

ENVIRONMENTAL SCOPING ASSESSMENT

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA)
FOR THE PROPOSED DESIGN AND CONSTRUCTION OF
OMHUKU - OSHIKULUFITU GRAVEL ROAD STANDARDS
(3KM) – OMUSATI REGION, NAMIBIA.

Environmental Assessment scoping report

MEFT APP-5950



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THE PROPOSED DESIGN AND CONSTRUCTION OF OMHUKU - OSHIKULUFITU GRAVEL ROAD STANDARDS (3KM) – OMUSATI REGION, NAMIBIA.

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Document type: Environmental Assessment scoping report

Document version: Final for submission

Application number: 5950

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Table 1: Acronyms

TERMS	DEFINITION
BID	Background Information Document
CA	Competent Authorities
EAPs	Environmental Assessment Practitioner(s)
ECC	Environmental Clearance Certificate
EIA	Environmental Impact Assessment
EIASR	Environmental Impact Assessment Scoping report
ECO	Environmental Control Officer
EMP	Environmental Management Plan
ESMP	Environmental and Social Management Plan
GHG	Greenhouse Gasses
ISO	International Organization for Standardization
I&APs	Interested and Affected Parties
MEFT: DEA	Ministry of Environment, Forestry and Tourism's Directorate of Environmental Affairs
NHC	National Heritage Council
NEMA	Namibia Environmental Management Act
OCE	Ohangwena Consulting Engineers
ORC	Omusati Regional Council
RE	Resident Engineer
ToR	Terms of Reference
UNFCCC	United Nations Framework Convention on Climate Change

DEFINITION OF TERMS

The ‘Consultant’ – this refers to the team that is conducting the Environmental and Social Impact Assessment and the preparation of the ESMP for the proposed development. The Consultant for the Project / ESIA Study is EnviroPlan Consulting.

The ‘Proponent’ – this refers to the institutions/departments that are directly involved in the implementation of the project, i.e., Ministry of Works and transport.

The ‘Stakeholders’ – this refers to the people, organisations, NGOs that are directly or indirectly affected and interested by the proposed project.

The ‘Environment’ – this refers to the ecology, economy, society and politics.

Listed activity(s)/ Project – means any activity which has or is likely to have an impact on the environment.

‘Sustainable utilization – means the use or exploitation of the environment which guards against extinction, depletion or degradation of any natural resource and permits the replenishment of natural resources by natural means or otherwise.

Waste – includes domestic, commercial or industrial material, whether in liquid, gaseous or solid form, which is discharged, emitted or deposited into the environment in such volume, composition or manner as to cause pollution.

i. Purpose of This Environmental Impact Assessment Report

This Environmental Scoping Report (ESR) follows on the scope of work outlined by Ministry of Works and Transport to construct an access gravel road from Omhuku to Oshikulufitu combined school (3km) in **Onhokolo village, Anamulenge constituency, Omusati Region, Namibia**. Existing information and input from commenting authorities, Interested and Affected Parties (I&APs) was used to identify and evaluate potential environmental impacts (both social and biophysical) associated with the proposed project.

Environmental defects associated with the proposed activities were identified through this ESR. A conscious decision was made based on the recommendations and guidelines by the Directorate of Environmental Affairs EIA guidelines in order to assess both significant and less significant environmental impacts proposed by the development. The developed Environmental Management Plan (EMP) for this proposed activity will have to be effectively implemented by the client, to ensure that adverse environmental impacts are not considered.

The detailed assessment of the anticipated impacts was undertaken with the purpose of highlighting any areas of concern regarding to the proposed project during its construction, and operation. In addition, an independent sensitivity mapping analysis was undertaken. This analysis characterised the development site on the significant environmental aspects in order to reflect the sites suitable and unsuitable (no-go) development footprint areas. This action guided the final footprint of the access gravel road.

This report will also be used to motivate and define the previously identified, project alternatives (i.e., site, technology and layout) based on the findings of the environmental baseline study and the suitability of the site to the type of development. This Environmental Assessment scoping report (EASR) has been compiled in accordance with the regulatory requirements stipulated in the EIA Regulations (2012), promulgated in terms of the Namibian environmental legislation (Environmental Management Act (No. 7 of 2007)

The Environmental Assessment (EA) was commissioned because the proposed establishment triggered the application for an environmental clearance certificate as the following listed activity, please refer to table 2 below:

Table 2: Listed activities

<p>3: Mining and Quarrying Activities 3.3 Resource extraction, manipulation, conservation and related activities</p>	<p>10: Infrastructure 10.1 The construction of- (b) public roads</p>
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ii. Resource extraction, manipulation, conservation and related activities.

1. The construction phase will encompass -

(a) The extraction of gravel and related materials;

Anticipated Environmental Impacts

- Low potential environmental impacts because the proposed site has already active borrow pits/ gravel extraction points as recommended by the local authorities
- Adding on a management plan has been developed to mitigate any anticipated possible impacts of the project to the environment.
- Relative or moderate social impact (positive)

Social Impact

The project is generally expected to improve the socio-economic environment of Onhokolo, Oshikulufitu and the entire Anamulenge constituency through employment and improved accessibility. Interested and Affected Parties were notified of the project through newspaper adverts and word of mouth through local leadership and all relevant information on consultation is covered in this document and Appendix (ii) of this document.

Recommendation

It is concluded that most of the impacts identified during this Environmental Assessment can be addressed through the recommended mitigation and management actions for both the construction and operation phases of the access gravel road. 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.

It is therefore recommended that the proposed access road get an approval receive Environmental Clearance, provided that the proponent's compliance to the Environmental and Social management plan (ESMP).

NB: The EAP does not accept any responsibility in the event that additional information comes to light at a later stage of the process. All data from unpublished research utilised for the purpose of this report was acknowledged. The scope of this investigation assessed the bio-physical and social status of the proposed project site environs.

1.1. CHAPTER ONE: BACKGROUND

Overview

Ministry of Works and Transport (MWT) has appointed **Ohangwena Consulting Engineers (OCE)** to design and supervise on the proposed construction and operation of a gravel access road project (3km). Ohangwena subsequently appointed **EnviroPlan Consulting CC**. EnviroPlan hereafter, on behalf of MWT, as the independent environmental consultant conducting the Environmental Assessment (EA) for the proposed activity.

In terms of the Namibian environmental legislation (Environmental Management Act (No. 7 of 2007)) and the Environmental Assessment Regulations of 2012; an EIA is required to obtain an Environmental Clearance Certificate from the Ministry of Environment and Tourism (MET) before the proposed project can proceed. PART VII of the Environmental Management Act section 27 subsections (2) has listed activities that cannot be undertaken without a clearance certificate.

Furthermore, as per the requirements of the Environmental Management Act No. 7 of 2007, OCE has appointed Enviroplan Consulting cc to conduct an Environmental Assessment (EA) and develop an Environmental Management Plan (EMP) for the development. This has been followed by an application for Environmental Clearance Certificate (ECC) to the Ministry of Environment and Tourism (MET): Directorate of Environmental Affairs (DEA).

In this respect, this document forms part of the application to be made to the (Department of Environmental Affairs' (DEA) office for an Environmental Clearance for the proposed design and construction of an 3km access gravel road, in accordance with 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. The Environmental Consultant

Enviroplan Consulting cc was appointed as the independent environmental consultant conducting the Environmental Impact Assessment (EIA) and apply for an Environmental clearance certificate from the Ministry of Environment Forestry and Tourism. This ESIA Study and EMP developed was a result

of hard work and determined effort towards a sustainable project implementation by a dynamic team from EnviroPlan Consulting in collaboration with Ohangwena Consulting Engineers.

1.3. Project Location

Omusati Region is situated in the northern part of the Republic of Namibia. The word 'omusati' is an Oshiwambo word which means a mopani tree. It shares borders with the Republic of Angola in the north, Ohangwena Region in the north-east, Oshana Region in the east and Kunene Region in the south-west. There are many unspoiled beautiful sceneries, while different species of trees and animals continue to attract tourists and visitors to the Region. The Region consists of twelve (12) Constituencies, namely Anamulenge, Elim, Etayi, Ogongo, Okahao, Okalongo, Onesi, Oshikuku, Outapi, Ruacana, Tsandi and Otamanzi, three (3) Settlements i.e., Okalongo, Onesi and Ogongo and five (5) Local Authorities namely Outapi, Ruacana, Okahao, Oshikuku and Tsandi Village Council. Outapi Town is the Administrative Seat and Capital of the Region.

The proposed access gravel road starts from Omhuku a small location near the C46 highway approximately 20 km from Outapi. The proposed road end at Oshikulufitu combined school and clinic in Onhokolo village and it is 3km in length. Accessibility can as well be improved to the nearby *cuca* shops and villages in Anamulenge constituency.

Road material will be sourced from burrow pits to be identified within the Onhokolo village. Proposal to leave the extraction pits open was proposed by local leadership so that they can be utilized to store domestic water in the dry constituency. Anamulenge is a settlement and former Catholic mission station in the Omusati Region in the north of Namibia in the Ombalantu tribal area.

Anamulenge Constituency covers an area of 354 km² (137 sq mi). It had a population of 13,410 in 2011, up from 12,617 in 2001.

