ENVIRONMENTAL IMPACT ASSESSMENT

PROPOSED CONSTRUCTION OF A FUEL RETAIL FACILITY ON ERF 396 OUTAPI, OMUSATI REGION-NAMIBIA.

ENVIRONMENTAL SCOPING REPORT

DECEMBER 2020

junior baiano
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Today for Tomorrow CC/2011/7445

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Acronyms

TERMS	DEFINITION
BID	Background Information Document
EAP	Environmental Assessment Practitioners
ECC	Environmental Clearance Certificate
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
ESIA	Environmental and Social Impact Assessment
EMP	Environmental Management Plan
GHG	Greenhouse Gasses
ISO	International Organization for Standardization
I&APs	Interested and Affected Parties
JBIC	Junior Baiano Industrial Consultants
MET: DEA	Ministry of Environment and Tourism's Directorate of Environmental Affairs

EXECUTIVE SUMMARY

Junior Baiano Industrial Consultants (JBIC) cc has been engaged by **Join Efforts Investments cc** to conduct an Environmental Impact Assessment (EIA), develop an Environmental Management Plan (EMP) and apply for an Environmental Clearance Certificate for the proposed fuel retail facility on ERF 396, Outapi in Omusati Region-Namibia.

In terms of the Environmental Impact Assessment Regulations 2012, the proposed project triggered the application for an environmental clearance certificate because of the following activities:

- ✓ **HAZARDOUS SUBSTANCE TREATMENT, HANDLING AND STORAGE**
  - *Activity 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.*
  - *Activity 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.*
  - *Activity 9.5: The 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.*

Environmental Impacts

- Surface and groundwater impacts during construction and operation.
- Impacts on vegetation and biodiversity through clearing of land during construction.
- Generation of waste during construction and operation.
- Health and safety impacts during construction and operation.

Social Impacts

The project is generally expected to contribute to improving the livelihoods of the local community of Outapi through the employment opportunities and increased provision of services and amenities which are not readily available in the area.

An EMP has been developed to mitigate any anticipated possible impacts of the project to the environment.

Public Participation Process

Interested and Affected Parties were notified of the project through site notices and newspaper adverts. All relevant information regarding consultation is covered in Chapter 4 of this document and attached in Appendix A.

Recommendation

Based on the Environmental Assessment it is concluded that most of the impacts identified can be addressed through the recommended mitigation and management actions for both the construction and operation phases of the fuel retail facility. Should the recommendations included in this report and the EMP be implemented the significance of the impacts can be reduced to reasonably acceptable standards and duration. All developments could proceed provided that general mitigation measures as set out are implemented as a minimum.

In this respect it is recommended that the proposed service station receives an Environmental Clearance Certificate, provided that the recommendations described in this report and the EMP are implemented.

1. CHAPTER ONE: BACKGROUND

1.1. INTRODUCTION

Join Efforts Investments Pty Ltd intends to spearhead direct investments in Outapi Town, in this respect the company intends to construct and operate a fuel retail facility in the town's CBD.

In this respect the proponent has appointed Junior Baiano Industrial Consultants cc to undertake an Environmental Scoping Assessment (ESA), formulate an Environmental Management Plan (EMP) and apply for an Environmental Clearance Certificate (ECC) to the Ministry of Environment and Tourism (MET): Directorate of Environmental Affairs (DEA) for the intended development.

This document forms part of the application to be made to the DEA's office for an ECC for the proposed fuel retail facility (service station) establishment, according the guidelines and statutes of the Environmental Management Act No.7 of 2007 and the Environmental Impacts Regulations (GN 30 in GG 4878 of 6 February 2012).

1.2. PROJECT LOCATION

The project site is located on Erf 396 along the C46 Road overlooking the Outapi main mall to the North. The map below (Figure 1) gives an aerial view of the project site and the exact project description details are as follows:

Table 1: Proposed Site Coordinates

Site Description Details	
Erf number	396
Suburb	Outapi
Erf Size	9000 m^2
Constituency	Outapi
Longitude	14°59'14.65"E
Latitude	17°30'8.15"S

