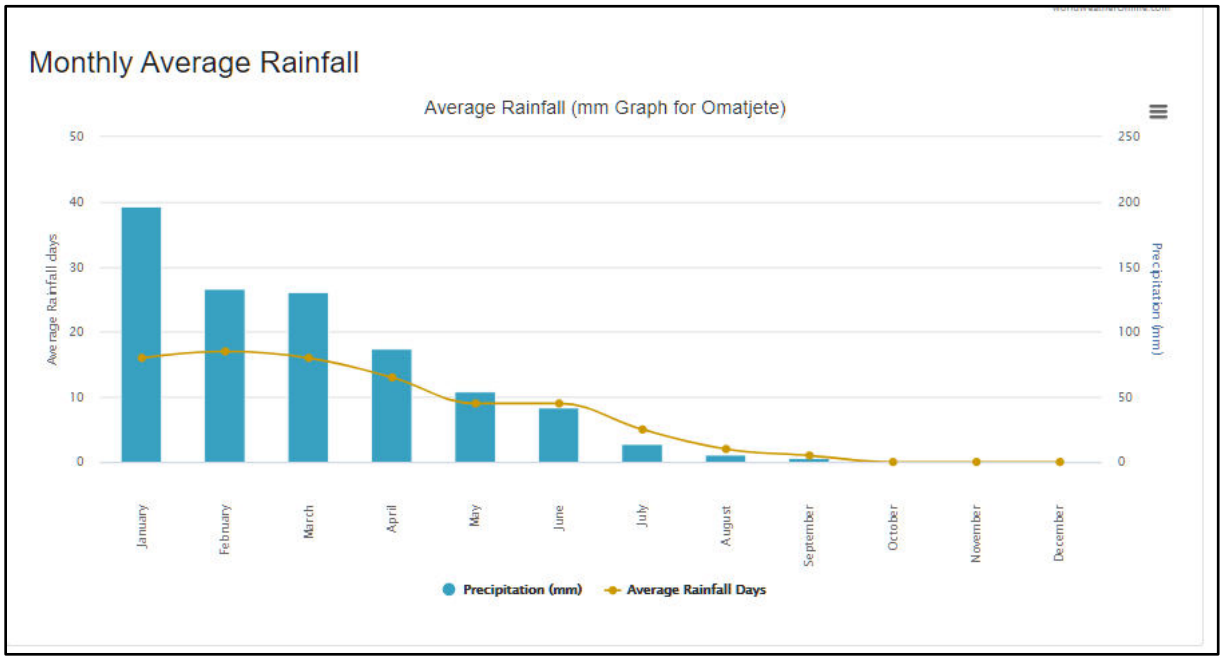

Figure 6: The monthly average rainfall of the project area (World Weather Online, 2021)

5.1.3 Air and Wind

Air: The current known sources of air pollution in the area are dust emissions from unpaved district and access roads created by heavy vehicles on the local roads including the D3712, particularly in dry and windy months.

The wind rose and speed chart for the Omatjete area is shown in **Figure 7.** According to the wind rose, the prevailing winds are blowing from southwest (SW) to northeast (NE) at the speed ranging from 12 to 28km per hour.

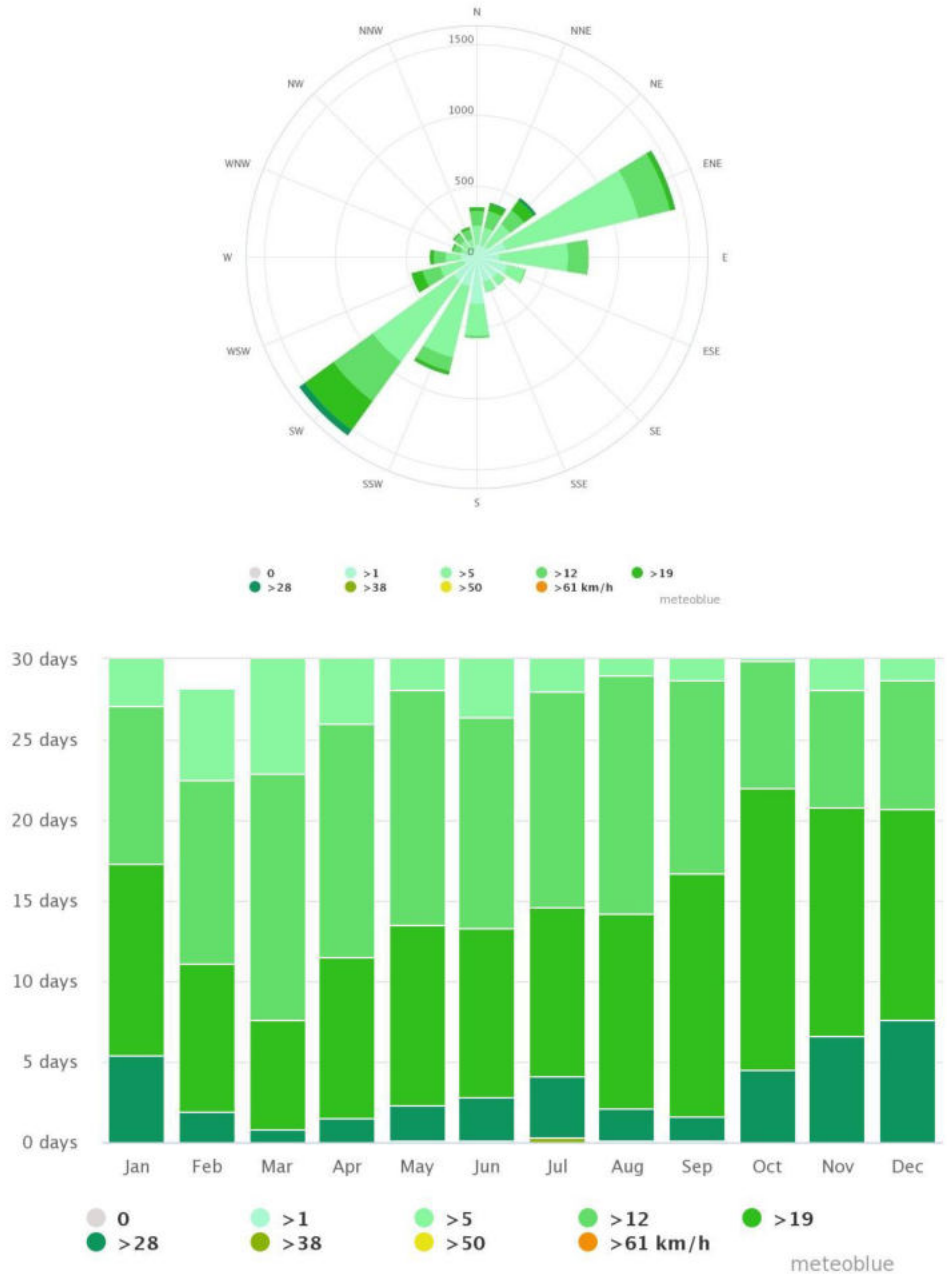

Figure 7: The wind rose and speed chart of the project area (Meteoblue, 2022)

5.1.4 Geology and Soils

According to Lohe *et al.,* (2021), the area is situated in the centre of the Damara trough. Classical geosyncline sedimentation produced a thick pile of ill-sorted sediments, which form the Ugab and Khomas subgroups of the Swakop Group (Damara Sequence). On the platform edges of the trough, mainly calcareous sediments were deposited. Both rock suites were subsequently folded and metamorphosed and granitic intrusions took place. The bands of marble and quartzite in these otherwise phyllitic metamorphic rocks are of hydrogeological significance

The site is overlain by a thin layer of sandy gravely and calcerous sediments, and underlain by bedrocks of mica schists, minor quartzite, and marble as shown in **Figure 8** below.

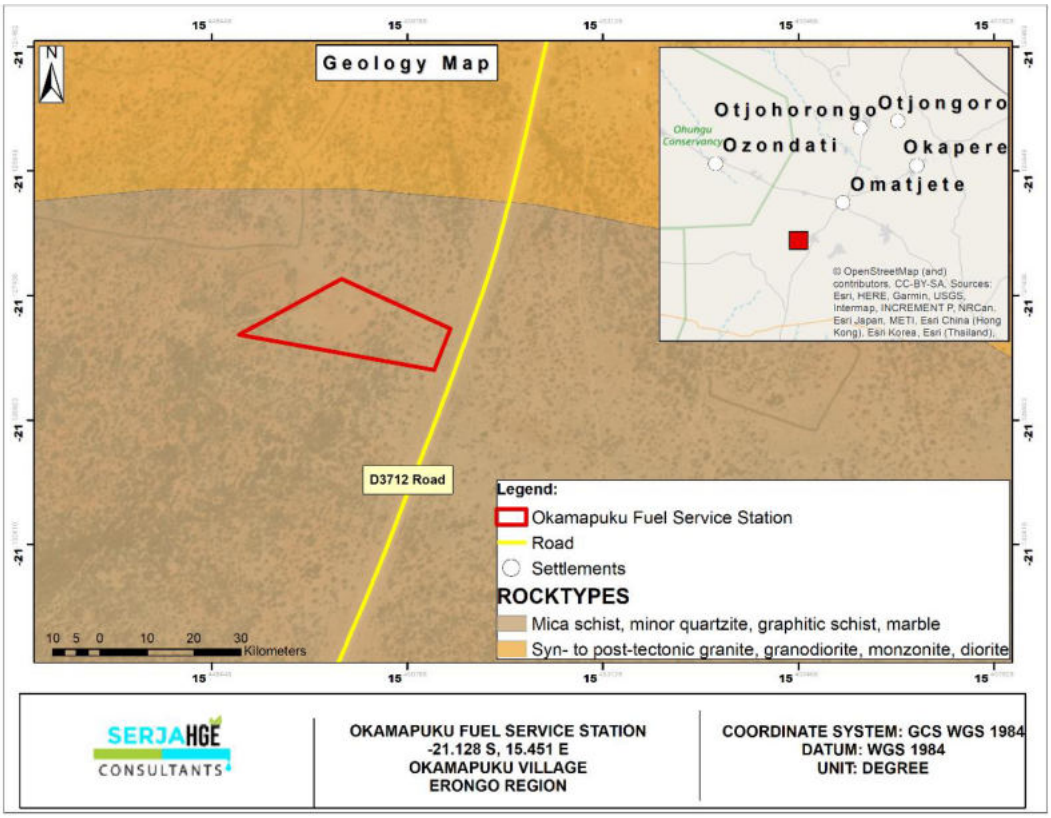

Figure 8: The geology of the site and surrounding areas

There were some visible calcrete pebbles and weathered bedrock onsite as shown in **Figure 9**.

Figure 9: The calcrete and some weathered quartzite units observed onsite

The project site is dominated by the Eutric Regosols as shown on the map in **Figure 10**. According to Britannica (2022), Regosols are characterized by shallow, medium- to fine-textured, unconsolidated parent material that may be of alluvial origin and by the lack of a significant soil horizon (layer) formation because of dry or cold climatic conditions.