Table 3: Project site coordinates (EPSG:4326: WGS 84)

Point number	Latitude (N)	Longitude (E)
A. Starting Point	-17.57733	15.13362
B. T-junction to the Clinic	-17.55328	15.14108
C. Clinic	-17.55284	15.14308
D. T-junction to the school	-17.54839	15.13932
E. School gate	-17.55127	15.13801

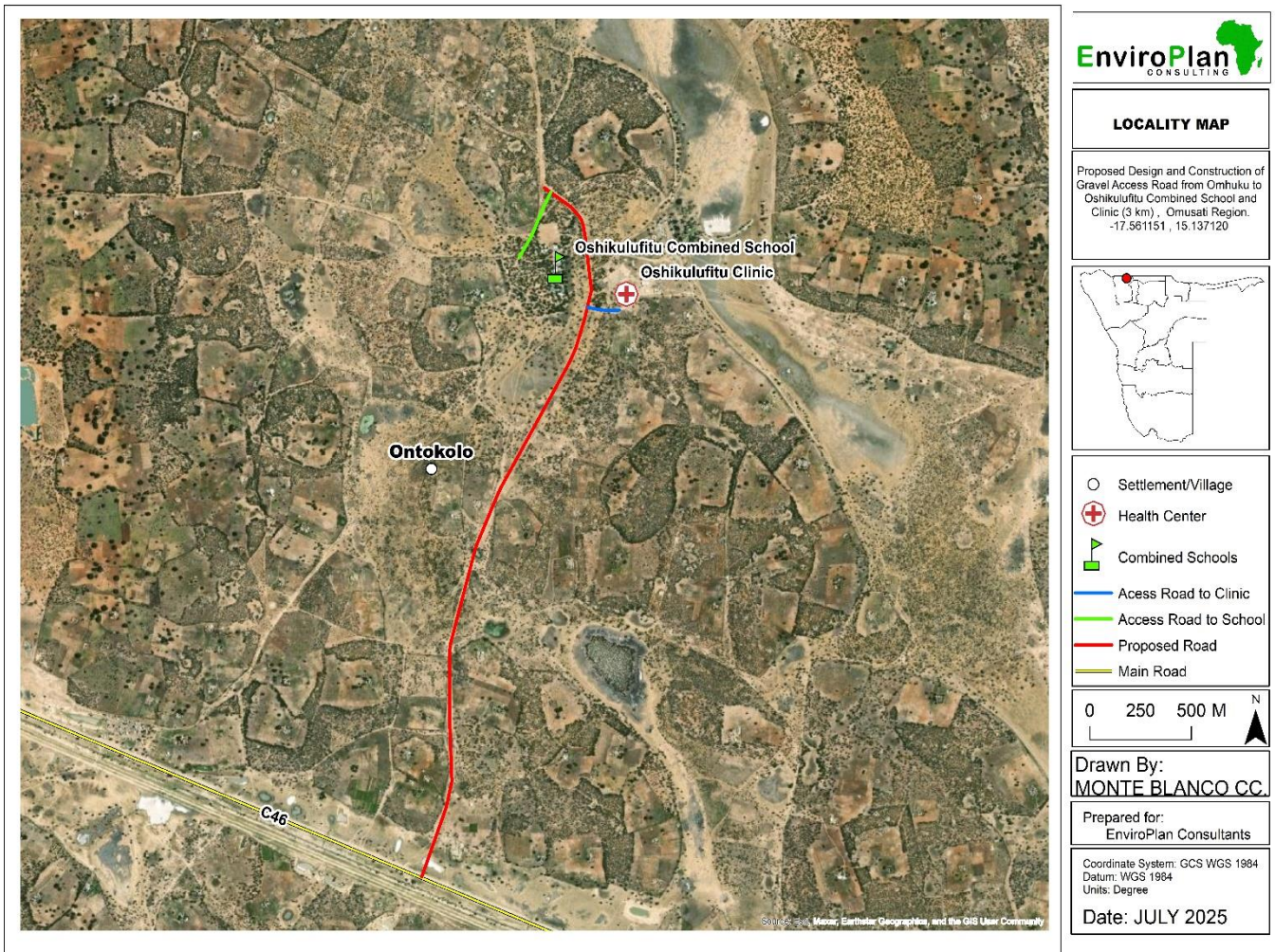


Figure 1: Proposed project site Locality map

1.4. Project Overview

The existing earth track, approximately three (3) kilometres gives access to Oshikulufitu combined school and Clinic from Outapi via the c46 road. These two facilities are in Onhokolo village and provides services to Okakekete, Oshikulufitu villages. Some sections of the existing road consist of soft sand, posing challenges to its stability and durability especially during rainy seasons. Proposal to upgrade the earth tracks to a standard gravel road by the Ministry of Works and Transport was done several years ago and the communities surrounding the project site are anxiously waiting for the development. Establishment of an access road which links the essential services in the constituency connecting it to the C46 road which connects the village to other parts of the country.

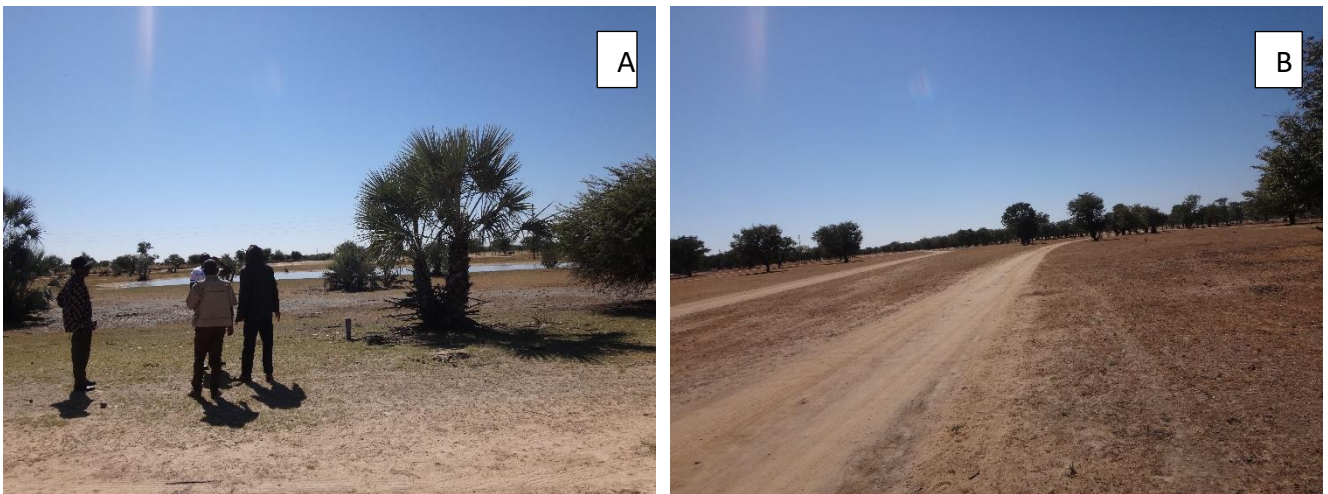


Figure 2: (a) and (b) showing the proposed road starting point and the existing earth tracks to Oshikulufitu combined school and clinic respectively

The existing route is an informal earth track approximately 6 meters wide, traversing areas characterized by loose loam soils and passing through several rural settlements, including a combined school and a clinic. In addition to the main route, two proposed access roads will connect Oshikulufitu school and clinic, further enhancing accessibility for the surrounding communities. The final road alignment will be determined in close consultation with the Project Control Engineer (PCE) and relevant local stakeholders to ensure minimal environmental and social impact. The design will prioritise the needs of the local population while promoting a sustainable, safe, and functional road infrastructure, Ohangwena Consulting Engineers 2025.

1.4.1. Infrastructure and Services

Water: The village rely on *Oshanas* for water for domestic use. They also use borehole water for drinking water and household use. In case of increased demand, the proponent will seek for extra borehole(s)/ water from elsewhere. User pays principle will be applicable to the water use by the contractor. About 72 percent of the people travel less than 1 kilometre to the main sources of potable water. However, 24 percent travels about 1-2 kilometres to fetch drinking water. Out of all households, almost 1 percent travel more than 5 kilometres to water points. About 49 percent of the people travel 1-2 kilometres to sources of portable water. Due to scarcity of water, rural communities continue to face the shortage of water and hence boreholes serve as alternatives according to Omusati Regional profile.

The rural water supply has reached most corners of the Constituency. All schools have access to water, while communities enjoy water from water points. The southern part of the Constituency is connected to a water canal, especially for livestock consumption during dry seasons.

Ablution: A portable sewer ablution system will be established on the camp site to cater for construction phase of the proposed project/ gravel road construction activities. The school and clinic use septic tanks. The other community households use pit latrines.

Telecommunication infrastructure: The site has a stable telecommunications network. The telecommunication facilities and services for both land line and cellular telephones are available. The mobile network coverage is reliable and there are two MTC Towers at Oshoto and Omhembra Villages. They provide network coverage even in nearby parts of southern Angola.

About 80 percent of the total area of the Region has access to internet and other related services through Telecom cable connections, 75 percent is covered by the Mobile Telecommunication Company (MTC), including the radiograph wave for the Namibia Broadcasting Corporation (NBC)

Accessibility: An existing C46 road network is directly linked to the proposed project area with easy access and connectivity at the project's convenience. C46 is one of the major roads connecting the northern towns of the country. Currently, the road is an unsealed earth track with varying widths of 4.5 m to 6 m, experiencing seasonal degradation due to lose loamy soil and insufficient drainage

structures. The project aims to construct the road to gravel standards, ensuring all-weather accessibility for local communities. Upon completion, the Oshakati Maintenance Office of the Roads Authority will assume maintenance responsibilities, ensuring the road remains in good condition through periodic blading, re-graveling, and drainage upkeep.

Electricity: The study area will make use of solar power as well as gasoline generators during the construction phase. All schools in the Constituency are electrified. There are electrical grids across the Constituency which connects and supply energy to the Government Institutions, while residents with financial means are at liberty to apply for connection. About 50 percent of the Growth Points have access to electricity.

There is one service provider of electricity in the Region, namely NamPower whilst Northern Electricity Distribution (NORED) is the only distributor. NamPower has three (3) Sub-stations namely, Ruacana Substation in Ruacana Constituency which supply from 66 kw and steps down to 11 kw, Etunda Substation at Etunda in Ruacana Constituency i.e., supply from 66 kw and steps down to 22 kw and Baobab Substation at Outapi in Outapi Constituency i.e., supply from 66 kw and steps down to 33 kw. NORED provides electrical equipment and accessories such as transformers to local citizens.