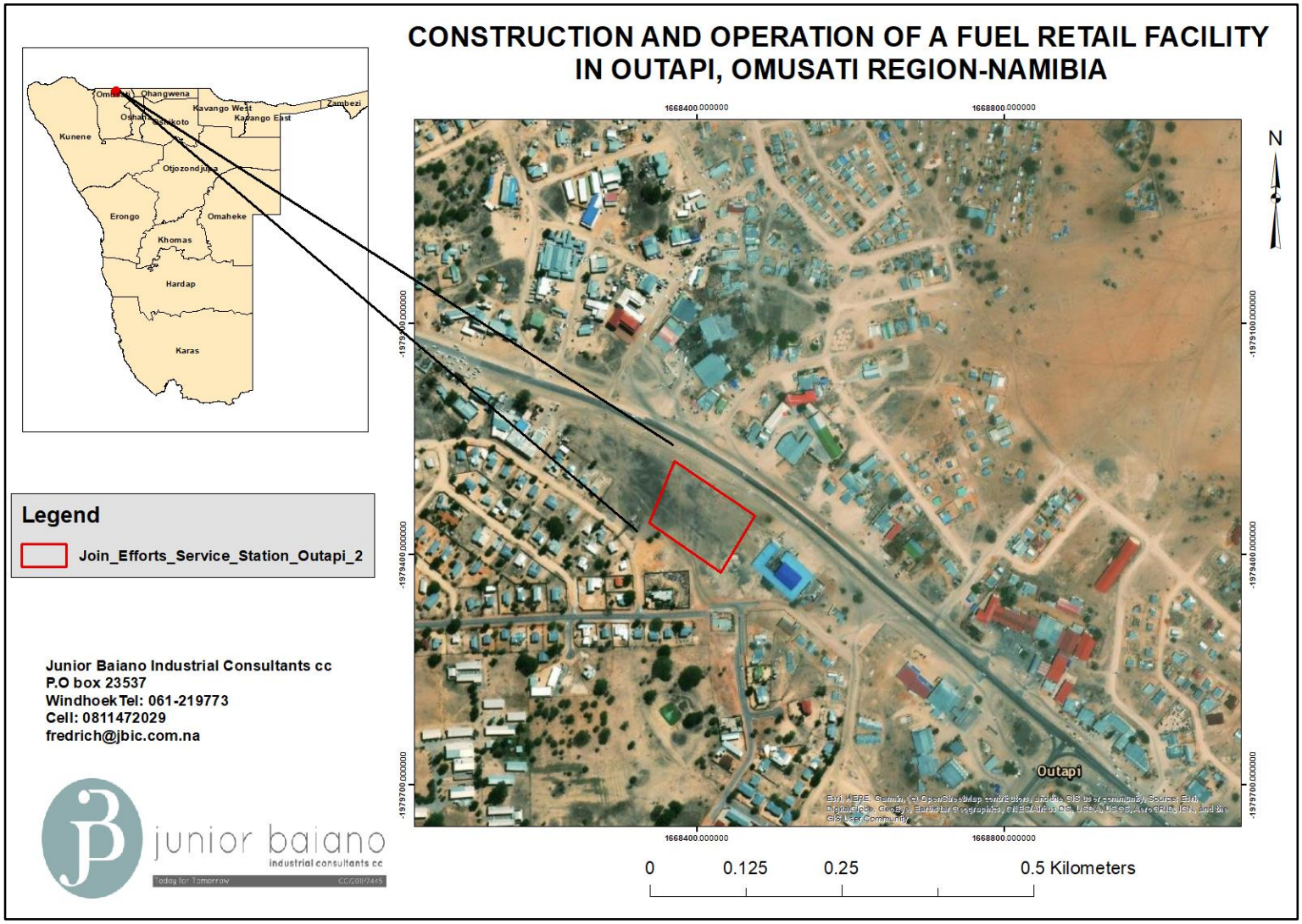

Figure 1: Proposed Fuel Retail Facility site.

1.3. PROJECT DESCRIPTION

1.3.1. DEVELOPMENT PROPOSAL & LAYOUT

It is the intention of the proponent to construct and operate a service station establishment in Outapi.

1.3.2. SERVICE STATION

The service station would be a 6-pump canopy supported by 4 tanks of 46 000 liters storing petrol and diesel. There will also be a convenience store and a mini-market on the proposed site.

The proposed facilities and services on site entail the following:

- Paved parking for vehicles,
- Fuel storage tanks and dispensation bay for refueling purposes,
- Convenience Store,
- Mini-market
- Offices for administrative and control center personnel, and
- Ablution facilities.

1.3.3. ACCESSIBILITY

The site can be accessed through the existing internal street network of Outapi town and access will be obtained from C46 main road in Outapi.

1.4. INFRASTRUCTURE AND SERVICES

The proposed development will be connected to the existing municipal reticulation network of Outapi.

1.5. NEED AND DESIRABILITY

The proposed activity is a welcome development in the Outapi, due to the increase in vehicles in the town and growth of the town in general. This is anticipated to reduce pressure on the existing fuel retail facilities in Outapi.

The proposed site is desirable to be developed as proposed due to its location which is ideal for the proposed service station because of its ease of accessibility and proximity to the CBD.

The proposed development will enable the optimal use of the land and provide amenities which are not readily available to the residents in the area. In this respect, the proponent saw an opportunity for the proposed development.

1.6. OBJECTIVES OF THIS STUDY

This Environmental Scoping Assessment is being undertaken in compliance with the Environmental Management Act No.7 of 2007 and the Environmental Impact Assessments Regulations (GN 30 in GG 4878 of 6 February 2012).

In terms of the Environmental Impact Assessment Regulations 2012, the proposed project triggered the application for an environmental clearance certificate because of the following activities:

- ✓ **HAZARDOUS SUBSTANCE TREATMENT, HANDLING AND STORAGE**
  - *Activity 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.*
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  - *Activity 9.5: The 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 main objectives of this study are as follows:

- To identify and provide mitigation measures of the expected impacts of the proposed establishment to protect the environment;
- To brief the project proponent of the legal and policy framework governing the proposed activity;

- To identify the possible changes in bio-diversity index that might occur because of project implementation in the area;
- To reflect on the various public concerns which will inform the proponents and DEA's decision making;
- To come up with preventive and precautionary measures for the expected physical and biological environmental negative impacts associated with the proposed activities;
- To structure an effective environmental management plan for the proposed activity to minimise and prevent negative impacts and maximise the positive impacts.