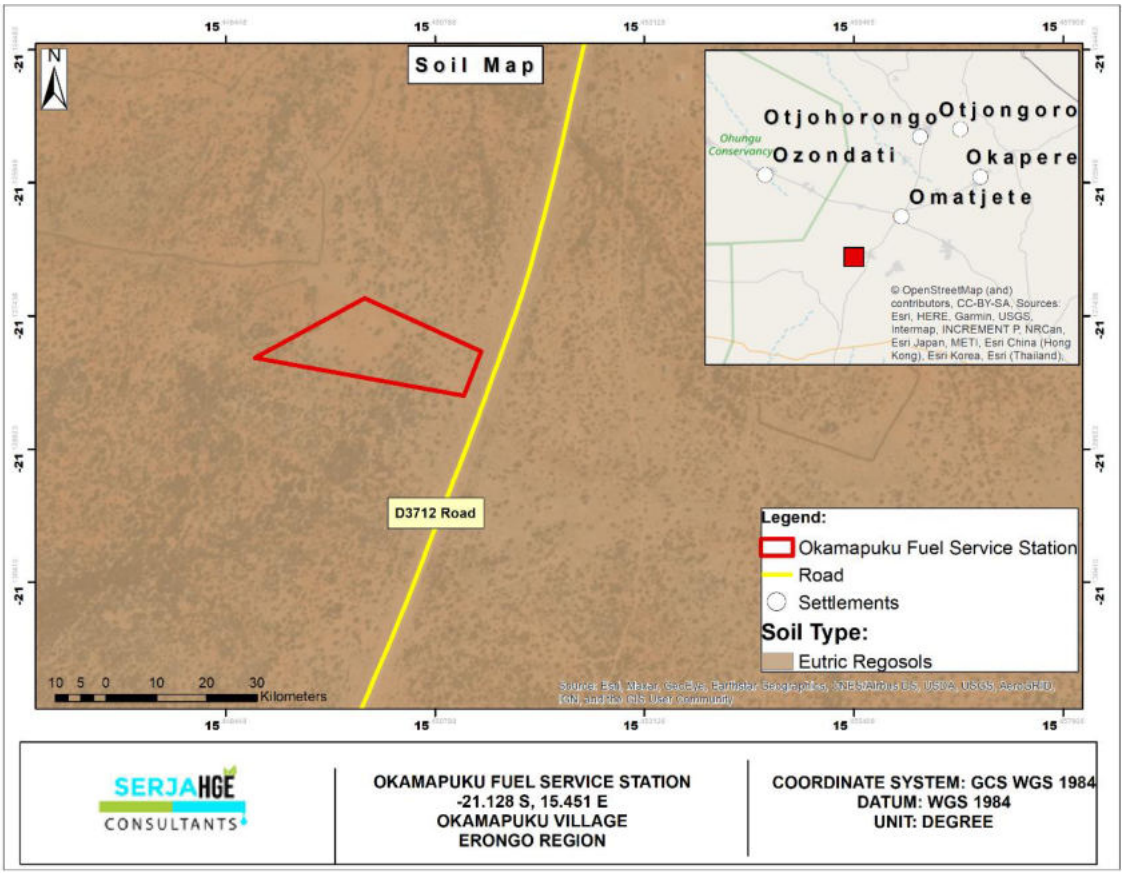

Figure 10: The dominant soil types found within and around the project site

Typical soil found within the site and surrounding areas are light brown and reddish sandy gravel and calcrete covered by medium to high density grass cover (due to the just ended rainy season) - **Figure 11**. The soils on the immediate eastern side of the site boundary are influenced by local land uses such as road upgrades as this side is bordering the D3712.

Figure 11: Typical soils (sandy gravel and calcrete) observed within the project site area

5.1.5 Water Resources: Groundwater (Hydrogeology) and Surface water (Hydrology)

The project site area is found within the Brandberg, Erongo and Waterberg Groundwater Basin which covers most of the western part of the Otjozondjupa Region and the northern Erongo Region. This area generally has only moderate to poor groundwater potential. The groundwater potential of fractured aquifers in the Swakop Group of the Damara Sequence is generally low. However, the carbonates (marbles and limestones) are of moderate potential and at properly selected targets like fracture zones and karstified contact zones, even high yields can be found. This depends on the amount of rainfall and associated weathering and recharge Christelis and Struckmeier, 2011).

The hydrogeological conditions of the project site are defined by rock bodies with little groundwater potential - **Figure 12**. This explains the lack of operational boreholes in the Okamapuku Village. On the immediate north of the Ugab River Stream, there is a Rural Water Supply about 2.5km north of the project site. The

borehole was drilled in June 1994, but according to the consulted community members, it has not been operational for some years now (it is said to be dry), and the community relies on piped water supply from another village's borehole about 5km east of Okamapuku. The low potential is attributed to the type of rock units underlying the site and their non-fractured/faulted nature limiting the storage, transmission, and flow of groundwater. Therefore, the main rocks within the project area are not good aquifers.

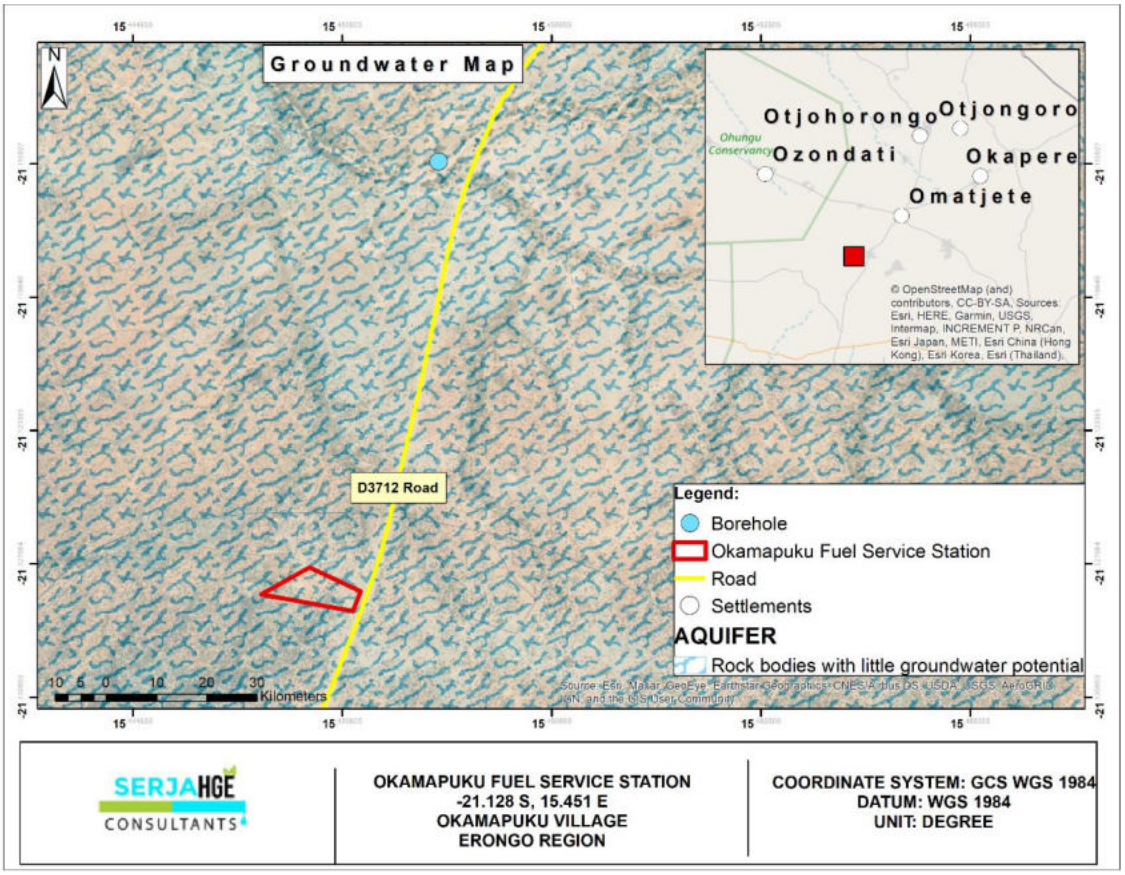

Figure 12: The groundwater (hydrogeological) map of the project site area

The unfractured and unfaulted bedrocks in the area however provide a good inhibitor for pollution spreading. Therefore, the groundwater vulnerability to pollution is considered moderate as shown in **Figure 13**. The moderate nature would then be attributed to infiltration areas such as contact zones of these bedrocks or areas with materials (sediments) that provide easy pathways for contaminated / polluted water such as in rivers.

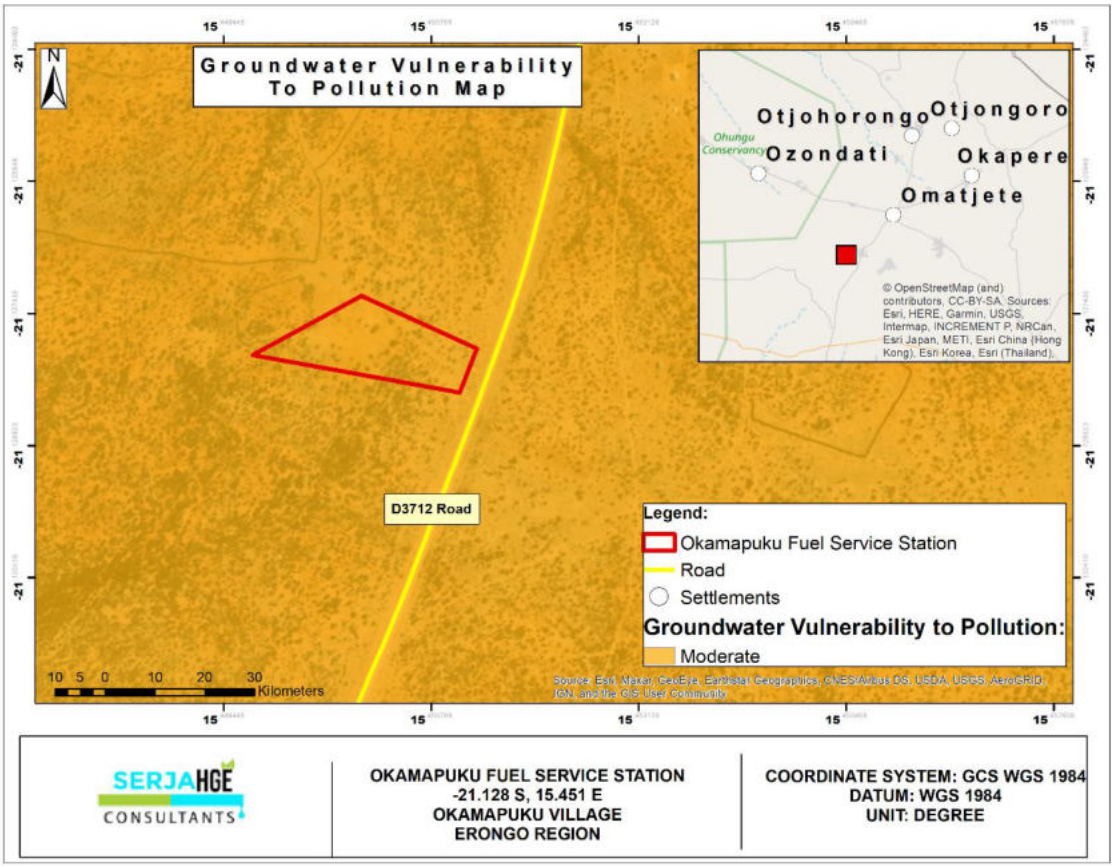

Figure 13: The site groundwater vulnerability to pollution map

In terms of rivers (surface water/hydrology), there are no permanent surface water systems. However, there are Ugab and Omaruru River Streams located to the north and immediate southwest of the site, respectively. Two parts of the Ugab River Stream is shown in Chyba! Nenalezen zdroj odkazů..

Figure 14: The Ugab River stream about 2.5km north of the project site area

The two River Streams' systems are shown on the map in **Figure 15**.

