Excel Dynamic Solutions (Pty) Ltd

Environmental Scoping Assessment (ESA) for the proposed construction and operation of the Brado Lodge and conference centre located near Otjinene Settlement in the Omaheke Region, Namibia

ENVIRONMENTAL ASSESSMENT REPORT: FINAL

ECC Application Reference: APP- 0010284

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EXECUTIVE SUMMARY

Brado Lodge CC (The Proponent), plans to construct a lodge and a conference centre near the Otjinene settlement in the Omaheke Region. The proposed facility (Coordinates: **-21. 14632, 18.76865**) is situated about 1. 6 km from the Otjinene Settlement, Omaheke Region. The proposed project is planned to cover a total surface area of about 3 482 hectares (ha). Furthermore, the Proponent plans to construct lodges and a conference centre which will become the premier supplier of sustainable hospitality and tourism services near Otjinene, by providing high-quality accommodation and catering for the needs of international visitors providing a sustainable eco-tourism, and eco-friendly activities (i.e. excursions).

Tourism and recreation facilities form part of the listed activities that may not be undertaken without an ECC under the Environmental Impact Assessment (EIA) Regulations, Subsequently, to ensure that the proposed activity is compliant with the national environmental legislation, the project Proponent, appointed an independent environmental consultant, Excel Dynamic Solutions (Pty) Ltd to undertake the required Environmental Assessment (EA) process and apply for the ECC on their behalf.

The application for the ECC was compiled and submitted to the competent Authority (Ministry of Environment, Forestry and Tourism (MEFT)). Upon submission of an Environmental Scoping Assessment (ESA) Report and Draft Environmental Management Plan (EMP), an ECC for the proposed project will be considered by the Environmental Commissioner at the MEFT's Department of Environmental Affairs and Forestry (DEAF).

Brief Project Description

The proposed methods for the proposed development are divided into the following categories:

1. **Pre-development (Site acquisition and Preparation) Phase**: This will involve the Proponent ensuring that the site for the proposed development is legitimately acquired from the relevant authority (i.e. Otjinene Village Council), and the land has been cleared in a legitimately matter by the appointed contractor in a sustainable and ecological manner, to erect site offices and construction equipment storage rooms, to enable the commencement of the construction phase of the proposed project.

   The is also the phase where Proponent ensure that utilities services for the proposed development are on site, if not available.

2. **Construction and Operational Phase**: This is the phase where the Proponent will conduct the construction activities of the proposed development which will be done by a qualified and experienced contractor/s by following the approved project architectural design of the project. The proposed development is planned to consist of 17 lodge guestrooms, a conference centre, a business park, a restaurant, 3 sleeping rooms, 4 public toilets, a public swimming pool and a public bar. This is also the phase where quality checks of the buildings will be conducted by a qualified and experienced building evaluator. This will be done to ensure that the buildings are constructed in a qualitative manner.

   Once the construction phase of the proposed project is completed, the proposed project will then be in full operation.

Public Consultation

Public Consultation Activities

Regulation 21 of the EIA Regulations details steps to be taken during a public consultation process and these have been used in guiding this process. The public consultation process assisted the Environmental Consultant in identifying all potential impacts and aided in the process of identifying possible mitigation measures and alternatives to certain project activities. The communication with I&APs about the proposed project was done through the following means and in this order to ensure that the public is notified and afforded an opportunity to comment on the proposed project:

- A Background Information Document (BID) containing brief information about the proposed facility was compiled and distributed my means of email to relevant Authorities, and upon request to all new registered Interested and Affected parties (I&APs).
- Project Environmental Assessment notices were published in The Namibian Newspaper (30 June 2022 and 07 July 2022) and New Era Newspaper (29 June 2022 and 06 July 2022), briefly explaining the activity and its locality, inviting members of the public to register as I&APs and submit their comments/concerns.
- A consultation meeting was scheduled and held with the I&APs on the 26 of July 2022 at the Otjinene Constituency office at 12h30. The consultation meeting minutes were recorded.
- The issues and concerns raised were noted and used to form a basis for the ESA Report and EMP.

Potential Impacts identified

The following potential positive and negative impacts are anticipated to occur during the construction and operational phase of the proposed development:

Positive impacts:

- Local traditions and customs are kept alive,
- Tourist enjoyment of the scenery, so there is pressure to conserve habitats,
- Creation of jobs for the locals,
- Help boost local economic growth,
- Contribution to regional economic development

Negative impacts:

- Land degradation and Biodiversity Loss.
- Generation of dust
- Water Resources Use
- Soil & Water Resources Pollution
- Waste Generation
- Occupational Health & Safety risks
- Vehicular Traffic Use & Safety
- Noise & Vibrations
- Impacts on local Roads
- Social Nuisance: local property intrusion & disturbance
- Social Nuisance: Job seeking & differing Norms, Culture & values

CONCLUSIONS AND RECOMMENDATIONS

The potential impacts that are anticipated from the proposed development were identified, described, and assessed. For the significant adverse (negative) impacts with a medium rating, appropriate management and mitigation measures were recommended for implementation by the Proponent, their contractors and project related employees.

The public was consulted as required by the EMA and its 2012 EIA Regulations (Section 21 to 24). This was done via the two local newspapers (New Era and The Namibian) used for this environmental assessment. A consultation through a face-to-face meeting with the I&APs in Otjinene was conducted, whereby they raised comments and concerns on the proposed development.

The issues and concerns raised by the registered I&APs formed the basis for this Report and the Draft EMP. The issues were addressed and incorporated into this Report whereby mitigation measures have been provided thereof to avoid and/or minimize their significance on the environmental and social components. Most of the potential impacts were found to be of medium rating significance. The effective implementation of the recommended management and mitigation measures will particularly see a reduction in the significance of adverse impacts that cannot be avoided completely (from medium rating to low). To maintain the desirable rating, the implementation of management and mitigation measures should be monitored by the Proponent directly, or their Environmental Control Officer (ECO) is highly recommended. The monitoring of this implementation will not only be done to maintain the reduced impacts' rating or maintain a low rating but to also ensure that all potential impacts identified in this study and other impacts that might arise during implementation are properly identified in time and addressed right away too.

On this basis, it is the opinion of the Consultant that an ECC should be issued, on conditions that the management and mitigation measures specified in the Environmental Management Plan (EMP) are implemented and adhered to.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

LIST OF ABBREVIATIONS

Abbreviation	Meaning
BID	Background Information Document
CV	Curriculum Vitae
DEA	Department of Environmental Affairs
EA	Environmental Assessment
EAP	Environmental Assessment Practitioner
ECC	Environmental Clearance Certificate
EDS	Excel Dynamic Solutions
ESA	Environmental Scoping Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
I&APs	Interested and Affected Parties
MEFT	Ministry of Environment, Forestry and Tourism
PPE	Personal Protective Equipment
Reg	Regulation
S	Section
TOR	Terms of Reference

DEFINITION OF TERMS

Accommodation	Facilities for overnight stay and the services commonly associated therewith, including facilities provided on any premises where camping in caravans, tents or similar devices is allowed.
Alternative	A possible course of action, in place of another that would meet the same purpose and need of the proposal.
Baseline	Work done to collect and interpret information on the condition/trends of the existing environment.
Biophysical	That part of the environment that does not originate with human activities (e.g. biological, physical and chemical processes).
Cumulative Impacts/Effects Assessment	In relation to an activity, means the impact of an activity that in it may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.
Ecological Processes	Processes play an essential part in maintaining ecosystem integrity. Four fundamental ecological processes are the cycling of water, the cycling of nutrients, the flow of energy and biological diversity (as an expression of evolution).
Environmentally Sustainable Tourism	The development and operation of the tourism industry in such a manner that the assets and attractions on which the industry depends, are protected, and in a particular the safeguarding and maintaining of ecological processes, biodiversity, aesthetic and cultural qualities for the long-term benefit of the tourism industry and Namibia's people.

Environment	As defined in Environmental Management Act - the complex of natural and anthropogenic factors and elements that are mutually interrelated and affect the ecological equilibrium and the quality of life, including – (a) the natural environment that is land, water and air; all organic and inorganic matter and living organisms and (b) the human environment that is the landscape and natural, cultural, historical, aesthetic, economic and social heritage and values.
Environmental Management Plan	As defined in the EIA Regulations (Section 8(j)), a plan that describes how activities that may have significant environments effects are to be mitigated, controlled and monitored.
Interested and Affected Party (I&AP)	In relation to the assessment of a listed activity includes - (a) any person, group of persons or organization interested in or affected by an activity; and (b) any organ of state that may have jurisdiction over any aspect of the activity. Mitigate - practical measures to reduce adverse impacts. Proponent – as defined in the Environmental Management Act, a person who proposes to undertake a listed activity. Significant impact - means an impact that by its magnitude, duration, intensity or probability of occurrence may have a notable effect on one or more aspects of the environment.
Fauna	All of the animals found in a given area.
Flora	All of the plants found in a given area.
Mitigation	The purposeful implementation of decisions or activities that are designed to reduce the undesirable impacts of a proposed action on the affected environment.

Monitoring	Activity involving repeated observation, according to a pre-determined schedule, of one or more elements of the environment to detect their characteristics (status and trends).
Nomadic Pastoralism	Nomadic pastoralists live in societies in which the husbandry of grazing animals is viewed as an ideal way of making a living and the regular movement of all or part of the society is considered a normal and natural part of life. Pastoral nomadism is commonly found where climatic conditions produce seasonal pastures but cannot support sustained agriculture.
Proponent	Organization (private or public sector) or individual intending to implement a development proposal.
Public Consultation/Involvement	A range of techniques that can be used to inform, consult or interact with stakeholders affected by the proposed activities.
Scoping	An early and open activity to identify the impacts that are most likely to be significant and require specialized investigation during the EIA work. Can, also be used to identify alternative project designs/sites to be assessed, obtain local knowledge of site and surroundings and prepare a plan for public involvement. The results of scoping are frequently used to prepare a Terms of Reference for the specialized input into full EIA.
Terms of Reference (ToR)	Written requirements governing full EIA input and implementation, consultations to be held, data to be produced and form/contents of the EIA report. Often produced as an output from scoping.
Tourism	The activities of foreign visitors and Namibian residents travelling to and staying at places outside of their usual environment for not more than one year for the purposes of visiting, experiencing and enjoying Namibia's natural, social and self-constructed amenities, and for business and other purposes.

Tourist	Any person who travels to a destination away from his or her normal place of residence for recreational or business purposes.

1 INTRODUCTION

1.1 Project Background

Brado Lodge CC (The Proponent), plans to construct a lodge and a conference centre near the Otjinene settlement in the Omaheke Region The proposed facility (Coordinates: **-21. 14632, 18.76865**) is situated about 1. 6 km from the Otjinene Settlement in the Omaheke Region. The proposed development is planned to cover a surface area of about 3 482 hectares (ha) (**Figure 1**). The Proponent plans to construct lodges and a conference centre which will become the premier supplier of a sustainable hospitality and tourism services near Otjinene, by providing high-quality accommodations, and catering for the needs of international and local visitors by providing sustainable eco-tourism and eco-friendly activities such as excursions.

Tourism and recreation facilities form part of the listed activities that may not be undertaken without an Environmental Clearance Certificate (ECC). Thus, the proposed Brado Lodge and Conference centre project is subjected to an ECC, to be issued by the Ministry of Environment, Forestry and Tourism (MEFT).

Figure 1: The locality map of the proposed project near Otjinene Settlement in the Omaheke Region

1.2 Terms of Reference and Scope of Works

Excel Dynamic Solutions (Pty) Ltd (EDS) has been appointed by The Proponent to undertake an environmental assessment (EA), and thereafter, apply for an ECC for the proposed development. There were no formal Terms of Reference (ToR) provided to EDS by the Proponent. The consultant, instead, relied on the requirements of the Environmental Management Act (No. 7 of 2007) (EMA) and its Environmental Impact Assessment (EIA) Regulations (GN. No. 30 of 2012) to conduct the study.

