

ENVIRONMENTAL IMPACT ASSESSMENT

FOR PROPOSED CONSTRUCTION AND OPERATION OF JOEL AND NGORE
TRADING INVESTMENT SERVICE STATION AT OKATUMBA GATE-EISEB AREA,
OMAHEKE REGION



APP-003817

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DOCUMENT AUTHENTICATION

This Environmental Impact Assessment project report has been prepared by Eco-Wise Environmental Consulting cc in accordance with the Environmental Management Act No 7 of 2007 (EMA) and its regulations of 2012, which requires that construction of filling station projects must have an EIA report prepared for submission to the Ministry of Environment and Tourism-Division of Environmental Affairs. We the undersigned, certify that the particulars in this report are correct and righteous to the best of our knowledge.

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ENVIRONMENTAL AUTHORIZATION INFORMATION

Please note that the environmental clearance certificate should be issued out to the client. All comments and enquiries during the evaluation of this document must be addressed to the Environmental Consultants. Please forward the environmental clearance certificate to the consultant.

TABLE OF CONTENTS

LIST OF IMAGES	5
LIST OF TABLES	6
LIST OF APPENDICES	6
ACRONYM.....	6
EXECUTIVE SUMMARY.....	7
CHAPTER ONE: BACKGROUND	9
1.1 INTRODUCTION	9
1.2 NEED FOR THE PROJECT	9
1.2.1 ACCESSIBILITY OF FUEL.....	9
1.2.2 ECONOMIC DEVELOPMENT	9
1.2.3 EMPLOYMENT CREATION.....	9
1.2.4 COMMUNITY DEVELOPMENT	10
1.3. HARAMBEE PLAN FOR PROSPERITY.....	10
1.4 SCOPE OF THE PROJECT	10
1.5 TERMS OF REFERENCE	10
1.6 OBJECTIVES.....	11
1.6.1 GENERAL OBJECTIVE.....	11
1.6.2 SPECIFIC OBJECTIVES.....	11
1.7 METHODOLOGY USED FOR THE STUDY.....	11
1.8 LAND OWNERSHIP	12
1.9 OVERVIEW OF EIA REPORT	12
CHAPTER TWO: PROJECT DESCRIPTION	12
2.1 PROJECT LOCATION.....	12
2.2 SURROUNDING LAND USES	15
2.3 PROJECT PHASE AND SCOPE OF WORKS	17
2.3.1 CONSTRUCTION PHASE	17
2.3.2 OPERATION PHASE.....	18
2.3.3 DECOMMISSIONING PHASE.....	18
2.4 PROJECT COST.....	19
CHAPTER THREE: ANALYSIS OF ALTERNATIVES.....	19
3.1 ALTERNATIVE LOCATIONS	19
3.2 THE “NO PROJECT” ALTERNATIVE	19
3.3 OTHER ALTERNATIVES.....	20
3.4 ALTERNATIVES ASSESSMENT OUTCOMES.....	20
CHAPTER FOUR: RELEVANT LEGISLATION	20
CHAPTER FIVE: DESCRIPTION OF THE AFFECTED ENVIRONMENT.....	26
5.1 BIO-PHYSICAL ENVIRONMENT	26
5.1.1 CLIMATE	26
5.1.2 TOPOGRAPHY AND GEOLOGY	27
5.1.3 HYDROGEOLOGY	27
5.1.4 SOILS	29
5.1.5 VEGETATION OF THE STUDY AREA	29
5.1.6 FAUNA	31
5.2 SOCIO-ECONOMIC ENVIRONMENT	33
5.2.1 POPULATION.....	33
5.2.2 EDUCATION PROFILE	33
5.2.3 EMPLOYMENT OPPORTUNITIES.....	34

CHAPTER SIX: PUBLIC PARTICIPATION	34
6.1 OBJECTIVES OF THE STAKEHOLDER CONSULTATION PROCESS	34
6.2 PRINCIPLES GOVERNING PUBLIC CONSULTATION	35
6.2.1 INCLUSIVITY	35
6.2.2 OPEN AND TRANSPARENCY	35
6.2.3 RELEVANCE	35
6.3 NOTIFICATION OF INTERESTED AND AFFECTED PARTIES.....	35
6.3.1 BACKGROUND INFORMATION DOCUMENT (BID)	35
6.3.2 ADVERTISEMENT	35
6.3.3 PUBLIC MEETING	36
6.3.4 QUESTIONNAIRES	36
6.3.5 PUBLIC NOTICES.....	37
6.4 SUMMARY OF STAKEHOLDERS CONSULTATION.	37
CHAPTER SEVEN: ASSESSMENT OF ENVIRONMENTAL IMPACTS.....	37
7.1 IDENTIFICATION OF POTENTIAL IMPACTS OF THE PROJECT	38
7.2 IMPACT ANALYSIS	38
7.3 IMPACT EVALUATION	41
7.3.1 NEGATIVE IMPACTS ASSOCIATED WITH THE PROJECT:	41
7.3.2 NEGATIVE SOCIO-ECONOMIC IMPACTS ASSOCIATED WITH THE PROJECT:.....	50
7.3.3 POSITIVE IMPACTS ASSOCIATED WITH THE PROJECT	54
7.3.4 IMPACTS ASSOCIATED WITH DECOMMISSIONING PHASE	58
7.3.5 OVERALL SITE SENSITIVITY	58
7.4 SUMMARY & ANALYSIS OF IMPACTS.....	58
CHAPTER EIGHT: ENVIRONMENT MANAGEMENT AND MONITORING PLAN	59
CHAPTER NINE: CONCLUSIONS AND RECOMMENDATIONS.....	59
REFERENCES.....	60

LIST OF IMAGES

Image 1: a & b shows site images	14
Image 2: shows a tyre shop (south)	15
Image 3: shows boundary fence for a homestead (north)	16
Image 4: shows a clinic & police station (east)	16
Image 5: shows an open area (west)	17
Image 6: shows soil type on site	29
Image 7: shows vegetation on site	31
Image 8: shows insects identified on site	32
Image 9: a & b shows stakeholder meeting at Devils Claw Buying Point Okatumba Gate	36
Image 10: shows public notice at the site.....	37

LIST OF TABLES

Table 1: Coordinates for the site 12
Table 2: shows other alternatives..... 20
Table 3: Relevant legislations related to the project..... 21
Table 4: General Climate Data 26
Table 5: Summary of General Fauna Data 32
Table 6: Details of public notification for the EIA study 35
Table 7: Ranking Matrix 38
Table 8: Ranking matrix for Environmental Significance 39
Table 9: Matrix to show environmental significance..... 40

LIST OF FIGURES

Figure 1: Locality Map..... 13
Figure 2: Hydrogeology Map..... 28
Figure 3: Vegetation Map 30

LIST OF APPENDICES

Appendix A –Public Participation Process (Adverts, Background Information Document (BID), Register, Meeting Minutes & Questionnaires

Appendix B- Consent letter from the Traditional Authority

Appendix C - Environmental Management Plan (EMP)

Appendix D - CV’s of Consultants

ACRONYM

ACRONYM	MEANING
BID	Background Information Document
EIA	Environmental Impact Assessment
EAP	Environmental Assessment Practitioner
EMP	Environmental Management Plan
I&APs	Interested and Affected Parties
PPP	Public Participation Process
ToR	Terms of Reference

EXECUTIVE SUMMARY

Proponent

The Proponent, Joel and Ngore Trading Investment cc proposes to construct and operate a service station at Okatumba Gate-Eiseb area in Omaheke Region. Joel and Ngore Trading Investment cc is a registered Namibian company.

Environmental Assessment Consultants

The Environmental Impact Assessment (EIA) for the proposed construction and operation of Joel and Ngore Trading Investment was conducted by Eco-Wise Environmental Consulting cc. The study was carried out according to the requirements of the Environmental Management Act (Act No.7 of 2007) and its regulations of 2012.

Environmental Impact Assessment

This is a process of evaluating the likely environmental impacts of a proposed project or development, taking into account inter-related socio-economic, cultural and human-health impacts, both beneficial and adverse. The project is a listed activity which cannot be undertaken without an EIA. The EIA regulations of 2012 under Hazardous Substance Treatment, Handling and Storage 9.5 states that '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' require an EIA.

The Environmental Consultants undertook this Environmental Impact Assessment (EIA) study, to predict the impacts of the proposed activity on the environment and to propose mitigation measures. The EIA covered the following aspects; project description, baseline studies, public participation process, environmental, socio-economic impact assessment and environmental management. All identified impacts were addressed and mitigation measures were brought forward.

Objectives of the EIA

Generally, the main objective of the study was, to identify environmental and socio-economic impacts associated with the project and to propose mitigation measures.

Specific objectives included:

- To determine the potential environmental impacts derived from the proposed project.
- To establish baseline environmental conditions so that relevant impacts could be projected and sufficient mitigation measures could be designed

- To consult with key, interested and affected stakeholders so that their concerns are considered in the formulation of the EIA report and implementation of the Environmental Management Plan
- Comply with Namibia's Environmental Impact Assessment Regulations (2012), Environmental Management Act (No. 7 of 2007) and other relevant laws and regulations.
- To propose alternative measures where it is noticed that adverse effects may occur and to set up an Environmental Management Plan that will govern all activities of the project for the better protection of the environment.

Environmental Impact Assessment Methodology

The following methodologies were used during the Environmental Impact Assessment study; desktop studies, observations through site visit, public meeting, advertisement, secondary data collection and distribution of questionnaires.

Draft Scoping Report

The draft scoping report was made available to the public for commenting. The draft report included all comments raised during the public meeting. All impacts identified through the site visit, professional expertise and comments from the public were incorporated in the report. An Impact Assessment matrix was used to establish the environmental risk of the overall project.

The main findings obtained from the assessment showed that the project will be associated with positive impacts such as accessibility of fuel, community development, employment creation and generation of revenue for the government through tax. However, the project might also have negative impacts such as, generation of dust, noise, generation of waste, health and safety hazards, surface and ground water contamination, fires and explosions.

In order to address the impacts associated with the project, different mitigation measures were brought forward so as to reduce to the minimum their effects on the environment. The mitigation measures include good designing of the service station, good site management system and regular trainings for employees just to mention a few. In a bid to ensure that the proposed mitigation measures will be implemented, an Environmental Management Plan was developed to guide all activities of the project during all its phases.

Final Scoping Report and EMP

The final report was submitted to the Proponent, Ministry of Mines and Energy and Ministry of Environment Forestry and Tourism: DEA for review.