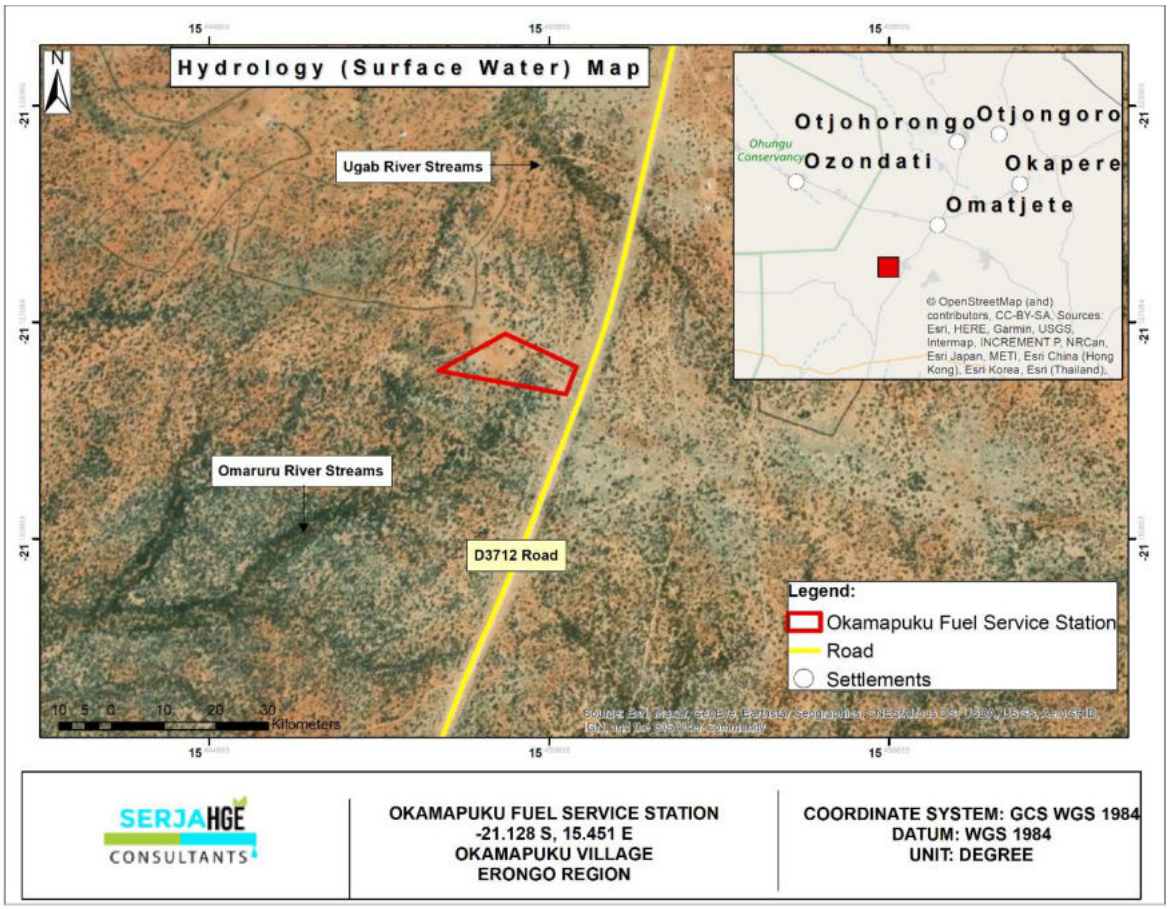

Figure 15: The hydrology (surface water) map of the project site area

5.1.6 Fauna

In terms of fauna, the area is communal, therefore, livestock farming is practised in the Okamapuku Village and surrounding areas. The livestock include goats, sheep, cattle, donkeys and horses. Some of the livestock that were observed on or near the site during site visit are shown in **Figure 16.**

Figure 16: Donkeys onsite - A, Cattle crossing the Ugab River Stream - B, and goats about 2km northeast of the site - C

According to the livestock map in **Figure 17**, there is about 19 livestock per square kilometres.

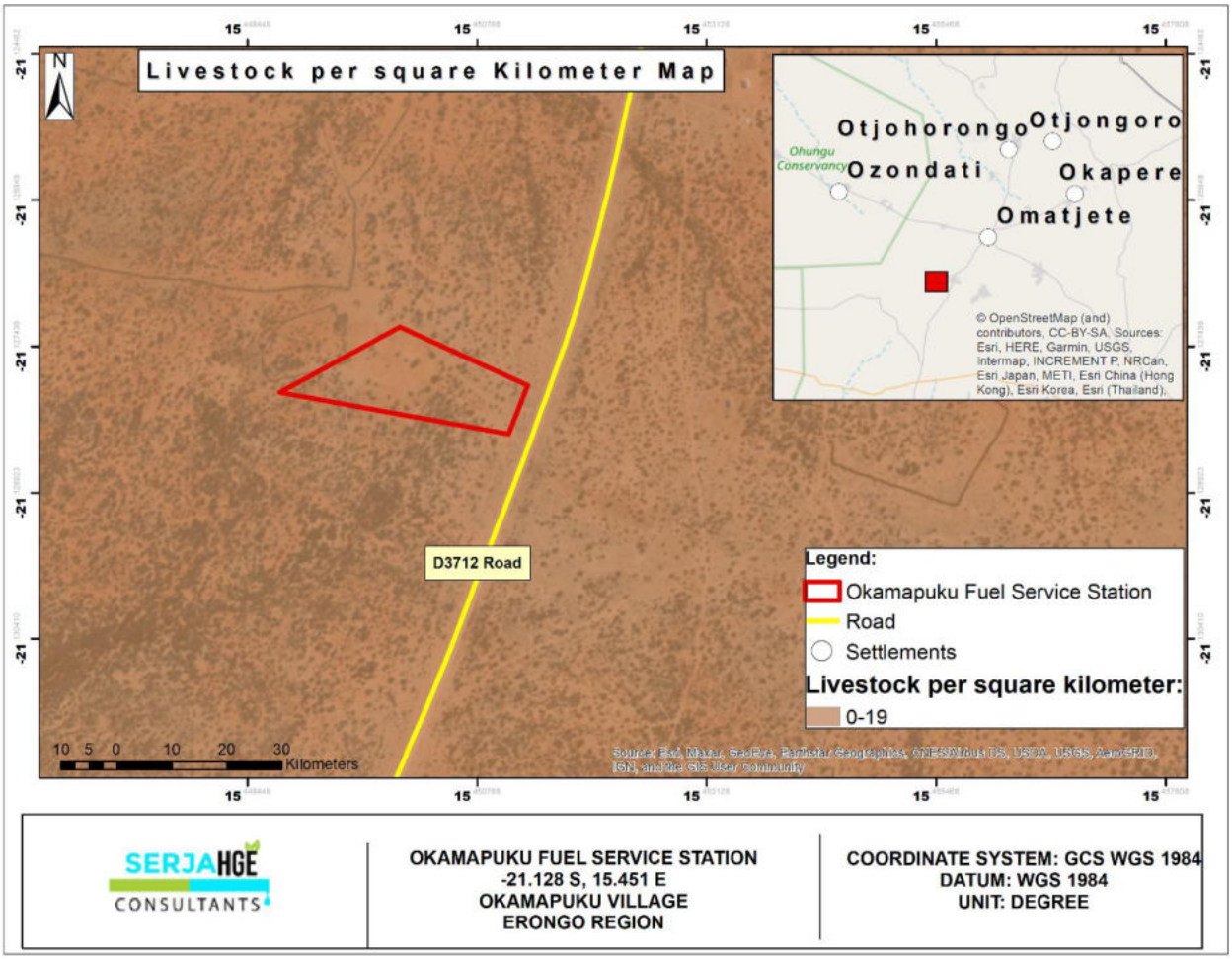

Figure 17: The faunal (livestock) map of the project site area

According to the community members who also attended the consultation meeting, there is no known wildlife occurring in the Village probably because of high human movement on the communal land. Wildlife can only be found on the commercial farms to the eastern side of Okamapuku.

5.1.7 Flora

The project site is covered by thick medium to high dense grass cover (probably due to the recent rains and the site visit was done in mid May 2022). The site vegetation is dominated by sparsely and densely young shrubs and about three trees of red-bark acacia, red thorn, or false umbrella thorn (*Acacia Reficiens*) *as* shown on the map in **Figure 18**.

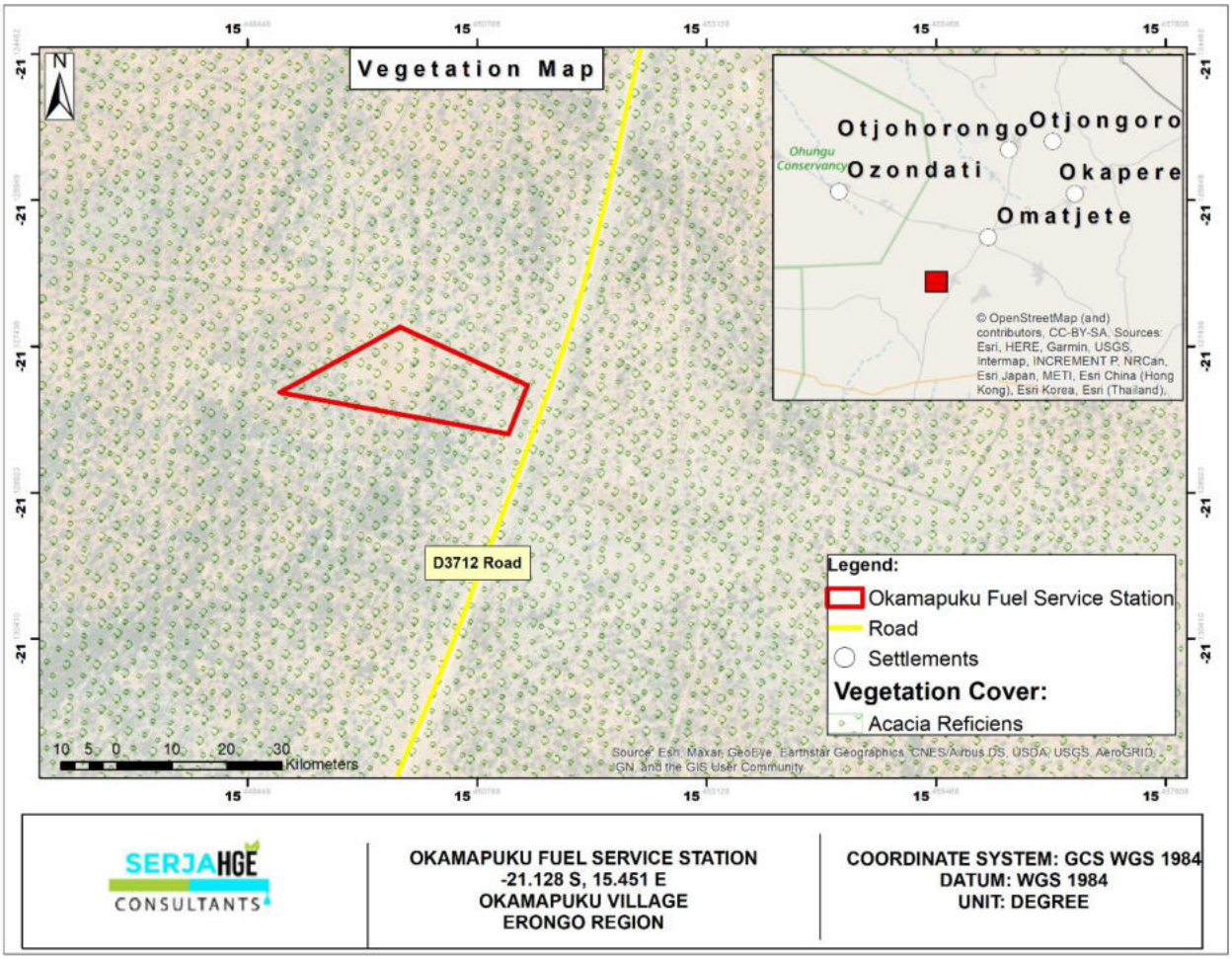

Figure 18: Dominant vegetation map of the project site

There are three species that are considered invasive onsite located at the existing site structure (corrugated zinc sheet). These species were identified as cactus and aloe as shown in **Figure 19**.

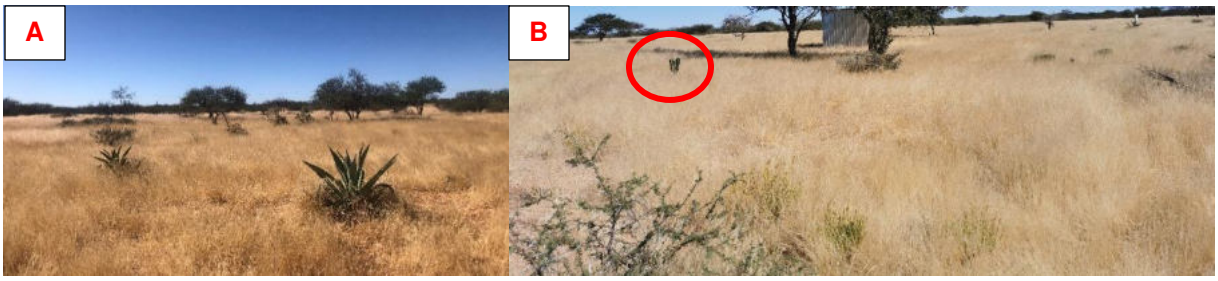

Figure 19: The invasive species in the middle of the site (*Aloe elegans* species - A and Cactus – B)

The photos of the common vegetation species found within the site and surrounding area are shown in **Figure 20**.