The application for the ECC was compiled and submitted to the Competent Authority (Ministry of Environment, Forestry and Tourism (MEFT)), (**Appendix A**), as the environmental custodian for project registration purposes. Upon submission of an Environmental Scoping Assessment (ESA) Report and Draft Environmental Management Plan (EMP), an ECC for the proposed development will be considered by the Environmental Commissioner at the MEFT's Department of Environmental Affairs and Forestry (DEAF).

1.3 Appointed Environmental Assessment Practitioner

To satisfy the requirements of the EMA and its 2012 EIA Regulations, The Proponent appointed EDS, to conduct the required EA process on their (Proponent's) behalf. The findings of the EA are incorporated into this report and the draft EMP – (**Appendix B**). These documents will be submitted as part of the ECC application to the Environmental Commissioner at the DEAF.

The EIA project is headed by Mr. Nerson Tjelos, a qualified and experienced Geoscientist and experienced EAP. The consultation process and reporting are done by Mr. Silas David and Reviewed by Ms. Rose Mtuleni. Mr. Nerson Tjelos CV is presented in **Appendix C.**

1.4 The Need for the Proposed Project

The Tourism sector is one of the largest economic contributor to the country's Gross Domestic Product (GDP), as it generates a substantial amount of jobs and is a valuable foreign exchange earner for the economy. Tourism can create direct and indirect income and employment effects to the Otjinene Settlement and previously marginalized communities in the area, with the potential

to aid with the poverty reduction targets. In addition, tourism forms the essence of some Namibia's development plans, namely: National Development Plan 5 (NDP5) and Harambee Prosperity Plan (HPP). These plans are benchmarks on the ideal of vision 2030.

The proposed Brado lodge and Conference Center is a unique project in terms of its ownership, the proposed project will be owned on Broad Base Public Private Partnership (BBPPP) which is in line with the National Development Goals of the Country.

2 PROJECT DESCRIPTION

The Proponent has obtained the right to build, operate, manage and maintain the proposed Brado lodge and conference center. The proposed methods for the proposed project are divided into the following categories:

2.1 Pre-development (Site Preparation) Phase

This will include the Proponent ensuring that the site for the proposed project is legitimately acquired from the relevant authority (Otjinene Village Council), and the land has been cleared by the appointed contractor in a sustainable and ecological manner to erect site offices and construction equipment storage rooms, and to enable the commencement of the construction phase. The is also the phase where Proponent ensure that utilities services for the proposed development are on site if not available. **Figure 2** below shows a typical representation of a site establishment or preparation for the proposed development.

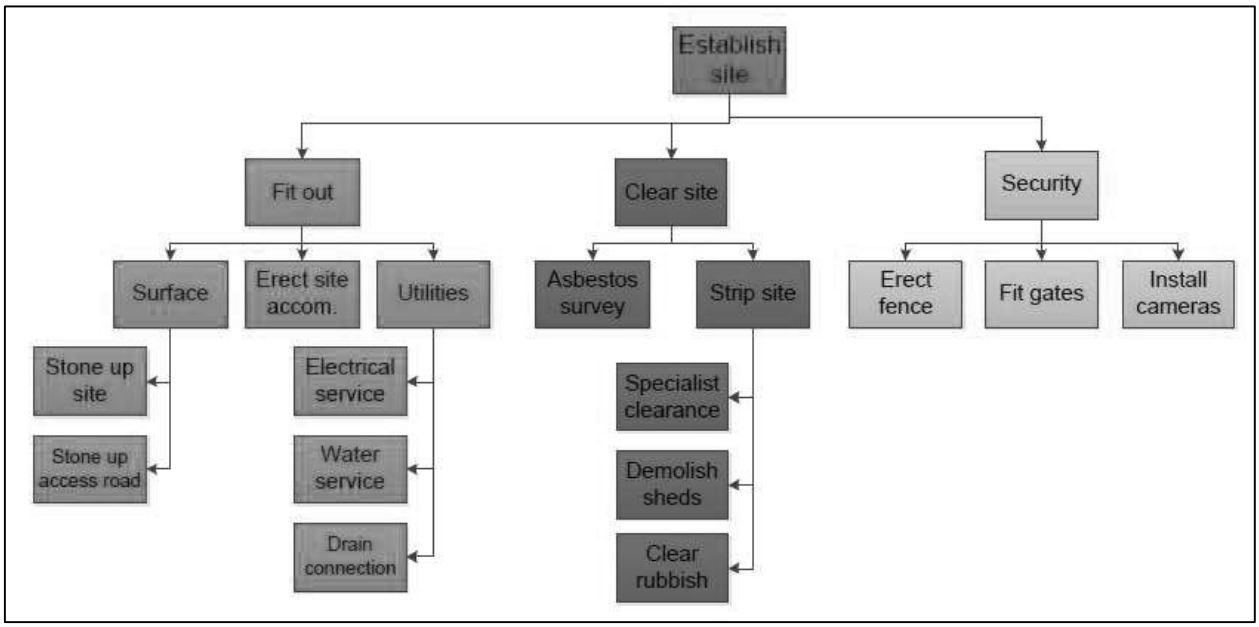

Figure 2: Typical example of the construction site preparation for the proposed project (source: https://constructionfield.org/wbs-establish-construction-site/)

2.2 Construction and Operational Phase

This phase will involve the construction of the proposed project by a qualified and experienced contractor/s through following the project building design of the proposed development (**Figure 3**). The construction of the proposed project will include associated facilities, such as seventeen (17) lodge guestrooms, a conference center, a business park, a restaurant, three (3) sleeping rooms, four (4) public toilets, a public swimming pool and a public bar.

This is also the phase where quality check of the buildings will be conducted by a qualified building evaluator at various stages of the construction phase. Once the construction phase of the project is completed, the proposed project will then be in operation.

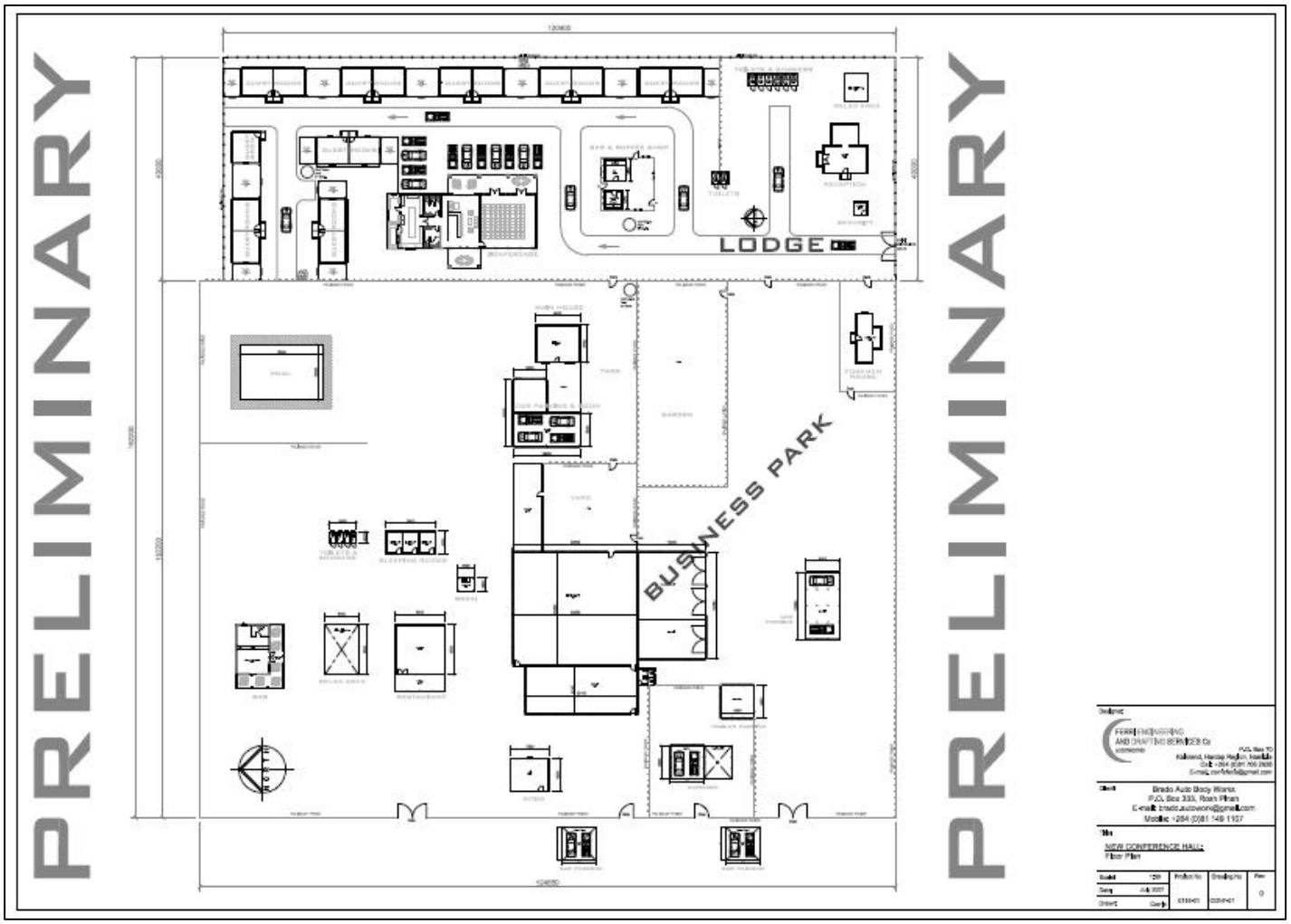

Figure 3: Preliminary Plan of the proposed development

Other aspects involved during the construction phase include:

2.2.1 Accessibility to Site

The proposed development is accessible via the C22 road which connects to the D3839 road from Otjinene. Therefore, project related vehicles will be using these existing roads to access the site. It is also anticipated that, if necessary, onsite new tracks to the site may be created. The Proponent may need to do some upgrade on the site access road to ensure that it is fit to accommodate project related vehicles, such as heavy trucks that will supply building equipment and materials.

2.2.2 Building Materials

Building materials such as bricks, stones, cements, thatch and mortar are envisioned to be used during the construction phase of the project. Furthermore, eco-friendly materials such as sticks and thatch are anticipated be used during the construction phase of the proposed development.

Building sand will be sourced from barrow-pit is anticipated for the proposed development. However, deemed building sands will be sourced from a barrow-pit that does not exist, required permits may need to be acquired from at the relevant authorities.

2.2.3 Waste Management

The site will be equipped with secured waste bins for each type of waste (i.e., domestic, hazardous, and recyclable). Depending on the amount generated, waste will be sorted and collected weekly or monthly and taken to the nearest certified landfill site. An agreement will need to be reached with different waste management facility operators/owners and authorization or permits will be obtained prior to utilizing these facilities.

Sewage Waste Management: During the operations, the effluent from the tricking plant for the proposed development is anticipated to occur and this will be used for the irrigation of grasses and trees around the buildings of the proposed development.

Solid Waste Management: Solid waste for the proposed development will be managed with reverence to the moralities outlined in the hierarchy of waste prevention, re-use and recycle, where waste minimisation and recycling is ideal to waste treatment and disposal.

2.2.4 Health and safety

Adequate and appropriate Personal Protective Equipment (PPE) will be provided to every project personnel while on and working at site. A minimum of two first aid kits will be readily available on site to attend to potential minor injuries.

Fire management: A minimum of basic firefighting equipment, i.e., two fire extinguishers will be readily available in vehicles, at the working sites and camps.

On-site Workers' Safety: Adequate and appropriate Personal Protective Equipment (PPE) will be provided to every project personnel while on and working at site. A minimum of two first aid kits will be readily available on site to attend to potential minor injuries.