CHAPTER ONE: BACKGROUND

1.1 INTRODUCTION

Joel and Ngore Trading Investment cc proposes to construct and operate a service station at Okatumba Gate-Eiseb area in Omaheke Region. Eco-Wise Environmental Consulting being an independent consultant was therefore hired to conduct an EIA for the proposed activity. Eco-Wise Environmental Consulting cc conducted a site visit on 21/04/2022. The project was also advertised in the two local newspapers namely The Namibian and New Era on the following dates 14 April 2022 and 21 April 2022.

During the EIA process, the consultant was mainly guided by the Environmental Management Act (No. 7 of 2007) and Environmental Impact Assessment Regulations (2012). The Environmental Impact Assessment Regulations (2012) states all the activities, which require an Environmental Impact Assessment and among the listed activities is annexure 9, Hazardous Substance Treatment, Handling and Storage where this project is classified under. Annexure 9.5 states that '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' require an EIA. The competent authority will be, Ministry of Environment Forestry and Tourism.

1.2 NEED FOR THE PROJECT

1.2.1 Accessibility of fuel

The establishment of the service station is necessary as it will ensure supply of fuel to local people and motorists. The locals used to get fuel at Pos 3 thus before it was closed or at Gam. Both Pos 3 and Gam are approximately 100 km from the proposed site. Currently the locals highlighted that fuel is a problem in the area as they have to rely on other local business people who buy in Gobabis and stock in containers. Besides that, the only reliable place they can get fuel is in Gobabis which is approximately 220km from the site.

1.2.2 Economic development

The project has the potential to benefit the country and surrounding communities both directly and indirectly. Direct economic benefits will be derived from salaries, taxes and profits. Indirect economic benefits will be derived from the procurement of goods and services and the increased spending power of employees through the creation of new jobs at the service station.

1.2.3 Employment creation

Employment will be created during the life span of the project. During the construction phase, contractors, sub-contractors and service providers are going to be employed. Moreover, during the operation phase people are also going to be employed and locals will be the first priority.

1.2.4 Community development

Generally, the area around Okatumba is remote hence this project will boost the development of the area. The business area near the site has small grocery shops and bars. The size of the business area is small in size hence the service station will expand the development in the area.

1.3. HARAMBEE PLAN FOR PROSPERITY

The Harambee Plan for Prosperity [HPP] has been developed to complement the National Development Plans and Vision 2030. One of the aims of the HPP is to promote economic advancement. The HPP states that the most effective way to address poverty is through wealth creation, which in turn is done by growing the economy in a sustainable inclusive manner and through the creation of decent employment opportunities. It is vital to point out that, by promoting the project, we will be promoting the aims for the Harambee Plan for Prosperity.

The HPP further promotes economic empowerment. The HPP states that it will introduce and operationalize economic empowerment legislation, to achieve greater equity in society in general and in particular greater equity in the ownership of productive assets. A spirit of entrepreneurship is encouraged in the plan and the plan assumes that through entrepreneurship there will be increased enterprise development. The proposed activity is being initiated by Namibians and promoting the project will imply promoting the spirit of entrepreneurship and economic empowerment encouraged in the HPP.

1.4 SCOPE OF THE PROJECT

The scope of the study includes carrying out environmental investigations in line with current provisions on environmental legislations bidding to Namibia. The Environmental Management Act (No 7 of 2007) and its regulations of 2012 were used as guidelines for the EIA study. The report is aimed at identifying and evaluating environmental and socio-economic impacts associated with the project.

1.5 TERMS OF REFERENCE

The approach to undertake the work was guided by the following ToR, which were provided by the Proponent;

- Conduct environmental scoping.
- Determine all the possible environmental and socio-economic impacts of the project.
- Conduct a public participation process to gather the views of Interested and Affected Parties.
- Design an Environmental Management Plan with sound and relevant mitigation measures.
- Compile and submit the EIA and EMP reports to Ministry of Environment Forestry and Tourism and Ministry of Mines and Energy.

- Coordinate the whole application process of the Environmental Clearance Certificate until the issuance of the certificate.

1.6 OBJECTIVES

The objectives of the study were derived from the ToR and they are as follows:

1.6.1 General objective

- To determine the potential environmental and socio-economic impacts derived from the proposed project

1.6.2 Specific Objectives

- To determine the potential environmental impacts derived from the proposed project.
- To establish baseline environmental conditions so that relevant impacts could be projected and sufficient mitigation measures could be designed
- To consult with key, interested and affected stakeholders so that their concerns are considered in the formulation of the EIA report and implementation of the Environmental Management Plan
- Comply with Namibia's Environmental Impact Assessment Regulations (2012), Environmental Management Act (No. 7 of 2007) and other relevant laws and regulations.
- To propose alternative measures where it is noticed that adverse effects may occur and to set up an Environmental Management Plan that will govern all activities of the project for the better protection of the environment.

1.7 METHODOLOGY USED FOR THE STUDY

- Desktop Study**- This involved review of documents and relevant legislatives. Documents containing geological, vegetation, climatic, demographic and hydrological data for Namibia were also reviewed.
- Site Visits** –The EIA team visited the site on 21/04/2022. The field visit was meant for physical inspection of the site in order to gather information on the state of the environment.
- Public Participation**-The project was advertised on the following dates 14 April 2022 and 21 April 2022 in the Namibian and New Era. The adverts were placed to notify the public and to invite comments for the proposed project. The study also sought public opinion/views through a public meeting and distribution of questionnaires. The meeting was held on 21/04 2022 at Devils Claw Buying Point Okatumba Gate in Okatumba village at 10:30am
- Mapping**-More data was obtained from the maps which were produced by the consultant GIS personal. The maps included vegetation, hydrogeology and locality.
- Reporting**- All data gathered was used to compile an EIA and EMP report which was submitted to Ministry of Environment Forestry and Tourism and Ministry of Mines and Energy.

1.8 LAND OWNERSHIP

The land is under communal land, see **Appendix B** consent letter from the traditional authority. The land granted to the Proponent measures 1.9ha.

1.9 OVERVIEW OF EIA REPORT

The remaining part of this report has been designated for the following aspects;

- Project Description.
- Legal and Policy Analysis.
- Environmental Baseline.
- Public Consultation.
- Impact Identification and Analysis.
- Environment Management, Monitoring and Evaluation Plan.
- Conclusions and Recommendations

CHAPTER TWO: PROJECT DESCRIPTION

The following issues will be clarified under project description;

- Project location.
- Project phase and scope of works.
- Project cost.

2.1 PROJECT LOCATION

Joel and Ngore Trading Investment cc proposes to construct and operate the service station at Okatumba Gate-Eiseb area in Omaheke Region. The area of study is also located within the Omuramba UA Mbinda Conservancy. **See Location map**, table 1 for coordinates and image 1 for site location.

Table 1: Coordinates for the site

SITE	AREA (HECTARES)	COORDINATES					
		Corner 1	Corner 2	Corner 3	Corner 4	Corner 5	Corner 6
Joel and Ngore Trading Investment Service Station	1.9	21° .38695S 20° .17632E	21° .38536S 20° .17665° E	21° .38554S 20° .17506E	21° .38534° S 20° .17508E	21° .38643S 20° .17582E	21° .38682S 20° .17576E

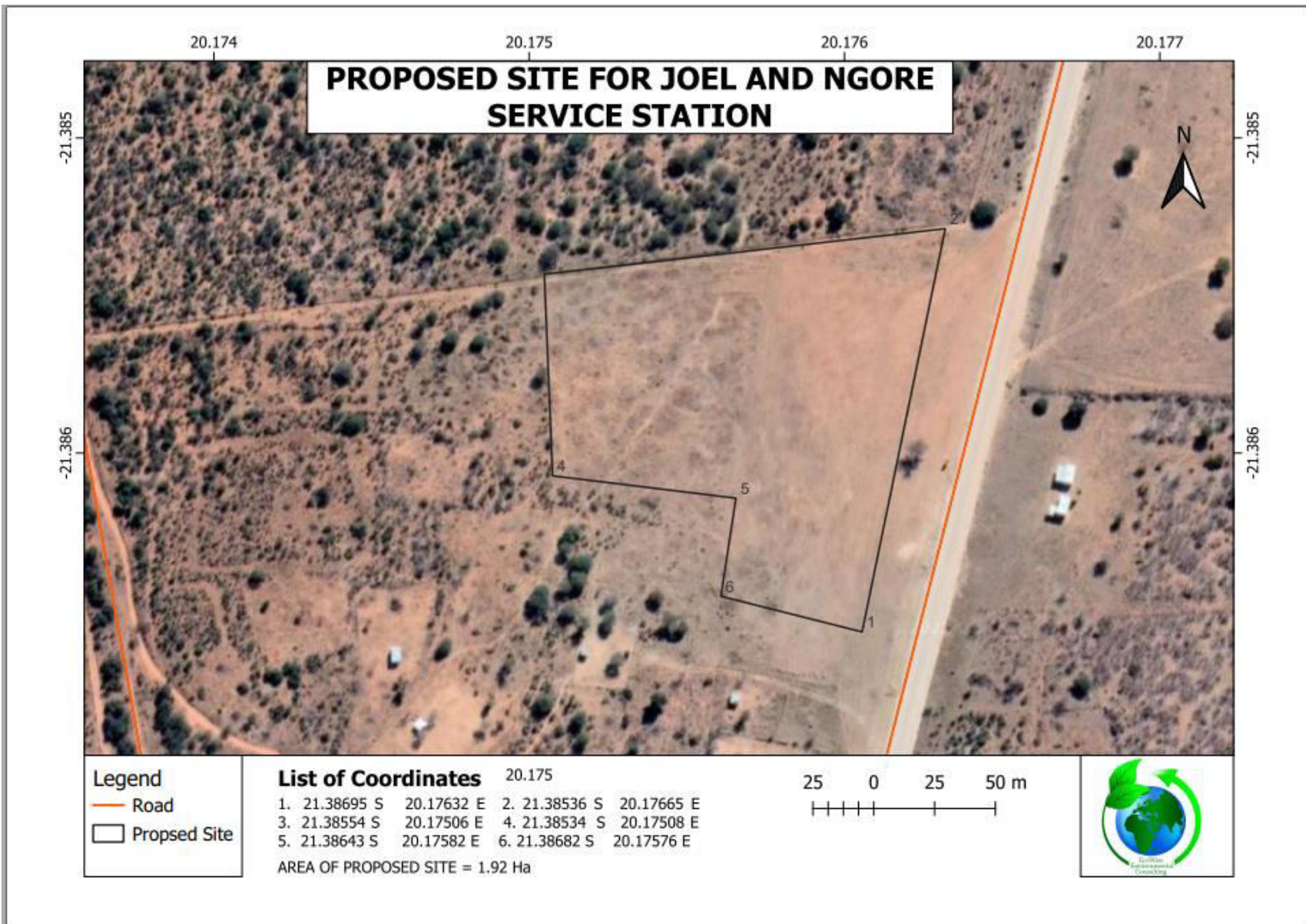


Figure 1: Locality Map



(a)



(b)

Image 1: a & b shows site images

2.2 SURROUNDING LAND USES

The proposed site is an open area which was designated for business. To the south there is a tyre shop, southwest homestead, west an open area and east clinic and police station which is separated by a road from the site. The distances are as follows;

- From the site to the homestead – approximately 164 meters
- From the site to the tyre shop- approximately 142 meters
- From the site to the clinic and police- approximately 62 meters



Image 2: shows a tyre shop (south)



Image 3: shows boundary fence for a homestead (north)



Image 4: shows a clinic & police station (east)



Image 5: shows an open area (west)

2.3 PROJECT PHASE AND SCOPE OF WORKS

The proposed project will undergo the following phases, construction, operation and perhaps decommissioning. The proposed service station will consist of two tanks and each tank will have a capacity of 14000 liters/ 14m³. The installations will be 1 underground tank for octane unleaded petrol (ULP) and 1 above ground tank for diesel (500ppm). The Proponent is proposing to install one pump which will dispense both petrol and diesel.