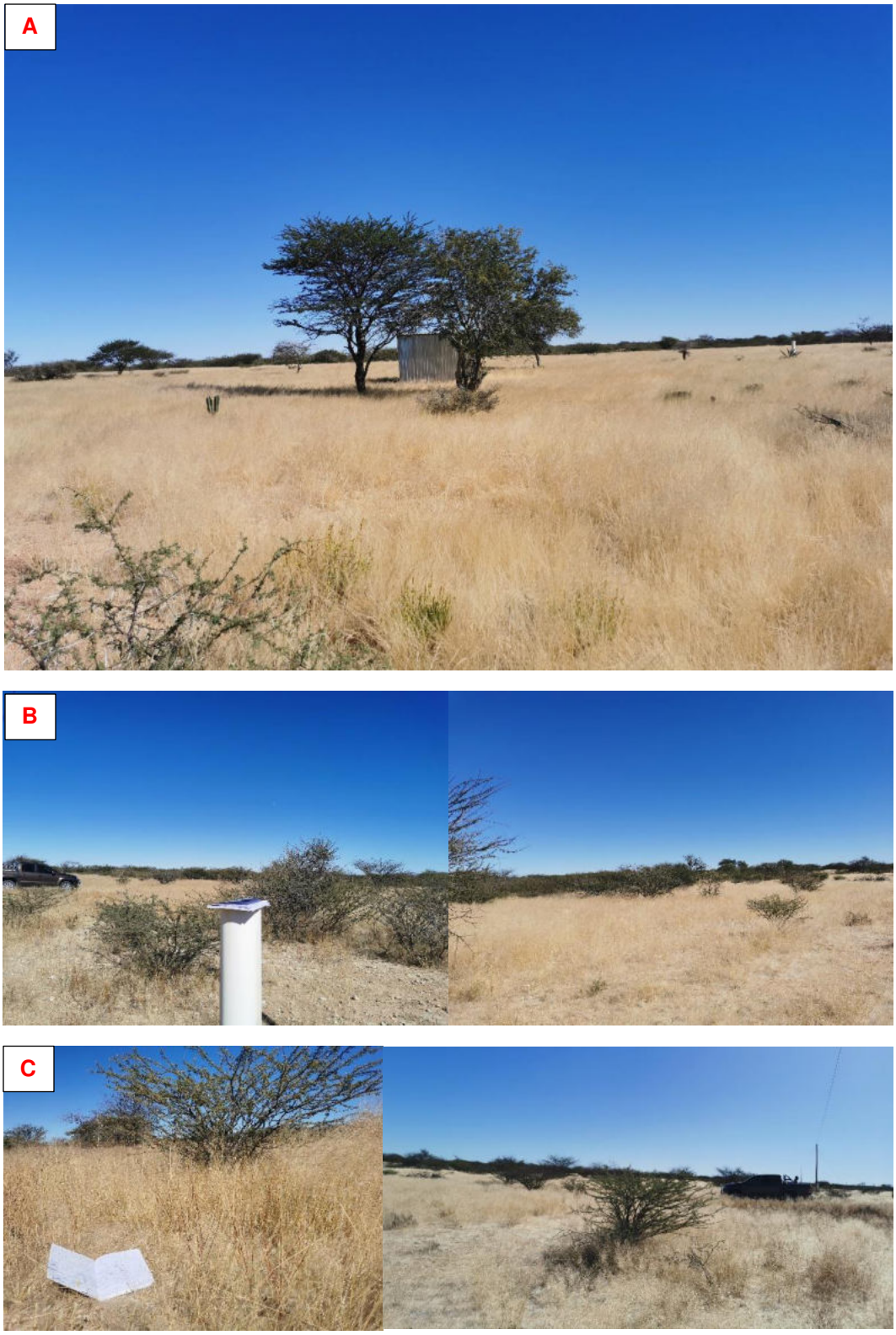

Figure 20: Some of the red-back thorn shrubs and young trees observed onsite with dense grass cover (The only three trees onsite in the middle of the site- A, onsite shrubs on the eastern and southern sides of the site - B, and northern and southern sides of the site - C)

5.2 Social and Economic Environment

5.2.1 Population Density

The Erongo Region has a population of 150 809 people, accounting to a 7.1% of the country's total population. The average population density of 2.4 persons/km². Out of the total population, 79 823 were men and 70 986 were women (Namibia Statistics Agency, 2011).

A. The Constituency Population Density: Daures

The project area falls under the Daures Constituency and according to the 2011 National Housing and Population Census, the population of the Constituency was recorded at 11 350 out of which 5 309 were men and 6 041 were women (Namibia Statistics Agency, 2011).

5.2.2 Economic Activities

According to the Namibia Statistics Agency (2011), the main source of income in households in the Erongo Region comes from farming (3%), wages and salaries (73%), cash remittance (5%), business and non-farming (9%) and pension (8%). The economy of the Erongo Region mainly depends on mining, fishing, agriculture, and tourism.

The fishing industry is the third largest economic sector contributed about 6.6 percent cent to the Gross Domestic Product (GDP). The Region's whole eastern part and certain western parts are characterized by livestock farming on commercial farms in the districts of Karibib, Usakos and Omaruru, and in the communal areas (Erongo Regional Council, 2021.

A. **Farming:** From the 2000 statistics, the Erongo Region accommodated more than 110 000 goats, nearly 36 000 heard of cattle, and about 50 000 sheep. Furthermore, commercial crop farming is practised in isolated areas such as on the banks of ephemeral rivers, namely the Omaruru River. The common farming activity within and around the site is communal by small-scale farming (livestock farming) with goats, cattle, sheep and horses and donkeys. These, especially cattle, sheep and goats provide the main source of both food and through sales, income for the communities. The livestock farming depends heavily on the rainy season; hence, most farmers usually suffer losses of herd of cattle during prolonged drought periods.
B. **Fishing**: According to the fishing industry is the third largest economic sector contributed about 6.6% to the Gross Domestic Product (GDP). The value of fishing, onshore and offshore processing accounted for N$3,410 million in 2008. It is also the largest employer at the coast. Namibia's fishing industry is the country's second biggest export earner of foreign currency after mining. In total of 90% of the national output is exported (Erongo Regional Council, 2021)

C. **Conservancies and Tourism**: The Erongo Region is home to two national parks, a seal reserve, four communal conservancies and several private game reserves or farms. Namibia is well known for its strong position on the conservation of its environment, the actual proclamation of various areas as reserves and the necessary acts, rules, regulations, and procedures to safeguard its rich and unique biodiversity. More than 42% of land in Namibia is under some form of conservation management. There are community-based organisations local people manage and utilise the wildlife and tourism resources in their areas, thereby deriving direct and indirect mutual benefits. These conservancies together with the about 54 other similar conservancies in the country enjoy employment creation, revenue, in-kind benefits, capacity building and other benefits.

   With regards to tourism, the Erongo Region offers some of the most spectacular and popular tourist destinations as well as a variety eco-, wildlife, cultural and adventure tourism opportunities. The common tourism activities especially in the project area include game seeing in the community reserves such as the Otjohorongo Community Reserve. Some commercial farms in the Erongo Region and farms further to the east of the site serve as hunting and guest establishments, while some have been converted into game farms or reserves for regional and international tourist. Due to these activities, these commercial farms provide employment to a substantial number of people in the areas (Erongo Regional Council, 2021).

D. **Mining Activities**: The mineral exploration and mining operations are moderately held activities in the Erongo Region. Exploration activities are common in the Erongo Region and provides livelihood to many of the Region's residents. Mining is practiced at both small-scale (on mining claims owned by communities), medium and large-scale level, depending on the commodities of interest as well as available technical and financial resources. There are existing active mineral licenses (both exploration and mining licenses) north of the project site and Omatjete.

   The mining Sector in the Region has been characterized by the establishment and expansion of several Uranium mines over the past decade due to an increased demand for this energy source. The Erongo Region also accommodates the mining of commodities such as gold, marble, granite, salt, and semi-precious stones (Erongo Regional Council, 2015).

5.2.3 Archaeology and Cultural Resources

The archaeology of the Erongo Region has been well documented, available archaeological records indicate that early humans in Central Namibia, Erongo Region dates back from the Early Stone Age period, more than one million years ago as evidenced by hominin fossils. Stone Age archaeology is prevalent in the larger geographical area. The geospatial data on the distribution of archaeological sites shows that sites are concentrated mainly in the central highlands. Furthermore, studies on the Holocene Later Stone Age (LSA) in Namibia predominantly rely on the archaeological evidence found in rock shelters, despite a wealth

of open-air surface assemblages. A total of 73 stratified rock-shelter sites in Namibia provide chronological information (Mushi, 2021).

On a broader area level, the area is known to be archaeologically and culturally sensitive in terms of rock arts - **Figure 21**. However, these arts are only common on outcrops such as granites. The site is relatively flat without any mountain or outcrops inside its boundaries. No surface archaeological rock art paintings or artefacts have been observed onsite during site visit.

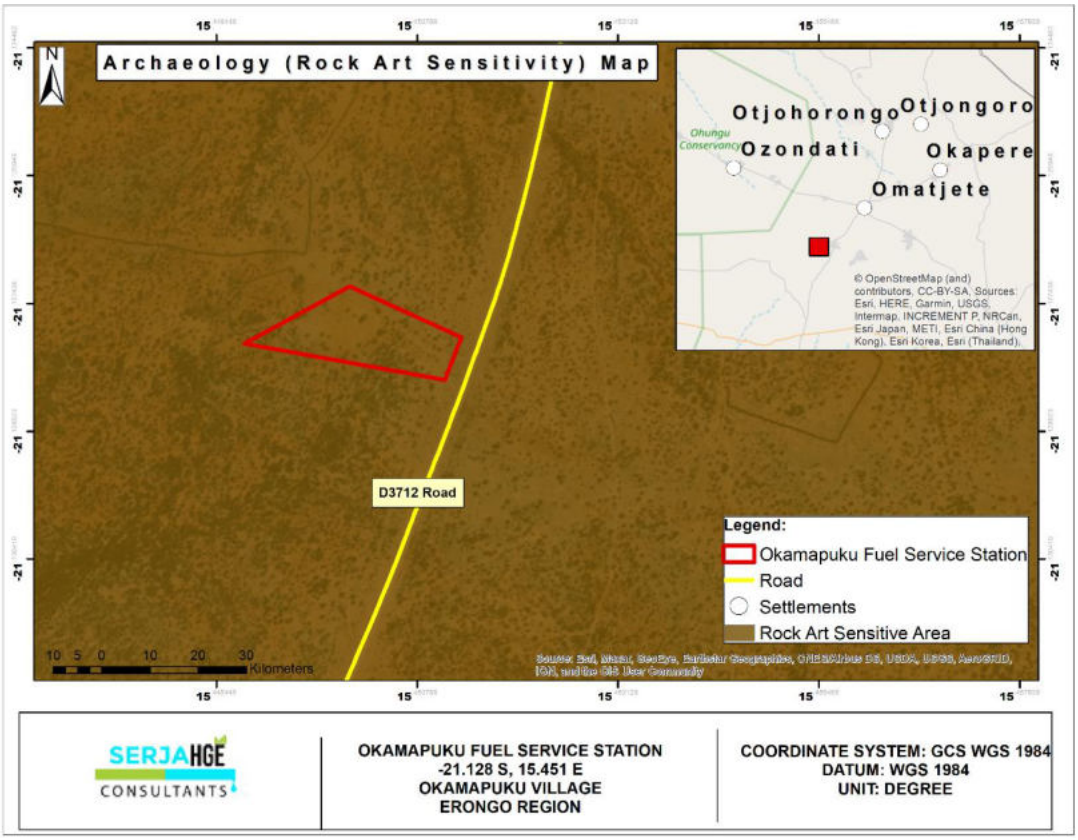

Figure 21: The Archaeological maps of the project site and surroundings

5.2.4 Surrounding Land Uses

The site is bordered by the district road to its immediate eastern side, and further to the east are village homesteads. To the west and north to the northeast are Okamapuku Village homesteads and village gathering areas, which includes the local Convenient Mini Market and Bar/Sheeben called *Ouwa nomake Shebeen and General Dealer* **(Figure 22**).