The Ministry of Mines and Energy through the Rural Electrification Programme has so far electrified about 120 schools and villages in the Region. The solar energy is also used by the residents but on a minimal scale.

1.4.2. Standard road cross section

To evaluate the proposed design standards, projected traffic volumes will be analysed alongside the recommended standards for main roads in flat terrain. The proposed pavement will consist of the following layers:

- x 1 x 150mm gravel wearing course
- x 1 x 150mm selected layer (only where required)
- x Fill in 150mm layers to the required design level

The proposed road width of this project will be 7.5 meters between shoulder breakpoints. The possible anticipated appropriate cross section as per the RA Standards are likely to be as shown in Figure 3a, 3b and 3c as proposed by Ohangwena consulting engineers overleaf.

The typical cross-section of the proposed gravel road

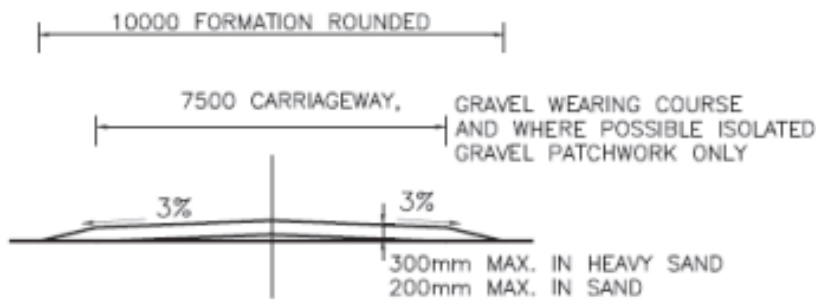


Figure 3a: Minimum RA cross section Class C 0-25 Vehicles per day (RA Standard Drawings 2014)

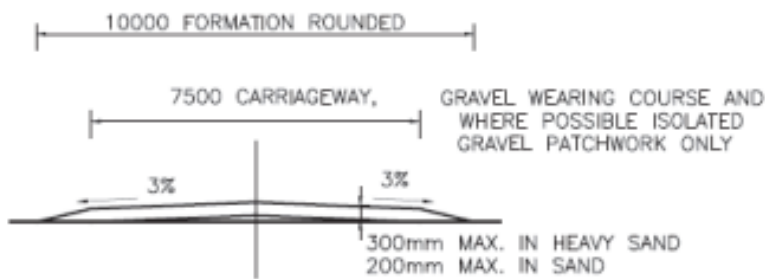


Figure 3b: Minimum RA cross section Class B 25-75 Vehicles per day (RA Standard Drawings 2014)

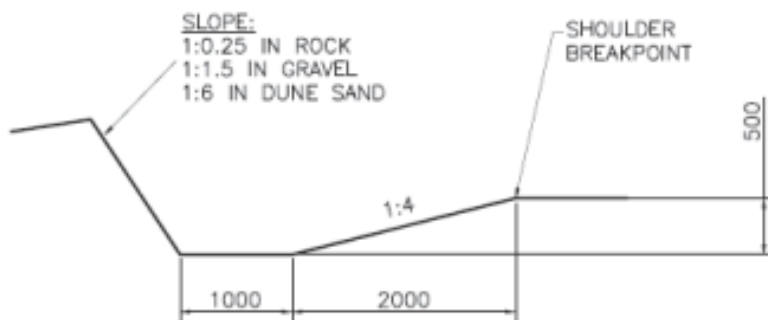


Figure 3c: Cross Section in Cut (RA Standard Drawings 2014)

Ohangwena Consulting Engineers

Figure 3 (a), (b) and C showing typical cross section of the proposed road, Ohangwena Consulting Engineers, 2025.

1.5. Need and Desirability

Access roads are crucial for transportation, infrastructure development, and economic activity, providing essential connectivity to areas like construction sites, businesses, and remote locations, facilitating the movement of people, goods, and equipment, AI overview. Namibia requires improved access roads, especially in rural areas, to facilitate economic development, improve quality of life, and ensure access to basic services and government institutions. Access roads in Namibia plays a very important role as follows:

(a) Connectivity and Accessibility:

- **Connecting to remote areas:**

Access roads are vital for connecting remote areas, such as construction sites, forests, mining sites, or rural locations, to the main road network, enabling access for people and resources.

The need to construct a standard gravel road on the proposed Omhuku to Oshikulufitu combined school and clinic is hereby supported by the infrastructure map overleaf. The project locality portrays a well-established electricity supply into the rural villages within the constituency but not a standard gravel road.

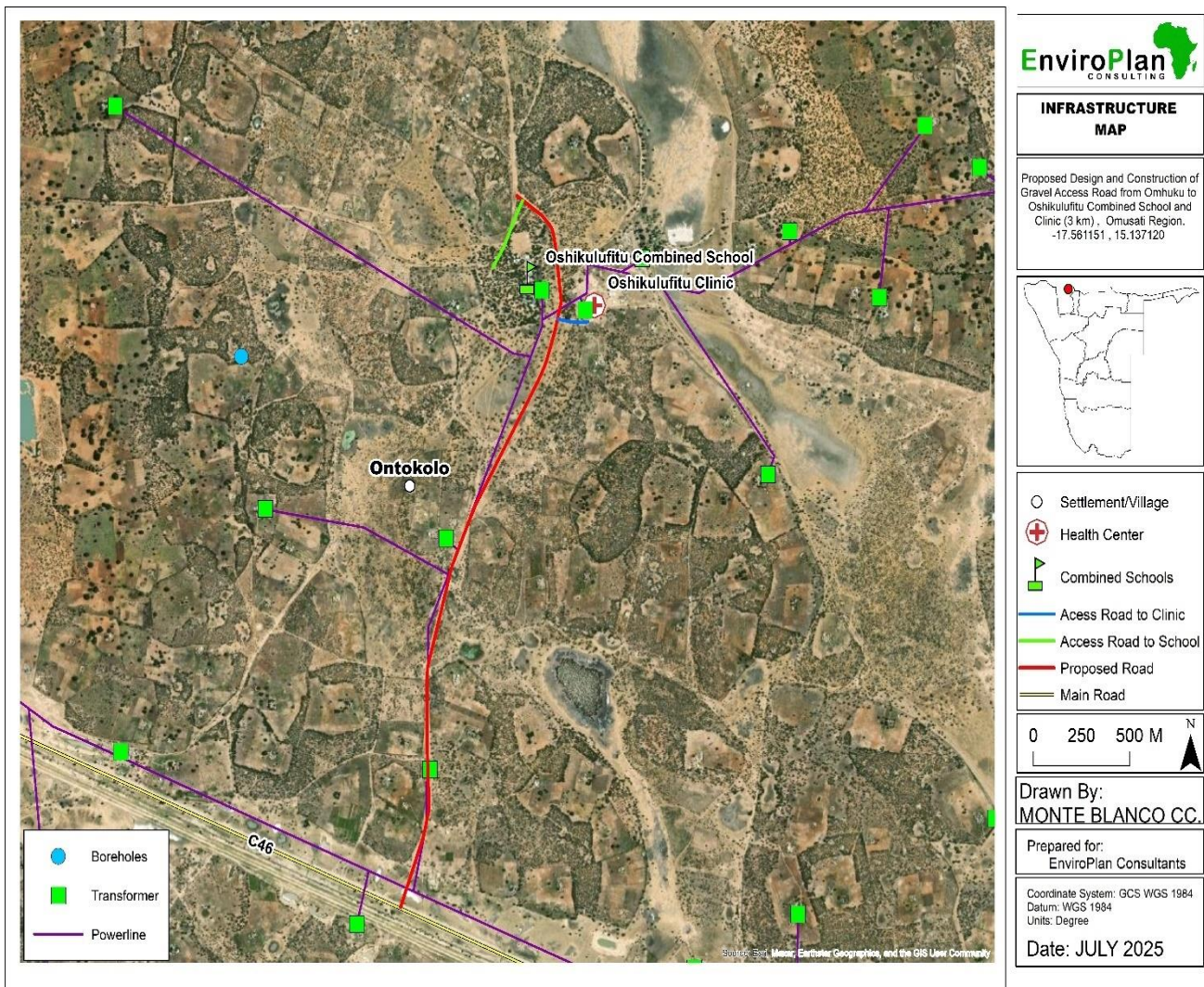


Figure 4: Infrastructure map

- **Facilitating transportation:**

They provide essential pathways for the movement of vehicles, equipment, and materials, ensuring smooth and efficient transportation.

- **Supporting economic activity:**

Access roads are crucial for supporting economic activities, such as construction projects, resource extraction, and trade, by facilitating the movement of goods and services.

- **Improving safety:**

Properly designed access roads can enhance safety by reducing traffic congestion and providing safe routes for construction workers and equipment.

- **Supporting local communities:**

Access roads can improve the quality of life for local communities by providing better access to essential services, such as healthcare, education, and markets.

Applicability to the proposed activity: The Anamulenge constituency is a flood prone area where heavy rainfall always triggers flooding. The proposed road upgrade will support the community by providing access to essential services.

(b) Construction and Infrastructure Development:

- **Supporting construction projects:**

Access roads are essential for construction projects, allowing for the timely delivery of materials, equipment, and personnel to the construction site.

- **Facilitating equipment movement:**

They enable the movement of heavy machinery, such as bulldozers, cranes, and excavators, to and from construction sites.

- **Reducing downtime:**

Efficient access roads minimize delays caused by inadequate or obstructed access, leading to increased efficiency and productivity.

- **Streamlining operations:**

They facilitate better coordination between various construction activities and teams.

- **Protecting the environment:**

Temporary access roads can help protect the environment by preventing heavy machinery from becoming stuck in muddy or challenging terrain, reducing environmental damage.

Applicability: The access road is most likely to reduce surface runoff and land degradation locally.

(c) Other Important Functions:

- **Providing access to businesses:**

Access roads are essential for providing access to businesses, schools, shops, and other commercial premises.