2.3.1 CONSTRUCTION PHASE

Land preparation- The site was already cleared but small thorn trees and grass are starting to grow. Therefore, there shall be a need to clear the land again. Land preparation will involve clearing of sparsely small thorn trees and grass found in the area. During this work small organic waste will be produced in conjunction with dust. Land clearing will have marginal negative impacts because the land was already cleared.

Installation of tanks- 2 tanks with a capacity of 14000liters per tank will be installed. Specifically, 1x ULP (underground) and 1x500ppm (aboveground).

Construction of structures- cafeteria, a tuck shop, parking area and toilets.

Transportation-During construction equipment such as storage tanks and building material will be transported to the site. During this activity impacts such as noise and dust can be experienced.

Installation of fire equipment-fuel related projects are prone to fires, therefore adequate firefighting equipment (extinguishers, bucket of sand) shall be installed on site.

Portable water supply infrastructure- water will be obtained locally from Okatumba borehole. A water storage tank will also be installed at the site. The water will be used for human consumption and also in cases such as fire outbreak.

Solar connection- solar will be used at the site.

Other fittings (builders' works) - These will include reinforced concrete beams, site lighting and other necessary fittings.

Testing and commissioning- at this stage the operations will be tested and if no faults are found the service station will be subsequently opened.

2.3.2 OPERATION PHASE

Fuel distribution- Fuel will be distributed by fuel tanker trucks to the service station.

Offloading- Fuel will be off-loaded into underground petroleum and the above ground diesel tanks. During this stage, precaution must be taken so as to avoid spillages.

Dispensing of fuel into vehicles – fuel will be sold to customers. Precaution measures should be taken on safety issues at site like no smoking, no use of cell phones, switching off the vehicle etc. Spillages, fire and explosion are some of the hazards which are associated with this stage.

Yard cleaning- during the operation phase, there will be a need to constantly clean the yard. The site should always be clean and free from litter.

Corrective Maintenance (Replacing of non -functioning equipment)- at this stage non-functioning equipment will be repaired.

Fire Emergence Preparedness- During the operation phase, fire emergency preparedness will be practiced to ensure total safety to employees on site and neighboring stakeholders. The preparedness will include the following: fire hose reel, fire extinguishers and SHE trainings and awareness campaign

2.3.3 DECOMMISSIONING PHASE

Removal of site infrastructure and equipment. There shall be, removal of the above and underground fuel storage tanks after emptying the fuel therein, appropriate treatment of any contaminated soil as necessary, backfilling of the excavations with suitable material such as pebbles or construction dug out soil, proper disposal of decommissioned facilities and other wastes using a licensed waste collector

- Proper disposal of dismantled material and protection of public health and safety.
- Landscaping at the project site – planting of indigenous grass and trees. The major emphasis here will be restoration of the affected environment.

2.4 PROJECT COST

The total funding required to set up the project is not yet established.

CHAPTER THREE: ANALYSIS OF ALTERNATIVES

The following chapter will focus on the alternatives to the project. Alternatives to the project are different options, other possibilities or other course of action, which can be adopted. The alternatives to the proposed project are:

Option 1 – Alternative locations

Option 2 – No project alternative

Option 3 – Continue with the project

3.1 ALTERNATIVE LOCATIONS

Option 1, which is alternative locations, implies that a different location to carry out the development must be acquired somewhere else other than the chosen site. Nevertheless, the following reasons justify the use of the proposed site for the development:

- Availability of land- There is adequate space for the proposed project.
- Accessibility- The site is adjacent to the district road D5913 which will be easy for customers to access the service station.
- Convenient – the proposed site is located between the two small service stations which used to provide the community with fuel. Both Pos 3 and Gam are approximately 100km from the site.

3.2 THE “NO PROJECT” ALTERNATIVE

Option 2, which is “no project alternative”, implies that the project must not be undertaken on the proposed land rather the land should remain undisturbed. However, the “no project alternative” will be less favorable from the socio-economic perspective due to the following factors:

- **Fuel accessibility**- currently to obtain fuel is a problem. The most reliable area to receive fuel is in Gobabis which is approximately 220km from the site. The community used to

travel to Pos 3 to obtain fuel but currently it is closed and at Gam sometimes fuel is not available. Therefore the 'no project alternative' will not help the current situation.

- **Local Empowerment**- the owners of the company are Namibians hence promoting local empowerment.
- **Community development**- the project has the potential to improve the community as the area is still remote.
- **Employment creation**- contractors and subcontractors will be employed during construction phase and fuel attendants will also be employed during the operation phase.

3.3 OTHER ALTERNATIVES

Table 2 below indicate other alternatives.

Table 2: shows other alternatives

<i>Energy & Sanitation</i>	<i>Proposed source</i>	<i>Alternative source</i>
Water	Local borehole at Okatumba	Drilling a borehole at the site.
Electricity (for lighting)	Solar	Electricity
<i>Waste Management</i>		
Sewage	Flash toilet (using septic tanks)	-Ventilated improved pit (VIP) latrine.

3.4 ALTERNATIVES ASSESSMENT OUTCOMES

Option 3, which promotes the continuation of the project, has been reckoned as the preferred alternative. Option 3, was viewed as beneficial given that it allows locals to easily access fuel. Furthermore, water for the proposed activity will be sourced from an already existing borehole in Okatumba. In addition, solar will be the preferred source for lighting during the operation phase. Flash toilets shall be used at the site and the wastewater will be disposed through a septic tank.

CHAPTER FOUR: RELEVANT LEGISLATION

This chapter reviews various applicable legislations, which govern the project. The objective is to ensure that the proposed project comply with Namibia's relevant laws, policies and regulations. Table 4 below indicates laws and policies, which relates to the project.

Table 3: Relevant legislations related to the project

Aspect	Legislation	Relevant Provisions	Relevance to the Project
The Constitution	Namibian Constitution First Amendment Act 34 of 1998	<ul style="list-style-type: none"> - According to article 91(c) it provides for duty to guard against “the degradation and destruction of ecosystems and failure to protect the beauty and character of Namibia” - Article 95 (l) deals with the “maintenance of ecosystems, essential ecological processes and biological diversity” and sustainable use of the country’s natural resources. 	<ul style="list-style-type: none"> - The study area is located within a conservancy - During the lifespan of the project, possible impacts which might affect the environment might happen e.g. spillages, fires etc hence the need for the Proponent to guard against hazards or impacts which might affect the environment.
Environmental	Environmental Management Act 7 of 2007	<ul style="list-style-type: none"> - States that, projects with significant environmental impacts are subject to an environmental assessment process (Section 27). - Requires for adequate public participation during the environmental assessment process for Interested and Affected Parties to voice their opinions on a project (Section 2). 	<ul style="list-style-type: none"> - The EMA should guide the management of this project. - Adverts should be published in two local newspapers twice. - The public and relevant authorities should be consulted during the process of public participation as per the requirement of the act - The Environmental Management Plan which will guide on the management of the environment should be drafted as per the requirement of the act

	EIA Regulations (2012)	- Lists all activities, which cannot be undertaken without an EIA.	<ul style="list-style-type: none"> - This project is listed under Hazardous Substance Treatment, Handling and Storage activities. - Annexure 9.5 states that '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' require an EIA.
	Petroleum Products Regulations (2000) (Guidelines For Operators of Retail Outlets)	-The guidelines provide important information on storage tanks and information to be given yearly, fire precautions and petroleum product spills. It also stipulates penalties for contravention of or failure to comply with the provisions of the Petroleum Products and Energy Act or regulations.	- Incidences such as spills and fire might happen on site therefore the Proponent must be familiar with the guidelines in case such incidences happen.
	Nature Conservation Ordinance No. 4 of 1975	Chapter 6 provides for legislation regarding the protection of indigenous plants	- Indigenous and protected plants should be protected within the areas of works.
	Environmental Assessment Policy of Namibia (1995)	The Policy seeks to ensure that the environmental consequences of development projects and policies are considered, understood and incorporated into the planning process, and that the term "environment" is broadly interpreted to	- The EIA shall consider this term of "environment".

		include biophysical, social, economic, cultural, historical and political components.	
	Petroleum Products & Energy Act	The Act emphasis on carrying out environmental impact assessment studies. Moreover, the act defines the responsibility of operators in the field of petroleum exploration and exploitation for health, safety and welfare of persons employed or performing work, and for protection of other persons, property, the environment and natural resources, in or in respect of any area where petroleum activities are carried out. Part XII contains provisions relating to emergency preparedness. Each operator shall prepare an emergency preparedness plan.	<ul style="list-style-type: none"> - An EIA study shall be carried out capturing possible impacts associated with the proposed activity. - The Proponent shall prepare an emergency preparedness plan.
Soil	Soil Conservation Act 6 of 1969	This act covers the prevention and combating of soil erosion; the conservation, improvement and manner of use of the soil and vegetation; and the protection of water sources	<ul style="list-style-type: none"> - During construction phase activities which disturb the soil will take place e.g. excavations - Soil might also be affected during operation or perhaps during decommissioning in an event of any spillages