1.7. TERMS OF REFERENCE

The Environmental Scoping Assessment conducted by Junior Baiano Industrial Consultants (JBIC) cc provides a comprehensive evaluation of the proposed project producing both ESA and EMP reports documenting the following:

- A complete description of the existing site proposed for development;
- Significant environmental issues of concern that were based on the baseline data compiled by the ESA Team, which took into consideration social, cultural and heritage information;
- An assessment of the public perception on the proposed development.
- Identification of Policies, Legislation and Regulations relevant to the project;
- Prediction of the likely short, medium and long-term impact of the development on the environment, including direct, indirect and cumulative impacts, and their relative importance to the design of the development's facilities;
- Identification of any mitigation actions to be taken to minimize predicted adverse impacts and provide associated costs where applicable and practical;
- Development of an environmental monitoring plan which will ensure that the mitigation measures are adhered to during the implementation phase;
- A conclusion and recommendation for the project proponent on an advisory note.

2. CHAPTER TWO: POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

2.1. INTRODUCTION

An important part of the ESA is identifying and reviewing the administrative, policy and legislative situation concerning the proposed activity, to inform the proponent about the requirements to be fulfilled in undertaking the proposed activities. This section looks at the legislative framework within which the proposed development will operate under. The focus is on the compliance with the legislation during the planning, construction and operational phases. All relevant legislation, policies and international statutes applicable to the project are highlighted in **Table 2: Relevant legislation, policies and international statutes applicable to the projectError! Reference source not found.** below as specified in the Environmental Management Act, 2007 (Act No.7 of 2007) and the regulations for Environmental Impact Assessment as set out in the Schedule of Government Notice No. 30 (2012).

Table 2: Relevant legislation, policies and international statutes applicable to the project

Aspect	Legislation	Relevant Provisions	Relevance to the Project
The Constitution	Namibian Constitution First Amendment Act 34 of 1998	• Article 16(1) guarantees all persons the right to property. It therefore provides everyone a right to acquire, own and dispose of property, alone or in association with others and to bequeath such property. • Article 95(I) "The State shall actively promote and maintain the welfare of the people by adopting policies that are aimed at maintaining ecosystems, essential ecological processes and the biological diversity of Namibia. It further promotes the sustainable utilisation of living natural resources basis for the benefit of all Namibians, both present and future."	• The project will enable the full execution of right to practice any profession, or carry on any occupation, trade or business by availing necessary provisions such as practising any profession, or carry on any occupation, trade or business in the country. • Through implementation of the environmental management plan, the proponent will ensure conformity to the constitution in terms of environmental management and sustainability.
National Development Plans		Namibia's overall Development ambitions are articulated in the National Vision 2030. At the operational level, five-yearly national development plans (NDP's) are prepared in extensive consultations led by the National Planning Commission in the Office of the President. The Government has so far launched a 4th NDP focusing on high and sustained economic growth, increased income equality Employment creation.	The proposed project will propel NDP4 targets in logistics, tourism and commodities market. Adding on, this will create employment which will work towards the NDP and Vision 2030.

Aspect	Legislation	Relevant Provisions	Relevance to the Project
Archaeology	National Heritage Act 27 of 2004	Section 48(1) states that "A person may apply to the Namibian Heritage Council (NHC) for a permit to carry out works or activities in relation to a protected place or protected object"	Any heritage resources discovered would require a permit from the NHC for relocation. The site is however already disturbed and semi-developed.
	National Monuments Act of Namibia (No. 28 of 1969) as amended until 1979	• "No person shall destroy, damage, excavate, alter, remove from its original site or export from Namibia: • Meteorites, fossils, petroglyphs, ornamental infrastructure graves, caves, rock shelters, middens, shells that came into existence before the year 1900 AD; or any other archaeological or palaeontological finds	The proposed site of development is not within any known monument sites, both movable and immovable as specified in the Act, however in finding any materials specified in the Act, contractors on site will take the required route and notify the relevant commission.
Environmental	Environmental Management Act 7 of 2007	• Requires 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 about a project (Section 2(b-c)). • According to Section 5(4) a person may not discard waste as defined in Section 5(1)(b) in any way other than at a disposal site declared by the Minister of Environment and Tourism or in a manner prescribed by the Minister. • Details principles which are to guide all EIAs	This Act and its regulations should inform and guide this EIA process.

Aspect	Legislation	Relevant Provisions	Relevance to the Project
	EIA Regulations GN 57/2007 (GG 3812)	• Details requirements for public consultation within a given environmental assessment process (GN No 30 S21). • Details the requirements for what should be included in a Scoping Report (GN No 30 S8) and EIA report (GN No 30 S15).	This Act and its regulations should inform and guide this EIA process.
	Pollution and Waste Management Bill (draft)	• This bill defines pollution and the different types of pollution. It also points out how the Government intends to regulate the different types of pollution to maintain a clean and safe environment. • The bill also describes how waste should be managed to reduce environmental pollution. Failure to comply with the requirements considered an offence and is punishable.	The project should be executed in harmony with the requirements of the act to reduce negative impacts on the surrounding environs from waste during construction or operation.
	Soil Conservation Act 76 of 1969	This act makes provision for combating and for the prevention of soil erosion, it promotes the conservation, protection and improvement of the soil, vegetation, sources and resources of the Republic of Namibia.	The Project impact on soil will rather be localised, however the Act should provide for guidelines of operation during construction to prevent soil erosion and contamination during operation.
	National Biodiversity Strategy and Action Plan (NBSAP2)	The action plan was operationalised in a bid to make aware the critical importance of biodiversity conservation in Namibia, putting together management of matters to do	Forming part of the EIA of and EMP for this Project, the proponent will consider all associated impacts, both acute and