Figure 22: Some of the surrounding land uses (the Convenient local mini market) and some homesteads

5.2.5 Services Infrastructure

The project site is in a rural set up, but it has the basic services for the people. The Okamapuku Village is found in the Erongo Region that is connected to the rest of the country by the B1 tarred road as well as some good-graded gravel road links, health centres, educational institutions, shops (in towns and settlements) and hospitality facilities, etc. Some of these services are well-placed around the project site area and nearby areas.

The following services infrastructure have been observed near the site and for the general project area:

- **Water Supply**: The Okamapuku Village is experiencing water shortages, and because of that their potable water is piped from another village located about 5km away and stored in two water tanks -**Figure 23**. The tanks 2.5km from the proposed project site and within 2km from the nearest Village homesteads.

Figure 23: The community water supplying tanks north of the project site (about 2.5km away)

- **Electricity:** There is an ErongoRed powerline just on the immediate eastern border of the site and as per the powerline poles in the Village about 2km north of the site - **Figure 24.** The powerline is supplying electricity to the Okamapuku Village and the proposed site will also be connected to the same grid upon the Proponent's consultations and agreements with ErongoRed.

Figure 24: The powerline supplying the Okamapuku Village

- **Roads:** The site next to and accessible from the district road, D3712 (**Figure 25**) on the immediate eastern side of the site (from Omatjete via Okamapuku to Okombahe). Therefore, the project vehicles will be using these existing roads to access the project site.

Figure 25: The D3712 passing by the project site (shown by the red arrow)

- **Telecommunication Services:** Like the rest of the regions, the Erongo Region and the project site area are well connected to the rest of the country and world via local network service providers such as the Mobile Telecommunications Company (MTC Namibia).and in some instance, Telecom Namibia as well landlines in urban areas and in some rural residences, including surrounding villages.

  There is an overhead Telecom Namibia line passing on the immediate eastern side of the site (Figure 26) and there is a potential of it being damaged by elongated construction and project materials loaded on heavy trucks when entering and leaving the site. The Proponent will need to notify Telecom of this issue. If permission, or consent is required from Telecom, then it should be done to ensure that the line and poles are protected (not damaged).

Figure 26: The D3712 passing by the project site (shown by the red arrow)

- **Waste management:** The proposed project site is in a rural set up but with waste managed at an urban level for commercial developments or projects. For non-commercial projects or rural everyday life, small informal waste management facilities (dumpsites) are utilized to store waste.

6 PUBLIC CONSULTATION AND PARTICIPATION PROCESS

Public consultation and participation form an important component of an EIA process. It provides potential Interested and Affected Parties (I&APs) and stakeholders an opportunity to comment and raise any issues relevant to the project for consideration as part of the assessment process. This greatly assist the EAP (Environmental Consultant) to thoroughly identify and record potential impacts and to what extent further investigations are necessary. The public consultation can also aid in the process of identifying possible mitigation measures. The consultation for this project has been done under the EMA and its EIA Regulations and as per the following subsections.

6.1 Pre-identified and Registered Interested and Affected Parties (I&APs)

Relevant and applicable national, regional, and local authorities, and other interested members of the public were identified. Pre-identified I&APs were contacted directly, while other parties who contacted the Consultant after project advertisement notices in the newspapers, were registered as I&APs upon their request. The summary of registered I&APs and stakeholders is provided in **Appendix D**.

6.2 Communication with I&APs, and Means of Consultation Employed

Regulation 21 of the EIA Regulations details the steps to be taken during a public consultation process and these have been used in guiding this process. Communication with I&APs with regards to the proposed development was facilitated through the following means:

- Project Environmental Assessment notices were published in The Namibia Media Holdings' Market Watch newspapers (*Allgemeine Zeitung, Die Republikein,* and *Namibian Sun*) dated 9 and 16 May 2022, i.e., the ESA notification / advertisement in the newspapers ran for two consecutive weeks. The newspaper notices contained information on the planned the activity and its locality, inviting members of the public to register as I&APs and submit their comments/concerns.
- A Background Information Document (BID) containing brief information about the proposed project was compiled and hand delivered to MME during the submission of the ECC application and circulated to all the pre-registered stakeholders / Interested and Affected parties (I&APs).
- Obtaining the local and traditional authority contact details through a contact provided by the Proponent and Environmental Consultant from other project consultations in the area. The purpose of this exercise was to initiate consultation and inform the local and traditional leaders of the proposed development and to sensitize the local community prior to the Consultation Meeting.
- A Public Consultation meeting was scheduled and held with the Okamapuku community on the 20th of May 2022 at 14h30 in Okamapuku Village at their local Gathering / Meeting tree as shown in some photos in **Figure 27**. The Consultation Meeting minutes were taken.

Figure 27: The Community Consultation meeting held in Okamapuku on the 20th of May 2022

- Three (3) A3 size posters were pasted at the; Zeraeua Traditional Authority Office entrance (**Figure 28**), Convenient Mini Market and Bar/Sheeben (*Ouwa nomake Shebeen and General Dealer*) in Okamapuku Village (**Figure 29)** and Omatjete Clinic notice board in Omatjete Settlement as shown in **Figure 30.**

Figure 28: The A3 ESA Poster at the Zeraeua Traditional Office in Omatjete

Figure 29: The A3 Poster at Ouwa nomake Shebeen and General Dealer in Okamapuku

Figure 30: The A3 Poster at the Omatjete Clinic notice board

6.3 Feedback from Interested and Affected Parties

Issues were raised by I&APs (from the consultation meeting) and these issues have been recorded and incorporated in the ESA Report and EMP. The summary these few key issues are presented in **Table 6** below.

Table 6: Summary of main issues and comments received during the consultation meeting on 20 May 2022

Issue	Concern
Employment of out-of-area at the expense of locals	The project work opportunities should be given to the locals who can do the job instead of employing people from outside Okamapuku and immediate villages when the locals can do the jobs.
Water availability and supply	The Village has a water shortage and currently gets its potable water from a borehole located about 5km away in another village. The water is supplied to the Okamapuku Village through a pipeline and stored in two community water tanks (central point) located about 2.5km from the site. Some community members have their own pipelines from the central point tanks to their homes. The water is not only used for human consumption but also for stock watering (animal consumption) at the provided trough. The existing nearby Rural Water Supply borehole drilled in 1994 (windmill powered) is not operational and is said had run dry some years back, which prompted the piped water from another village.
Social health and safety	The safety measures of the proposed tanks and operations of the service such as accidental fire prevention and control measures.
Need for development in the area	The closest service stations are in Omaruru that is 70km away and hence the consensus from the meeting is that this proposed development is a need and well welcomed. This is motivated by the crucial services such as the Omatjete Clinic, tourist vehicles, wild-life rangers, conservancy community (in conservancies such as Otjohorongo), and community members / locals will benefit from it. Lack of development and employment opportunities in the area and surrounding areas.

7 IMPACTS IDENTIFICATION, ASSESSMENT AND MEASURES

7.1 Identification of Potential Impacts

The proposed project and its associated activities are usually associated with different potential positive and negative impacts. For an environmental assessment, the focus is placed mainly on the negative impacts that are likely to affect the host environmental and social features. The assessment is done to ensure that these impacts are sufficiently addressed, and adequate mitigation measures are recommended thereto for implementation so that an impact's significance is brought under control, while maximizing the positive impacts. The potential positive and negative impacts that have been identified from the proposed project activities are listed in **Table 7:**

Table 7: The list of potential positive and negative (adverse) impacts anticipated from the project activities

Positive impacts	Negative impacts
-Fuel service and supply convenience and local empowerment through the presence of a fuel service station in the area. -Socio-economic development through temporary employment creation, skills transfer leading to a boost in local economic growth and development. -Corporate Social Responsibility (CSR) through possible future small and medium community project investment -Increased support for local businesses through the procurement of consumable items such as Personal Protective Equipment (PPE), machinery, etc. -National economic development and contribution through the payment of taxes and (energy) levies and Investments opportunities into the area due to the Fuel Station presence and operations.	-Potential disturbance of grazing areas, -Physical land / soil disturbance. -Soil and surface water & groundwater pollution -Potential impact on water resources (water abstraction and supply to the project). -Impact on local biodiversity (fauna and flora). -Noise (nuisance): noise generated by machinery and vehicles during loading and offloading on site may lead to local nuisance. -Air pollution: potential dust from construction and operational vehicles, such as heavy trucks and equipment. -Vehicular traffic: potential increase in local traffic and pressure on the road due to project activities. -Environmental pollution: activities associated with these facilities usually generates different types of waste. -Occupational & community health and safety: improper handling of site materials and equipment may cause health and safety risks. -Archaeological and cultural heritage impact during earthworks / construction

7.2 Impact Assessment Methodology

The Environmental Assessment process primarily ensures that potential impacts that may occur from project activity are identified and addressed with environmentally cautious approaches and legal compliance. The impact assessment method used for this project is in accordance with Namibia's Environmental Management Act (No. 7 of 2007) and its Regulations of 2012, as well as the International Finance Corporation (IFC) Performance Standards.

The identified impacts were assessed in terms of scale/extent (spatial scale), duration (temporal scale), magnitude (severity) and probability (likelihood of occurring), as presented in **Table 8.**

To enable a scientific approach to the determination of the environmental significance, a numerical value is linked to each rating scale. This methodology ensures uniformity and that potential impacts can be addressed in a standard manner so that a wide range of impacts are comparable. It is assumed that an assessment of the significance of a potential impact is a good indicator of the risk associated with such an impact. The following process will be applied to each potential impact:

- Provision of a brief explanation of the impact,
- Assessment of the pre-mitigation significance of the impact; and
- Description of recommended mitigation measures.

The recommended mitigation measures prescribed for each of the potential impacts contribute towards the attainment of environmentally sustainable operational conditions of the project for various features of the biophysical and social environment. The following criteria (in **Table 8**) were applied in this impact assessment:

Table 8: Criteria used for impact assessment (extent, duration, intensity and probability)

The Criteria used to assess the potential negative impacts				
Extent or (spatial scale)- extent is an indication of the physical and spatial scale of the impact.				
Low (1)	**Low/Medium (2)**	**Medium (3)**	**Medium/High (4)**	**High (5)**
Impact is localised within the site boundary: Site only	Impact is beyond the site boundary: Local	Impacts felt within adjacent biophysical and social environments: Regional	Impact widespread far beyond site boundary: Regional	Impact extend National or over international boundaries
Duration- Duration refers to the timeframe over which the impact is expected to occur, measured in relation to the lifetime of the project				
Low (1)	**Low/Medium (2)**	**Medium (3)**	**Medium/High (4)**	**High (5)**

The Criteria used to assess the potential negative impacts				
Immediate mitigating measures, immediate progress	Impact is quickly reversible, short-term impacts (0-5 years)	Reversible over time; medium term (5-15 years)	Impact is long-term	Long term; beyond closure; permanent; irreplaceable or irretrievable commitment of resources
Intensity, Magnitude / severity - Intensity refers to the degree or magnitude to which the impact alters the functioning of an element of the environment. This a qualitative type of criteria				
H-(10)	**M/H-(8)**	**M-(6)**	**M/L-(4)**	**L-(2)**
Very high deterioration, high quantity of deaths, injury of illness / total loss of habitat, total alteration of ecological processes, extinction of rare species	Substantial deterioration, death, illness or injury, loss of habitat / diversity or resource, severe alteration or disturbance of important processes	Moderate deterioration, discomfort, partial loss of habitat / biodiversity or resource, moderate alteration	Low deterioration, slight noticeable alteration in habitat and biodiversity. Little loss in species numbers	Minor deterioration, nuisance or irritation, minor change in species / habitat / diversity or resource, no or very little quality deterioration.
Probability of occurrence - Probability describes the likelihood of the impacts occurring. This determination is based on previous experience with similar projects and/or based on professional judgment				
Low (1)	**Medium/Low (2)**	**Medium (3)**	**Medium/High (4)**	**High (5)**
Improbable; low likelihood; seldom. No known risk or vulnerability to natural or induced hazards.	Likely to occur from time to time. Low risk or vulnerability to natural or induced hazards	Possible, distinct possibility, frequent. Low to medium risk or vulnerability to natural or induced hazards.	Probable if mitigating measures are not implemented. Medium risk of vulnerability to natural or induced hazards.	Definite (regardless of preventative measures), highly likely, continuous. High risk or vulnerability to natural or induced hazards.