Water	Water Act 54 of 1956	<ul style="list-style-type: none"> - Prohibits the pollution of underground and surface water bodies. 	<ul style="list-style-type: none"> - Pollution through spillages might happen during the operation phase hence the Proponent should take all necessary measures which prevent such incidents.
Health and Safety	Labour Act (No 11 of 2007)	<ul style="list-style-type: none"> - This act emphasizes and regulates basic terms and conditions of employment, it guarantees prospective health, safety and welfare of employees and protects employees from unfair labour practices. 	<ul style="list-style-type: none"> - The Proponent will be obliged to create a safe working environment for the employees.
	Public Health and Environmental Act, 2015	<ul style="list-style-type: none"> - The act mainly emphasis on proper management of the environment, to prevent negative health impacts. - The act promotes proper waste management. 	<ul style="list-style-type: none"> - Proper waste management should be promoted to prevent nuisance, which can consequently affect public health. - Recycling, reuse and reduce must be practised at all times thus if any waste is generated.
	Traditional Authority Act, Act No.25 of 2000	<ul style="list-style-type: none"> - The Act provides for the establishment of Traditional Authorities, the designation, election and recognition of traditional leaders including their powers, duties, functions and authorities. 	<ul style="list-style-type: none"> - The study area is under the jurisdiction of the traditional authority
	Communal Land Reform Act, Act 5 of 2002	<ul style="list-style-type: none"> - The Act provides for the allocation of land rights in the communal areas of Namibia including the establishment, roles and functions of Communal Land Boards. It also provides for the powers of 	<ul style="list-style-type: none"> - The study area falls under communal land

		the Chiefs and Traditional Authorities in all matters related to communal land.	
	Heritage Act	<ul style="list-style-type: none"> - The Heritage Act of 2004 makes provision for the developer to identify and assess any archaeological and historical sites of significance. The existence of any such sites should be reported to the Monuments Council as soon as possible. The Council may serve notice that prohibits any activities as prescribed within a specified distance of an identified heritage/archaeology site. 	<ul style="list-style-type: none"> - Even though nothing of archaeological significance is known to be on the site, in an event that the Proponent comes across anything of archaeological significance, they should report immediately to the Monuments Council

N.B: The Proponent shall be required to comply with all the legislations bidding to this project. Where there is need to engage private consultants to facilitate compliance, the Proponent is encouraged to consult qualified and certified personnel. The Environmental consultant is supposed to conduct legal compliance audits and produce bi-annual reports, which will be required during the renewal of the environmental clearance certificate.

CHAPTER FIVE: DESCRIPTION OF THE AFFECTED ENVIRONMENT

This chapter describes the environmental setting of the project, which includes the biophysical environment and the socio-economic environment. The baseline information will assist in the monitoring of the environmental impacts once the project is in the construction, operational and monitoring stage.

5.1 BIO-PHYSICAL ENVIRONMENT

5.1.1 Climate

The area under study receives an average annual rainfall of 350-400 mm per annum. Maximum temperatures can reach 32°C-34°C during the summer months. Average minimum temperatures can reach 2-4°C. Table 5 below briefly describe the general climatic conditions experienced within the area of study, as deduced from the Atlas of Namibia, by Mendelsohn *et al* 2003.

Table 4: General Climate Data

Average Annual rainfall:	Rainfall in the area is averaged to be 350-400 mm per year
Variation in rainfall:	Variation in annual rainfall is averaged to be 40-50 % per year
Average evaporation:	Evaporation in the area is averaged to be between 1960-2100mm per year.
Precipitation:	January & February receives high rainfall, with January being the wettest. June and July being the driest month
Water Deficit:	Water deficit in the area is averaged to be between 1700-1900mm per year.
Temperatures	Annual temperatures are around 18-20 °C per year Average maximum temperature 32°C-34°C Hottest month December Average minimum temperatures 2-4°C Coldest month July
Wind direction	Winds blow from NE to SW
Humidity	Most humid month is March with 70%-80% and September being the least with 10%-20%

(Source: Atlas of Namibia, 2003)

5.1.2 Topography and Geology

The topography of the region is generally flat. The study area is also flat with an elevation of 1228m. The general geology of the study region comprises of the sands of the Kalahari group. Most of the few rock formations that are exposed or that lie just below the surface of sands were formed about 550 to 600 million years ago and consist of sandstones, marble, dolomite and limestone that are part of the Damara super group (Mendelsohn 2002). No surface rocks were identified on site.

5.1.3 Hydrogeology

The Omaheke region has the pans namely the Nyae Nyae, Dobe and Gautscha pans. In addition, there are no perennial rivers in the region. Dry Omuramba drainage lines may carry water for very short periods after heavy rain. Groundwater is generally available throughout the landscape, and the quality of water is also generally good. Higher yielding aquifer is in the Eiseb area of the Omaheke Region.

Locals at Okatumba get their water for drinking from boreholes. The nearest river (Epukiro River) is approximately 700metres and the nearest representative borehole (39906) is approximately 58km from the site.

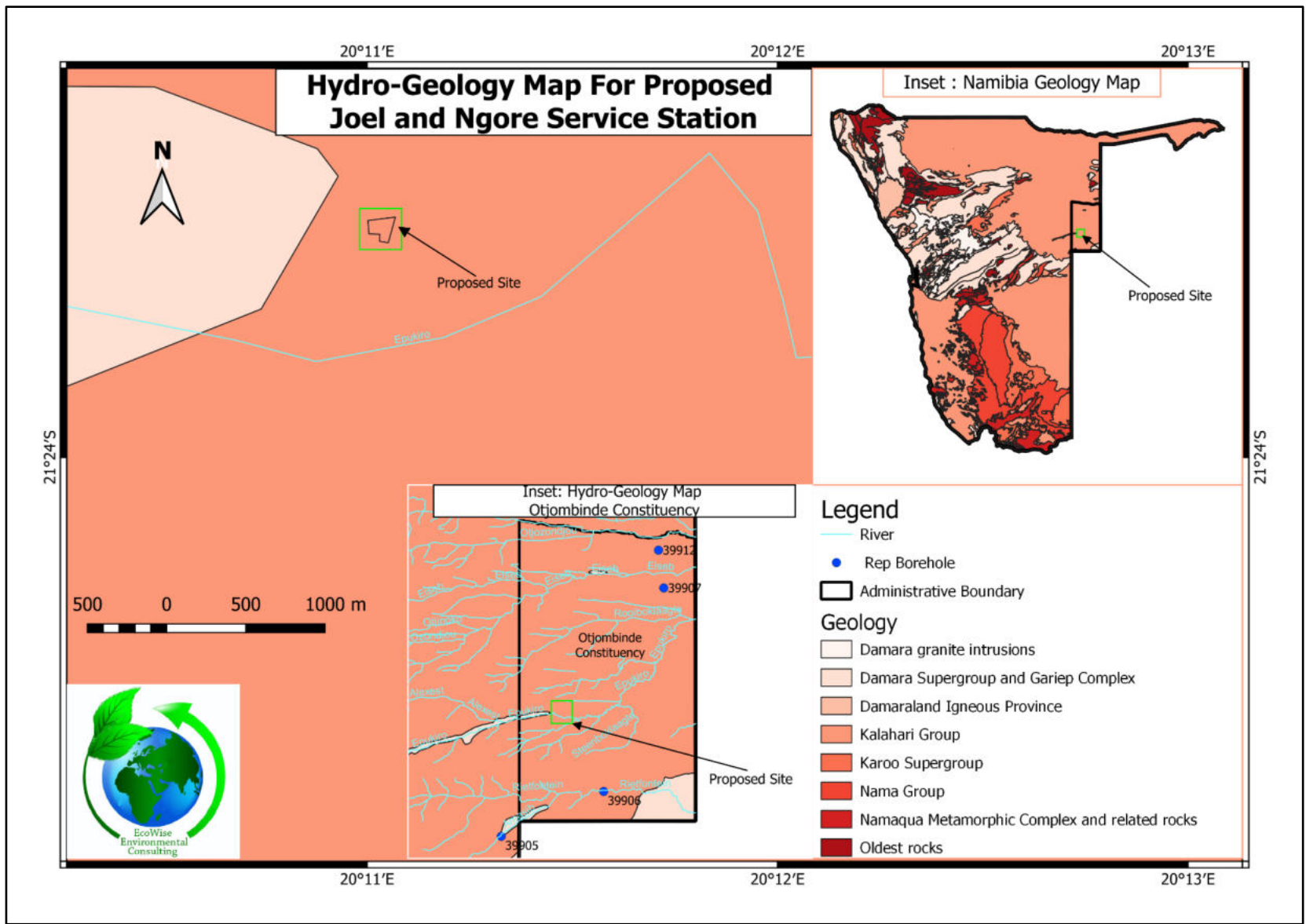


Figure 2: Hydrogeology Map

5.1.4 Soils

The study area is dominated by light brownish sandy soils. Sandy soils allows water to drain through rapidly, leaving very little moisture at depth to which most plants can reach. In addition, sandy soils allow high infiltration rate which results in high saturation rate and eventually runoff, resulting in washing away of the little available nutrients in the soil.



Image 6: shows soil type on site

5.1.5 Vegetation of the study area

The project area is located within the Acacia tree and shrub savanna specifically under the central Kalahari (Mendelsohn *et al*, 2003). The vegetation structure is classified as shrubland woodland mosaic. Generally, variation in green vegetation biomass is medium (10-15%). The alien species found in the region is the acacia reficiens. Alien or invasive species are seen as problematic species in the area due to their abundance and their likelihood of causing bush encroachment. However, the study area is already disturbed given that, vegetation was cleared. No red listed or protected species were identified or recorded in the study area. Images below show plants which are regrowing on the site.