2.2.5 Accommodation

The working personnel will be accommodated in Otjinene, or a campsite will be set up for the workers near the site. If the accommodation camp is to be set up near the site, necessary arrangements will be made with the relevant authority (Otjinene village council). Construction activities will take place during daytime only and staff will commute to the site (s) from their place of accommodation.

2.3 Construction Closure Phase

Once the construction phase of the proposed project is completed, the proponent will be required to dismantle and remove the site offices and campsites that were erected during the construction phase of the proposed project. Furthermore, this phase also involves the dismantling all the construction related equipment and the removal of building materials that were leftover during the construction phase of the proposed development.

3 PROJECT ALTENATIVES

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

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

- What alternatives are technically and economically feasible?

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

The alternatives considered for the proposed development are discussed in the following subsections.

3.1 Alternatives Considered

The environmental assessment for the proposed development has accommodated the ordeal which might occur into consideration. This includes the review of the likelihood of the construction activities. It should be noted that the best alternative option shall be identified to ensure the impacts on the environment and society are minimized. Furthermore, the supplemental construction activities may be considered as another alternative to cater for any impacts that are of serious concern.

4 LEGAL FRAMEWORK: LEGISLATION, POLICIES AND GUIDELINES

This Chapter outlines the regulatory framework applicable to the proposed project. **Table 1** Provides a list of applicable and relevant framework for the project.

4.1 Namibia Tourism Board Act (No. 21 of 2000)

The core objective of this act is to establish the Namibia Tourism Board and to provide for its functions, to provide for the registration and grading of accommodation establishments, to provide for the declaration of any sector of the tourism industry as a regulated sector and for the registration of business falling within a regulated sector; and to provide for matters incidental thereto.

4.2 The Environmental Management Act (No. 7 of 2007)

This EIA was carried out according to the Environmental Management Act (EMA) and its Environmental Impact Assessment (EIA) Regulations (GG No. 4878 GN No. 30).

The EMA has stipulated requirements to complete the required documentation to obtain an Environmental Clearance Certificate (ECC) for permission to undertake certain listed activities. These activities are listed under the following Regulations:

- Tourism Development Activities- The construction of resorts, lodges, hotels or other tourism and hospitality facilities.
- Other activities- Construction of cemeteries, camping, leisure and recreation sites.

The Environmental Impact Assessment (EIA) Regulations GN 28-30 (GG 4878) detail requirements for public consultation within a given environmental assessment process (GN 30 S21). The EIA regulations also outline the required details of a Scoping Report (GN 30 S8) and an Assessment Report (GN 30 S15).

Other legal obligations that are relevant to the proposed activities are presented in Error! R eference source not found..

Table 1: Applicable local, national and international standards, policies and guidelines governing the proposed development

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
The Constitution of the Republic of Namibia, 1990 as amended	The Constitution of the Republic of Namibia (1990 as amended) addresses matters relating to environmental protection and sustainable development. Article 91(c) defines the functions of the Ombudsman to include: "…the duty to investigate complaints concerning the over-utilisation of living natural resources, the irrational exploitation of non-renewable resources, the degradation and destruction of ecosystems and failure to protect the beauty and character of Namibia…"	By implementing the environmental management plan, the establishment will be in conformant to the constitution in terms of environmental management and sustainability. Ecological sustainability will be main priority for the proposed development.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Health & Safety Regulations, 10th Draft	Makes provision for the health and safety of persons employed or otherwise present in the development area. These deal with among other matters; clothing and devices; design, use, operation, supervision and control of machinery; fencing and guards; and safety measures during repairs and maintenance.	The Proponent should comply with all these regulations with respect to their employees.
Petroleum Products and Energy Act (No. 13 of 1990) Regulations (2001)	Regulation 3(2)(b) states that "No person shall possess [sic] or store any fuel except under authority of a license or a certificate, excluding a person who possesses or stores such fuel in a quantity of 600 litres or less in any container kept at a place outside a local authority area".	The Proponent should obtain the necessary authorization from the Ministry of Mines and Energy for the storage of fuel on-site.
The Regional Councils Act (No. 22 of 1992)	This Act sets out the conditions under which Regional Councils must be elected and administer each delineated region. From a land use and project planning point of view, their duties include, as described in section 28 "to undertake the planning of the development of the region for which it has been established with a view to physical, social and economic characteristics, urbanisation patterns, natural resources, economic development potential, infrastructure, land utilisation pattern and sensitivity of the natural environment.	The relevant Regional Councils are considered to be I&APs and must be consulted during the Environmental Assessment (EA) process. The project site falls under the Omaheke Regional Council; therefore, they should be consulted.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Local Authorities Act No. 23 of 1992	To provide for the determination, for purposes of traditional government, of traditional authority councils; the establishment of such traditional authority councils; and to define the powers, duties and functions of traditional authority councils; and to provide for incidental matters.	The Otjinene Village Council is the responsible local Authority of the area therefore they should be consulted.
Water Act 54 of 1956	The Water Resources Management Act 11 of 2013 is presently without regulations; therefore, the Water Act No 54 of 1956 is still in force: Prohibits the pollution of water and implements the principle that a person disposing of effluent or waste has a duly of care to prevent pollution (S3 (k)). Provides for control and protection of groundwater (S66 (1), (d (ii)). Liability of clean-up costs after closure/abandonment of an activity (S3 (l)). (l)).	The protection (both quality and quantity/abstraction) of water resources should be a priority.
Water Resources Management Act (No 11 of 2013)	The Act provides for the management, protection, development, use and conservation of water resources; and provides for the regulation and monitoring of water services and to provide for incidental matters. The objects of this Act are to:	

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
	Ensure that the water resources of Namibia are managed, developed, used, conserved and protected in a manner consistent with, or conducive to, the fundamental principles set out in Section 66 - protection of aquifers, Subsection 1 (d) (iii) provide for preventing the contamination of the aquifer and water pollution control (Section 68).	
National Heritage Act No. 27 of 2004	To provide for the protection and conservation of places and objects of heritage significance and the registration of such places and objects; to establish a National Heritage Council; to establish a National Heritage Register; and to provide for incidental matters.	The Proponent should ensure compliance with these Acts requirements. The necessary management measures and related permitting requirements must be taken. This done by the consulting with the National Heritage Council of Namibia.
The National Monuments Act (No. 28 of 1969)	The Act enables the proclamation of national monuments and protects archaeological sites.	
Soil Conservation Act (No 76 of 1969)	The Act makes provision for the prevention and control of soil erosion and the protection, improvement and conservation of soil, vegetation and water supply sources and resources, through directives declared by the Minister.	Duty of care must be applied to soil conservation and management measures must be included in the EMP.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Public Health Act (No. 36 of 1919)	Section 119 states that "no person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health."	The Proponent and all its employees should ensure compliance with the provisions of these legal instruments.
Health and Safety Regulations GN 156/1997 (GG 1617)	Details various requirements regarding health and safety of labours.	
Road Traffic and Transport Act, No. 22 of 1999	The Act provides for the establishment of the Transportation Commission of Namibia; for the control of traffic on public roads, the licensing of drivers, the registration and licensing of vehicles, the control and regulation of road transport across Namibia's borders; and for matters incidental thereto. Should the Proponent wish to undertake activities involving road transportation or access onto existing roads, the relevant permits will be required.	Mitigation measures should be provided for, if the roads and traffic impact cannot be avoided, the relevant permits must be applied for.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Labour Act (No. 6 of 1992)	Ministry of Labour (MOL) is aimed at ensuring harmonious labour relations through promoting social justice, occupational health and safety and enhanced labour market services for the benefit of all Namibians. This ministry insures effective implementation of the Labour Act no. 6 of 1992.	The Proponent should ensure that the development do not compromise the safety and welfare of workers.

4.3 International Policies, Principles, Standards, Treaties and Conventions

The international policies, principles, standards, treaties, and conventions applicable to the project are as listed in **Table 2** below.

Table 2: International Policies, Principles, Standards, Treaties and Convention applicable to the project

Statute	Provisions	Project Implications
Equator Principles	A financial industry benchmark for determining, assessing, and managing environmental and social risk in projects (August 2013). The Equator Principles have been developed in conjunction with the International Finance Corporation (IFC), to establish an International Standard with which companies must comply with to apply for approved funding by Equator Principles Financial Institutions (EPFIs). The Principles apply to all new project financings globally across all sectors. **Principle 1:** Review and Categorization	These principles are an attempt to: '…encourage the development of socially responsible projects, which subscribe to appropriately responsible environmental management practices with a minimum negative impact on project-affected ecosystems and community-based

Statute	Provisions	Project Implications
	Principle 2: Environmental and Social Assessment **Principle 3:** Applicable Environmental and Social Standards **Principle 4:** Environmental and Social Management System and Equator Principles Action Plan **Principle 5:** Stakeholder Engagement **Principle 6:** Grievance Mechanism **Principle 7:** Independent Review **Principle 8:** Covenants **Principle 9:** Independent Monitoring and Reporting **Principle 10:** Reporting and Transparency	upliftment and empowering interactions.'
The International Finance Corporation (IFC) Performance Standards	The International Finance Corporation's (IFC) Sustainability Framework articulates the Corporation's strategic commitment to sustainable development and is an integral part of IFC's approach to risk management. The Sustainability Framework comprises IFC's Policy and Performance Standards on Environmental and Social Sustainability, and IFC's Access to Information Policy. The Policy on Environmental and Social Sustainability describes IFC's commitments, roles, and responsibilities related to environmental and social sustainability.	The Performance Standards are directed towards clients, providing guidance on how to identify risks and impacts, and are designed to help avoid, mitigate, and manage risks and impacts as a way of doing business in a sustainable way, including stakeholder engagement and disclosure obligations of the Client (Borrower) in

Statute	Provisions	Project Implications
	As of 28 October 2018, there are ten (10) Performance Standards (Performance Standards on Environmental and Social Sustainability) that the IFC requires a project Proponents to meet throughout the life of an investment. These standard requirements are briefly described below. **Performance Standard 1**: Assessment and Management of Environmental and Social Risks and Impacts **Performance Standard 2**: Labour and Working Conditions **Performance Standard 3:** Resource Efficient and Pollution Prevention and Management **Performance Standard 4:** Community Health and Safety **Performance Standard 5:** Land Acquisition, Restrictions on Land Use, and Involuntary Resettlement **Performance Standard 6:** Biodiversity Conservation and Sustainable Management of Living Natural Resources **Performance Standard 7**: Indigenous Peoples/Sub-Saharan African Historically Undeserved Traditional Local Communities **Performance Standard 8:** Cultural Heritage	relation to project-level activities. In the case of its direct investments (including project and corporate finance provided through financial intermediaries), IFC requires its clients to apply the Performance Standards to manage environmental and social risks and impacts so that development opportunities are enhanced. IFC uses the Sustainability Framework along with other strategies, policies, and initiatives to direct the business activities of the Corporation to achieve its overall development objectives.

Statute	Provisions	Project Implications
	Performance Standard 9: Financial Intermediaries (FIs) **Performance Standard 10:** Stakeholder Engagement and Information A full description of the IFC Standards can be obtained from http://www.worldbank.org/en/projects-operations/environmental-and-social-framework/brief/environmental-and-social-standards?cq_ck=1522164538151#ess1	
The United Nations Convention to Combat Desertification (UNCCD) 1992	Addresses land degradation in arid regions with the purpose to contribute to the conservation and sustainable use of biodiversity and the mitigation of climate change. The convention objective is to forge a global partnership to reverse and prevent desertification/land degradation and to mitigate the effects of drought in affected areas to support poverty reduction and environmental sustainability United Nation Convention.	The project activities should not be such that they contribute to desertification.
Convention on Biological Diversity 1992	Regulate or manage biological resources important for the conservation of biological diversity whether within or outside protected areas, with a view to ensuring their conservation and sustainable use. Promote the protection of ecosystems, natural habitats, and the maintenance of	Removal of vegetation cover and destruction of natural habitats should be avoided and where not possible minimised.