- **Supporting emergency services:**

They are crucial for enabling emergency services, such as fire trucks and ambulances, to reach remote areas quickly.

- **Facilitating maintenance operations:**

Access roads are necessary for facilitating maintenance operations on infrastructure, such as pipelines and power lines.

- **Supporting rural development:**

Investments in rural roads have significant potential for promoting local economic and social development, creating jobs, and supporting local commerce.

Applicability: The access road will link the entire constituency with shops, improve accessibility of medical needs and school attendance all year round thus promoting rural development.

1.6. Project Alternatives

1.6.1. Site Location Alternatives

An integrated site selection study was done in order to identify a suitable route for the proposed access road. Ohangwena Engineering consultants (OCE) as the consulting engineers appointed for the designs of the access road will therefore do the land surveying and pegging of the road. Plans to follow an existing sand track might cause minimal damage to the existing infrastructure, mahangu fields and households. Realignment will be done with consultations to the local authorities.

- Distance: Approximate distance to be covered by the access road is 3km and this will play a very important role to the intended services i.e., the clinic, the school, church and local shops.

- Land suitability:

- Sites that facilitate easy construction conditions (relatively flat land with few rock outcrops or water-bodies) were favoured during site selection.

- Avoidance of environmentally sensitive areas and fatal flaws.

Consideration of the above criteria resulted in the selection of the preferred site as the most obvious route and no further site location alternatives are considered in the EIA process.

1.6.2. Site Layout Alternatives

The project component design underwent a number of iterations based on technical aspects and the environmental and social considerations assessed during the EIA process. From a site location perspective, the position of the proposed road infrastructure was determined by the consideration of the following aspects:

-Local topographical conditions.

-Accessibility

-Pre-existing supporting infrastructure

The design of the gravel road's vertical and horizontal alignment will be based on a 100km/h design standard. The minimum alignment design standards will be in accordance with the TRH 17: Geometric Design of Rural roads.

1.6.3. **NO-GO Alternative**

The current low environmental impact associated with current land use will be maintained and no change in land use or zoning would be required. The status quo needs to be measured against the proposed facility to determine whether the environmental and socio-economic benefits warrant the approval thereof or whether the status quo should be maintained.

This development alternative entails that the proposed road developments not be constructed on the project site, thus result in the site being left as is. While Namibia boasts some of the best roads in the world, there is a glaring reality; that of deteriorated rural road networks, which makes it nearly impossible for residents to access basic services, New Era 2023. Prioritise rural roads, Govt told. This will furthermore impede economic development and socio-economic progress.

Due to the numerous socio-economic benefits of the proposed project and the fact that the identified environmental impacts can be suitably mitigated it has been determined that the No Go option can be eliminated. Should the Competent Authorities (CA) refuse the authorisation of the proposed access road, the 'No Go' option will be "implemented" and the status quo of the site will remain intact - leaving the site in its present state with the risk to increase land degradation and impede accessibility during seasonal flooding.

1.7. **Environmental Impact Assessment Methodology**

The set of potential tools include risk assessment, life-cycle assessment, benefit-cost analysis, ecosystem-services valuation, integrated assessment models, sustainable impact assessment, environmental justice, and present and future scenario tools;

The project proponent used Cost-Benefit Analysis and Cost Effectiveness methodologies for decision making in the pre-planning phase of the project. The Environmental assessment team used Leopold Matrix to do the impact assessment. This matrix is used to identify potential impacts associated with a project or alternatives. It assists performing a comprehensive review of the variety of interactions between project elements and environmental parameters, to identify important environmental factors, data needs, and less damaging alternatives.

Understanding the Leopold Matrix

The Leopold Matrix, developed by Luna Leopold in 1971, is a tool for assessing the potential environmental impacts of a proposed project. It's a qualitative method that uses a matrix to identify and evaluate interactions between project activities and environmental conditions.

Key Features:

- **Structure:**

The matrix has project actions (activities) on the horizontal axis and environmental characteristics on the vertical axis.

- **Interactions:**

Each cell in the matrix represents a potential interaction between a specific project action and an environmental characteristic.

- **Evaluation:**

Each cell is evaluated for the magnitude and significance of the potential impact, typically on a scale of 1 to 10.

- **Qualitative:**

While numerical values are used, the Leopold Matrix is primarily a qualitative method because the values are based on subjective judgment and not purely on quantitative data.

How it works:

- 1. Identify Actions and Characteristics:**

List all the proposed actions of the project and identify relevant environmental characteristics that might be affected.

- 2. Cross-reference:**

Create a matrix with actions on one axis and characteristics on the other.

- 3. Assess Interactions:**

For each cell, assess the potential magnitude (how strong the impact might be) and significance (how important the impact is).

4. Analyse:

Use the matrix to identify the most significant potential impacts and inform mitigation strategies.

Example:

In a dam project, the Leopold Matrix might assess the impact of excavation on water quality, or the impact of altered flow patterns on aquatic ecosystems.

Purpose:

The Leopold Matrix helps ensure that potential environmental impacts are considered during project planning and that informed decisions are made about project design and mitigation.

The assessment team also made use of the **World Bank Environmental Impact checklist**. These checklists are designed to be used in identifying significant environmental impacts, project alternatives, and special issues associated with development projects. They are qualitative and predictive in nature.

1.8. Expected Environmental Impacts

From previous experience with developments of this nature and comments received from Interested and Affected Parties, establishing an access road might have the following key impacts on the receiving environment:

Socio-economic impacts:

- Additional employment will be created during construction phase of the project (positive impact)
Affected parties proposed that the proponent make it compulsory for the appointed contractor and contact a meeting with the locals before the construction begin. In addition to that the Environmental consultant allowed all qualified/ skilled community members to register their qualifications and contact number as listed in appendix (ii) of this report. If implemented as the EMP designs, plant operators can be sourced within the constituency.
- Noise and dust pollution from construction operations (negative impact).
- Community health issues - transmission of diseases from construction team and support staff to local community (negative impact)
- Increase in criminal activities (negative impact)

- Increase of traffic on nearby roads by construction vehicles (negative impact)

Biophysical impacts:

- Surface drainage and stormwater impacts including sedimentation and erosion (flow of surface draining systems might be disturbed)
- Impact on surface water resources
- Possibility of air pollution (dust during construction)
- Possibility of noise pollution
- Visually the site might be unpleasing
- Effect on natural and general ambiance of the area and surroundings
- Effect on vegetation (grass, shrubs and trees directly in areas to be cleared for construction of infrastructure)
- Impact on agricultural resources (mahangu fields disturbance)
- Effect on movement of animals
- Concerns if the area/ burrow pits can be restored / rehabilitated to an acceptable status once the construction phase is over.
- Impact of construction waste on the environment
- Storage of hazardous substances on site

1.9. Conclusion

If the proposed activities receive a go ahead then should consider sustainable technologies. Ohangwena Consulting Engineers will ensure a proper designing and implementation to ensure minimal environmental impacts as a result of the project development.

2. CHAPTER TWO: POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

2.1. Introduction

An important part of the EIA is identifying and reviewing the administrative, policy and legislative frameworks concerning the proposed activity so as to inform the proponent about the requirements to be fulfilled in undertaking the proposed project. This section looks at the legislative framework within which the proposed development will conform to; the focus is on the compliance with the legislation during the planning, construction and operational phases. All relevant legislations, policies and international statutes applying to the project are highlighted in the table 4 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).

The project's activities are undertaken in a biophysical and social environment. These activities or some of them may have direct and indirect impact to the environment. It is therefore necessary to consider the legislations and legal requirements governing the project and its associated activities.

The main legal framework presented herein is that of Namibia for the relevant project component under the scope of this document – detailed legislation that are applicable to the project are given in the EIA Report and then a summary of these that require permitting and licensing for certain project activities. **Local and National Legislation (Acts, Polices, Regulations, etc.) and the Environmental Management Act No. 7 of 2007.**

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

The Act aims at promoting sustainable management of the environment and use of natural resources. The Environmental Management Act (EMA) is broad; it regulates land use development through environmental clearance certification and/or Environmental Impact Assessments. The Act provides for the clearance certification for "**construction of public roads**".

2.1.1. Namibia's Green Plan, 1992

In 1992, Namibia's Green Plan was drafted by the Ministry of Environment, Forestry and Tourism. The document analysed the main environmental challenges facing Namibia and specified actions required to address them. This included a strategic plan for integrated and sustainable environmental management, which outlines key focus areas for sustainable development. The proposed activities will be guided by the green plan.

2.1.2. Climatic Change Policies

National Climate Change Strategy & Action Plan 2013 – 2020

The climate change action plan which identifies Climatic Change as a critical threat to sustainable development. Therefore, it must be addressed in a holistic and multisector manner.

Relevance to the project

There are several activities to be done as a result of project development. In respect to the Climate Change strategy, appropriate measures to combat climate change have been implemented from the initial stages of project designing and the consulting engineers will deploy the most appropriate construction methods to execute the project.

(a). Deforestation

The project activities are less likely to cause disturbance to the local trees and bushes on the proposed site. The project will not remove more than 20 matured trees. Most of vegetation to be cleared are shrubs and it is very important to note that the area/ project path is already disturbed by a service road for the electricity transmission lines, numerous sand tracks, grazing and many other factors.

(b). Making use of renewable sources of energy

The proposed activities will make use of solar energy at the project's campsite/ plant.

(c). Emissions of Green House Gases (GHGs)

There are four main types of forcing greenhouse gases: carbon dioxide, methane, nitrous oxide and fluorinated gases. The main feedback greenhouse gas is water vapor. The general physical layout of the proposed activities is less likely to contribute to global GHGs emissions in either way. All relevant

legislation that was consulted and applicable to the proposed development are presented in this chapter.

For this Report, *Table 4 on page 23* presents the information on the legal obligations (legislations, policies, and guidelines) in terms of legislation, where permitting and/or licensing that may be required from different applicable regulatory authorities as a requirement to the ECC.