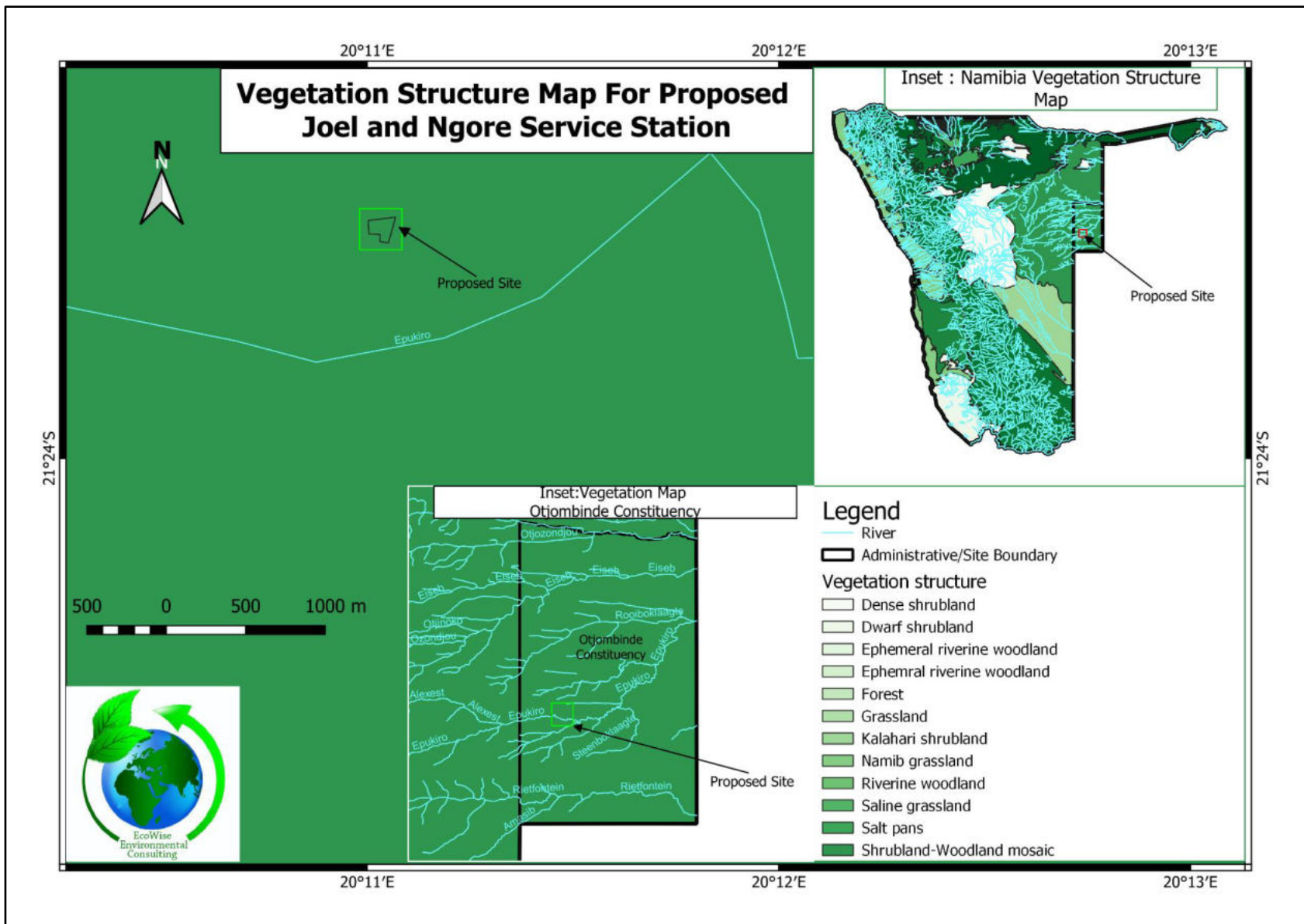


Figure 3: Vegetation Map

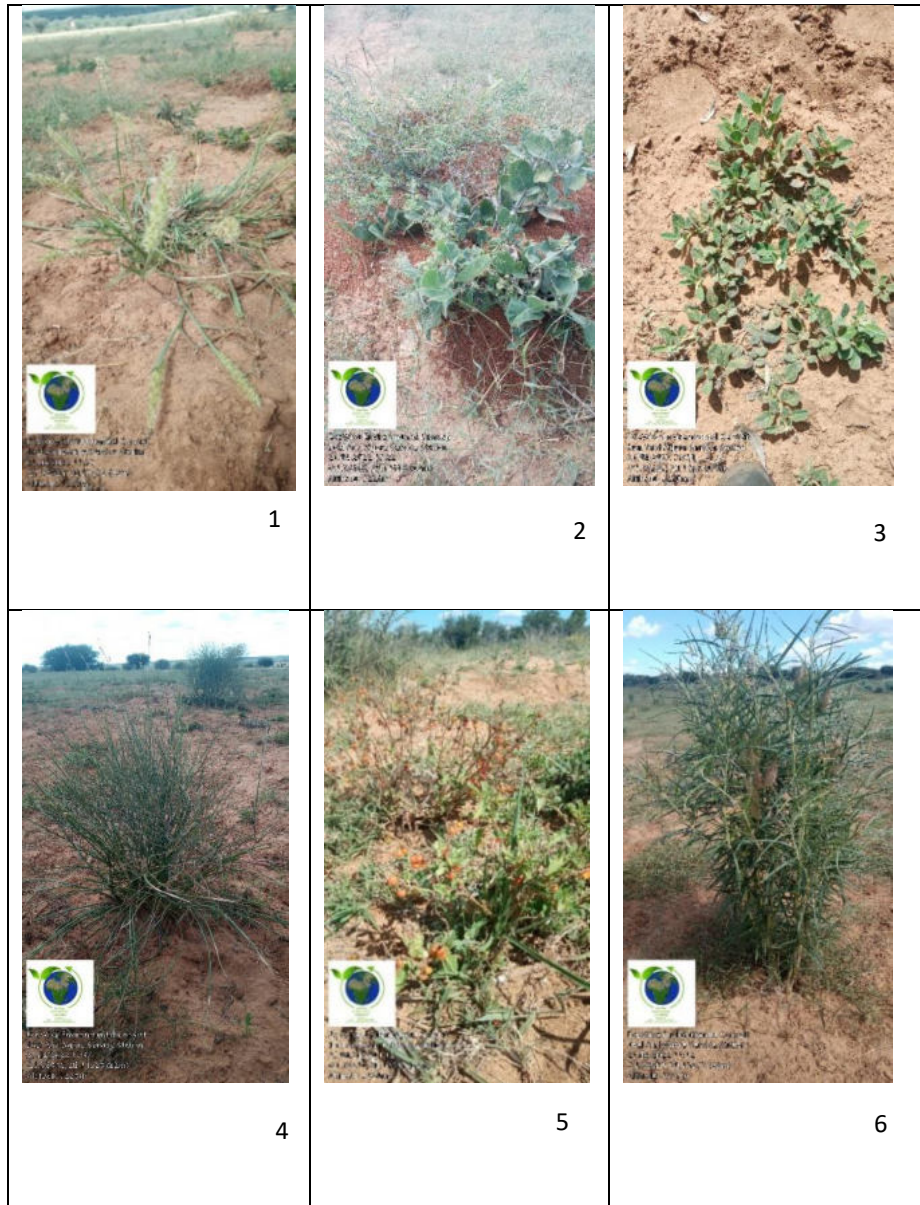


Image 7: shows vegetation on site

1-*Cenchrus longispinus* (Hack) Fernald Dune sandbur

2-*Cucurbita foetidissima* Kunth

3-*Evolvulus alsinoides* (L.) L.

4-*Scirpoides holoschoenus* (L) Sojak

5-*Solanum villosum* Mill

6- *Asclepias brachystephana* Engelm.ex Torr

5.1.6 Fauna

Animals like cattle and goats are mainly domesticated by the locals. The population of cattle within the region is high. It is vital to note that, the area of study is already disturbed and surrounded by buildings therefore limiting the chances of having any wildlife near the area. During the site visit animals which were identified on site were cattle and also insects such as ants. Table 5 below shows fauna in the region.

Table 5: Summary of General Fauna Data

Type of fauna	Number of different species/genera	Total around Namibia
Mammal Diversity	61-75 Species	217
Bird Diversity	81-110Species	658
Reptile Diversity	51-60 Species	258
Frog Diversity	4-7 Species	50
Termite Diversity	7-9 Genera	19
Scorpion Diversity	6-9 Species	21

Source: Atlas of Namibia (2003)

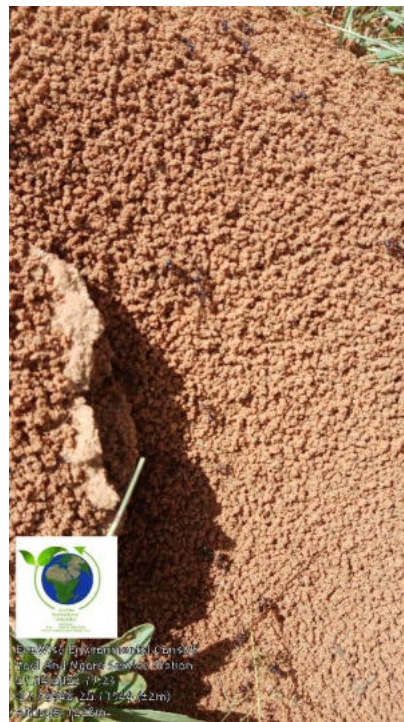


Image 8: shows insects identified on site

5.2 SOCIO-ECONOMIC ENVIRONMENT

The early inhabitants of the Omaheke Region were the San People. The San people occupied the vast eastern land of Namibia and they depended on hunting and gathering. The Odendaal Commission recommended the consolidation of the reserves into so-called homelands. It was the Commission recommendation that gave rise to what was called the Bushman land and Herero land as home for San and Herero people respectively. Herero land was further divided into the magisterial districts of Herero land West and Herero land east which included the Aminuis block south of Gobabis. In 1970 Bushman land also became a magisterial district and was then promulgated as a homeland in 1976 for the “exclusive use and occupation of the Bushman Nation”. Tsumkwe was established as an administrative centre in 1959, and the first school in Bushman land was opened in Tsumkwe in 1962.

The first immigration was witnessed in 1923 and 1924 when the native reserves were formed. The second movement was a resettlement programme by South Africa Defence Force, which relocated about 4000 San people from southern Angola and Kavango to military bases in western Bushman land. The third movement was for Herero people from Botswana and 3000 people in 423 families settled between 1993 and 1996. The fourth movement was of variety of people, largely from Kavango and Herero land who have moved into Bushman land on their own accord.

Tourism is one of the fastest growing economic sectors in the region, with development of safaris and lodges becoming increasingly popular. The Transkalahari End Resort and East Gate Rest Camp are some of the prominent guest lodges. Its border with Botswana in the east, lends itself to vast open savannas, which in itself leads to ideal game viewing opportunities. This has resulted in many Safaris’ tour and Game Farms in the area, contributing to Namibia's ever growing tourism industry. The region is also the hunting capital of the country, as every year between June and August hunters come to the region to collect their trophy kills. Omaheke region has around 800 farms and many of the farms are conservancy farms.