Statute	Provisions	Project Implications
	viable populations of species in natural surroundings.	
Stockholm Declaration on the Human Environment, Stockholm (1972)	It recognizes the need for: "a common outlook and common principles to inspire and guide the people of the world in the preservation and enhancement of the human environment.	Protection of natural resources and prevention of any form of pollution.

Relevant international Treaties and Protocols ratified by the Namibian Government

- Convention on International Trade and Endangered Species of Wild Fauna and Flora (CITES), 1973.
- Convention on Biological Diversity, 1992.
- World Heritage Convention, 1972.

5 ENVIRONMENTAL BASELINE

The baseline information presented below is sourced from a variety of sources including reports of studies conducted in the Omaheke Region. Further information was obtained by the Consultant during the public consultation meeting and during the site visit.

5.1 Biophysical Environment

5.2 Climate

Otjinene has a Subtropical steppe climate, the Otjinene district's yearly temperature is 23.27ºC and it is 1.19% lower than Namibia's averages. Otjinene typically receives about 43.27 millimeters of precipitation and has 72.58 rainy days (19.88% of the time) annually. **Figure 4** below shows the climate of the project area.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Nov	Oct	Dec	Year
Record high °C (°F)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Average high °C (°F)	30.45 (86.81)	29.66 (85.39)	28.56 (83.41)	26.17 (79.11)	24.18 (75.52)	21.6 (70.88)	21.45 (70.61)	25.55 (77.99)	29.38 (84.88)	31.58 (88.84)	31.27 (88.29)	30.71 (87.28)	27.55 (81.59)
Daily mean °C (°F)	27.31 (81.16)	26.24 (79.23)	25.03 (77.05)	22.42 (72.36)	19.82 (67.68)	16.43 (61.57)	16.11 (61.0)	19.68 (67.42)	23.96 (75.13)	27.03 (80.65)	27.63 (81.73)	27.63 (81.73)	23.27 (73.89)
Average low °C (°F)	20.83 (69.49)	19.57 (67.23)	18.43 (65.17)	15.68 (60.22)	12.26 (54.07)	7.9 (46.22)	7.1 (44.78)	9.2 (48.56)	12.61 (54.7)	16.62 (61.92)	19.42 (66.96)	20.86 (69.55)	15.04 (59.07)
Record low °C (°F)	12.96 (55.33)	14.95 (58.91)	11.96 (53.53)	8.97 (48.15)	2.99 (37.38)	-2.99 (26.62)	-1.99 (28.42)	-1.99 (28.42)	1.0 (33.8)	3.99 (39.18)	8.97 (48.15)	8.97 (48.15)	-2.99 (26.62)
Average precipitation mm (inches)	102.11 (4.02)	113.59 (4.47)	78.53 (3.09)	31.34 (1.23)	2.81 (0.11)	0.22 (0.01)	0.64 (0.03)	0.48 (0.02)	3.12 (0.12)	15.85 (0.62)	55.85 (2.2)	116.71 (4.59)	43.27 (1.7)
Average precipitation days (≥ 1.0 mm)	13.23	13.59	11.14	5.62	0.73	0.09	0.18	0.27	1.09	3.08	9.88	13.68	6.05
Average relative humidity (%)	41.8	46.93	47.58	45.45	34.32	33.46	33.12	23.4	19.14	19.15	27.26	37.63	34.11
Mean monthly sunshine hours	11.35	11.27	11.28	11.28	11.0	10.86	10.89	11.23	11.44	11.32	13.21	13.1	11.52

Figure 4: Shows the Climate condition in Otjinene

5.3 Topography

The proposed development is located within the Kalahari Sandveld landscape. The Kalahari Sandveld in Otjinene is dominated by the savanna woodland growing on sands deposited by wind over the last 70-65 million years ago. The landscape is particularly flat, although the sands have been moulded into dunes in some areas (Mendelsohn, 2003). The altitudes ranges between 1, 350 m and 1, 562 m above sea level. **Figure 5** shows the landscape and topography setup of the project area.

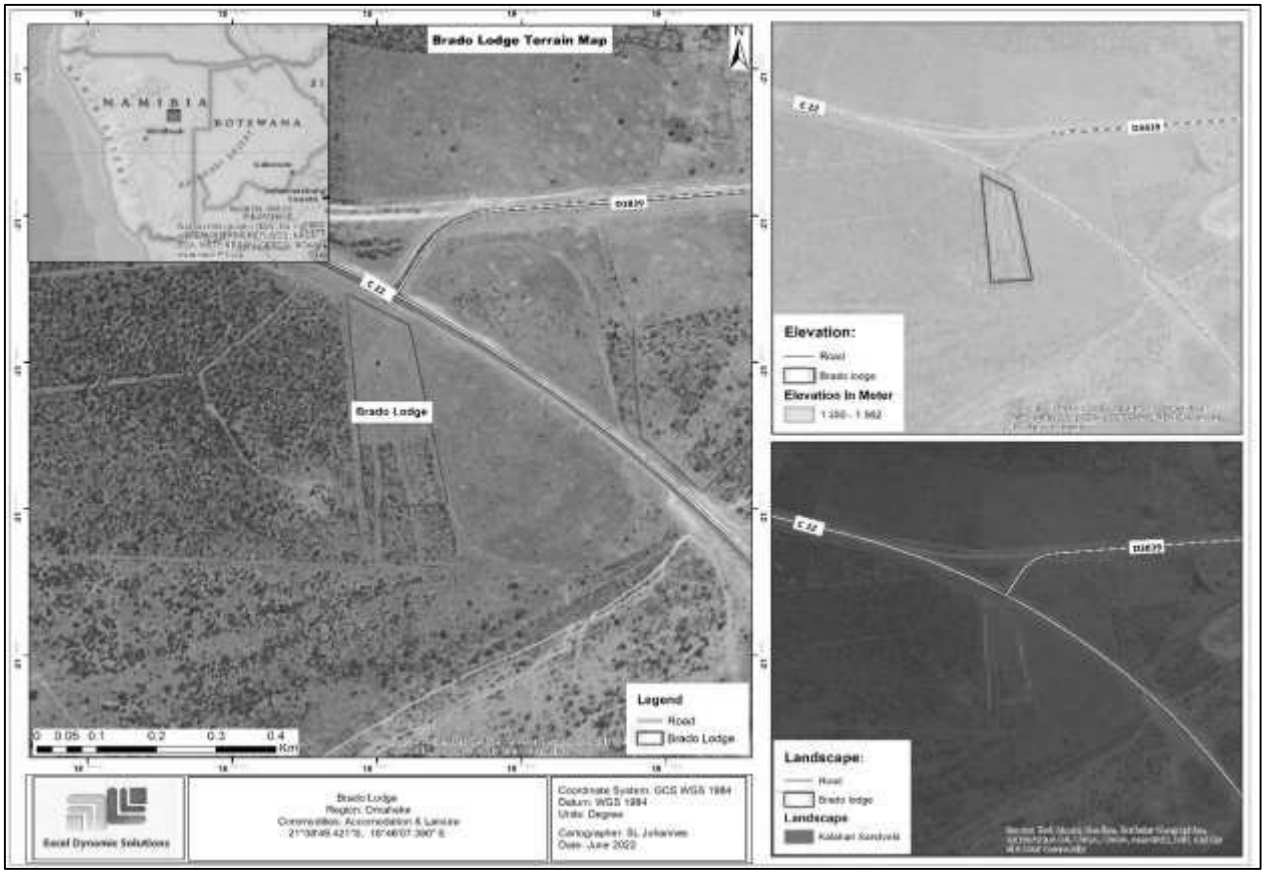

Figure 5: Shows the landscape and topographical of the project area

5.4 Geology and Soil

Geology

The Lodge is found within the Kalahari Group. The Kalahari Group is subdivided into the Kalahari and the Namib Sands group. The Kalahari group cover the eastern parts of the Nama Basin and almost all of the owambo Basin. The large sand seas of the Namib Desert have approximately the same age as the Kalahari sand (Mendelsohn, 2003).

The Kalahari and Namib Sands are more dominated by the schist, marble quartzile, conglomerate and graphitic schist as it is shown in the figure below. **Figure 6** below shows the general geology map for the project.

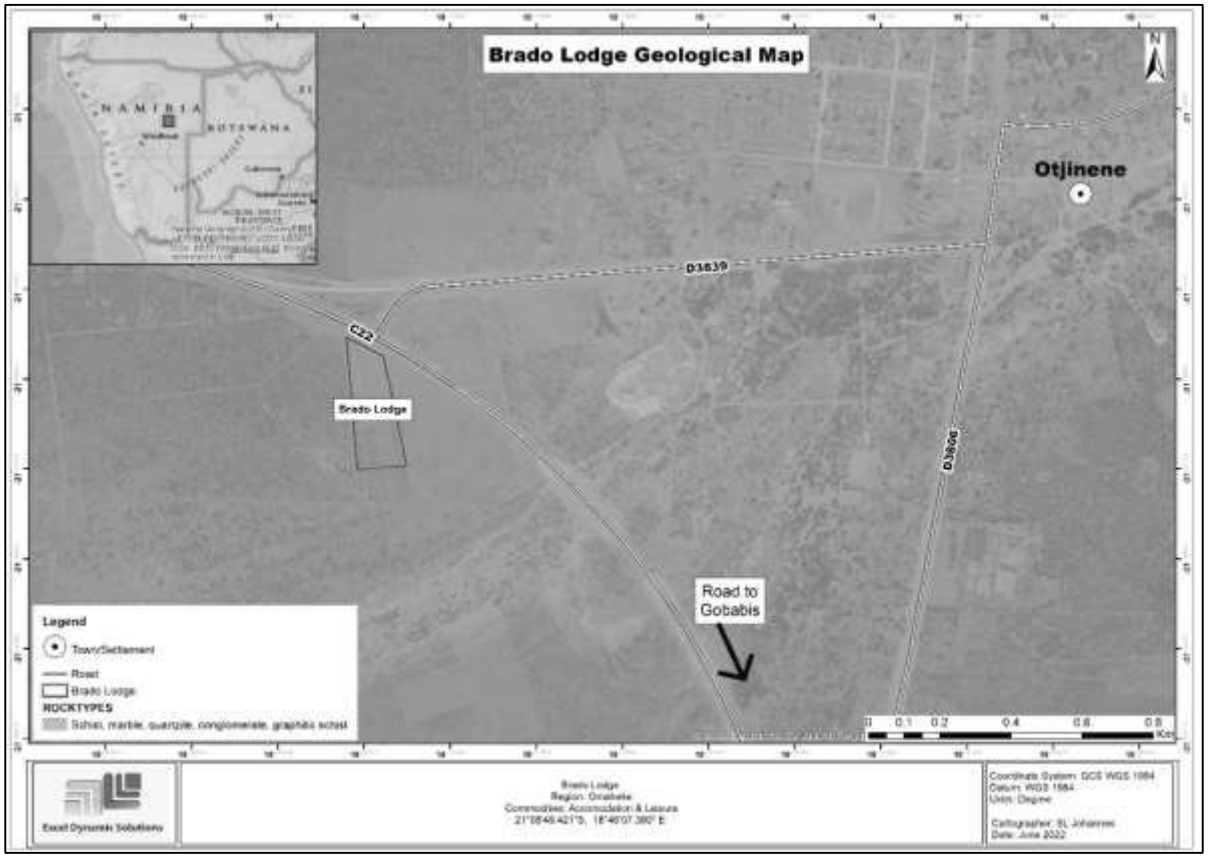

Figure 6: Shows the geology map of the area

Soil

The Omaheke region lie on the western edge of a vast basin of sand, and it is this sand that determines much about the vegetation, farming potential of the region. The proposed project lies within the Eutric Fluvisol soil which typically cover much of the area. The Fluvisol soil is found along the margin and valleys of larger river courses in eastern Namibia. Some are flooded regularly, especial those in and around the Eastern Caprivi floodplain. Some Fluvisols provides nutrient-rich soil for crop cultivation (Mendelsohn, 2003). **Figure 7** shows the soils of the project area.