7.3 Impact Significance

Impact significance is determined through a synthesis of the above impact characteristics. The significance of the impact “without mitigation” is the main determinant of the nature and degree of mitigation required. As stated in the introduction to this chapter, for this assessment, the significance of the impact without prescribed mitigation actions was measured.

Once the above factors (**Table 8**) have been ranked for each potential impact, the impact significance of each is assessed using the following formula:

SP = (magnitude + duration + scale) x probability

The maximum value per potential impact is 100 significance points (SP). Potential impacts were rated as high, moderate, or low significance, based on the following significance rating scale (**Table 9**).

Table 9: Impact significance rating scale

Significance	Environmental Significance Points	Colour Code
High (positive)	>60	H
Medium (positive)	30 to 60	M
Low (positive)	<30	L
Neutral	0	N
Low (negative)	>-30	L
Medium (negative)	-30 to -60	M
High (negative)	>-60	H

For an impact with a significance rating of high, mitigation measures are recommended to reduce the impact to a low or medium significance rating, provided that the impact with a medium significance rating can be sufficiently controlled with the recommended mitigation measures. To maintain a low or medium significance rating, monitoring is recommended for a period to enable the confirmation of the significance of the impact as low or medium and under control.

The assessment of the project phases is done for both pre-mitigation (before implementing any mitigation) and post-mitigation (after mitigations are implemented). The objective with the mitigation measures is to firstly avoid the risk and if the risk cannot be avoided, mitigation measures to minimize the impact are recommended. Once the mitigation measures have been applied, the identified risk will be of low significance for the negative impacts and high significance for positive impacts (maximizing benefits)

7.4 Assessment of Positive Impacts

7.4.1 Fuel Supply Availability and Convenience

The presence and operational phase of the fuel station in the Village will be provide the much-needed service of fuel availability, not only for the Okamapuku Village but also the surrounding areas such as Omatjete which is a growth point in the broader area. The fuel station will serve not only local vehicles, but also services such as the local and regional tourism, mining sectors and government services such as the Omatjete Clinic vehicles (ambulances), MEFT's wildlife services in the area as well as other purposes in nearby areas. The impact is assessed in **Table 10** below.

Table 10: Assessment of fuel supply convenience

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	L/M- 2	L/M - 2	L/M - 4	L - 1	L – 8
Measures to maximize the impact -The Proponent should ensure through their Supplier that the Fuel Service Station has sufficient fuel always. -The Station should operate 24 hours every day to ensure there is an uninterrupted supply of fuel.					
Post mitigation	M/H - 4	H - 5	M - 6	H - 5	H - 75

7.4.2 Employment Opportunities

The project activities through construction and operational works will create job opportunities. However, if the employed people are not from the local communities and discriminated for opportunities or overlooked for outsiders, this would result in conflicts between the Proponent, hired contractors and the locals. This can be improved by implementing the measures provided in the assessment **Table 11** below.

Table 11: Assessment of the project activities on local employment

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	L/M- 2	L/M - 2	L/M - 4	L - 1	L – 8
Measures to maximize the impact -It should be mandatory to contractors to give all unskilled and semi-skilled work to be given to the locals before considering outsiders (anyone from outside Okamapuku and immediate surrounding villages). -The anticipated work opportunities and number of positions should be announced through the local leadership at the Zeraeua Traditional Authority. -The name of the prospective workers should be screened by the local leaders to verify their place of origin to ensure that the opportunities reserved for the locals are not given to outsiders. -Equal opportunities should be given to both men and women, where possible.					
Post mitigation	M/H - 4	H - 5	M - 6	H - 5	H - 75

7.4.3 Provision of Project Goods and Services

The project will need the provision of different services and goods procured from different suppliers on services like local site clearing, civils and earthmoving contractors during the construction phase, provision of lubricants, PPE, cleaning services and external maintenance services, if necessary.

-the required services would also include possible business opportunities in the areas of cleaning services, maintenance to local companies. The unfairness and discrimination in procurement opportunities of overlooking locals for outsiders would bring conflicts. This can be improved by implementing the measures provided in the assessment **Table 12** below.

Table 12: Assessment of the project activities on procurement of services and goods

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	L/M- 2	L/M - 2	L/M - 4	L - 1	L – 8
Measures to maximize the impact -The procurement stage for the construction works should follow a fair and transparent process. -Procurements for construction should be open only to Namibian companies with strong local participation. A percentage of the scope should be reserved for Small-Medium Enterprise (SME) contractors who may be recruited on a sub-contract basis to build local capacity. -The business opportunities such as site clearing, cleaning services and maintenance should be given to local companies. In the case that the locals are not well-equipped or capacitated for some of the business, joint ventures should be formed with other companies from other immediate regions to build capacity for the local company(ies).					
Post mitigation	M/H - 4	H - 5	M - 6	H - 5	H - 75

7.4.4 National Economic Development: Payment of Taxes and Levies and Investments

The project has a potential contributing to the regional and national economic development through the payment of national taxes such as Value Added Tax (VAT) to the Namibia Revenue Agency and energy levies to the Ministry of Mines and Energy (MME). The presence and operation of the Fuel Station will also have a good potential of attracting investors to further invest in the business itself and broader project area, given that there is fuel supply and associated required services for further business opportunities. This will contribution towards national economy from the energy sector and other future investments from different sectors. The impact has been assessed in **Table 13** below and its significance can be improved by implementing the measures provided below too.

Table 13: Assessment of the project activities on national economic development and investment opportunities

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	L/M- 2	L/M - 2	L/M - 4	L - 1	L – 8
Measures to maximize the impact -The Proponent to ensure compliance with their project's requirements by the Namibia Revenue Agency and Ministry of Mines and Energy by paying VAT and energy levies, respectively. -Marketing and national awareness of the project operations in the area should be made to attract potential investors in the business (Fuel Service Station), Okamapuku and most importantly Omatjete and surrounding areas.					
Post mitigation	M/H - 4	H - 5	M - 6	H - 5	H - 75

7.5 Assessment of Potential Negative Impacts

The potential negative impacts stemming from the proposed project activities are described, assessed and mitigation measures provided thereof. Further mitigation measures in a form of management action plans are provided in the Draft EMP (**Appendix B**).

7.5.1 Soil (Land) Disturbance and Loss of Grazing Areas

The excavations and land clearing to enable siting of project structures and equipment will potentially result in soil disturbance which will leave the site soils exposed to erosion. This impact would be probable at site areas with no to little vegetation cover to keep the soils in place. The movement of heavy vehicles and equipment may lead to compaction of the soils mainly during construction. The clearing of the site areas where currently local livestock is grazing will lead to loss of the grazing area. This will, however, be a localized impact since there is still ample area outside the site boundaries that can still be used for grazing. The potential impact can be rated as medium if no mitigation measures are implemented. However, with the effective implementation of mitigation measures and monitoring, the impact significance will be reduced to low. The assessment of this impact is presented in **Table 14.**

Table 14: Assessment of the impacts of the project activities on soils (land disturbance)

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M/H - 4	L/M - 4	M/H - 4	M – 44
Mitigations Measures -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. -All construction trenches and pits excavated on site should be backfilled and areas rehabilitated. -Soils that are not within the intended footprints of the site boundaries should be left undisturbed. -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.					
Post mitigation	L/M - 2	L/M - 2	L/M - 4	L/M - 2	L - 16

7.5.2 Water Resources Availability and Use

The abstraction of more water than it can be replenished from low groundwater potential areas would negatively affect the local communities (people and livestock) and physical environment that depend on the same low potential groundwater resource (aquifer). The impact of the project activities on the resources would be dependent on the water volumes required onsite by different activities.

The project area has low groundwater potential as shown under the baseline chapter and this is also proven by the dry borehole in the Okamapuku Village. Due to this shortage, the Village is supplied with piped water from another village and stored in water tanks located next to the old dry borehole. It is anticipated that the project will also be connected to the communal water point. The volumes of water required for the project activities is not yet known, however, the water needs for these kinds of projects are usually not very significant. Regardless, measures will still need to be implemented.

Without the implementation of any mitigation measures, the impact can be rated as medium, but upon effective implementation of the recommended measures, the impact significance would be reduced to low as presented in the **Table 15** below.

Table 15: Assessment of the project impact on water resource use and availability

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M - 3	M - 6	M/H - 4	M – 48
Mitigations and recommendation to manage water use -Water should be used efficiently, and recycling and re-using of water onsite should be encouraged. -The Proponent should connect the site to the communal water supply. Water supply authorization should be made between the DWSSC and the Proponent. -Should the Proponent decide to site and drill their own borehole, they should apply for Borehole Drilling and Groundwater Abstraction & Use Permits from the Department of Water Affairs of MAWLR. -Water storage tanks should be inspected daily (or install water leakage detector) to ensure that there is no leakage, resulting in water wastage. -Water conservation awareness and saving measures training should be provided to all the project workers in both phases so that they understand the importance of conserving water and become accountable.					
Post mitigation	L/M - 2	L/M - 2	L - 2	L/M - 2	L - 12

7.5.3 Soil and Water Resources Pollution

The proposed activities are associated with a variety of potential pollution sources (i.e., lubricants, fuel, and wastewater) that may contaminate/pollute soils and eventually surface water and groundwater. The anticipated potential source of pollution to water resources from the project activities would be hydrocarbons (oil) from project vehicles, machinery, and equipment as well as potential wastewater/effluent from project related activities.

The spills (depending on volumes spilled on the soils) from these machinery, vehicles and equipment could be washed in surface water bodies such as rivers and streams during heavy rainfalls. If construction undertaken during heavy rainy months with surface runoff, the impact would be inevitable. For groundwater, the risk would be from the leakages of buried fuel tanks (bursting). The pollution may infiltrate into the ground and pollute the fractured or faulted aquifers. The impact on site groundwater systems would be minimal to none given the compacted nature of the bedrocks, i.e., the bedrocks are intact to allow free transport of polluted water compared to fractured or faulted rock units that may provide ready pathways for pollution. Therefore, the impact will be moderately low. The impact would however be likely if surface runoff reaches river streams that are underlain by sediments (to provide pathways to polluted water into groundwater resources).

Pre-mitigation measure implementation, the impact significance is low to moderate and upon implementation, the significance will be reduced to low. The impact is assessed in **Table 16** below.

Table 16: Assessment of the project activities on soils and water resources (pollution)

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M/H - 4	M - 6	M - 3	M - 39
Mitigations and recommendation to manage soil and water pollution -Spill control preventive measures should be in place on site to manage soil contamination, thus preventing and or minimizing the contamination from reaching water resources bodies. -All project employees should be sensitized about the impacts of soil pollution and advised to follow appropriate fuel handling procedures. -The fuel storage tanks should be designed to have a double layer to contain the fuel in case of tank burst. -The Proponent should develop and prepare countermeasures to contain, clean up, and mitigate the effects of an oil spill. This includes keeping spill response procedures and a well-stocked cache of supplies easily accessible. -Ensure employees receive basic Spill Prevention, Control, and Countermeasure (SPCC) Plan training and mentor new workers as they get hired. -Project machines and equipment should be equipped with drip trays to contain possible oil spills. -Polluted soil should be removed immediately and put in a designate waste type container for later disposal. -Drip trays must be readily available on project vehicles onsite and fuel consuming machinery and monitored to ensure that accidental fuel spills along the tanks around the site are 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 equipment washing, and servicing of vehicles should take place at a dedicated area, where contaminants are prevented from contaminating soil or water resources (with an impervious layer). -Hazardous waste (used oils and grease) should not be discharged onsite or anywhere in the environment. -Toilet water should be treated using chemical portable toilets and periodically emptied out before reaching capacity and transported to a wastewater treatment facility.					
Post mitigation	L - 1	L - 1	L - 2	L/M - 2	L - 8

7.5.4 Impact on Fauna and Flora (Biodiversity)

Fauna: The construction activities would result in land degradation, leading to habitat loss for a diversity of flora and fauna ranging from microorganisms to large animals. The presence and movement of the project workforce and project equipment and heavy vehicles would disturb the domestic animals grazing within the site area.