Aspect	Legislation	Relevant Provisions	Relevance to the Project
		with ecosystems protection, biosafety, and biosystematics protection on both terrestrial and aquatic systems.	long term, and will propose methods and ways to sustain the local biodiversity.
Forestry	Forest Act 12 of 2001	• Tree species and any vegetation within 100m from a watercourse may not be removed without a permit (S22(1) • Provision for the protection of various plant species.	The clearing of vegetation is prohibited (subject to a permit) 100m either side of a river. Certain tree species occurring in the area are protected under this Act. Permits must be obtained from MAWF in accordance with the Act. However, on site there are no trees that require clearing permit.
Water	Water Act 54 of 1956	• The Water Resources Management Act 24 of 2004 is presently without regulations; therefore, the Water Act No 54 of 1956 is still in force: • A permit application in terms of Sections 21(1) and 21(2) of the Water Act is required for the disposal of industrial or domestic wastewater and effluent. • Prohibits the pollution of underground and surface water bodies (S23(1). • Liability of clean-up costs after closure/ abandonment of an activity (S23(2)). • Protection from surface and underground water pollution	The protection of ground and surface water resources should guide development's layout plans.
Health and Safety	Labour Act (No 11 of 2007) in conjunction with Regulation 156, 'Regulations	• 135 (f): "the steps to be taken by the owners of premises used or intended for use as factories or places where machinery is used, or by occupiers of such premises or by users of machinery about the	The proponent will employ several people and shall ensure securing a safe environment and preserving the health and welfare of employees at work. This

Aspect	Legislation	Relevant Provisions	Relevance to the Project
	Relating to the Health and Safety of Employees at work'.	structure of such buildings of otherwise to prevent or extinguish fires, and to ensure the safety in the event of fire, of persons in such building;" (Ministry of Labour and Social Welfare). • 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.	will include applying appropriate hazard management plans and enforcing Occupational Health and Safety (OHS) enforcement by contractors.
	Public Health and Environmental Act, 2015	• Under this act, in section 119: "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 service station operation will ensure compliance to the terms of the Act.
Services and Infrastructure	Road Ordinance 1972 (Ordinance 17 0f 1972)	• Width of proclaimed roads and road reserve boundaries (S3.1) • Control of traffic during construction activities on trunk and main roads (S27.1) • Infringements and obstructions on and interference with proclaimed roads. (S37.1) • Distance from proclaimed roads at which fences are erected (S38)	Although the project is a major boost for the town, the commodities market and the national highways the proponent needs to ensure that the development do not affect the major roads within their vicinity during construction and operation phases.

3. CHAPTER THREE: RECEIVING ENVIRONMENT

3.1. SOCIO-ECONOMIC

Outapi, also known as Uutapi or Ombalantu, is a town in the north of Namibia near the border with Angola. It is situated 90 km north-west of Oshakati and is the capital of the Omusati Region and the district capital of the Outapi Electoral Constituency. Outapi is a rapidly developing community with many newly constructed government buildings and a growing commercial area in the town. The language spoken there is Oshiwambo.

In 2001, Outapi was the smallest town in Namibia, with a population of just over 2,600, It is, however, developing rapidly. There is a large number of newly constructed government buildings and shops in the south of the town. The town features several schools, a community hall, a hospital and a police station.

To promote agriculture and local arts, there are two open markets where farmers from nearby villages can come and sell their produce. The town hosts the annual Olufuko Festival, which was initiated in 2012. The festival is a combination of a business expo and cultural celebrations, the festival has seen the town growing as well through the major capital injection that comes through the expo.

3.2. CLIMATE

Classification of climate: Semi-arid highland savannah (0.2 0.5 p/pet). Climate is classified as subtropical stepper (low latitude dry) with a subtropical thorn woodland biozane.

Average rainfall: 400-500 mm per year

Average Evaporation: Evaporation in the area is averaged 3000 to 3200 mm.

Precipitation: Sporadic and unpredictable, high intensity, highly localised storm events between December and March.

Temperature: During the hottest month of the year, which is mainly November, the average maximum temperature is about 30 - 37 °C. During July which is the coldest month the average minimum temperature is 8 - 10 °C.

Humidity: The relative humidity during the least humid months of the year (i.e. September and October) is around 10-20% and the most humid month is March with 70-80% humidity. Namibia has a low humidity in general, and the lack of moisture in the air has a major impact on its climate by reducing cloud cover and rain and increases the rate of evaporation.

Wind direction: Predominantly easterly wind. The area experience strong winds during August/Sep with an average wind of 8-10mph.

3.3. TERRESTRIAL ECOLOGY

The subject site is located within an urban area that has been mostly developed and thus no significant fauna and flora are expected to be present on site.

3.3.1. FLORA

In North of Namibia the vegetation is classified as Savannah bush and comprises a number of Acacia species and numerous species of perennial thorn trees in the bushes and shrubs and grass on the flat slopes (Lawrence, 1971). According to Giess (1971), savanna bush vegetation type, is mainly characterised by trees such as Combretum apiculatum and Acacia species (such as Acacia reficiens, A. hereroensis, and A. erubenscens). The grass in this vegetation type mainly comprises of the climax grasses such as Anthephora pubescens, Brachiaria nigropedata, Digitaria eriantha and many other species. There are three main tree species found in the study area as the area is sparsely vegetated.