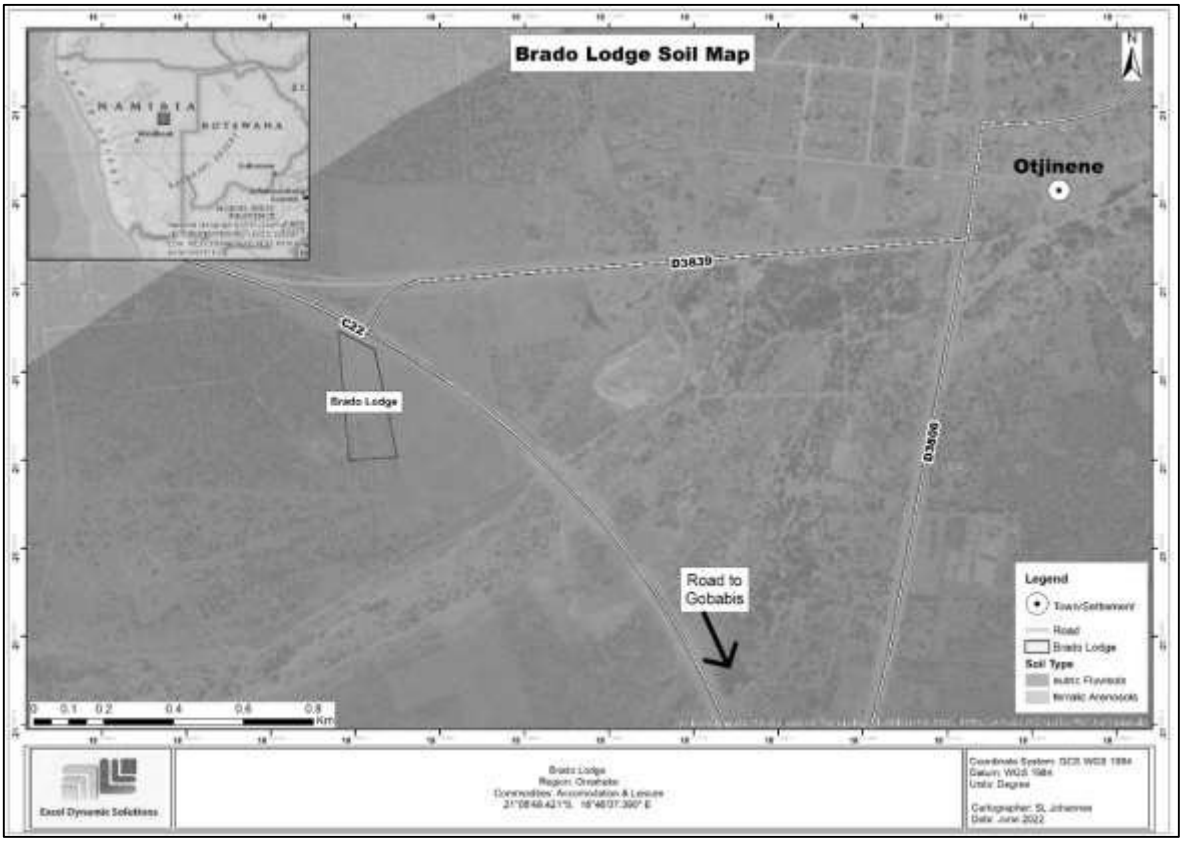

Figure 7: Shows the soils for the proposed project

5.5 Hydrology and Water Resources

In terms of surface water/ hydrology, the Eiseb River is the nearest river to the proposed development which located on the south-east of the project. With regards to groundwater (hydrogeology), the development is mainly covered by porous aquifer with moderate water storage. There is an existing borehole which is in operation for water usage sited within the proposed project. **Figure 8** shows the hydrology map of the lodge area.

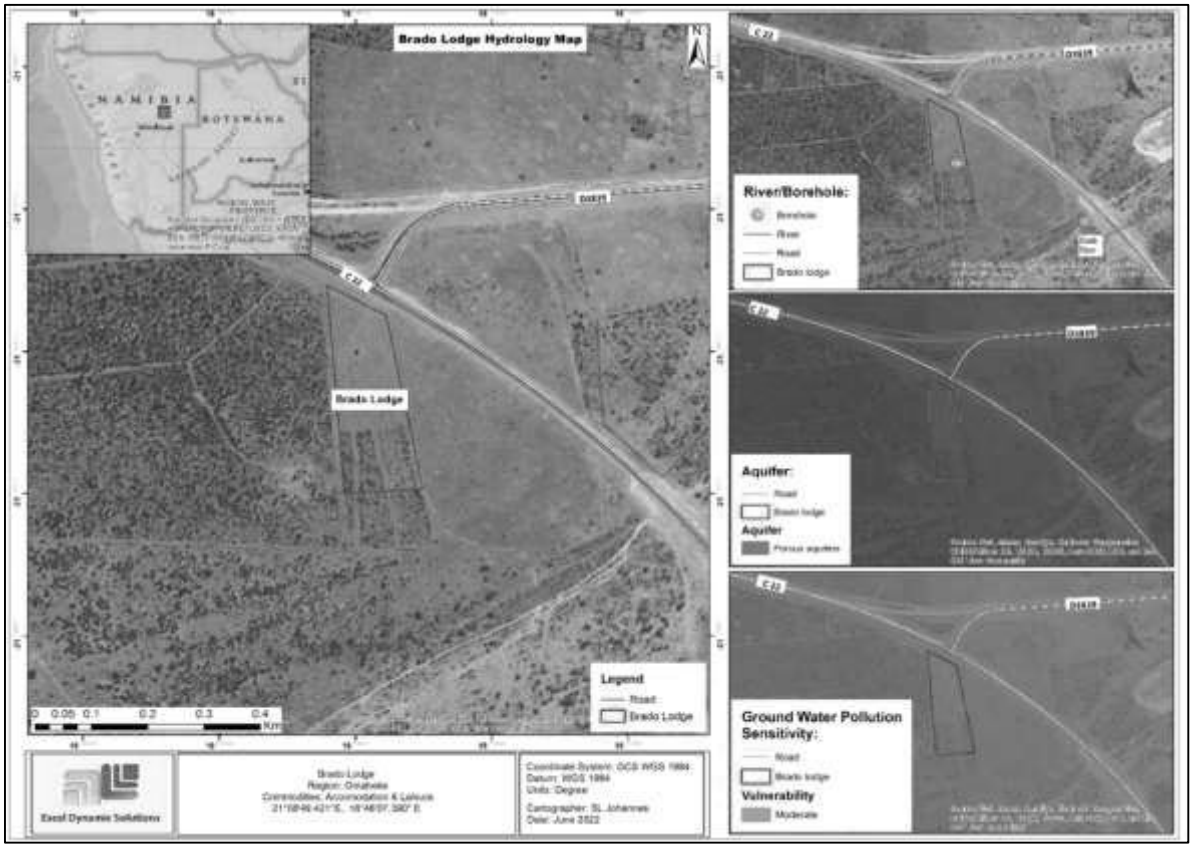

Figure 8: Shows hydrology map for the proposed development

5.6 Flora and Fauna

Flora

The project area lies with an area dominated by the woody plants, commonly biome trees and shrubs savannah. These are characterized by large open grasslands covered with acacia trees. The trees are tall in the area of deeper sand which is situated on the east. Plants growth becoming progressively shrubby further west where the soil is shallower. The project area is mainly dominated by the *Acacia erioloba* commonly known as the Camel thorn, which is a nation protected plant species. **Figure 9** shows the vegetation structure and coverage for the proposed project.

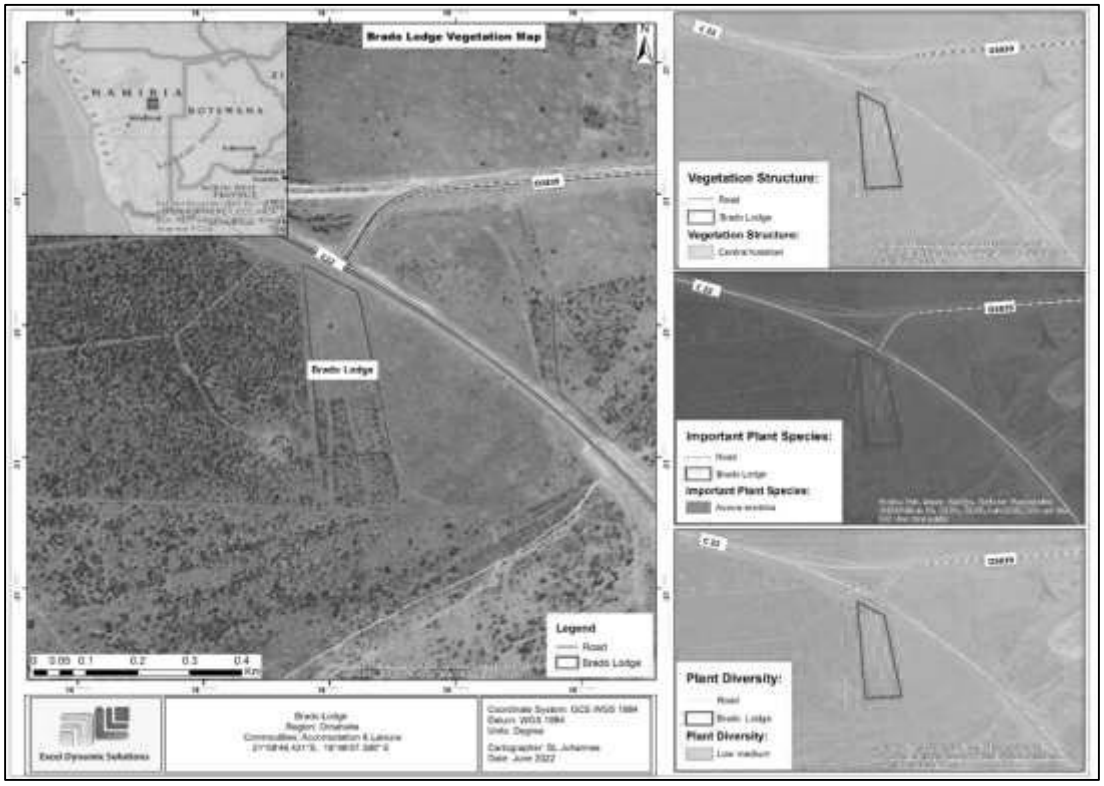

Figure 9: Shows the vegetation cover for the proposed project

Fauna

The project area is surrounded by farms that accommodate livestock. Furthermore, due to the flat landscape of the project area, this provide an opportunity which makes a good nesting environment for bird species in the area. However, due to the limited rocks in the area, reptiles and small organisms are limited in the area.

5.7 Heritage and Archaeology

No graves, monuments or any other building of historical value was observed near the project area during the site visit.

5.8 Land Use and Project Site Suitability

The project is located on an open space land use; The considerations taken into account during the site selection process are; the area is sparsely inhabited, easily accessible, not in an area prone to flooding therefore the proposed project and personnel are at minimal risk. Given that

there is a presence of tarred road, access to the site by passing and local vehicle users, it is deemed that the project is well located in servicing the consumers without intruding into areas demarcated for other land uses.

5.9 Socio-Economic conditions

Approximately 7, 306 people reside permanently in Otjinene (**Figure 10**). These settlement has a permanent clinic, special education school, post and telecommunication offices, a couple of general dealers, churches, a police stations and various dwelling structures for the local inhabitants. The major sources of income in the settlement is farming (**Figure 11**).