Flora: The flora (vegetation) would be impacted through clearing to create access roads and setting up project equipment, structures and services infrastructures. The clearing of vegetation, where deem

necessary will be limited to the specific site areas and minimal, therefore, the impact will be localized, site-specific, therefore manageable.

Under the status, the impact can be of a medium significance rating. With the implementation of appropriate mitigation measures, the rating will be reduced to a low significance rating. The impact is assessed in **Table 17** below.

Table 17: Assessment of the impacts of project activities on biodiversity

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M: -3	M: -3	M: -6	M/H: 4	M: -48
Mitigations and recommendation to minimize the loss of biodiversity **Fauna** -Workers should be sensitized to refrain from disturbing, killing or stealing livestock and killing small soil species. -Construction trenches and holes should be backfilled after completion of work to prevent injuries. -Environmental awareness on the importance of biodiversity preservation should be provided to the workers. **Flora** -The Proponent should limit the vegetation removal, to promote a balance between biodiversity and their activities. -Vegetation that is not within site structures or access routes should not be disturbed to preserve biodiversity. -The movement of vehicle and machinery should be restricted to existing roads and tracks.					
Post mitigation	L/M: -2	L/M: -2	L/M: -4	L/M: 2	L: -16

7.5.5 Dust Generation (Air Quality)

There is a potential impact of dust emanating from site access roads when transporting project equipment and supply to and from site as well as earthworks (excavations) in preparation of construction. This may compromise the air quality in the area. Therefore, the impact significance is rated as medium. The significance can be reduced to low by the effective implementation of mitigation measures (**Table 18)**.

Table 18: Assessment of the impacts of project activities on air quality

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M: -3	M: -3	M/L: -4	M/H: 4	M: -40
Mitigations and recommendation to minimize dust -Project vehicles should not be driven at a speed more than 40 km/h to avoid dust generation within the site. -Construction schedule should be limited to the given number of days of the week, and not every day. This will keep the vehicle-related dust level minimal in the area. -Dust masks, eye protective glasses and other respiratory personal protective equipment (PPE) such as face masks should be provided to the workers at excavation areas, where they are exposed to dust					

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
-A reasonable amount of water should be used on site problematic access roads, using regular water spray to suppress the dust that may be emanating from certain site areas.					
Post mitigation	L - 1	L - 1	L- 2	L - 1	L - 4

7.5.6 Waste Generation, Handling and Management

Waste types such as solid, wastewater and hazardous will be produced onsite during both phases of the project. If the generated waste is not disposed of in a responsible way, land pollution may occur on or around the site. Improper handling, storage and disposal of hydrocarbon products and hazardous materials at the site may lead to soil and groundwater contamination, in case of spills and leakages. To prevent these issues, biodegradable and non-biodegradable wastes must be stored in separate containers and collected regularly for disposal at a nearest recognized waste management facilities. Without any mitigation measures, the general impact of waste generation has a medium significance. The impact will reduce to low significance, upon implementing the mitigation measures. The assessment of this impact is given in **Table 19**.

Table 19: Assessment of waste generation impact

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M: -3	M: -3	M/L: -4	M/H: 4	M: -40
Mitigations and recommendation to waste management -Workers should be sensitized to dispose of waste in a responsible manner and not to litter. -Ensure that there are no wastes left scattered onsite at the end of each day. -All domestic and general operational waste produced daily should be contained onsite until such that time it will be transported to designated waste sites. -No waste may be buried or burned on site or anywhere else. -The site should be equipped with separate waste bins for hazardous and general/domestic waste. -Sewage waste should be properly stored and handled and regularly disposed of at the nearest treatment facility -Oil spills should be taken care of by removing and treating soils affected by the spill. -A penalty system for irresponsible disposal of waste on site and anywhere in the area should be implemented. -Careful storage and handling of hydrocarbons on site is essential. -Potential contaminants such as hydrocarbons and wastewater should be contained on site and disposed of in accordance with municipal wastewater discharge standards so that they do not contaminate soils and water. -An emergency plan should be available for major/minor spills at the site during operation activities (with consideration of air, groundwater, soil, and surface water) and during the transportation of the product(s) to the sites.					
Post mitigation	L - 1	L - 1	L - 2	L/M - 2	L - 8

7.5.7 Occupational and Community Health and Safety Risks

Project personnel (workers) may be exposed to health and safety risks. These are in terms of accidental injury, owing to either minor (i.e., superficial physical injury) or major (i.e., involving heavy machinery or vehicles) accidents. The heavy vehicle, equipment and fuel storage area should be properly secured to prevent any harm or injury to the Proponent's personnel, locals (people) and animals. Another potential risks to both people and animals in the area are unsecured construction trenches or not backfilled.

The use of heavy equipment and the presence of hydrocarbons on site may result in accidental fire outbreaks. This could pose a safety risk to the project personnel and locals.

Considering the current unemployment rate of youth in Namibia, people from other areas in different areas may be attracted to the area because of the development for work. The influx of people into the project area may also lead to sexual relations between these out-of-area workers and the locals. This would lead to the spreading of sexual transmitted diseases (i.e., HIV/AIDS) when engaging in unprotected sexual intercourse.

Without the implementation of any measures, the impact significance can be rated as medium. However, with adequate mitigation measures, the impact rating will be reduced to low. This impact is assessed in **Table 20** below and mitigation measures provided.

Table 20: Assessment of the impacts of project activities on health and safety

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M - 3	M - 6	M/H - 4	M – 48
Mitigations and recommendation to minimize health and safety issues -During inductions, project workers should be provided 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. -Project workers should be properly equipped with adequate and appropriate personal protective equipment (PPE) such as coveralls, gloves, safety boots, earplugs, dust masks, safety glasses, etc. -Heavy vehicle, equipment and fuel storage site should be properly secured, and appropriate warning signage placed where visible. -Construction trenches should be secured and should be backfilled after completion of work. -Excavated materials should be put back into the construction holes and the holes filled, and trenches backfilled respectively. -An emergency preparedness plan should be compiled, and all personnel appropriately trained. -Workers should not be allowed to enter the working sites when under the influence of alcohol as this may lead to mishandling of equipment which results into injuries and other health and safety risks. -Warning signage should be erected at hazardous site areas such as open construction trenches and fuel tanks sites. -Prohibition signs such as '***'No smoking, Flammable, open fire is prohibited''*** should be erected at appropriate sites.					

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
-The site areas that are considered temporary risks should be equipped with "danger" or "cautionary" signs clearly written in the locally spoken languages, i.e., Otjiherero, Afrikaans and English. -Community safety and health awareness should be raised by educating the locals not to enter the site unauthorized. **<u>On the issue of social influx of outsiders and sexual transmitted diseases:</u>** -The Proponent and their contractors should prioritize the employment of more local people, and only if necessary and due to lack of skills in the area, out-of-area people can be given some of the work. -The locals employed should be provided with the necessary training of skills required for the project to avoid bringing in many out-of-area employees. This way, skills development and transfer is ensured in the local community. -The project 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.					
Post mitigation	L/M - 2	L/M - 2	L - 2	L/M - 2	L - 12

7.5.8 Vehicular Traffic Safety and Road Use

The main road such as D3712 is the main transportation routes for all vehicular movement in the area connecting Omatjete to Okombahe. There would be a potential increase in traffic flow during both construction and operational phases, due to the delivery of supplies and services to site. These service and supplies will include but not limited to water, waste removal, procurement of construction and operational machinery, equipment, and others.

The project activities will mean an increased movement of heavy trucks and equipment on local roads which would exert more pressure on these roads. These local roads in remote areas are normally not in a good condition already for light vehicles, and the additional vehicles such as heavy ones may make it worse and difficult to be used by small (vehicles) that already struggled on the roads prior. This will be a concern if maintenance and care is not done frequently.

Pre-mitigation, the impact can be rated medium and with the implementation of mitigation measures, the significance will be low as assessed in **Table 21** below.

Table 21: Assessment of the impacts of the project activities on vehicular traffic

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M/H - 4	L/M - 4	M/H - 4	M - 44
<u>Mitigations and recommendation to minimize impact on road safety and related vehicular traffic issues.</u> -Project related goods and services should be delivered to site twice a week to reduce the daily movement of trucks and pressure on local roads. A special case would be due to emergencies only. -Drivers of all project phases' vehicles should be in possession of valid and appropriate driving licenses and adhere to the road safety rules.					

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Drivers should drive slowly (40km/hour or less) and be on the lookout for livestock and people, particularly children. -The Proponent should ensure that the site access roads are well equipped with temporary road signs. -Project vehicles should be in a road worthy condition and serviced regularly to avoid accidents owing to mechanical faults. -Vehicle drivers should only make use of designated site access roads provided and as agreed. Vehicle drivers should not be allowed to operate vehicles while under the influence of alcohol. -No heavy trucks or project related vehicles should be parked outside the project site boundary or demarcated areas. -To control traffic movement on site, deliveries from and to site should be carefully scheduled. This should optimally be during weekdays and between the hours of 8am and 5pm. -The site access road(s) should be maintained to an unacceptable standard for the vehicles. -The Proponent should consider frequent maintenance of local roads to ensure that the roads are in a good condition for other roads users such as locals, tourists and travellers from and outside the area.					
Post mitigation	L/M - 2	L/M - 2	L - 2	L/M - 2	L - 12

7.5.9 Noise and vibrations

There is a potential of noise from certain activities such as trenching during construction, which may be a nuisance to surrounding communities. Excessive noise and vibrations without any protective measures in place can be a health risk to workers on site. A long-term impact is during operations is the constant movement of vehicles to and from the site, especially to the neighboring homesteads. However, the homesteads are located at reasonable distances from 500m to over 1km. Without any mitigation, the impact is rated as of medium significance. To change the impact significance from the pre-mitigation significance to low rating, the mitigation measures should be implemented. This impact is assessed in **Table 22** below.

Table 22: Assessment of the impacts of noise and vibrations from project activities

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	L/M - 2	L/M - 2	M - 6	M/H - 3	M – 30
<u>Mitigations and recommendation to minimize noise</u> -Noise from operations' vehicles and equipment on the sites should be at acceptable levels. -Construction hours should be restricted to 08h00 and 17h00 to avoid noise generated by equipment and the movement of vehicles before or after hours. -When operating the machinery onsite, workers should be equipped with personal protective equipment (PPE) such as earplugs to reduce exposure to excessive noise.					
Post mitigation	L - 1	L/M - 2	L - 2	L/M -2	L - 10

7.5.10 Archaeological and Heritage resources

The potential impact on heritage resources would be through the inadvertent unearthing of buried objects especially during trenching and installation of project services. There are no known or observed surface heritage sites or objects within the site. This was also confirmed during the consultation meeting held with the community in Okamapuku. However, the absence of such resources on the surface does not mean that such sites cannot be encountered during excavation works. Therefore, the necessary measures will be implemented through the Chance Finds Procedure (CFP).

Therefore, this impact can be rated as medium significance if there are no mitigation measures in place. Upon implementation of the necessary measures, the impact significance will be reduced to a lower rating. The impact is assessed in **Table 23**.

Table 23: Assessment of the impacts of project activities on archaeological & heritage resources

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M/H - 4	M - 3	M - 6	M - 3	M – 39
Mitigations and recommendation to minimize impact on archaeological and heritage resources -The Proponent and Contractors should adhere to the provisions of Section 55 of the National Heritage Act No. 27 of 2004 in event significant heritage and culture features are discovered while conducting construction works. -On-site personnel and contractor crews must be sensitized to exercise and recognize “chance finds heritage” in the course of their work. -During the construction works, it is important to take note and recognize any significant material being unearthed and making the correct judgment on which actions should be taken (refer to CFP Appendix 1 attached to the EMP). -The footprint impact of the project activities should be kept to minimal to limit the possibility of encountering chance finds within the site boundaries. -When the removal of topsoil and subsoil on the site for construction purposes, the site should be monitored for subsurface archaeological materials by a qualified Archaeologist.					
Post mitigation	L - 1	L - 1	M/L - 4	M/L -2	L - 12

7.5.11 Social Nuisance: Property intrusion and Disturbance or Damage

The presence of some out-of-area workers may lead to social annoyance to the local community. Not only out-of-area but locals too could intentionally trespass into private properties of the locals and cause damage. The private properties of the communities could be houses, fences or yards, or cause damage to livestock. The unpermitted and unauthorized entry to such properties resulting in property theft, vandalism (damage) may cause crashes between the affected community members and the Proponent.