The project site has minimal vegetation cover because of existing structures within its proximity.

Table 3: Common Plant Species occurring on the project area

Species	Common name	Status
Acacia erioloba	Camel thorn	Protected
Acacia mellifera	Black thorn	
Acacia reficiens	False umbrella thorn	
Acacia erubescens	Blue thorn	
Acacia karroo	Sweet thorn	
Acacia tortolis	Umbrella thorn	
Commiphora tenuipetiolata	White-stem corkwood	
Ficus Cordata	Fig Tree	Protected
Arecaceae	Palm tree	

3.3.2. FAUNA

Outapi town area is dominated by human inhabitants which resulted in movement of wild animals away from the area. The EIA team researched and established that around the proposed project has minimum amount of wildlife. This could mostly be the case due the presence inhabitants and economic activities that possibly scared away wildlife. Some form of human encroachment in the area may also have contributed to low number of wildlife due to lost and fragmented habitats. Only evidence of the presence of birds, squirrels and soil rodents, termites were observed.

Figure 2: Current project environment

The current state of the project site best reflects the nature of human impact on the environment, due to lack of development on site the area was being used as a solid waste dumping site by nearby residents, and the town council will have to commission a scrapper periodically to clear off the waste.

The site is surrounded by several businesses, to the North is the C46 road and across is a shopping complex. The east and western side of the project site are mixed residential and business erven, who have been informed of the development.

The site is void of vegetation because of the regular clearing of the ERF when it is full of solid waste. The site also has some illegal footpaths and roads used by residents as shortcuts to their respective businesses or homes.

3.4. LANDSCAPE AND GEOLOGY

The site area has a generally flat terrain with a gradient of less 0.002% implying the importance of a well-drained development to avoid flooding on the area. The site area slopes towards south-west.

Outapi located in the greater Kalahari Basin, which covers most of the northern and eastern parts of Namibia and extends across the Namibian border into Angola. The bedrock underlying the basin filled with Kalahari Group deposits consist of basal rocks of the Damara Sequence, followed by the Karoo Sequence sediments, overlain and intruded by volcanics of Karoo age.

The unconsolidated to semi-consolidated clay, sand and gravel of the Kalahari Group fill the Omusati Region, which deepens from the northeast towards the northwest, from 0 to >400 m along the north-west trending basin axis

The site area composed of completely weathered fine sandy loamy soils. The soil macro-fauna encountered within the study area include very few arthropods (insects, millipedes, and termites), molluscs (snails), annelids (earthworms) and nematodes that are always found in most soils.

3.5. HYDROLOGY

Outapi village forms part of the Etosha Cuvelai Drainage and the Oshana flood plain which are common in the most parts of the North of Namibia. The groundwater basin underlain is the Owambo basin. The exact proposed project site in not within the flood plains of Oshana Region and however the project area resembles an Oshana type of environmental set up. But due to urbanisation and development within the locale of the site, the project area is not actively functioning as an Oshana anymore. The area is generally flat with very few evidences of surface erosion. The surrounding area is relatively flat giving limited chance for surface drainage Adequate drainage and spill prevention mechanisms will be employed to avoid potential pollution through surface water runoff of groundwater seepage.

4. CHAPER FOUR: PUBLIC CONSULTATION

4.1. OVERVIEW

The public consultation process forms an important component of the Environmental Assessment process. It is defined in the EIA Regulations (2012), as a "*process in which potential interested and affected parties are given an opportunity to comment on, or raise issues relevant to, specific matters*" (S1). Section 21 of the Regulations details steps to be taken during a given public consultation process and these have been used in guiding our process.

Formal public participation has taken place via public consultations and focal meetings, newspaper announcements to inform the public of the proposed project under consideration. The public consultation process has been guided by the requirements of Environmental Management Act (EMA) No. 7 of 2007 and the process has been conducted in terms of regulation 7(1) as well as in terms of the EMA Regulations of GN 30 of 6 February 2012 and the World Bank EIA standards and project ToR.

Its overriding goals have been to ensure transparency in decision making and to:

- Ensure stakeholder concerns are incorporated in project design and planning;
- Increase public awareness and understanding of the project and
- Enhance positive development initiatives through the direct involvement of affected people.

The objectives of the public participation are to build credibility through instilling integrity of conducting the ESA, educate the stakeholders on the process to be undertaken and opportunities for their involvement and build stakeholders by establishing an agreed framework accordingly. This requires accessible, fair, transparent and constructive participation at every stage of process. Inform stakeholders on the proposed project and associate issues, impacts and mitigation and using the most effective manner to disseminate information.

In this section of the report, the results of consultations with various classes of stakeholders are summarized. The results of consultations with other stakeholders and community members who took part in this EIA are attached as Appendices.

The consultation was facilitated through the following means:

- A Background Information Document (BID) containing brief project description, the EIA process and notice of invitation to participate. BID was shared with stakeholders and community members.
- Invitation to participate as published in the local newspapers as shown in Table 3 below and Appendix A of this document.
- Placement of a public notice at the project site and around Rundu town.