2.1.3. The United Nations Convention to Combat Desertification (UNCCD) 1992

The Convention 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's 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.

Project requirement/applicability: The project activities should not be carried out in such a way that they contribute to desertification like unnecessarily cutting down of trees.

2.1.4. The Convention on Biological Diversity 1992

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. It promotes the protection of ecosystems, natural habitats, and the maintenance of viable populations of species in natural surroundings.

Project requirement/applicability: Removal of vegetation cover and destruction of natural habitats should be avoided and where not possible minimised. The project will have a direct impact to less than 4km of the already affected path way. No further disturbance is expected outside the project area.

Table 4: Policies, Legal and Administrative regulations

Legislation/Policy/ Guideline	Applicable Provisions	Implications for this project
Environmental Management Act EMA (No 7 of 2007)	Requires that projects with significant environmental impacts are subject to an environmental assessment process (Section 27).	The EMA and its regulations should inform and guide this EA process.
Environmental Impact Assessment (EIA) Regulations GN 28-30 (GG 4878) Regulated under the Ministry of Environment, Forestry and Tourism	The details principles which are to guide all EAs.	The proposed activities should not be carried out without a valid ECC. The ESMP prepared for this access road construction and operation should guide the proponent and ensure that the project is sustainably implemented. The contact details at the Department of Environmental Affairs and Forestry (DEAF) are as follows: <i>Environmental Affairs reception. +264 819528609,</i>

Legislation/Policy/ Guideline	Applicable Provisions	Implications for this project
	<p>Details requirements for public consultation within a given environmental assessment process (GN No 30 S21).</p> <p>The details the requirements for what should be included in an Environmental Scoping Report (GN No 30 S8) and an EIA report (GN No 30 S15).</p>	<p>The first phase of the project (pre-planning phase). However, if necessary and required, constant consultations and engagements with the interested and affected parties (stakeholders) should be continued. In case of grievances raised to the Proponent, this should be addressed and resolved amicably prior to commencement of the construction phase</p>
<p>Soil Conservation Act (No 76 of 1969)</p> <p>Regulated under the Ministry of Agriculture, Water and Land Reform</p>	<p>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.</p>	<p>Duty of care must be applied to soil conservation and management measures must be included in the ESMP. This is mainly aimed at soil disturbance through unnecessary creation of new tracks and pollution from project related activities.</p>

Legislation/Policy/ Guideline	Applicable Provisions	Implications for this project
<p>Petroleum Products and Energy Act (No. 13 of 1990) Regulations (2001)</p> <p>Regulated under the Ministry of Mine and Energy</p>	<p>Regulation 3(2)(b) states that “No person shall possess or store any fuel except under authority of a licence or a certificate, excluding a person who possesses or stores such fuel in a quantity of 600 litres or less in any container kept at a place outside a local authority area”</p>	<p>There are no fuel tanks to be kept on site. However, care must be exercised when handling hydrocarbon products on site, regardless of volume.</p>
<p>Forestry Act 12 of 2001</p> <p>Regulated under the Ministry of Environment, Forestry and Tourism</p>	<p>Prohibits the removal of any vegetation within 100 m from a watercourse (Forestry Act Section 22(1)). The Act prohibits the removal of and transport of various protected plant species.</p>	<p>There is rarely appearance of sparsely vegetation at very few areas of the site. Although not considered protected species, destroying the shrubs or trees which are not on the way should be avoided.</p>
<p>The National Heritage Act (No. 27 of 2004)</p> <p>The National Monuments Act (No. 28 of 1969)</p> <p>Regulated under the Ministry of Education, Arts and Culture</p>	<p>The Act extends the protection of archaeological and historical sites to private and communal land and defines permit procedures regarding activities at such sites.</p> <p>The Act enables the proclamation of national monuments and protects archaeological sites.</p>	<p>Should heritage resources (e.g., human remains, etc.) are discovered at some point on and or around the site, these should be reported to the National Heritage Council of Namibia for relocation.</p> <p>Contact: Ms. Agnes Shiningayamwe (Regional Heritage Officer)</p> <p>Tel: 061 301 903, Email: rho1@nhc-nam.org</p>

Legislation/Policy/ Guideline	Applicable Provisions	Implications for this project
<p>Pollution Control and Waste Management Bill</p> <p>Regulated under the Ministry of Environment, Forestry and Tourism</p>	<p>The bill aims to “prevent and regulate the discharge of pollutants to the air, water and land” Of particular reference to the Project is: Section 21 “(1) Subject to sub-section (4) and section 22, no person shall cause or permit the discharge of pollutants or waste into any water or watercourse.”</p> <p>Section 55 “(1) No person may produce, collect, transport, sort, recover, treat, store, dispose of or otherwise manage waste in a manner that results in or creates a significant risk of harm to human health or the environment.”</p>	<p>The Proponent and their workers should continue with the good waste management (directly or indirectly) to ensure that the waste does not cause environmental threat and risk.</p> <p>No permit or license required.</p>
<p>Public Health Act (No. 36 of 1919)</p>	<p>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.”</p>	<p>The Proponent and all its employees should ensure compliance with the provisions of these legal instruments.</p> <p>No permit or license required.</p>
<p>Health and Safety Regulations GN 156/1997 (GG 1617)</p>	<p>Details various requirements regarding health and safety of labourers.</p>	<p>No permit or license required.</p>
<p>Public and Environmental Health Act No. 1 of 2015</p>	<p>To provide a framework for a structured uniform public and environmental health system in Namibia; and to provide for incidental matters.</p>	

Legislation/Policy/ Guideline	Applicable Provisions	Implications for this project
<p>Regulated under the Ministry of Health and Social Services</p>		
<p>Road Traffic and Transport Act, No. 22 of 1999</p> <p>Regulated under the Ministry of Works and Transport</p>	<p>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.</p>	<p>Mitigation measures should be provided for if the roads and traffic impact cannot be avoided. The relevant access road permits must therefore be applied for.</p>
<p>Labour Act (No. 6 of 1992)</p> <p>Regulated under the Ministry of Labour, Industrial Relations and Employment Creation</p>	<p>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 ensures effective implementation of the Labour Act No. 6 of 1992, specifically its Regulations, No. 156 Labour Act, 1992: Regulations relating to the health and safety of employees at work</p>	<p>The Proponent should ensure that the construction and maintenance personnel are regulated under the Act and do not compromise the safety and welfare of workers.</p> <p>No permit or license required.</p>

Legislation/Policy/ Guideline	Applicable Provisions	Implications for this project
Water Act 54 of 1956	<p>Certification 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) and Accountability for costs to be met in remedying the environment as soon as project abandonment (S23 (2).</p>	<p>The protection of ground and surface water resources should guide the project construction phase. No Hazardous substances should be disposed in any case for example spillages Use of monitoring boreholes should be kept on record. In the event of borehole water use, it is subject to user pays principle in the area where project will be implemented.</p>
Namibia's Draft Wetland Policy	<p>Namibia's Wetland Policy Vision is to manage national and shared wetlands wisely by protecting their vital ecological functions, life support systems for the current and future benefit of people's welfare, livelihoods and socio-economic development. The objectives of the policy are to:</p> <ul style="list-style-type: none"> ❖ protect and conserve wetland diversity and ecosystem functioning to support basic human needs; ❖ provide a framework for enduring use of wetland resources; 	<p>The project site is might be an indirect water source to the downstream rivers. The project site is not recognized under wetlands in Namibia but will ensure all its activities will be environmentally receptive.</p>

Legislation/Policy/ Guideline	Applicable Provisions	Implications for this project
	<ul style="list-style-type: none"> ❖ promote the integration of wetland management into other sectorial policies; and to ❖ Recognize and fulfill Namibia’s international and regional commitments concerning shared wetlands and wetlands of international importance. 	
The National Land Policy 1998	<p>Namibia’s national Land Policy Of 1998 gives traditional authorities a role undertakes land administration with varying degrees of efficiency and legitimacy</p> <p>Namibia's National Land Policy is based upon the principles enunciated in the Constitution and on the national commitment to redress the social and economic injustices inherited from the colonial past.</p> <p>Article 10 of the Constitution of the Republic of Namibia states that all persons shall be equal before the law and that no one shall be discriminated against on the grounds of sex, color, ethnic origin, religion, creed or social or economic status.</p>	<p>The proposed access road is a sustainable and economically viable.</p> <p>The proposed project will in accordance with Article 95 (1) of the Constitution, Namibia's Land Policy at all times promote environmentally sustainable land use. Failure to demonstrate that proposed land uses are environmentally sustainable, will be grounds for Land Boards to terminate or deny the award of title.</p>

Legislation/Policy/ Guideline	Applicable Provisions	Implications for this project
	In accordance with Article 95 (L) of the Constitution, this National Land Policy requires environmentally sustainable land and natural resource use.	The proposed project is in a communal area and the traditional leaders will guide the project proponent where necessary.

2.2. Conclusion

These pieces of regulations should be observed throughout the project’s life cycle. Any deviations from these policies, regulations and administrative frameworks may have catastrophic results to the environment (including man power) and the work environment. These laws bring about rational work ethics that support the protection of the environment. Strict monitoring by relevant authorities will bring about sound environmental practices. Ministry of works appointed Ohangwena Engineering consultants to supervise and enforce these regulations hence constant monitoring will be done in form of inspections and audits during the construction phase.

3. CHAPTER THREE: RECEIVING ENVIRONMENT

3.1. Introduction

In this chapter, the findings of the EIA team on baseline surveys, public consultation and desk reviews undertaken are in respect to the ecology, society, economy and geo-political set up of the proposed project area. The geological structure and metrology of the project site will also be discussed in this chapter to give an in-depth understanding of the project area in question.