Pre-implementation of mitigation measures, the impact is rated as of medium significance. However, upon mitigation (post-mitigation), the significance will change from medium to low rating. The impact is assessed below (**Table 24**).

Table 24: Assessment of social impact of project related activities on private and community properties

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M - 3	M - 6	M/H - 4	M – 48
Mitigations and recommendation to minimize the issue of damage to or intruding/trespassing of properties -The project workers and contractors should be informed of the importance of respecting the locals' properties by not trespassing or injuring / killing their livestock. -Any worker or contractor found guilty of trespassing should be called in for disciplinary hearing and/or dealt with as per their employer' (Proponent)'s code of employment conduct. -The workers/contractors should be advised to respect the local's private properties, values, and norms. -Workers are prohibited from entering people's private yards or fences without permission. -The cutting down or damaging of vegetation belonging to the community without prior is strictly prohibited.					
Post mitigation	L - 1	L - 1	M/L - 4	M/L -2	L - 12

7.6 Cumulative Impacts

The cumulative impacts associated with the proposed project activities will include:

- **Vehicular traffic safety** – the increased number of vehicles in the area may lead to high traffic flow around the site area, as this road has been used by light and heavy trucks for different operations in the area including exploration and mining related activities and tourism. Not only does the road used by miners but also locals who are currently complaining about the bad road conditions caused by heavy trucks.
- **Water Use**: the site area has limited groundwater potential and relies on another village water supply. The addition of the project into the area will increase water needs/demand and may affect the current water supply. The measures provided under section 7.5.2 will be implemented to help reduce the impact.
- **Air quality (dust)**: the D3712 is currently used by vehicles travelling between Omatjete and Okombahe and within the community. The road is untarred (gravel) that dust is generated especially during dry months of the year. This was also experienced during the site visit in May 2022. This issue will continue and be worsened by the movement of heavy trucks during the construction as well as construction phases. Regardless, the mitigation measures provided under section 7.5.5 will be implemented to mitigate the impact in the long run.

8 CONCLUSIONS

The Environmental Scoping Study for the proposed construction and operational activities of Okamapuku Fuel Service Sation was carried out in accordance with the EMA and its 2012 EIA Regulations. As the primary objective of the study, some key potential positive and negative impacts were identified, described, assessed, and appropriate management and mitigation measures were made thereof for implementation by the Proponent.

The public was consulted as required by Section 21 to 24 of the EIA Regulations. This exercise was done by placing notifications in the three newspapers, i.e., *Allgemeine Zeitung, Die Republikein, and Namibian Sun*) dated 9 and 16 May 2022. A community consultation meeting was scheduled, and an invitation was sent to the local leadership for the announcement to the local communities. A Face-to-Face meeting was held with the available community members on the 20th of May 2022 in Okamapuku.

The community made some comments and raised a few issues and most importantly expressed their excitement for a fuel station finally being established in their community, given the current struggle with fuel supply in both the Village and Omatjete. These were noted down, addressed, and incorporated into this Report. For significant environmental and social issues, mitigation measures have been provided thereof to avoid and/or minimize their significance on these components.

Impact Assessment: The potential negative impacts assessed have a medium rating significance. The effective implementation of the recommended management and mitigation measures accompanied by monitoring will particularly see a reduction in the significance of adverse impacts that cannot be avoided completely (from medium rating to low).

The Scoping assessment (ESA) Study was deemed sufficient and concluded that no further detailed assessments are required for the ECC application of the proposed project and its associated activities.

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Serja Consultants are confident that the potential negative impacts associated with the proposed project activities can be managed and mitigated by the effective implementation of the recommended management and mitigation measures and with more effort and commitment put on monitoring the implementation.

It is therefore, recommended that the proposed construction and operational activities of the Fuel Service Station be granted an Environmental Clearance Certificate, provided that:

- All the management and mitigation measures provided herein are effectively and progressively implemented.
- All required permits, licenses and approvals for the proposed activities should be obtained as required. These include permits and ensuring compliance with these specific legal requirements.
- The Proponent, their project workers or contractors comply with the legal requirements governing their project and its associated activities and ensure that project permits and or approvals required to undertake specific site activities are obtained and renewed as stipulated by the issuing authorities.

- Disturbed site areas are rehabilitated, as far as practicable. This includes the levelling of stockpiled topsoil, backfilling of construction trenches and holes as well as removal of all waste from site.

To maintain the desirable rating and that the potential impacts are under control, the implementation of management and mitigation measures should be monitored by their Environmental Control Officer (ECO) and audited by an Independent Environmental Consultant on a bi-annual basis. Monitoring the implementation will also be done to ensure that all potential impacts that might arise during implementation are properly identified in time and addressed immediately.

9 LIST OF REFERENCES

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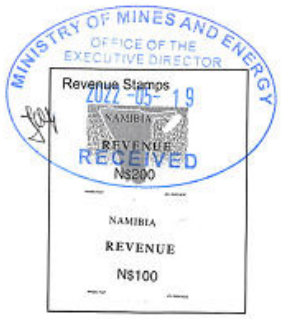
4. Government of the Republic of Namibia. (2020). Notification of Approval of Specification and Standards of Petroleum Products: Petroleum Products Regulations, 2000. Under regulation 44 of the Petroleum Products Regulations published under Government Notice No. 155 of 23 June 2000. Windhoek. Ministry of Mines and Energy
5. Lohe, C., Amster, R. and Swartz, B. (2021). (editors). Groundwater in Namibia: An Explanation to the Hydrogeological Map. Windhoek: Ministry of Agriculture, Water and Land Reform
6. Meteoblue. (2022). Weather: Simulated historical climate & weather data for Omatjete: https://www.meteoblue.com/en/weather/historyclimate/climatemodelled/omatjete_namibia_3354523
7. Mushi, R. (2021). Archaeological and Heritage Impact Assessment Report for the proposed Prospecting and Exploration Activities (of Dimension stone) on Exclusive Prospective Licence (EPL) No. 7233 located near Omatjete in Erongo Region, Namibia. Windhoek. Unpublished.
8. Namibia Statistics Agency. (2011). Namibia 2011: Population and Housing Census – Erongo Regional Profile. Windhoek: Namibia Statistics Agency.
9. World Weather Online. (2021). Omatjete - Erongo Region, Namibia Weather. Available from World Weather Online: https://www.worldweatheronline.com/omatjete-weather-averages/erongo/na.aspx.

APPENDIX A: THE DATE STAMPED COPY OF THE ECC APPLICATION SUBMITTED TO THE MINISTRY OF MINES & ENERGY (COMPETENT AUTHORITY)



ANNEXURE 1

FORMS

Form 1

REPUBLIC OF NAMIBIA

ENVIRONMENTAL MANAGEMENT ACT (No. 7 of 2007)

(Section 32)

APPLICATION FOR ENVIRONMENTAL CLEARANCE CERTIFICATE (APP NO. 003834)

PART A: DETAILS OF APPLICATION

1.	Name:	Port Marine Solutions cc
2.	Business Registration No.:	CC//2012/10136
3.	Correspondence Address:	P.O. Box 62242, Windhoek Katutura
4.	Name of Contact Person:	Seblon Shitalangaho
5.	Position of Contact Person:	Managing Member
6.	Telephone No.:	+264 81 237 6660
7.	Fax No:	N/A
8.	E-mail Address:	info@serjaconsultants.com

PART B: SCOPE OF THE ENVIRONMENTAL CLEARANCE CERTIFICATE

1. THE ENVIRONMENTAL CLEARANCE CERTIFICATE IS FOR:

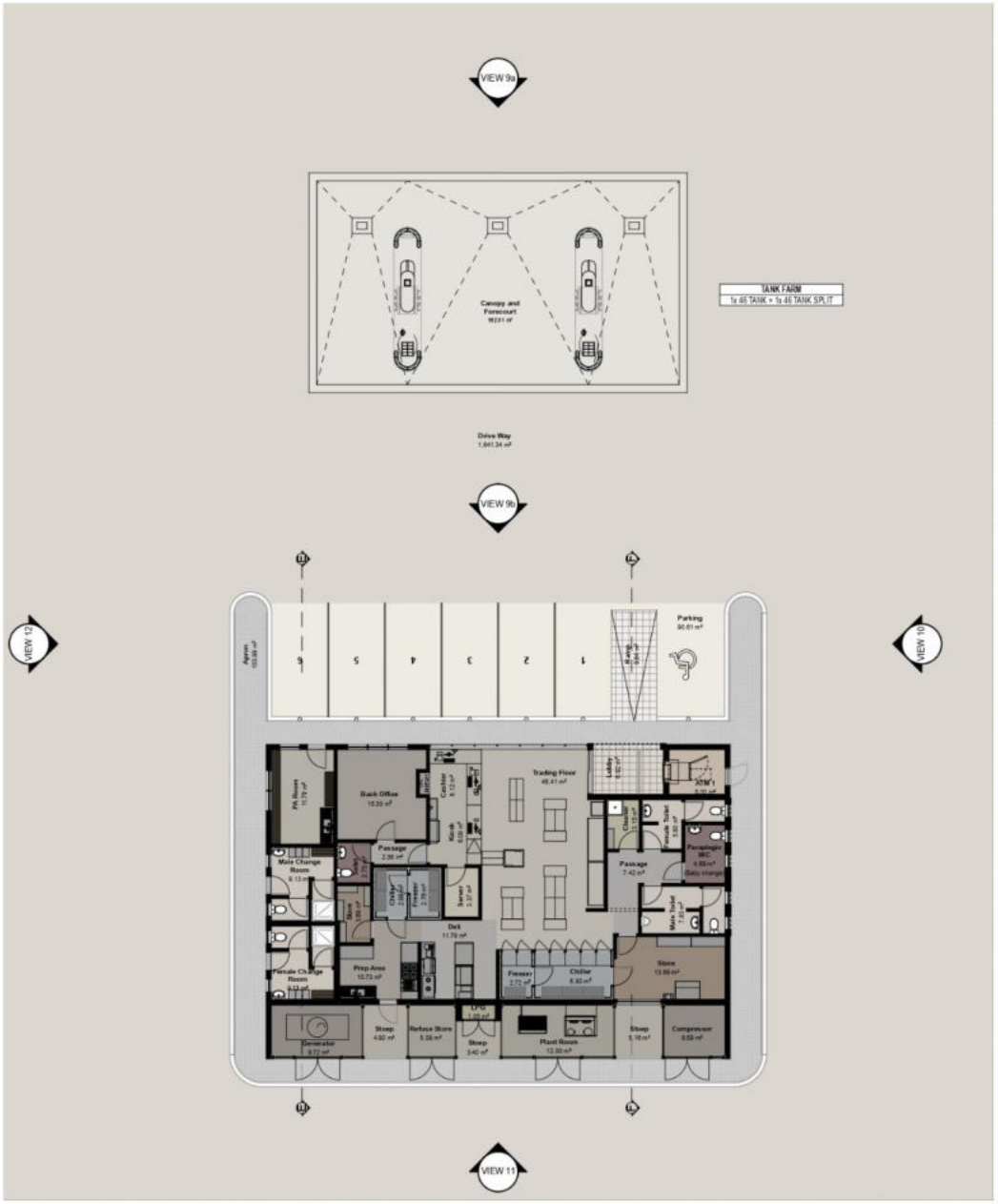
The 'listed activities' that are relevant or related to the proposed activities are listed below:

LISTED ACTIVITY 9. HAZARDOUS SUBSTANCE TREATMENT, HANDLING AND STORAGE

-9.2 Any process or activity which requires a permit, licence or other form of authorisation, or the modification of or changes to existing facilities for any process or activity which requires an amendment of an existing permit, licence or authorisation or which requires a new permit, licence or authorisation in terms of a law governing the generation or release of emissions, pollution, effluent or waste.

-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.

APPENDIX D (I):SITE LAYOUT (DRAWINGS) – SITE PLAN



MEASURED AREAS	
BUILDING (UNDER ROOF AREA)	234.87 SQM
SERVICE YARD	48.14 SQM
TOTAL	283.01 SQM

SITE PLAN

APPENDIX D (II): SITE LAYOUT (DRAWINGS) – FLOOR PLAN

FLOOR PLAN