5.2.1 Population

The area of study is located in the Omaheke region and according to NSA (2011) the population of the region was 68039 in 2001 and in 2011 it was 71233. The annual population growth rate grew from 0.5 (2001) to 2.5 (2011). The majority (70%) of the people live in rural areas. There were an estimated 8300 households in 2001 and almost half the population was less than 15 years. The population density is extremely variable and about 89% of the region has no inhabitants.

5.2.2 Education Profile

According to (EMIS, 2012) there are 30 Primary schools, 4 Combined schools and 8 Secondary schools, in total there are 42 schools which is too low as compared to other regions. Of the 42 schools, 35 are state owned and 7 privately owned. 86 out of 706 teachers in Omaheke Region

are without training. The total number of learners in Omaheke Region was 18 365 in 2012 (EMIS, 2012). In conclusion, the number of schools, learners and teachers is too low comparing with other regions in Namibia. If the project is to be implemented, the Proponent should try to help the community as a social responsibility of the company.

5.2.3 Employment Opportunities

According to NSA (2011), 61 % of the economically active population aged 15 years and above is employed and 40% unemployed in Omaheke region. Unemployment rate increased in the region because in 2001 it was 24%. Given the increase in unemployment rate, it is vital to note that more development is needed to create more jobs for the people. Many people depend on wages and salaries and farming which contribute 49% and 22% respectively (NSA 2011).

CHAPTER SIX: PUBLIC PARTICIPATION

Public participation process is a fundamental principal of the EIA process and it involves engaging members of the public to express their views about a certain project. Public involvement is a valuable source of information on key impacts, potential mitigation measures and the identification and selection of alternatives. Section 2 of the Environmental Management Act (2007), states that public participation in decision-making affecting the environment shall be promoted and fair and equitable access to natural resources shall be promoted. The Environmental Management Act (No 7 of 2007), empowers the local community to participate in projects conducted within their jurisdiction.

During the public participation of the proposed construction and operation of Joel and Ngore Trading Investment service station, the following principals were used: inclusivity, transparency and relevance.

6.1 OBJECTIVES OF THE STAKEHOLDER CONSULTATION PROCESS

The objectives of the public consultation are;

- To inform I&AP about the proposed activity and to give them the opportunity to express their views, concerns or opinions.
- To reduce conflict through early identification of contentious issues
- To gather potential negative and positive environmental impacts associated with the proposed project from the stakeholders' perspectives.
- To engage stakeholders for the effective mitigation and enhancement of negative and positive impacts arising from the proposed project respectively.

6.2 PRINCIPLES GOVERNING PUBLIC CONSULTATION

The following principals were used during the public participation:

6.2.1 Inclusivity

The public participation was open for everyone; invitation to make comments was announced in the local newspapers, The Namibian and New Era. Both locals and the traditional authority were conducted.

6.2.2 Open and transparency

The consultant took time to explain the background of the project and both positive and negative impacts associated with the project. All people who registered as Interested and Affected Parties were also given a BID and full document of the EIA was available upon request.

6.2.3 Relevance

The consultant remained focused on subjects related to the project. Interested and Affected Parties were suppose to make comments relating to socio-economic and environmental impacts associated with the project. Political and other non-related comments were considered not relevant.

6.3 NOTIFICATION OF INTERESTED AND AFFECTED PARTIES

The consultation was facilitated through the following means:

6.3.1 Background Information Document (BID)

The consultant prepared a BID, which was circulated to Interested and Affected Parties. A BID is a short document, which briefly gives the background of the project. The main aim of distributing the BID to Interested and Affected Parties is to bring awareness and clarity about the proposed project. **A copy of the BID is provided in Appendix A.**

6.3.2 Advertisement

Adverts were placed in two local newspapers namely, The Namibian and New Era as shown in table 9 below.

Table 6: Details of public notification for the EIA study

Newspaper	Area of Distribution	Language	Date Placed
The Namibian	Country Wide	English	14 April 2022
The Namibian	Country Wide	English	21 April 2022
New Era	Country Wide	English	14 April 2022
New Era	Country Wide	English	21 April 2022
Site notices	At the site	English	21 April 2022

(See Appendix A)

6.3.3 Public Meeting

The public meeting was held on 21 April 2022 at Devils Claw Buying Point Okatumba Gate, in Okatumba village as shown on site images below. For more information on issues raised during the meeting, see **Appendix A, Meeting Minutes**



a)



b)

Image 9: a & b shows stakeholder meeting at Devils Claw Buying Point Okatumba Gate

6.3.4 Questionnaires

Questionnaires were also distributed amongst the participants so as to gather more information on their views towards the project. Distribution of questionnaires was also done to allow stakeholders to air their views privately. The questionnaires were open –ended whereby the respondent was free to express their views and ideas. **The questionnaires are attached in Appendix A.**

6.3.5 Public Notices

Notices with project information were placed at the site as shown on the image below.



Image 10: shows public notice at the site

6.4 SUMMARY OF STAKEHOLDERS CONSULTATION.

During the public participation process, all people viewed the project as beneficial to the community. For more issues raised during the public participation process, see Appendix A, Meeting Minutes and questionnaires. In summary, all of the participants viewed the project as beneficial given that it will allow them accessibility to fuel.

6.4.1 Stakeholders' Recommendations

The participants recommended that, the fuel price should be market related.

CHAPTER SEVEN: ASSESSMENT OF ENVIRONMENTAL IMPACTS

This section serves to identify all the potential impacts both negative and positive. In identifying these potential impacts, mitigation measures have been proposed so that the Proponent may carry out the process in an environmentally sound manner. The methodology, which was used to assess impacts and alternatives, include the following:

- Public participation
- Site visit
- Professional experience

7.1 IDENTIFICATION OF POTENTIAL IMPACTS OF THE PROJECT

Positive Impacts

- Employment creation.
- Accessibility of fuel

Negative impacts

- **Air Environment**
 - Dust
 - Noise
- **Land Environment**
 - Biodiversity loss
 - Generation of waste
 - Impact on soil
 - Fire and explosions
 - Spillages
- **Water Environment**
 - Impact on surface and groundwater sources
- **Socio -Economics**
 - Occupational Health and Safety risks.
 - Heritage impact
- **Indirect Impacts**
 - Cumulative impacts

7.2 IMPACT ANALYSIS

In this section, the impacts of the proposed project on human and biophysical environment are evaluated and analyzed. Following the identification of the various potential environmental impacts, the impact analysis framework looked at the impacts under the following categories;

Table 7: Ranking Matrix

	Temporal scale	Duration	Score	
EFFECT	Short term	Less than 5 years	1	
	Medium term	Between 5 and 20 years	2	
	Long term	Between 20 and 40 years (a generation) and from a human perspective almost permanent.	3	
	Permanent	Over 40 years and resulting in a permanent and lasting change that will always be there.	4	
	Spatial Scale			
	Study area	The proposed site /within immediate area of the activity	1	
	Beyond project boundary	Surrounding area outside the project boundary	2	
	Regional	District and Provincial level	3	
	National	Country	4	
	International	Internationally	5	
		Severity	Benefit	

	Slight/Slightly Beneficial	Slight impacts on the affected system(s) or party(ies)	Slightly beneficial to the affected systems(s) or party(ies)	1
	Moderate/Moderately Beneficial	Moderate impacts on the affected system(s) or party(ies)	An impact of real benefit to the affected system(s) or party (ies)	2
	Severe/Beneficial	Severe impacts on the affected system(s) or party(ies)	A substantial benefit to the affected system(s) or party(ies)	3
	Very Severe/Very Beneficial	Very severe change to the affected system(s) or party(ies)	A very substantial benefit to the affected system(s) or party(ies)	4
Likelihood				
LIKELIHOOD	Unlikely	The likelihood of these impacts occurring is slight		1
	May occur	The likelihood of these impacts occurring is possible		2
	Probable	The likelihood of these impacts occurring is probable		3
	Definite	The likelihood is that this impact will definitely occur		4

Table 8: Ranking matrix for Environmental Significance

Environmental Significance		Positive	Negative
LOW	An acceptable impact for which mitigation is desirable but not essential. The impact by itself is insufficient even in combination with other low impacts to prevent development.	4-7	4-7
MODERATE	An important impact, which requires mitigation. The impact is insufficient by itself to prevent the implementation of the project but which, in conjunction with other impacts may prevent its implementation.	8-11	8-11
HIGH	A serious impact, which, if not mitigated, may prevent the implementation of the project. These impacts would be considered by society as constituting a major and usually long-term change to the natural and/or social environment and result in severe negative or beneficial effects.	12-15	12-15
VERY HIGH	A very serious impact, which may be sufficient by itself to prevent the implementation of the project. The impact may result in permanent change. Very often, these impacts are unmitigable and usually result in very severe effects or very beneficial effects.	16-20	16-20

Table 9: Matrix to show environmental significance

	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	4	5	6	7	8	9	10	11	12	13	14	15	16	17
2	5	6	7	8	9	10	11	12	13	14	15	16	17	18
3	6	7	8	9	10	11	12	13	14	15	16	17	18	19
4	7	8	9	10	11	12	13	14	15	16	17	18	19	20

7.3 IMPACT EVALUATION

7.3.1 Negative impacts associated with the project:

Potential impacts of the project on the environment and their mitigation measures are:

1. Dust

Identified Impact	Effect					Risk or Likelihood	Score	Overall Significance
	Temporal Scale	Score	Spatial Scale	Score	Severity of impact			
Dust Unmitigated	Short term	1	Study area	1	Slight impact	1	4	7
Mitigated	Short term	1	Study area	1	Slight impact	1	1	4

Dust is expected to be generated during the construction and perhaps at the decommissioning phase. During construction, dust is expected to be generated especially in the dry months and when there are strong winds. The main sources of dust during the construction phase will be movement of vehicles/ equipment at site and excavation works. The composition of dust is expected to be non-toxic in nature. However, the impact is expected to affect the study area and not exceed the boundaries given that the area of the site is big enough (1.9ha) and also the scale of construction operations will be small. The overall environmental significance with or without mitigation measures will be low hence implying that, the impact by itself is insufficient even in combination with other low impacts to prevent development.

During the decommissioning phase dust might be emitted from the demolition of structures. It is recommended that an EIA be done before the decommissioning phase.