Table 4: Details of public notification of the EIA study

Method	Area of Distribution	Language	Date Placed
The Confidante	Country Wide	English	5 November 2020
New Era	Country Wide	English	12 November 2020
Site notices	Project site	English	1 November 2020
	Outapi Pick N Pay	English	1 November 2020
	Outapi Mall	English	1 November 2020
Public Meeting	Project site	English	27 November 2020

Figure 3: Notices placed on site and around Outapi

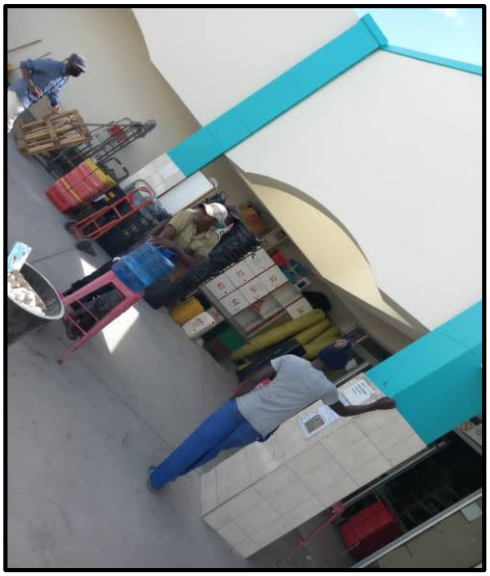

Figure 4: Adequate consultation notices in Outapi

Identification of Interested and Affected Parties (I&APs)

The EIA team identified and consulted the I&APs & key stakeholders for the proposed project. I&APs were allowed to register on a willing basis to the EIA team. A database was compiled containing their names and correspondence details. The registration was accomplished over a period of 30 days. Detailed information regarding points of concern is attached to Annexure 5 of this report.

Public Meeting

A public meeting was scheduled to be held on 28 November 2020 at the Project site. No I&APs were in attendance. However, the EIA team then conducted a door-to-door visit to distribute the BIDs to the nearby properties, proof of consultation is given in the appendices.

5. CHAPTER FIVE: ENVIRONMENTAL AND SOCIO-ECONOMIC IMPACTS

5.1. OVERVIEW

The chapter describes the potential environmental and socio-economic impacts that may occur due to the proposed activities being undertaken as part of the proposed development. The various impacts are discussed throughout the project cycle (during construction, operation and decommissioning). This chapter aims to inform the decision to be taken by the Ministry of Environment and Tourism in respect of the ECC.

5.2. IMPACT ASSESSMENT METHODOLOGY

An impact assessment matrix was used to assess all possible impacts of the project on the environment. In line with Namibia's Environmental Management Act No. 7 of 2007 and the Environmental Impacts Regulations (GN 30 in GG 4878 of 6 February 2012) with the direction on impacts analysis the following impact assessment criteria was identified by the team and deemed suitable.

Table 5: Impact Screening Criteria

Aspect	Description
Nature	Focuses on the type of effect that the project will have on environmental components. Addresses questions related to "what will be affected and how?"
Extent	Spatial extent of the project and anticipated spatial extent of impacts indicating whether the impact will be within a limited area (on site where construction is to take place); local (limited to within 15km of the area); regional (limited to ~100km radius); national (extending beyond Namibia's boarders).
Duration	This looks at the temporal issues pertaining to time frames e.g. whether the impact will be temporary (during construction only), short term (1-5 years), medium term (5-10 years), long term (longer than 10 years, but will cease after operation) or permanent.
Intensity	Establishes whether the magnitude of the impact is destructive or innocuous and whether it exceeds set standards, and is described as none (no impact); low (where natural/ social environmental functions and processes are negligibly affected); medium (where the environment continues to function but in a noticeably modified manner); or high (where environmental functions and processes are altered such that they temporarily or permanently cease and/or exceed legal standards/requirements).
Probability	Considers the likelihood of the impact occurring and is described as uncertain, improbable (low likelihood), probable (distinct possibility), highly probable (most likely) or definite (impact will occur regardless of prevention measures).

Aspect	Description
Significance	Significance is given before and after mitigation. Low if the impact will not have an influence on the decision or require to be significantly accommodated in the project design, Medium if the impact could have an influence on the environment which will require modification of the project design or alternative mitigation (the route can be used, but with deviations or mitigation) High where it could have a "no-go" implication regardless of any possible mitigation (an alternative route should be used).

The application of the above criteria will be used to determine the significance of potential impacts using a combination of duration, extent, and intensity/magnitude, augmented by probability, cumulative effects, and confidence. Significance is described as follows:

Table 6: Impact Rating Criteria

Significance Rating	Criteria
Low	Where the impact will have a negligible influence on the environment and no modifications or mitigations are necessary for the given development description. This would be allocated to impacts of any severity/ magnitude, if at a local scale/ extent and of temporary duration/time.
Moderate	Where the impact could have an influence on the environment, which will require modification of the development design and/or alternative mitigation. This would be allocated to impacts of moderate severity/magnitude, locally to regionally, and in the short term.
High	Where the impact could have a significant influence on the environment and, in the event of a negative impact the activity(ies) causing it, should not be permitted (i.e. there could be a 'no-go' implication for the development, regardless of any possible mitigation). This would be allocated to impacts of high magnitude, locally for longer than a month, and/or of high magnitude regionally and beyond.