3.2. Socio-Economic status

Outapi, the capital of the Omusati Region in Namibia, is a growing commercial and administrative centre with a mix of economic activities. Retail trade is a significant sector, employing a large portion of the workforce, with major retail brands and local businesses present within the urban area. The Region has a total land surface area of 26 551 km² and it is the 9th largest Region among 14 Regions, with the population density of 9.1 percent, (Omusati regional profile). Omusati is the third populated Region with the population of 243 166 out of which 133 621 are females and 109 545 are males.

The Omusati Region in Namibia is primarily an agricultural area with a strong focus on subsistence farming, particularly mahangu (pearl millet) cultivation and livestock farming. Other key socio-economic activities include the harvesting of *Colophospermum mopane* products for both subsistence and commercial purposes. Additionally, tourism, mining, and manufacturing contribute to the region's economy.

3.2.1. Land Use

The Constituency is predominated by subsistence crop and livestock farming. It mainly produces crops such as pearl millet, maize, sorghum, water melons, groundnuts and beans. There are livestock such cattle, goats, donkeys, chicken, pigs and small number of sheep and ducks. There is a large number of donkeys and mainly used for ploughing mahangu fields. Omusati Region is predominantly an agricultural Region. This is due to its fertile soil and the availability of water from the water canal. Among other crops, *omahangu* is successfully cultivated and consumed as a staple food. A canal which carries water from Ruacana River to Oshakati passes through Outapi Town. The water from the canal is used for irrigation at the Government-owned Farm at Etunda in Ruacana Constituency where crops such as maize, watermelons, tomatoes, potatoes and bananas, amongst

other fruits and vegetables are grown. Apart from the said activities, local people also engage in livestock farming, conservancies and retailing.

The Region has different types of livestock such as cattle, sheep, goats and donkeys in all Constituencies. According to statistics of the 2010 Livestock Census, there are 276,975 cattle, 14,737 sheep, 245,497 goats and 155,393 poultry in the Region. There are well established vaccination facilities (pens) throughout the Region as well as breeding stations like Oshaambelo and Ogongo UNAM Centres. The cattle farming and goats are very important because community members slaughter them and sell cooked and uncooked meat.

The proposed project site does not fall in a conservancy but communal owned land where farmers practice mahangu cultivation, cattle, donkey and goat rearing on small scale farming.



Figure 5: Spotted livestock roaming in search for food and water within the proposed project site



Figure 6: Evidence of *Mahangu* cultivation in the community under study

The proposed gravel road will be undertaken within Anamulenge bordering Ogongo constituency. Figure 7 below shows the constituency map drawn for the proposed activities.

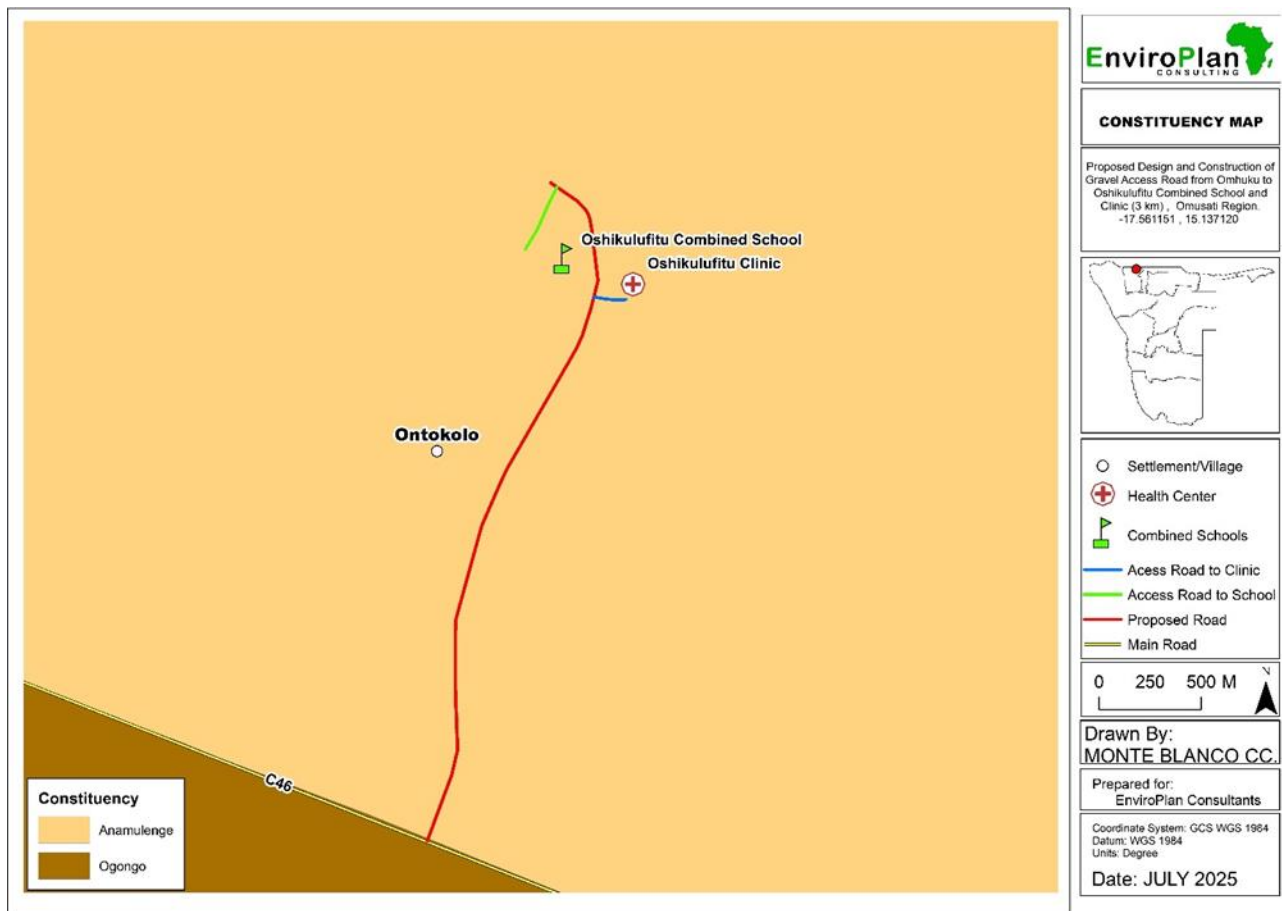


Figure 7: Constituency Map

3.3. Climate

3.3.1. Precipitation and Rainfall

It is a semi-arid and characterized by the high temperature ranging between 25-37 degrees Celsius. The average rainfall per year is about 350-500 mm between November to April. The Region falls under the very flat hydrogeological Cuvelai Basin dipping from some 1150 m above sea level (asl) in the north east to 1080 m asl in Etosha Pan. The rainfall decreases from 600 mm in the north east to 300 mm in the west. Omusati Regional Profile Page 8 the relatively high and reliable average rainfall allows for crop farming. After rain season, innovative irrigation systems are being utilized by locals to produce agricultural products. The ground water in the west and south of the Region is sweet

and shallow i.e., 10-20 meters from surface. During droughts, pits are dug and serve as reliable sources of water. The rest of water sources in the Region is predominantly saline.

Precipitation

A *wet day* is one with at least 0.04 inches of liquid or liquid-equivalent precipitation. The chance of wet days in Outapi varies significantly throughout the year. The *wetter season* lasts 3.7 months, from December 17 to April 7, with a greater than 19% chance of a given day being a wet day. The month with the most wet days in Outapi is February, with an average of 10.3 days with at least 0.04 inches of precipitation.

The *drier season* lasts 8.3 months, from April 7 to December 17. The month with the fewest wet days in Outapi is July, with an average of 0.0 days with at least 0.04 inches of precipitation. Among wet days, we distinguish between those that experience *rain alone*, *snow alone*, or a *mixture* of the two. The month with the most days of *rain alone* in Outapi is February, with an average of 10.3 days. Based on this categorization, the most common form of precipitation throughout the year is *rain alone*, with a peak probability of 38% on February 18.

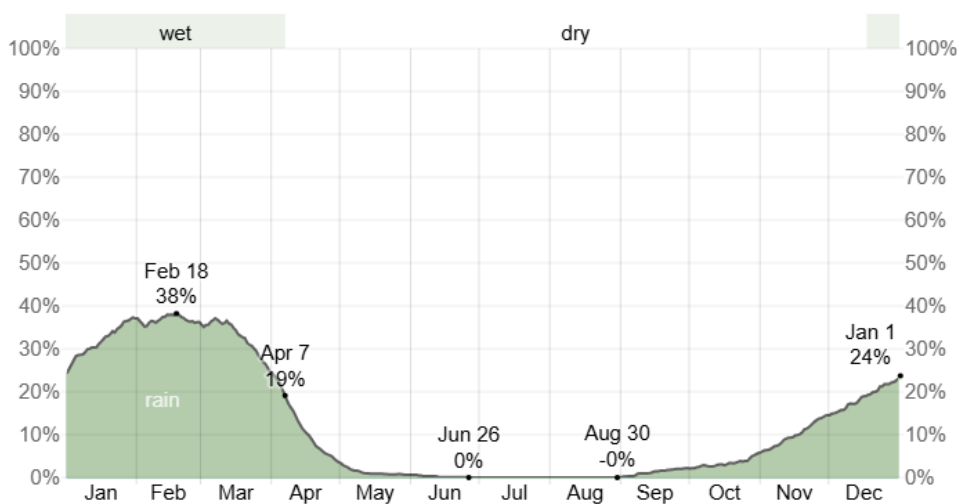


Figure 8: Daily Chance of Precipitation in Outapi (<https://weatherspark.com>)

To show variation within the months and not just the monthly totals, we show the rainfall accumulated over a sliding 31-day period centered around each day of the year. Outapi experiences *extreme* seasonal variation in monthly rainfall.

The *rainy period* of the year lasts for 5.5 months, from November 6 to April 23, with a sliding 31-day rainfall of at least 0.5 inches. The month with the most rain in Outapi is February, with an average

rainfall of 4.0 inches. The *rainless* period of the year lasts for 6.5 months, from April 23 to November 6. The month with the least rain in Outapi is July, with an average rainfall of 0.0 inches.