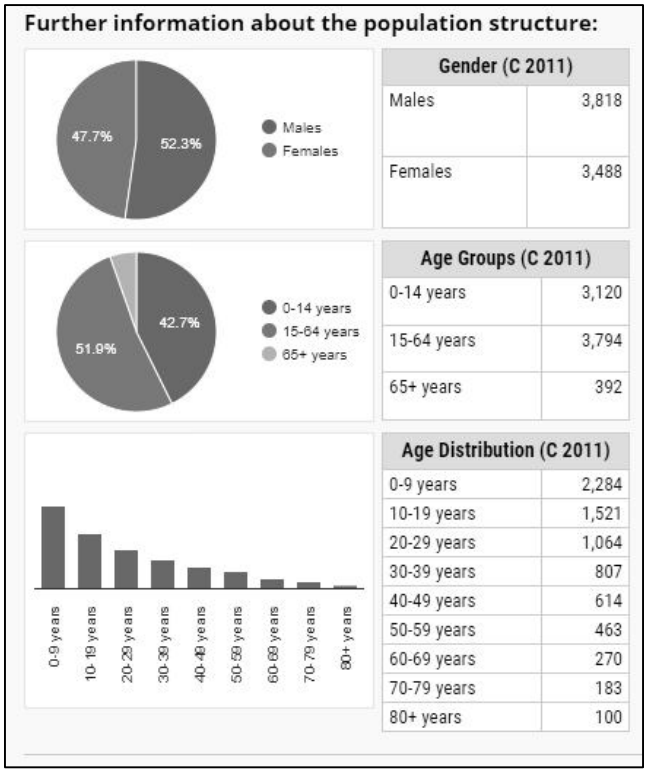

Figure 10: Population structure of the project area

Figure 11: Services and Infrastructures near the project area (source: NSA, 2022)

6 PUBLIC CONSULTATION PROCESS

Public consultation forms an important component of an Environmental Assessment (EA) process. It provides potential Interested and Affected Parties (I&APs) with an opportunity to comment on and raise any issues relevant to the project for consideration as part of the assessment process, thus assisting the Environmental Assessment Practitioner (EAP) in identifying all potential impacts and to what extent further investigations are necessary. Public consultation can also aid in the process of identifying possible mitigation measures. Public consultation for this scoping study has been done in accordance with the EMA and its EIA Regulations.

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

Relevant and applicable national, regional, and local authorities, local leaders, and other interested members of the public were identified. Pre-identified I&APs were contacted directly, while other parties who contacted the Consultant after project advertisement notices in the newspapers, were registered as I&APs upon their request. Newspaper advertisements of the proposed development were placed in two widely-read national newspapers in the region (The Namibian Newspaper and New Era Newspaper). The project advertisement/announcement ran for two consecutive weeks inviting members of the public to register as I&APs and submit their

comments. The summary of pre-identified and registered I&APs is listed in **Table 3** below and the complete list of I&APs is provided in **Appendix D**.

Table 3: Summary of Interested and Affected Parties (I&APs)

National (Ministries and State-Owned Enterprises)
Ministry of Environment, Forestry and Tourism
Ministry of Health and Social Services
Regional, Local and Traditional Authorities
Omaheke Regional Council
Otjinene Village Council
General Public
Interested members of the public
Namibia Community Based Tourism Association

6.2 Communication with I&APs

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

- A Background Information Document (BID) containing brief information about the proposed facility was compiled (**Appendix E**) and emailed to relevant Authoritative Ministries, and upon request to all new registered Interested and Affected Parties (I&APs);
- Project Environmental Assessment notices were published in The Namibian newspaper (30 June 2022 and 07 July 2022) and New Era Newspaper (29 June 2022 and 06 July 2022), (**Appendix F**), briefly explaining the activity and its locality, inviting members of the public to register as I&APs and submit their comments/concerns;
- Public notices were placed at frequented places at Otjinene Village Council and at Otjinene Constituency Office (**Figure 12**) to inform members of the public of the EIA process and register as I&APs, as well as submit comments.

- A public meeting was scheduled and held on **26 July 2022**, at Otjinene Constituency Office at 12:30.

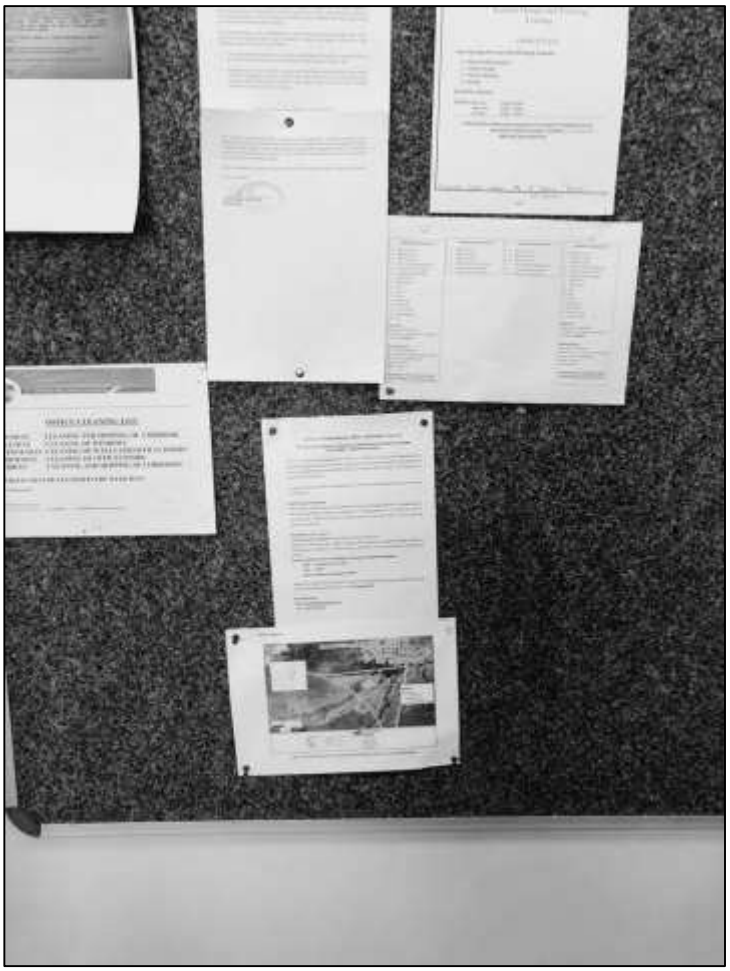

Figure 12: Public notices placed at Otjinene Village Council, Omaheke Region

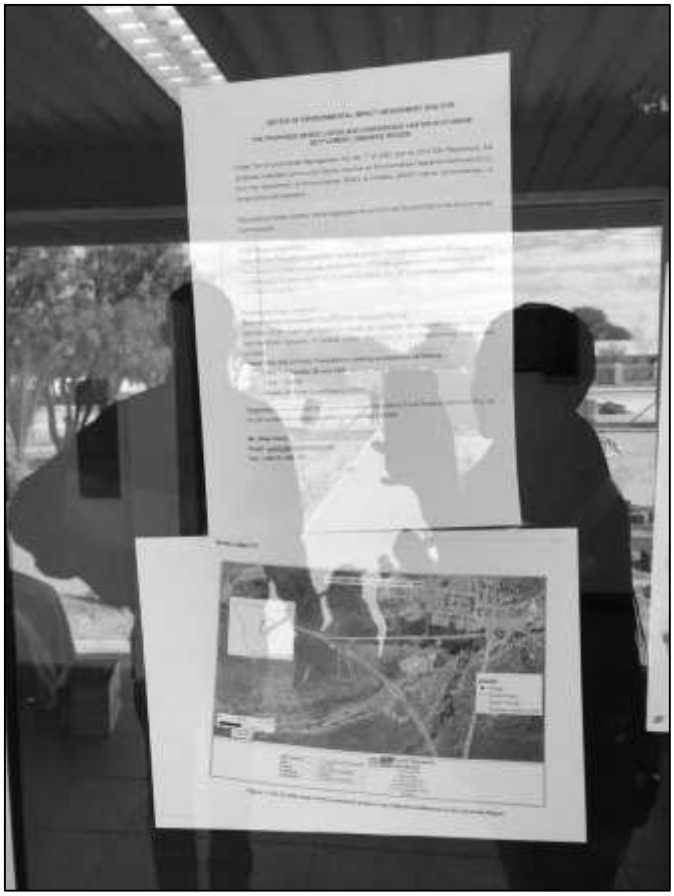

Figure 13: Public notices placed at Otjinene Constituency Office, Omaheke Region

Figure 14: Public meeting scheduled on 26 July 2022 at Otjinene Constituency Office

Issues were raised by affected and interested parties and these issues have been recorded and incorporated in the environmental report and EMP. The summarized issues raised during the public meeting are presented in **Table 4** below. The issues raised and responses by EDS are attached under **Appendix G**.

Table 4: Summary of main issues and comments received during the first public meeting engagements

Issue	**Concern**
Employment	Will the Proponent going to employ the people in Otjinene.
Vegetation	Is there any indigenous vegetation on the site?

7 IMPACT IDENTIFICATION, ASSESSMENT AND MITIGATION MEASURES

7.1 Impact Identification

Proposed development activities are usually associated with different potential positive and/or negative impacts. For an environmental assessment, the focus is placed mainly on the negative impacts. This is done to ensure that these impacts are addressed by providing adequate mitigation measures such that an impact's significance is brought under control, while maximizing the positive impacts of the development. The potential positive and negative impacts that have been identified from the proposed development activities are listed as follow:

Positive impacts:

- Local traditions and customs are kept alive,
- Tourist enjoyment of the scenery, so there is pressure to conserve habitats,
- Creation of jobs for the locals,
- Help boost local economic growth,
- Contribution to regional economic development

Negative impacts:

- Land degradation and Biodiversity Loss
- Generation of dust
- Water Resources Use
- Soil & Water Resources Pollution
- Waste Generation
- Occupational Health & Safety risks
- Vehicular Traffic Use & Safety
- Noise & Vibrations
- Impacts on local Roads
- Social Nuisance: local property intrusion & disturbance
- Social Nuisance: Job seeking & differing Norms, Culture & values

7.2 Impact Assessment Methodology

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

The identified impacts were assessed in terms of scale/extent (spatial scale), duration (temporal scale), magnitude (severity) and probability (likelihood of occurring), as presented in **Table 5**, **Table 6**, **Table 7** and **Table 8**, respectively.

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

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

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

7.2.1 Extent (spatial scale)

Extent is an indication of the physical and spatial scale of the impact. **Table 5** shows rating of impact in terms of extent of spatial scale.

Table 5: Extent or spatial impact rating

Low (1)	Low/Medium (2)	Medium (3)	Medium/High (4)	High (5)
Impact is localized within the site boundary: Site only	Impact is beyond the site boundary: Local	Impacts felt within adjacent biophysical and social environments: Regional	Impact widespread far beyond site boundary: Regional	Impact extend National or over international boundaries

7.2.2 Duration

Duration refers to the timeframe over which the impact is expected to occur, measured in relation to the lifetime of the project. **Table 6** shows the rating of impact in terms of duration.

Table 6: Duration impact rating

Low (1)	Low/Medium (2)	Medium (3)	Medium/High (4)	High (5)
Immediate mitigating measures, immediate progress	Impact is quickly reversible, short term impacts (0-5 years)	Reversible over time; medium term (5-15 years)	Impact is long-term	Long term; beyond closure; permanent; irreplaceable or irretrievable commitment of resources

7.2.3 Intensity, Magnitude / severity

Intensity refers to the degree or magnitude to which the impact alters the functioning of an element of the environment. The magnitude of alteration can either be positive or negative. These ratings were also taken into consideration during the assessment of severity. **Table 7** shows the rating of impact in terms of intensity, magnitude or severity.