5.1. IMPACT ASSESSMENT

By subjecting each of the potential impacts to the matrix above, the EIA team established the significance of each impact prior to implementing mitigation measures and then after mitigation measures have been implemented. Some of the mitigation measures are mentioned but detailed descriptions of management actions are contained in the accompanying EMP.

Table 7: Environmental impact assessment matrix for the proposed service station

Environmental Impact	Element	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance
TOPOGRAPHY	With Mitigation	Alteration of existing topography	Construction & operation	Short term	Low	Local	Direct	Probable	**Low**
	No Mitigation	Alteration of existing topography	Construction & operation	Short term	Low	Local	Direct	Probable	**Moderate**
	With Mitigation	Topographic changes and Visual Impact	Construction &Operation	Medium term	Moderate	Local	Direct	Probable	**Moderate**
	No Mitigation	Topographic changes and Visual Impact	Construction &Operation	Medium term	Moderate	Local	Direct	Probable	**High**
SOILS	With Mitigation	Loss of usable topsoil material	Construction	Long term	Low	Local	Direct	Probable	**Moderate**
	No Mitigation	Loss of usable topsoil material	Construction	Long term	Moderate	Local	Direct	Highly probable	**High**
	With Mitigation	Spillages and leakages of fuel, oil and other hazardous substances ferried by trucks.	Construction and Operations	Long term	Moderate	Local	Direct	Probable	**Moderate**
	No Mitigation	Spillages and leakages of fuel, oil and other hazardous substances ferried by trucks.	Construction and Operations	Long term	Moderate	Local	Direct	Highly probable	**High**
	With Mitigation	Underground tanks leakages and fuel spillages during tank and vehicles refill.	Operation	Long Term	Moderate	Local	Direct	Probable	**Moderate**
	No Mitigation	Underground tanks leakages and fuel	Operation	Long Term	High	Local	Direct	Probable	**High**

Environmental Impact	Element	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance
		spillages during tank and vehicles refill.							
	With Mitigation	Contamination to soil from waste disposal	Construction and Operations	Long term	Moderate	Local	Direct	Improbable	**Low**
	No Mitigation	Contamination to soil from waste disposal	Construction and Operations	Long term	Moderate	Local	Direct	Probable	**Moderate**
LAND CAPABILITY	With Mitigation	Land utilisation for the benefit of the people	Operations	Long term	High	National	Indirect	Probable	**Moderate**
	No Mitigation	Land utilisation for the benefit of the people	Operations	Long term	High	National	Indirect	Probable	**Moderate**
	With Mitigation	Decreased in vegetated land (biodiversity zones) around the town.	Construction and Operations	Long term	Low	Local	Direct	probable	**Low**
	No Mitigation	Decreased in vegetated land (biodiversity zones) around the town.	Construction and Operations	Long term	Moderate	Local	Direct	probable	**Moderate**
GROUND AND SURFACE WATER	With Mitigation	Pollution of underground aquifers from contaminated seepage and fuel storage tank leakages	Construction and Operations	Medium term	Moderate	Local	Direct	Improbable	**Moderate**
	No Mitigation	Pollution of underground aquifers from contaminated	Construction and Operations	Medium term	High	Local	Direct	Improbable	**High**

Environmental Impact	Element	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance
		seepage and fuel storage tank leakages							
	With Mitigation	Groundwater sources and soil may be polluted by construction activities	Construction	Short term	Moderate	Local	Direct	probable	**Moderate**
	No Mitigation	Groundwater sources and soil may be polluted by construction activities	Construction	Short term	High	Local	Direct	probable	**High**
	With Mitigation	Groundwater source potentially contaminated by sewerage waste	Operations	Long term	Low	Local	Direct	probable	**Low**
	No Mitigation	Groundwater source potentially contaminated by sewerage waste	Operations	Long term	Moderate	Local	Direct	probable	**Moderate**
	With Mitigation	Potential pollution of groundwater from fuel storage tank leakages or insufficient control of wastewater and oils on site.	Operations	Long term	Moderate	Local	Direct	Probable	**Moderate**
	No Mitigation	Potential pollution of groundwater from fuel storage tank leakages or insufficient control of	Operations	Long term	High	Local	Direct	Highly probable	**High**

Environmental Impact	Element	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance
		wastewater and oils on site.							
	With Mitigation	Groundwater source and soil may be polluted by construction activities	Construction	Short term	Moderate	Local	Direct	probable	**Moderate**
	No Mitigation	Groundwater source and soil may be polluted by construction activities	Construction	Short term	High	Local	Direct	probable	**High**
	With Mitigation	Increased sediment load from exposed surfaces	Construction	Short term	Low	Local	Direct	Probable	**Low**
	No Mitigation	Increased sediment load from exposed surfaces	Construction	Short term	Moderate	Local	Direct	Probable	**Moderate**
	With Mitigation	Stormwater generation from the open surface area for parking of vehicles will be created, the large open surface area may create stormwater which may result in pollution.	Construction and operations	Long term	Moderate	Local	Direct	Probable	**Moderate**