Mitigation measures:

- Use of dust suppression methods e.g., sprinkling water
- People at the site should be provided with respirators
- Regular monitoring and review to ensure safe operation
- To conduct an EIA before the decommissioning phase

2. Noise

Identified Impact	Effect					Risk or Likelihood	Score	Overall Significance	
	Temporal Scale	Score	Spatial Scale	Score	Severity of impact				
Noise Unmitigated	Short term	1	Study area	1	Slight impact	1	May occur	2	5
Mitigated	Short term	1	Study area	1	Slight impact	1	Unlikely	1	4

Noise might be generated during the construction, operation and perhaps the decommissioning phases. During construction phase, noise will be generated locally from construction vehicles and other construction activities. These activities can cause an increase in the ambient noise levels; however, the impact will remain localized to the project area and will hardly exceed the ambient noise level beyond the project boundary. During the operation phase, noise might be emitted by frequenting cars to the service station but it is not expected to exceed 85dB. According to ISO 18001 standards, workers are not allowed to work under noise levels that are equal to or exceed 85 decibels per 8 hours.

Mitigation measures:

- During construction employees should be equipped with ear protection equipment such as ear plugs/muffs.
- Employees should be limited to working hours only at most 8 hours per day.
- Noise should be addressed and mitigated at an early stage of construction phase.
- Proper and timely maintenance of machineries and preventive maintenance of vehicles is to be adopted.

4 Biodiversity Loss

Identified Impact	Effect					Risk or Likelihood	Score	Overall Significance	
	Temporal Scale	Score	Spatial Scale	Score	Severity of impact				
Biodiversity loss Unmitigated	Short term	1	Study area	1	Slight impact	1	Unlikely	1	4
Mitigated	Short term	1	Study area	1	Slight impact	1	Unlikely	1	4

The site was already cleared and currently vegetation which is regrowing is mainly grass and small different plants. No endangers plant species were identified on site. The site does not have any wild animals because the area and its surroundings are no longer virgin lands. Only small insects and cow dung were identified on site. Biodiversity loss is therefore expected to be of low environmental significance given that the site was already cleared.

Mitigation measures

- Implementation of agro- forestry techniques well adapted to the site (greenbelt and green cover)

5. Impact on Soil

Identified Impact	Effect					Risk or Likelihood	Score	Overall Significance	
	Temporal Scale	Score	Spatial Scale	Score	Severity of impact				
Impact on soil Unmitigated	Short term	1	Study area	1	Slight impact	1	Definite	4	7
Mitigated	Short term	1	Study area	1	Slight impact	1	May occur	2	5

It is definite that soil will be affected during the construction, operation and perhaps the decommissioning phase if mitigation measures are not implemented. During the construction phase soil will be disturbed by activities like excavations. During the operation

phase, fuel leakages and spillages might contaminate the soil. However, the impact on soil is expected to be localized and of low environmental significance given that the ground will be covered by concrete slabs and interlocks. The listed below mitigation measures should be effectively implemented so as to reduce the probability of soil contamination.

Mitigation measures:

- Concrete slabs and interlocks shall be constructed so as to prevent soil contamination in events of spillages and fuel leakages.
- On completion of works (in phases), all temporary structures, surplus materials and wastes to be completely removed
- After completion of construction the surrounding area where the extra soil and remaining construction material should be cleared and levelled so that the original condition is restored
- Proper care should be taken so that there is no spill that would cause soil contamination
- Hazardous waste properly handled and sent for disposal to appropriate disposal areas
- The management to maintain records of contaminated waste on a regular basis

6. Surface and Groundwater Contamination

Identified Impact	Effect					Risk or Likelihood	Score	Overall Significance	
	Temporal Scale	Score	Spatial Scale	Score	Severity of impact				
Surface & groundwater contamination Unmitigated	Short term	1	Study area	1	Moderate impact	2	May occur	2	6
Mitigated	Short term	1	Study area	1	Slight impact	1	Unlikely	1	4

Groundwater contamination might be experienced during the operation and perhaps at decommissioning phase. During the operation phase, spillages might occur when offloading fuel into the storage tanks and when filling vehicles. Surface and groundwater contamination is very harmful if not checked because the contamination can spread and reach water bodies which are used by people and animals. Moreover, it is very expensive to clean-up the pollution, therefore it will be vital to implement the mitigation measures

so as to avoid contamination of underground water. It is important to note that, risks of such an impact can be lowered through proper training of staff and installation of suitable containment structures. The severity of the impact is however expected to be moderate without mitigation measures because the scale of operation of the service station will be small. The Proponent is proposing to install only one pump with only two tanks with a capacity of 14 000liters. In addition, the nearest river from the site is approximately 700metres and the nearest representative borehole (39906) is approximately 58km from the site.

Mitigation measures:

- Install oil interception system.
- Install leak detection system.
- Install isolating surface drainage system.
- Implement integrity tests on the tanks.
- Concrete slabs /interlocks to cover the ground.
- Proper toilet facilities should be constructed
- Use of containment
- Overfilling of the tanks may also take place and proper monitoring of the product levels in the tanks must take place to eliminate overfilling

Additional Guidelines to the prevention of potential leakages and/or spillages that could lead to groundwater pollution include:

- All fueling should only be conducted on surfaces provided for this purpose;
- The condition of the fuel reticulation system will have to be checked regularly and repaired to prevent leakages;
- Proper training of operators must be conducted on a regular basis;
- Any spillage of more than 200 liters must be reported to the relevant authorities and remediation instituted (refer to section 49 of the Petroleum Products and Energy Act, 1990 (Act No. 13 of 1990)
- Equipment and materials to deal with spill clean-up must be readily available on site and staff must be trained in the usage of these products.

7. Traffic Impact

Identified Impact	Effect						Risk or Likelihood	Score	Overall Significance
	Temporal Scale	Score	Spatial Scale	Score	Severity of impact	Score			
Traffic impact Unmitigated	Short term	1	Study area	1	Slight impact	1	May occur	2	5
Mitigated	Short term	1	Study area	1	Slight impact	1	Unlikely	1	4

During construction phase there shall be movement of vehicles and equipment along the C44 - D5913 to the site. Construction related activities are not expected to have an impact on the movement of traffic along these roads because the road is not a busy road. In addition, during the operation phase, traffic impacts are expected to be of low significance because an entry and exit will be included in the design of the service station and also the size of the site is big (1.9ha). With or without mitigation measures, the probability of traffic congestion and accidents happening will be unlikely and the significance will be low.

Mitigation measures on traffic impacts

- No diversion of traffic or closure of the road is expected
- Entry and exit way to be included at design stage
- During construction, the responsible contractor must ensure that all drivers employed have valid driver's licenses of vehicle types they are employed for and that they have experience in driving those vehicles.
- The contractor must ensure that there is always a supervisor on site to ensure that no driver under the influence of alcohol or narcotics is driving company vehicles.

8. Air Quality (Emissions)

Identified Impact	Effect						Risk or Likelihood	Score	Overall Significance
	Temporal Scale	Score	Spatial Scale	Score	Severity of impact	Score			
Emissions Unmitigated	Short term	1	Study area	1	Slight impact	1	May occur	2	5
Mitigated	Short term	1	Study area	1	Slight impact	1	Unlikely	1	4

During the operation phase, fuel will be delivered to the tanks and also to the customers, this can affect the air quality. Hydrocarbon vapors will normally be released during delivery as liquid displaces the gaseous mixture in the tanks. Hydrocarbons are a class of compounds primarily composed of carbon and hydrogen. These substances contribute to the greenhouse effect and global warming, depletion of the ozone, increase occurrences of cancer and respiratory disorders and reduce the photosynthetic ability of plants.

Mitigation measures:

- Vent pipes should be placed in such a manner as to prevent impact on potential receptors.
- Regular check tests

9. Fire and Explosions

Identified Impact	Effect					Risk or Likelihood	Score	Overall Significance	
	Temporal Scale	Score	Spatial Scale	Score	Severity of impact				
Fire & explosions Unmitigated	Short term	1	Study area	1	Very severe impact	4	May occur	2	8
Mitigated	Short term	1	Study area	1	Slight impact	1	Unlikely	1	4

Fire and Explosion can happen during the operation phase. Hydrocarbons are volatile under certain conditions and their vapors in specific concentrations are flammable. If precautions are not taken to prevent their ignition, fire and subsequent safety risks may arise. An integrated fire prevention plan should be drafted before “start-up” of the facility. Special note must be taken of the regulations stipulated in sections 47 and 48 of the Petroleum Products and Energy Act, 1990 (Act No. 13 of 1990).

Mitigation measures

- Sufficient water should always be available in case of fire for firefighting purposes.
- Firefighting trainings
- Good housekeeping such as the removal of flammable materials including rubbish, dry vegetation, and hydrocarbon-soaked soil from the vicinity of the service station.
- The Emergency Response Plan should be implemented and should address the potential spills and workers should be trained on the actions that are to be taken if such an event is to occur
- Regular inspections should be carried out to inspect and test firefighting equipment.
- Fuel tank should be placed away from potential neighboring fire points. Equip the service station with firefighting equipment.
- All fire precautions and fire control at the service station must be in accordance with SANS 10089-1:1999, Petroleum Products Regulations (2000) or better. A holistic fire protection and prevention plan is needed.

- Experience has shown that the best chance to rapidly put out a major fire is in the first 5 minutes. It is important to recognize that a responsive fire prevention plan does not solely include the availability of firefighting equipment, but more importantly, it involves premeditated measures and activities to prevent, curb and avoid conditions that may result in fires.

10. Generation of Waste

Identified Impact	Effect						Risk or Likelihood	Score	Overall Significance
	Temporal Scale	Score	Spatial Scale	Score	Severity of impact	Score			
Generation of waste Unmitigated	Short term	1	Study area	1	Slight impact	1	May occur	2	5
Mitigated	Short term	1	Study area	1	Slight impact	1	Unlikely	1	4

Waste will be generated during construction, operation and perhaps at decommissioning phase. During the construction phase, waste might be generated from domestic waste and construction wastes like empty cement bags, painting containers etc. During the operation phase, waste is expected to be generated from domestic waste in the form of rubbish and human waste. In addition, liquid waste in the form of oils/fuel might also be generated from spills and leakages. Waste can also be generated during the decommissioning phase when infrastructure will be removed. In general, the impact of waste is expected to be localized and it will be of low environmental significance.

Mitigation measures:

- Contaminated wastes in the form of soil, litter, building rubble and other material must be disposed-off at an appropriate disposal site.
- Strictly, no burning of waste on the site or at the disposal site, as it causes environmental and public health impacts;
- Waste should be dumped at an authorized designated area
- To avoid contaminating the soil and underground ecosystem, no wastewater should be disposed on soil.

- Regular inspection of the site
- Toilets should be constructed
- Regular servicing and maintenance of vehicles and machinery during the construction phase, to avoid leakage of oils and lubricates.