Table 7: Intensity, magnitude or severity impact rating

Type of criteria	Negative				
	H- (10)	M/H- (8)	M- (6)	M/L- (4)	L- (2)
Qualitative	Very high deterioration, high quantity of deaths,	Substantial deterioration, death, illness or injury, loss of	Moderate deterioration, discomfort, partial loss of	Low deterioration, slight noticeable	Minor deterioration, nuisance or irritation, minor

Type of criteria	Negative				
	H- (10)	M/H- (8)	M- (6)	M/L- (4)	L- (2)
	injury of illness / total loss of habitat, total alteration of ecological processes, extinction of rare species	habitat / diversity or resource, severe alteration or disturbance of important processes	habitat / biodiversity or resource, moderate alteration	alteration in habitat and biodiversity. Little loss in species numbers	change in species / habitat / diversity or resource, no or very little quality deterioration.

7.2.4 Probability of occurrence

Probability describes the likelihood of the impacts actually occurring. This determination is based on previous experience with similar projects and/or based on professional judgment. **Table 8** shows impact rating in terms of probability of occurrence.

Table 8: Probability of occurrence impact rating

Low (1)	Medium/Low (2)	Medium (3)	Medium/High (4)	High (5)
Improbable; low likelihood; seldom. No known risk or vulnerability to natural or induced hazards.	Likely to occur from time to time. Low risk or vulnerability to natural or induced hazards	Possible, distinct possibility, frequent. Low to medium risk or vulnerability to natural or induced hazards.	Probable if mitigating measures are not implemented. Medium risk of vulnerability to natural or induced hazards.	Definite (regardless of preventative measures), highly likely, continuous. High risk or vulnerability to natural or induced hazards.

7.2.5 Significance

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

Once the above factors (**Table 4**, **Table 5**, **Table 6** and **Table 7**) have been ranked for each potential impact, the impact significance of each is assessed using the following formula:

SIGNIFICANCE POINTS (SP) = (MAGNITUDE + DURATION + SCALE) X PROBABILITY

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

Table 9: Significance rating scale

Significance	Environmental Significance Points	Colour Code
High (positive)	>60	H
Medium (positive)	30 to 60	M
Low (positive)	1 to 30	L
Neutral	0	N
Low (negative)	-1 to -30	L
Medium (negative)	-30 to -60	M
High (negative)	<-60	H

Positive (+) – Beneficial impact

Negative (-) – Deleterious/ adverse+ Impact

Neutral – Impacts are neither beneficial nor adverse

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

The assessment of the development phases is done for pre-mitigation and post-mitigation.

The risk/impact assessment is driven by three factors:

Source: The cause or source of the contamination.

Pathway: The route taken by the source to reach a given receptor

Receptor: A person, animal, plant, eco-system, property or a controlled water source. If contamination is to cause harm or impact, it must reach a receptor.

A pollutant linkage occurs when a source, pathway and receptor exist together. Mitigation measures aim firstly, avoid risk and if the risk cannot be avoided, mitigation measures to minimize the impact are recommended. Once mitigation measures have been applied, the identified risk would reduce to lower significance (Booth, 2011).

The potential negative impacts stemming from the proposed project are described, assessed and mitigation measures provided thereof. Further mitigation measures in a form of management action plans are provided in the Draft Environmental Management Plan.

7.3 Assessment of Potential Negative Impacts

The main potential negative impacts associated with the operation and maintenance phase are identified and assessed below:

7.3.1 Land Degradation and Loss of Biodiversity

Endemic species are most severely affected since even the slightest disruption in their habitat can result in extinction or put them at high risk of being wiped out. The presence and movement of the workforce and construction of project equipment and heavy vehicles would disturb the species. In terms of flora, the direct impacts on flora and vegetation communities will mainly occur through clearing of vegetation. The dust emissions from land clearing and construction may affect surrounding vegetation through the fall of dust. Some loss of vegetation is an inevitable consequence of the development.

Under the status, the impact can be of a medium significance rating. With the implementation of appropriate mitigation measures, the rating will be reduced to a low significance rating. The impact is assessed in **Table 11** below.

Table 10: Assessment of the impacts of the project on biodiversity

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M: -3	M: -3	M: -6	M/H: 4	M: -48

Post mitigation	L/M: -2	L/M: -2	L/M: -4	L/M: 2	L: -16

Mitigations and recommendations to minimize the loss of biodiversity

- The Proponent should avoid unnecessary removal of vegetation, thus promoting a balance between biodiversity and their operations.
- Movement of vehicles and machinery should be restricted to existing roads and tracks to prevent unnecessary damage to the vegetation.
- No vegetation should be cut or used for firewood related to the project's operations. The Proponent should provide firewood for his onsite camping workers from authorized firewood producer or seller.
- Design access roads appropriately in a manner that disturbs minimal land areas as possible.
- Formulate and implement suitable and appropriate operational management guidelines for the cleared areas.
- Workers should refrain from disturbing, killing or stealing farm animals and killing small soil species found on sites.
- Environmental awareness on the importance of biodiversity preservation should be provided to the workers.

7.3.2 Generation of Dust (Air Quality)

Dust emanating from site access roads when transporting equipment and supply (water) to and from site (time-to-time) may compromise the air quality in the area. Vehicular movements from heavy vehicles such as trucks would potentially create dust even though it is not always so severe. The hot and dry environment, loose and sandy nature of the substrate and low vegetation cover causes ambient fugitive dust levels. The medium significance of this impact can be reduced to a low significance rating by properly implementing mitigation measures. The impact is assessed in **Table 12** below.

Table 11: Assessment of the impacts of the project on air quality

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M: -3	M: -3	M/L: -4	M/H: 4	M: -40
Post mitigation	L - 1	L - 1	L- 2	L - 1	L - 4

Mitigations and recommendations to minimize dust

- Vehicles should not drive at a speed more than 40 km/h to avoid dust generation around the area.
- The Proponent should ensure that the construction/operational schedule is limited to the given number of days of the week, and not every day. This will keep the vehicle-related dust level minimal in the area.
- Using regular water sprays on gravel routes and near site to suppress the dust that may be emanating from certain construction activities.

7.3.3 Water Resources Use

Water resources is impacted by project developments/activities in two ways, namely through pollution (water quality) or over-abstraction (water quantity) or at times both.

The abstraction of more water than it can be replenished would negatively affect the local communities that depend on the same low potential groundwater resource (aquifer).

The impact of the project activities on the resources would be dependent on the water volumes required by each project activity. Commonly construction activities use a lot of water.

The required water for construction is about 7,000 litres per month. This water will be used for construction and washing equipment, drinking and other domestic purposes. Given the low to medium groundwater potential of the project site area, the Proponent may consider carting some of the water volumes from outside the area and store it in industry standard water reservoirs/tanks on site. Although the construction may be requiring this much water, this would also be dependent on the duration of the construction phase.

Without the implementation of any mitigation measures, the impact can be rated as medium, but upon effective implementation of the recommended measures, the impact significance would be reduced to low as presented in the **Table 12** below.

Table 12: Assessment of the project impact on water resource use and availability

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M/H - 4	L/M - 4	M/H - 4	M - 44
Post mitigation	L/M - 2	L/M - 2	L - 2	L/M - 2	L - 12

Mitigations and recommendations to manage water use

- Drinking water abstracted from boreholes or supplied by carting should be used efficiently, and recycling and re-using of water on certain site activities should be encouraged, where necessary and possible.
- Water reuse/recycling methods should be implemented as far as practicable.
- Water storage tanks should be inspected daily to ensure that there is no leakage, resulting in wasted water on site.
- Water conservation awareness and saving measures training should be provided to all the project workers in both phases so that they understand the importance of conserving water and become accountable.

7.3.4 Soil and Water Resources Pollution

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

The spills (depending on volumes spilled on the soils) from these machinery, vehicles and equipment could infiltrate into the ground and pollute the fractured or faulted aquifers on site, and with time reach further groundwater systems in the area. However, it should be noted that the scale and extent/footprint of the activities where potential sources of pollution will be handled is relatively small. Therefore, the impact will be moderately low.

Pre-mitigation measure implementation, the impact significance is low to moderate and upon implementation, the significance will be reduced to low. The impact is assessed in **Table 13** below.

Table 13: Assessment of the project impact on soils and water resources (pollution)

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M/H - 4	M - 6	M - 3	M - 39
Post mitigation	L - 1	L - 1	L - 2	L/M - 2	L - 8

Mitigations and recommendations to manage soil and water pollution

- Spill control preventive measures should be in place on site to management soil contamination, thus preventing and or minimizing the contamination from reaching water resources bodies. Some of the soil control preventive measures that can be implemented include:
    - Identification of oil storage and use locations on site and allocate drip trays and polluted soil removal tools suitable for that specific surface (soil or hard rock cover) on the sites.
    - Maintain equipment and fuel storage tanks to ensure that they are in good condition thus preventing leaks and spills.
    - The oil storage and use locations should be visually inspected for container or tank condition and spills.
- All project employees should be sensitized about the impacts of soil pollution and advised to follow appropriate fuel delivery and handling procedures.
- The Proponent should develop and prepare countermeasures to contain, clean up, and mitigate the effects of an oil spill. This includes keeping spill response procedures and a well-stocked cache of supplies easily accessible.
- Ensure employees receive basic Spill Prevention, Control, and Countermeasure (SPCC) Plan training and mentor new workers as they get hired.
- Project machines and equipment should be equipped with drip trays to contain possible oil spills when operated on site.
- Polluted soil should be removed immediately and put in a designate waste type container for later disposal.
- Drip trays must be readily available on this trailer and monitored to ensure that accidental fuel spills along the tank trailer path/route around the site are cleaned on time (soon after the spill has happened).
- Polluted soil must be collected and transported away from the site to an approved and appropriately classified hazardous waste treatment facility.
- Washing of equipment contaminated hydrocarbons, as well as the washing and servicing of vehicles should take place at a dedicated area, where contaminants are prevented from contaminating soil or water resources.
- Toilet water should be treated using chemical portable toilets and periodically emptied out before reaching capacity and transported to a wastewater treatment facility.

7.3.5 Waste Generation

Domestic and general waste may be produced on site. To prevent these issues, biodegradable and non-biodegradable wastes must be stored in separate containers and collected regularly for disposal at a recognized landfill/dump site. Any hazardous waste that may have an impact on the animals, vegetation, water resources and the general environment should be handled cautiously. Without any mitigation measures, the general impact of waste generation has a medium significance. The impact will reduce to low significance, upon implementing the mitigation measures. The assessment of this impact is given in **Table 14**.

Table 14: Assessment of waste generation impact

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	L/M - 2	L/M - 2	M - 6	M - 3	M – 30
Post mitigation	L - 1	L - 1	L - 2	L/M - 2	L - 8

Mitigations and recommendations to waste management

- Workers should be sensitized to dispose of waste in a responsible manner and not to litter.
- After each daily works, the Proponent should ensure that there are no wastes left on the sites.
- All domestic and general operational waste produced daily should be contained onsite until such that time it will be transported to designated waste sites.
- No waste may be buried or burned on site or anywhere else.
- The site should be equipped with separate waste bins for hazardous and general/domestic waste.
- Sewage waste should be stored as per the portable chemical toilets supplied on site and regularly disposed of at the nearest treatment facility.
- Oil spills should be taken care of by removing and treating soils affected by the spill.
- A penalty system for irresponsible disposal of waste on site and anywhere in the area should be implemented.
- Careful storage and handling of hydrocarbons on site is essential.

- Potential contaminants such as hydrocarbons and wastewater should be contained on site and disposed of in accordance with the village council wastewater discharge standards so that they do not contaminate surrounding soils and eventually groundwater.
- An emergency plan should be available for major/minor spills at the site during operation activities (with consideration of air, groundwater, soil, and surface water) and during the transportation of the product(s) to the sites.

7.3.6 Occupational Health and Safety Risks

Project personnel (workers) involved in the proposed construction activities may be exposed to health and safety risks. These are in terms of accidental injury, owing to either minor (i.e., superficial physical injury) or major (i.e., involving heavy machinery or vehicles) accidents. The site safety of all personnel will be the Proponent's responsibility and should be adhered to as per the requirements of the Labour Act (No. 11 of 2007) and the Public Health Act (No. 36 of 1919). The heavy vehicle, equipment and fuel storage area should be properly secured to prevent any harm or injury to the Proponent's personnel or local domestic animals. If machinery and equipment are not properly stored and packed, the safety risk may be a concern for project workers.