Environmental Impact	Element	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance
	No Mitigation	Stormwater generation from the open surface area for parking of vehicles will be created, the large open surface area may create stormwater which may result in pollution.	Construction and operations	Long term	High	Local	Direct	Highly Probable	**Moderate**
	With Mitigation	Increase in surface water run- off from a large open surface area on site because of vegetation removal	Construction and operations	Short term	Moderate	Local	Direct	Improbable	**Low**
	No Mitigation	Increase in surface water run- off from a large open surface area on site because of vegetation removal	Construction and operations	Short term	Moderate	Local	Direct	Improbable	**Moderate**
AIR QUALITY	With Mitigation	Generation of dust causing a nuisance to neighbouring residents and businesses	Construction	Short term	Low	Local	Direct	Probable	**Low**
	No Mitigation	Generation of dust causing a nuisance to neighbouring residents and businesses	Construction	Short term	Moderate	Local	Direct	Probable	**Moderate**
	With Mitigation	Fuel vapour and noxious smells may be released during UST	Operations	Long Term	Moderate	Local	Direct	Probable	**Moderate**

Environmental Impact	Element	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance
		refill, through vent pipes and during vehicle refilling processes.							
	No Mitigation	Fuel vapour and noxious smells may be released during UST refill, through vent pipes and during vehicle refilling processes.	Operations	Long Term	Moderate	Local	Direct	Probable	**High**
	With Mitigation	Nuisance from construction machinery and vehicular noise.	Construction and operation	Long term (operation)	Low	local	Direct	Probable	**Low**
	No Mitigation	Nuisance from construction machinery and vehicular noise.	Construction and operation	Long term (operation)	Moderate	local	Direct	Probable	**Moderate**
	With Mitigation	Visual impacts due to use of unsustainable disposal methods	Construction and Operations	Long term	Low	Local	Direct	Probable	**Low**
	No Mitigation	Visual impacts due to use of unsustainable disposal methods	Construction and Operations	Long term	Moderate	Local	Direct	Probable	**Moderate**
FAUNA	With Mitigation	Loss of habitat and clearing or damage to vegetation	Construction	Short Time	Moderate	Local	Direct	Highly Probable	**Moderate**
	No Mitigation	Loss of habitat and clearing or damage to vegetation	Construction	Short Time	High	Local	Direct	Highly Probable	**High**

Environmental Impact	Element	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance
FLORA	With Mitigation	Proliferation of invasive species Establishment of bush encroachers in disturbed areas.	Construction and Operations	Long Term	Low	Local	Direct	Probable	**Low**
	No Mitigation	Proliferation of invasive species Establishment of bush encroachers in disturbed areas.	Construction and Operations	Long Term	Low	Local	Direct	Probable	**Moderate**
	With Mitigation	Illegal collection of firewood	Construction and Operations	Long Term	Low	Local	Direct	Probable	**Low**
	No Mitigation	Illegal collection of firewood	Construction and Operations	Long Term	Low	Local	Direct	Probable	**Low**
	With Mitigation	Clearing of land may lead to destruction of protected vegetation and loss of biodiversity. Loss of mature and protected tree species due to clearing of land for parking space.	Construction	Short Term	Low	Local	Direct	Highly Probable	**Low**
	No Mitigation	Clearing of land may lead to destruction of protected vegetation and loss of biodiversity. Loss of mature and protected tree species	Construction	Short Term	Moderate	Local	Direct	Highly Probable	**Moderate**

Environmental Impact	Element	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance
		due to clearing of land for parking space.							
	With Mitigation	Uncontrolled/accidental fires	Construction and Operations	Long Term	High	Local	Direct	Probable	**Moderate**
	No Mitigation	Uncontrolled/accidental fires	Construction and Operations	Long Term	High	Local	Direct	Probable	**Moderate**
SOCIO-ECONOMIC	With Mitigation	Temporary employment prospects in the area	Construction	Short Term	Low	Local	Direct	Probable	**Moderate Positive**
	No Mitigation	Temporary employment prospects in the area	Construction	Short Term	Low	Local	Direct	Probable	**Moderate Positive**
	With Mitigation	Security concerns due to increased number of persons in areas	Construction and Operations	Long	High	Local	Direct	Probable	**Moderate Positive**
	No Mitigation	Security concerns due to increased number of persons in areas	Construction and Operations	Long	High	Local	Direct	Probable	**Moderate Positive**
	With Mitigation	Job creation permanent workforce	Operations and constructions	Long term	Moderate	Local	Direct	Probable	**Moderate Positive**
	No Mitigation	Job creation permanent workforce	Operations and constructions	Long term	Moderate	Local	Direct	Probable	**Moderate Positive**

Environmental Impact	Element	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance
	With Mitigation	Improved transport infrastructure and services	Operations	Long Term	Moderate	National	Direct	Highly Probable	**High Positive**
	No Mitigation	Improved transport infrastructure and services	Operations	Long Term	Moderate	National	Direct	Highly Probable	**High Positive**
	With Mitigation	Employment and local procurement.	Construction and Operations	Long Term	Moderate	Local	Direct	Probable	**Moderate Positive**
	No Mitigation	Employment and local procurement.	Construction and Operations	Long Term	Moderate	Local	Direct	Probable	**Moderate Positive**

5.2. RECOMMENDATION

Based on the Environmental Assessment it is concluded that most of the impacts identified can be addressed through the recommended mitigation and management actions for both the construction and operation phases of the fuel retail facility.

Should the recommendations included in this report and the EMP be implemented the significance of the impacts can be reduced to reasonably acceptable standards and durations. All developments could proceed provided that general mitigation measures as set out are implemented as a minimum.

In this respect it is recommended that the proposed service station receives an environmental clearance certificate, provided that the recommendations described in this report and the emp are implemented

REFERENCES

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