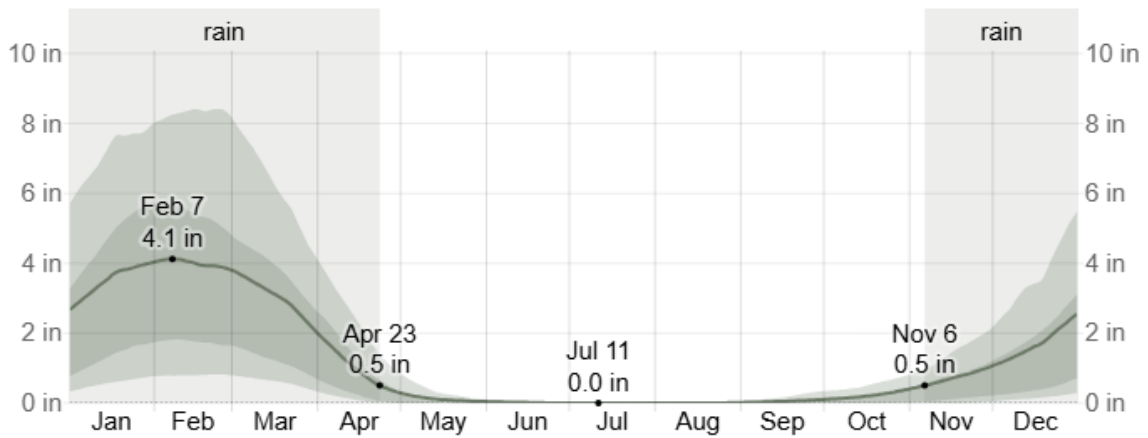


Figure 9: Average Monthly Rainfall in Outapi(<https://weatherspark.com>)

3.3.2. Average Temperature in Outapi.

The hot season lasts for 3.6 months, from September 14 to January 1, with an average daily high temperature above 94°F. The hottest month of the year in Outapi is November, with an average high of 95°F and low of 68°F.

The cool season lasts for 2.3 months, from May 26 to August 2, with an average daily high temperature below 84°F. The coldest month of the year in Outapi is July, with an average low of 49°F and high of 82°F. Figure 10 below shows Average temperature by month in Outapi.

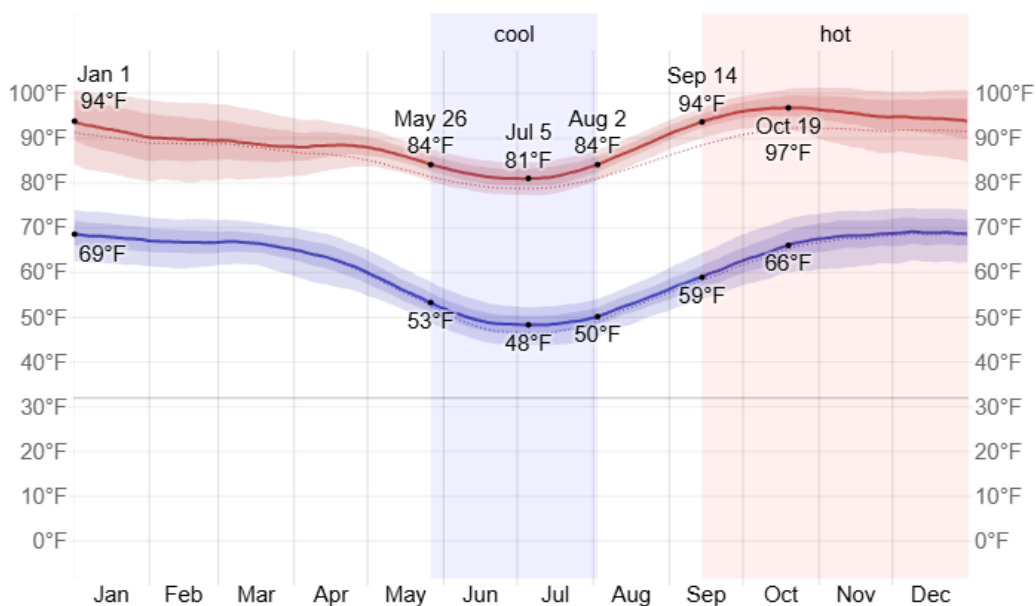


Figure 10: Average temperature by month- Outapi (<https://weatherspark.com>)

3.4. Flora and Fauna

3.4.1. Flora

The landscape of the Region is made up of mopane trees which is a dominant specie and spreads across the Region on shallow sand. The sandy parts of the Region bear abundant makalani palms ‘omilunga’, fig trees ‘omikwiyu’, baobab trees ‘omikwa’ and marula trees ‘omigongo’, especially in the eastern part. The region got its name from the Mopane tree (*omusati*: Ndonga: *Mopane*), which is the dominant species in the region. The Makalani palms decrease rapidly westwards from the border with the Oshana region. The change in vegetation type reflects ecological conditions, forming a natural boundary between the two regions.

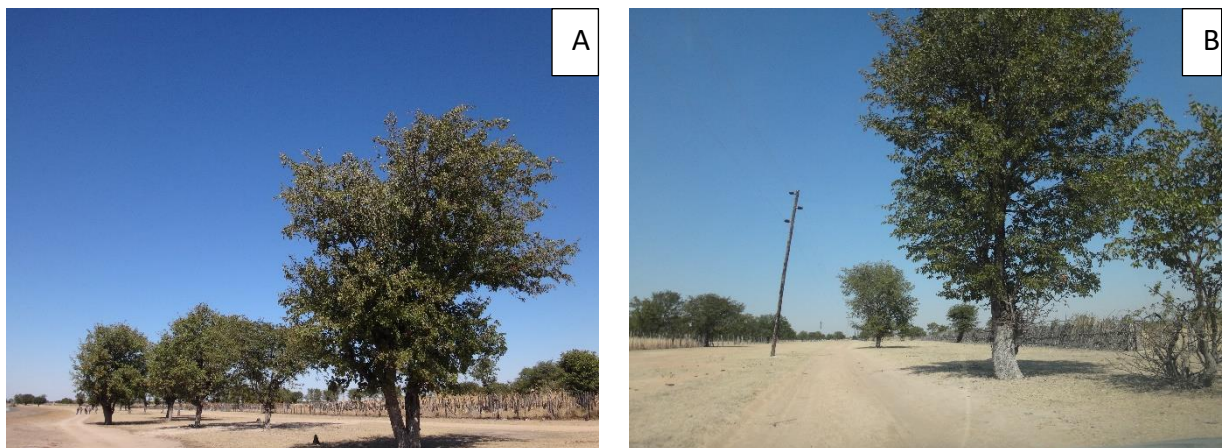


Figure 11 (a) and (b): Common Mopane trees within the vicinity of the proposed road route and some are most likely to be affected.

- The project area is part of the larger mopane woodland ecosystem, with mopane trees (*Colophospermum mopane*) being a dominant species.

The proposed project falls under both grassland and woodland vegetation structure as shown on figure 12 overleaf.