The impact is probable and has a medium significance rating. However, with adequate mitigation measures, the impact rating will be reduced to low. This impact is assessed in **Table 15** below and mitigation measures provided.

Table 15: Assessment of the impacts of construction activities on health and safety

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M - 3	M - 6	M/H - 4	M – 48
Post mitigation	L/M - 2	L/M - 2	L - 2	L/M - 2	L - 12

Mitigations and recommendations to minimize health and safety issues

- The Labour Act's Health and Safety Regulations should be complied with.
- As part of their induction, the project workers should be provided with an awareness training of the risks of mishandling equipment and materials on site as well as health and safety risk associated with their respective jobs.

- When working on site, employees should be properly equipped with adequate personal protective equipment (PPE) such as coveralls, gloves, safety boots, earplugs, dust masks, safety glasses, etc.
- Heavy vehicle, equipment and fuel storage site should be properly secured, and appropriate warning signage placed where visible.
- Drilled boreholes that will no longer be in use or to be used later after being drilled should be properly marked for visibility and capped/closed off.
- Workers should not be allowed to drink alcohol prior to and during working hours nor allowed on site when under the influence of alcohol as this may lead to mishandling of equipment which results into injuries and other health and safety risks.
- The site areas that are considered temporary risks should be equipped with "danger" or "cautionary" signs.

7.3.7 Vehicular Traffic Use and Safety

Depending on the project needs, trucks, medium and small vehicles will be frequenting the area to and from sites. This would potentially increase slow moving heavy vehicular traffic along these roads. The impact would not only be felt by the district road users but also the local road users. This would add additional pressure on the roads.

However, only so many times a week or even monthly that construction related heavy trucks will be transporting materials and equipment to site. Therefore, the risk is anticipated to be short-term, not frequent, and therefore of medium significance. Pre-mitigation, the impact can be rated medium and with the implementation of mitigation measures, the significance will be low as assessed in **Table 16** below.

Table 16: Assessment of the impacts of construction activities on road use (vehicular traffic)

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M/H - 4	L/M - 4	M/H - 4	M - 44
Post mitigation	L/M - 2	L/M - 2	L - 2	L/M - 2	L - 12

Mitigations and recommendations to minimize impact on road safety and related vehicular traffic issues.

- The heavy truck loads should comply with the maximum allowed speed limit for respective vehicles while transporting materials and equipment/machinery on the public and access roads (40km/h).
- The potential carted water to the site (from other source of water supply) should be done once or twice a week in container that can supply and store water for most of the week, thus reducing the number of water-carting trucks on the road daily.
- Drivers of all project phases' vehicles should be in possession of valid and appropriate driving licenses and adhere to the road safety rules.
- Drivers should drive slowly (40km/hour or less) and be on the lookout for livestock and residents/travelers.
- The Proponent should ensure that the site access roads are well equipped with temporary road signs conditions to cater for vehicles travelling to and from site throughout the project's life cycle.
- Project vehicles should be in a road worthy condition and serviced regularly to avoid accidents owing to mechanical faults.
- Vehicle drivers should only make use of designated site access roads provided and as agreed.
- Vehicle's drivers should not be allowed to operate vehicles while under the influence of alcohol.
- No heavy trucks or project related vehicles should be parked outside the project site boundary or demarcated areas for such purpose.
- To control traffic movement on site, deliveries from and to site should be carefully scheduled. This should optimally be during weekdays and between the hours of 8am and 5pm.
- The site access road(s) should be upgraded to an unacceptable standard to be able to accommodate project related vehicles as well as farm vehicles.

7.3.8 Noise and vibrations

Construction activities for the proposed project may be a nuisance to surrounding communities due to the noise produced by the activity. Excessive noise and vibrations can be a health risk to workers on site. Equipment used on site is of medium size and the noise level is bound to be limited to the site only, therefore, the impact likelihood is minimal. Without any mitigation, the impact is rated as of medium significance. To change the impact significance from the pre-

mitigation significance to low rating, the mitigation measures should be implemented. This impact is assessed in **Table 17** below.

Table 17: Assessment of the impacts of noise and vibrations

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	L/M - 2	L/M - 2	M - 6	M/H - 3	M – 30
Post mitigation	L - 1	L/M - 2	L - 2	L/M -2	L - 10

Mitigations and recommendations to minimize noise

- Noise from operations' vehicles and equipment on the sites should be at acceptable levels.
- The operational times should be set such that no activity is carried out during the night or very early in the mornings.
- When operating the machinery onsite, workers should be equipped with personal protective equipment (PPE) such as earplugs to reduce to excessive noise.

7.3.9 Impact on Local Roads

These types of projects are usually associated with movements of heavy trucks and equipment or machinery that use locals frequently. The heavy trucks travelling on the local roads and exert more pressure on them. These local roads in remote areas are normally not in a good condition already for light vehicles, and the additional vehicles such as heavy ones may make it worse and difficult to be used by small (vehicles) that already struggled on the roads before they got worse.

Without any management and or mitigation measures, the impact can be rated as medium and to reduce this rating to low, the measures will need to be effectively implemented. The assessment of this impact is presented in **Table 18**.

Table 18: Assessment of construction of the proposed development on local services (roads and water)

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M/H - 4	M - 3	M - 6	M - 3	M – 39
Post mitigation	L - 1	L - 1	M/L - 4	M/L -2	L - 12

Mitigations and recommendations to minimize the impact on local services

- The heavy trucks transporting materials and services to site should be scheduled to travel at least twice a week to avoid daily travelling to site, unless on cases of emergencies.
- The Proponent should consider frequent maintenance of local roads to ensure that the roads are in a good condition for other roads users such as travelers from and outside the area.

7.3.10 Social Nuisance: Local Property intrusion and Disturbance or Damage

The presence of some out-of-area workers may lead to social annoyance to the local community. This could particularly be a concern when they or some of those workers enter or damage properties of the locals. The private properties of the locals could be houses, fences, vegetation, or domestic or any properties of economic or cultural value to the landowners or occupiers of the land. The damage or disturbance to properties may not only be private but local public properties. The unpermitted and unauthorized entry to private properties may cause crashes between the affected landowners and the Proponent.

Pre-implementation of mitigation measures, the impact is rated as of medium significance. However, upon mitigation (post-mitigation), the significance will change from medium to low rating. The impact is assessed below (**Table 19**).

Table 19: Assessment of social impact of community property damage or disturbance

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M - 3	M - 6	M/H - 4	M – 48
Post mitigation	L - 1	L - 1	M/L - 4	M/L -2	L - 12

Mitigations and recommendations to minimize the issue of damage to or intrusion of properties

- Any workers or site employees that will be found guilty of intruding peoples 'privately owned properties should be called in for disciplinary hearing and/or dealt with as per their employer' (Proponent)’s code of employment conduct.
- The project workers should be advised to respect the community and local's private properties, values, and norms.

- No worker should be allowed to wander in people's private yards or fences without permission.
- The project workers are not allowed to kill or in any way disturb local livestock in the area.
- The cutting down of vegetation belonging to the neighbours is strictly prohibited.

7.3.11 Social Nuisance: Job seeking and Differing Norms, Culture and Values

The proposed project activities could attract a potential influx of people from outside the project area in search of job opportunities. Such influxes during the construction and operational phase may lead to social annoyance to the local community as well as conflicts. This is generally considered a concern, given the current unemployment rate of youth in Namibia. People from other areas/regions may learn of the project intentions through EIA notices in the newspapers and be forced to go look for work opportunities in the area. Different people may come with different ways of living to the area, which could interfere with the local norms, culture, and values. This could potentially lead to social crashes between the locals and outsiders (out-of-area job seekers).

Pre-implementation of mitigation measures, the impact is rated as of medium significance. However, upon mitigation (post-mitigation) – see mitigation measures below, the significance will change from medium to low rating. The impact is assessed in **Table 20** below.

Table 20: Social impact assessment of outsiders' influx into the area (job seeking related)

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M - 3	M - 6	M/H - 4	M – 48
Post mitigation	L/M - 2	L/M - 2	L - 2	L/M - 2	L - 12

Mitigations and recommendations measure to reduce the influx of outsiders into the area

- The Proponent should prioritize the employment of more local people, and only if necessary and due to lack of skills in the area, out-of-area people can be given some of the work. This is to avoid the influx of outsiders into the area for works that can be done the locals.

- The workers should be engaged in health talks and training about the dangers of engaging in unprotected sexual relations which results in contracting HIV/AIDS and other sexual related infections.
- Out-of-area workers that may be employed (due to their unique work skills) on site should be sensitized on the importance of respecting the local values and norms, so that they can co-live-in harmony with the local communities during the duration of their employment period on site.

7.4 Mitigations and Recommendations for Construction Closure phase

The construction closure of the project will include but not limited to the following:

- Carrying away all waste generated on site.
- Removal of erected site offices, and building materials which are left from the construction phase on site.
- Transporting all machinery and equipment to designated offsite storage facilities.

8 CONCLUSIONS AND RECOMMENDATIONS

The potential impacts that are anticipated from the proposed project activities were identified, described, and assessed. For the significant adverse (negative) impacts with a medium rating, appropriate management and mitigation measures were recommended for implementation by the Proponent, their contractors and project related employees.

The public was consulted as required by the EMA and its 2012 EIA Regulations (Section 21 to 24). This was done via the two newspapers (New Era and The Namibian) used for this environmental assessment. A consultation through a face-to-face meeting with I&APs in Otjinene was conducted, whereby they raised comments and concerns on the proposed project activities.

The issues and concern raised by the registered I&APs formed the basis for this Report and the Draft EMP. The issues were addressed and incorporated into this Report whereby mitigation measures have been provided thereof to avoid and/or minimize their significance on the environmental and social components. Most of the potential impacts were found to be of medium rating significance. The effective implementation of the recommended management and mitigation measures will particularly see a reduction in the significance of adverse impacts that cannot be avoided completely (from medium rating to low). To maintain the desirable rating, the implementation of management and mitigation measures should be monitored by the Proponent directly, or their Environmental Control Officer (ECO) is highly recommended. The monitoring of

this implementation will not only be done to maintain the reduced impacts' rating or maintain a low rating but to also ensure that all potential impacts identified in this study and other impacts that might arise during implementation are properly identified in time and addressed right away too.

On this basis, it is the opinion of the Consultant that an ECC should be issued, on conditions that the management and mitigation measures specified in the Environmental Management Plan (EMP) are implemented and adhered to.

9 REFERENCES

Booth, P. (2011). Environmental Conceptual Site Model Exercise: Source – pathway – receptor. WSP Global: Semantic Scholar.

Manheimer. (2018). Retrieved from Tree Atlas of Namibia: http://treeatlas.biodiversity.org.na/viewspec.php?nr=20

Mendelsohn. (2006). A digest of information on key aspect of Otjozondjupa and Omaheke geography. Namibia: Research and Information Services of Namibia.

Mendelsohn. (2003). *The Atlas of Namibia: A Portrait of the land and its people.* pg 14 -18

Mendelsohn, J. (2003). Atlas of Namibia: A Portrait of the Land and its People. Windhoek: The Ministry of Environment and Tourism of Namibia.

NSA. (2011). Retrieved from https://digitalnamibia.nsa.org.na/

NSA. (2011). Digital Namibia: Namibia statistics of Namibia. Retrieved February 17, 2021, from https://digitalnamibia.nsa.org.na/

SASSCAL WeatherNet, 2020. http://www.sasscalweathernet.org/weatherstat_monthly_we.php

Vigne. P (2000). Options for Livelihoods Diversification in Omaheke Region. A Report on a semi-structured interview Survey conducted by Oxfam Canada in Collaboration with the Ministry of Agriculture, Water and Rural Development. Windhoek: Oxfam Canada