7.3.2 Negative socio-economic impacts associated with the project:

1. Occupational Health and Safety Risks

Identified Impact	Effect					Risk or Likelihood	Score	Overall Significance	
	Temporal Scale	Score	Spatial Scale	Score	Severity of impact				
O.H.S Unmitigated	Short term	1	Study area	1	Moderate impact	2	May occur	2	6
Mitigated	Short term	1	Study area	1	Slight impact	1	Unlikely	1	4

OHS hazards may occur during the construction and operation phases. Dust, fire and occupational stress are hazards which are likely to be encountered during the construction and operational phase. Dust emitted during the construction phase can cause pneumoconiosis to employees. Therefore, dust suppression measures should be used during the short time of construction phase. Moreover, too much work pressure on employees can result into high level of stress which can consequently result into accidents.

Mitigation measures:

- Conduct Hazard identification and risk assessments
- All Health and Safety standards specified in the Labour Act should be complied with.
- Provide all staff on site with protective equipment (helmets, gloves, respirators, work suits, earplugs, goggles and safety shoes where applicable).
- Trainings on occupational health and safety

- Safety talks to be done every day before commencement of work
- Formulation of a safety health and environment workers committee
- Implementation of Behavior Based Safety System
- Reduce noise exposure by isolating noisy equipment and rotate tasks during construction phase
- Provisions of First Aid Box and trained person in first aid.
- Any leakage/spillage shall be immediately attended and provision of urgent cleaning.
- Work area will be monitored to maintain work environment free from any hazards.
- Provision of adequate and maintenance of Fire Extinguishers at site
- Provision of immediate accident/incident reporting and investigation.
- Safety Posters and slogans should be exhibited at conspicuous places
- Dust suppression measures

2. Safety and security

Identified Impact	Effect						Risk or Likelihood	Score	Overall Significance
	Temporal Scale	Score	Spatial Scale	Score	Severity of impact	Score			
Safety & security Unmitigated	Short term	1	Study area	1	Slight impact	1	May occur	2	5
Mitigated	Short term	1	Study area	1	Slight impact	1	Unlikely	1	4

Generally, projects attract different people from different locations. Some people can end up stealing or practicing anti-social behaviors. To address the issue of theft unauthorized people should not be allowed near or around the service station during construction phase. During operation phase, security officers should be employed.

Mitigation measures:

- Sensitization campaigns/workshops to the staff on repercussions of anti-social behaviours (stealing, alcohol and drug abuse)
- Employing security officers.

3. Heritage Impact

Identified Impact	Effect					Risk or Likelihood	Score	Overall Significance
	Temporal Scale	Score	Spatial Scale	Score	Severity of impact			
Heritage impact Unmitigated	Short term	1	Study area	1	Slight impact	1	1	4
Mitigated	Short term	1	Study area	1	Slight impact	1	1	4

At the site, there are no known heritage areas or artefacts deemed to be impacted by the construction activities. In addition, if the Proponent come across archaeological features or objects that possess cultural values (e.g., Pottery, bones, shells, ancient clothing or weapons, ancient cutlery, graves etc.), the area should be barricaded off and the relevant authorities should be contacted immediately.

Mitigations measures:

- All works are to be immediately ceased should an archaeological or heritage resource be discovered.
- The National Heritage Council of Namibia (NHCN) should advise with regards to the removal, packaging and transfer of the potential resource.

4. Cumulative Impacts

Identified Impact	Effect						Risk or Likelihood	Score	Overall Significance
	Temporal Scale	Score	Spatial Scale	Score	Severity of impact	Score			
Cumulative impact Unmitigated	Short term	1	Study area	1	Slight impact	1	May occur	2	5
Mitigated	Short term	1	Study area	1	Slight impact	1	Unlikely	1	4

During the operational phase there might be cumulative impacts. Fuel is going to be off-loaded which can result in the release of hydrocarbon vapors which have an impact of reducing the air quality and also causing fires and explosions. Hydrocarbon vapors if released in the atmosphere can also cause global warming, reduction of photosynthesis of plants and cancer.

Mitigation measures:

- All possible sources of ignition in the entire area should be eliminated
- Sufficient water should always be available in case of fire for firefighting purposes.
- Vent pipes should be placed in such a manner as to prevent impact on potential receptors.
- Regular check tests

7.3.3 Positive impacts associated with the project

1. Employment Creation

Identified Impact	Effect					Risk or Likelihood	Score	Overall Significance	
	Temporal Scale	Score	Spatial Scale	Score	Severity of impact				
Employment Unmitigated	Permanent	4	Beyond project boundary	2	Very beneficial	8	Definite	4	18
Mitigated	Permanent	4	Beyond project boundary	2	Very beneficial	8	Definite	4	

During construction phase, contractors, subcontractors and service providers shall be employed. At operation phase, the Proponent will employ people and the jobs will range from fuel attendance, cashiers, security guards etc. It is definite that jobs will be created during the life span of the project.

Enhancement required:

- Employ locals in all casual labour in the construction and operation phase
- When recruiting, the responsible contractor and Proponent are to ensure gender equality is taken into consideration that both men and women are employed equally and treated equally.
- Equity, transparency, to be put into account when hiring and recruiting

2. Accessibility of Fuel

Identified Impact	Effect					Score	Risk or Likelihood	Score	Overall Significance
	Temporal Scale	Score	Spatial Scale	Score	Severity of impact				
Accessibility of fuel Unmitigated	Permanent	4	Beyond project boundary	2	Very beneficial	8	Definite	4	18
Mitigated	Permanent	4	Beyond project boundary	2	Very beneficial	8	Definite	4	18

Currently locals are facing a great challenge to get fuel, the reliable area to get fuel is in Gobabis which is approximately 220km from the site. If the proposed service station operates in the area, this will greatly help the locals and by-passers to easily access fuel. Therefore, the proposed project will be very beneficial and it will not only help the locals but also people outside the project area.

Enhancement required:

- Maintain a consistent supply of fuel
- Maintain fuel market related prices

3. Local Empowerment

Identified Impact	Effect					Score	Risk or Likelihood	Score	Overall Significance
	Temporal Scale	Score	Spatial Scale	Score	Severity of impact				
Local Empowerment Unmitigated	Permanent	4	Regional	3	Very beneficial	8	Definite	4	19
Mitigated	Permanent	4	Regional	3	Very beneficial	8	Definite	4	19

Joel and Ngore Trading Investment is owned by Namibian citizens from the Omaheke Region hence promoting this project implies promoting local empowerment.

4. Community development

Identified Impact	Effect					Risk or Likelihood	Score	Overall Significance	
	Temporal Scale	Score	Spatial Scale	Score	Severity of impact				
Community development Unmitigated	Permanent	4	Beyond project boundary	2	Very beneficial	8	Definite	4	18
Mitigated	Permanent	4	Beyond project boundary	3	Very beneficial	8	Definite	4	18

Construction and operation of the proposed service station will bring development in the remote area of Okatumba. The construction of Joel and Ngore Trading Investment service station will definitely bring development in the area.

Enhancement required:

- The Proponent should also participate in community development programs.

5. Generation of Revenue

Identified Impact	Effect					Risk or Likelihood	Score	Overall Significance	
	Temporal Scale	Score	Spatial Scale	Score	Severity of impact				
Revenue Unmitigated	Permanent	4	National	4	Very beneficial	8	Definite	4	20
Mitigated	Permanent	4	National	4	Very beneficial	8	Definite	4	20

Joel and Ngore Trading Investment cc will generate revenue through payment of tax. More taxes will also be generated through contracted and subcontracted companies.

Enhancement required:

- The Proponent should pay taxes as stipulated by the law of Namibia.

7.3.4 Impacts Associated with Decommissioning Phase

The decommissioning phase of the service station project is difficult to visualize at this point in time. However, impacts associated with this phase will be similar to that of the construction phase. The possibility of noise happening during this stage is high as bulldozers will be used to remove the structures. Dust might also be generated during the demolitions. Moreover, during the decommissioning phase, precaution must be greatly taken to avoid employees from being injured. Waste generated should also be disposed at an approved waste facility and not dumped in the surrounding areas. Furthermore, the site should be rehabilitated (planting of grass and trees on the site). An environmental impact assessment should also be conducted.

7.3.5 Overall Site Sensitivity

Impact	Unmitigated	Overall Significance	Mitigated	Overall Significance
Dust	7	Low	4	Low
Noise	5	Low	4	Low
Biodiversity loss	4	Low	4	Low
Impact on soil	7	Low	5	Low
Surface and groundwater contamination	6	Low	4	Low
Traffic impact	5	Low	4	Low
Fire and explosion	8	Moderate	4	Low
Generation of waste	5	Low	4	Low
Occupational Health and Safety	6	Low	4	Low
Safety and Security	5	Low	4	Low
Heritage impact		Low	5	Low
Cumulative impacts	7	Low	4	Low

7.4 SUMMARY & ANALYSIS OF IMPACTS

Fire and explosions, falls under the range of moderate environmental significance when unmitigated. This implies that, this impact require mitigation but nevertheless it is not sufficient by itself to prevent the implementation of the project. Other stated impacts remain of low significance which implies that mitigation is required but the impacts by themselves are not sufficient even in combination with other low impacts to prevent development. The impacts are expected to be of low environmental significance because the scale of the operations will be small and an approved service station design by Ministry of Mines and Energy shall be used.

CHAPTER EIGHT: ENVIRONMENT MANAGEMENT AND MONITORING PLAN

Environmental planning and management as a concept seek to improve and protect environmental quality for both the project site and the neighborhood through segregation of activities that are environmentally incompatible. Environmental planning and management integrate land use structure, social systems, regulatory law, environmental awareness and ethics. Environmental Management Plan (EMP) is a vital output for an Environmental Impact Assessment as it provides a checklist for project monitoring and evaluation.

EMP for the proposed project is aimed at providing a logical framework within which identified negative environmental impacts can be mitigated and monitored. **See Appendix C**, for the EMP.

CHAPTER NINE: CONCLUSIONS AND RECOMMENDATIONS

9.1 CONCLUSION

In conclusion, the project does not pose any serious and negative environmental impacts. Mitigation measures have been proposed to address any of the negative impacts arising from the project. Should the Proponent implement all the suggested mitigation measures, the consultant recommends the issuance of the Environmental Clearance Certificate.

9.2 RECOMMENDATIONS

The following recommendations have been brought forward:

- Environmental audits by an independent environmental consultancy must be carried out to monitor environmental compliance. The monitoring and audit reports should accompany the application for renewal of the environmental clearance certificate after 3 years.

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