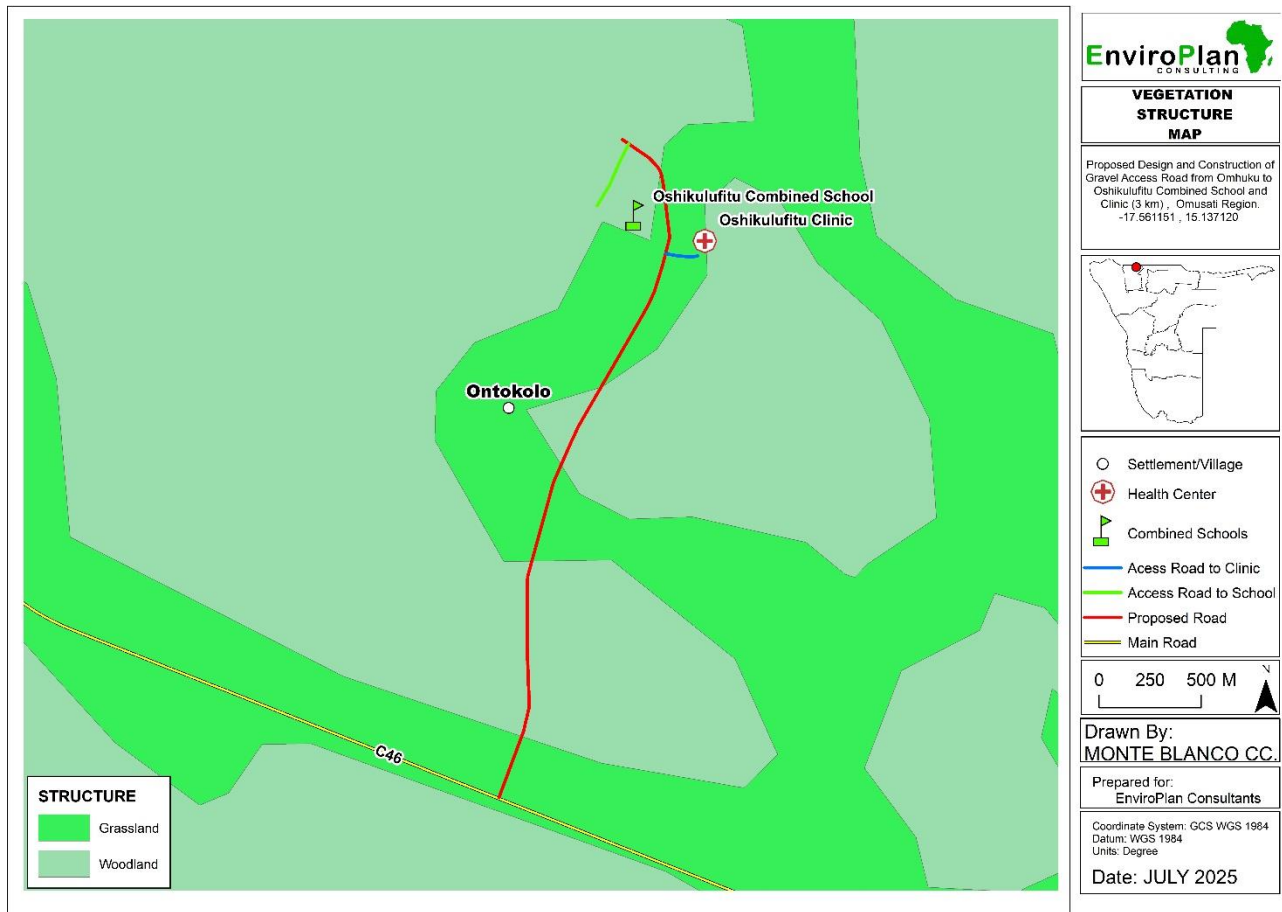


Figure 12:Vegetation structure Map

3.4.2. Fauna

According to the Omusati regional profile, there are three Conservancies in the Region, namely Sheya Shuushona Conservancy in Okahao Constituency, Uukwaluudhi Conservancy and Uukwaludhi Safari Lodge in Tsandi Constituency. The Government has relocated about 400 heads of game into these Conservancies which includes 47 rare black-faced impalas and four endangered black rhinos, warthogs, african wild cats, bat eared fox, black nose impalas, blue wild beasts, bush bucks, elephants, giraffes, hyenas, kudus, mongoose, oryx, springboks, zebras, leopards and cheetahs.

3.4.3. Habitat categorization

The proposed project site consists of open plains with deeper soil and scattered bushes and shrubs. It relatively consists of the least vegetation or least species richness. It as well has watercourses that are normally dry but that carry water for very short periods during the rainy season. The watercourses are marked by having more bushes and scattered trees along their length, and the substrate is usually sandy and un-compacted.

Each of these habitats has its own distinctive food, shelter and refuge characteristics, but each harbor almost the same faunal component. In comparison, watercourse habitats and open plains are more widespread and more homogeneous. Therefore, avoidable disturbance in any of the area should be minimized, since they all support different types of flora and fauna species.



Figure 13: General overview of the Onhokolo village's grazing area

3.4.4. Amphibians Diversity

There is 25 recorded species of amphibians. The Government through the Ministry of Fisheries and Marine Resources has established the essential facilities

in order to promote the consumption of fish as well as to generate income. Two types of fresh fish namely, tilapia and cat fish are harvested once a month and sold to communities within the Region and beyond. Fish is also harvested in local pans known as '*oshana*' and lakes. The communities catch them for selling purpose and consuming at household level. Etaka Dam is one of the sites where fishing activities take place throughout the year in the Onesi Constituency.

3.4.5. Mammals Diversity

While the area is more densely populated than areas further north, it still supports a variety of wildlife, including insects, small mammals, and potentially larger animals like jackals and antelopes, especially in the surrounding areas.

3.4.6. Reptile Biogeography

The Omusati region of Namibia likely has reptile biodiversity influenced by its semi-arid savanna and woodland habitats. While specific studies on Omusati's reptile biogeography might be limited,

general knowledge of Namibian reptile distributions suggests the region would host species adapted to these environments. These could include various lizard species like geckos and skinks, as well as snakes and possibly even a tortoise or two.

3.5. Avifauna

Omusati region is home to a remarkable diversity of bird species, It boasts with 430 bird species. The region is home to various bird species, including the African Marsh Harrier (*Circus ranivorus*), Blacksmith Lapwing (*Vanellus armatus*), and Southern Masked Weaver (*Ploceus velatus*).

3.6. The General Geology, Surface and Ground Water

3.6.1. Local Geology

The Region has two salt pans, namely Ongandjera Salt Pan in Okahao Constituency and Otjiwarunda Salt Pan in Otamanzi Constituency. They are major sources of income to communities residing in the vicinity within the Region. They consist of large alkaline and saline contents and they have the potential to further increase industrial activities in the Region and thereby creating employment opportunities.

- **Soils:**

The soils in Outapi are mainly deep Kalahari and Namib sands, with clayey sodic sands in the oshanas, suitable for plant growth.

- **Rocks:**

Basement Rocks

The Outapi region is underlain by the Kamanjab basement inlier, which includes metamorphosed volcanic, sedimentary, and intrusive rocks.

Orogenic Belts

It lies near the boundary between the Damara and Kaoko orogenic belts, indicating a history of tectonic activity.

Damara Orogeny

The area was affected by the Damara Orogeny, a significant geological event that involved deformation and metamorphism.

Sedimentary Rocks

The area includes sedimentary rocks of the Swakop Group, which are characterized by carbonate deposition and interbedded mica and graphitic schist.

Mineralization

The region is known for its mineral deposits, including those associated with the Otavi Group dolostones and siliciclastic and metavolcanic rocks.

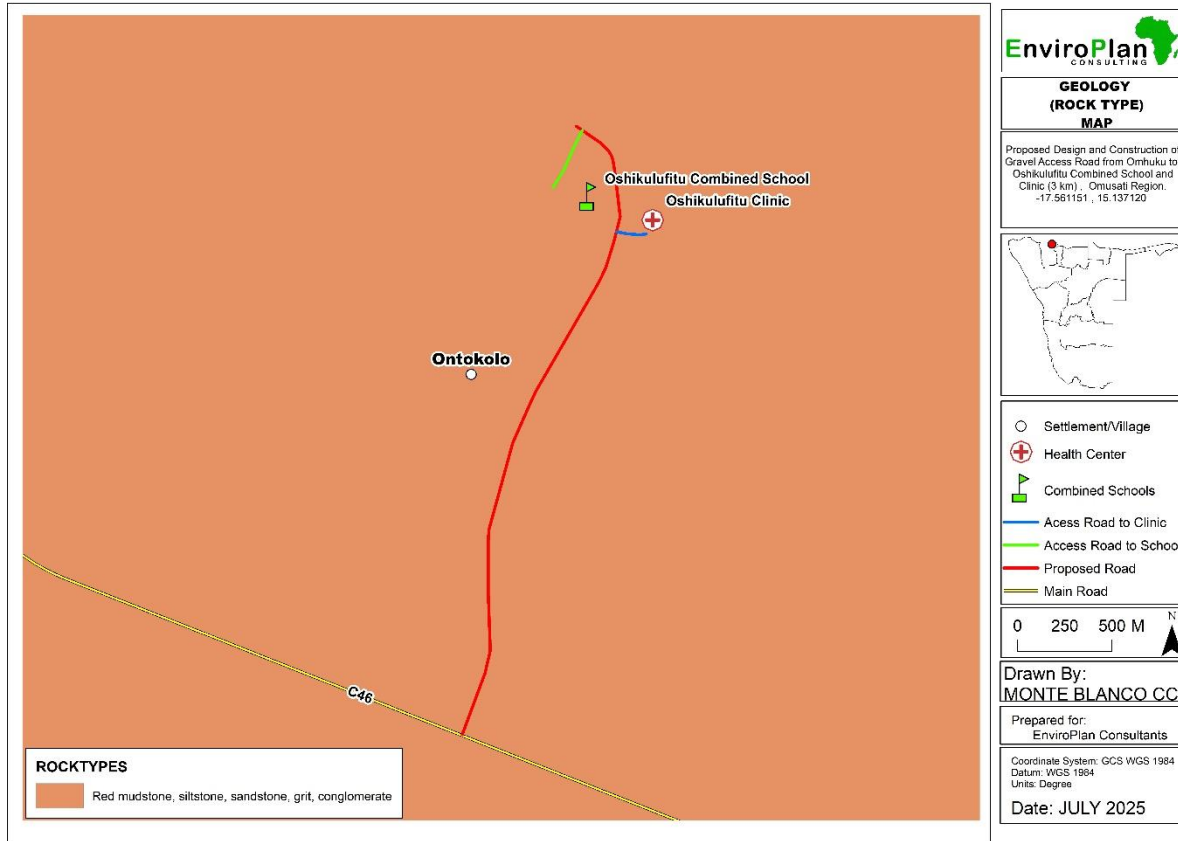


Figure 14: Geology map around project area.

3.6.2. Water Sources

The Omusati region in Namibia relies on a combination of groundwater, surface water, and a canal system for its water supply. Groundwater is typically found shallow in the west and south, while the rest of the region has predominantly saline groundwater. Surface water, including the Ruacana River, is a crucial source, with a canal system transporting water to areas like Oshakati and for irrigation at Etunda. Additionally, the region utilizes the Ohangwena II aquifer, a deep and potentially sustainable source, though it requires careful management to avoid saline intrusion.

- **Groundwater:**
 - In the west and south of the region, groundwater is relatively shallow (10-20 meters deep) and fresh.

- However, much of the region's groundwater is saline, and in some areas, it's brackish (slightly saline).
- In the past, small desalination plants were used to treat brackish water, but they are no longer functional.
- **Surface Water:**
 - The Ruacana River, flowing from Angola, is a major source of surface water.
 - A canal system (Etaka canal) transports water from the Ruacana River to Oshakati and other areas, including the Etunda irrigation farm.
 - The canal system has faced challenges, including aging infrastructure and water scarcity, but efforts are underway to rehabilitate and improve it.
- **Ohangwena II Aquifer:**
 - This aquifer is a large, deep source of freshwater, but it is overlain by a saline aquifer.
 - It requires careful drilling to avoid saline intrusion.
 - It can be a vital buffer during droughts, but its use needs to be managed sustainably.
- **Challenges:**
 - Water scarcity is a significant issue in Omusati, especially in rural communities.
 - Saline groundwater and aging infrastructure contribute to the problem.
 - There are ongoing efforts to improve water infrastructure, including drilling boreholes, rehabilitating canals, and upgrading water treatment plants.
 - The region is also exploring alternative water sources, such as direct potable reclamation, to ensure a sustainable water supply.

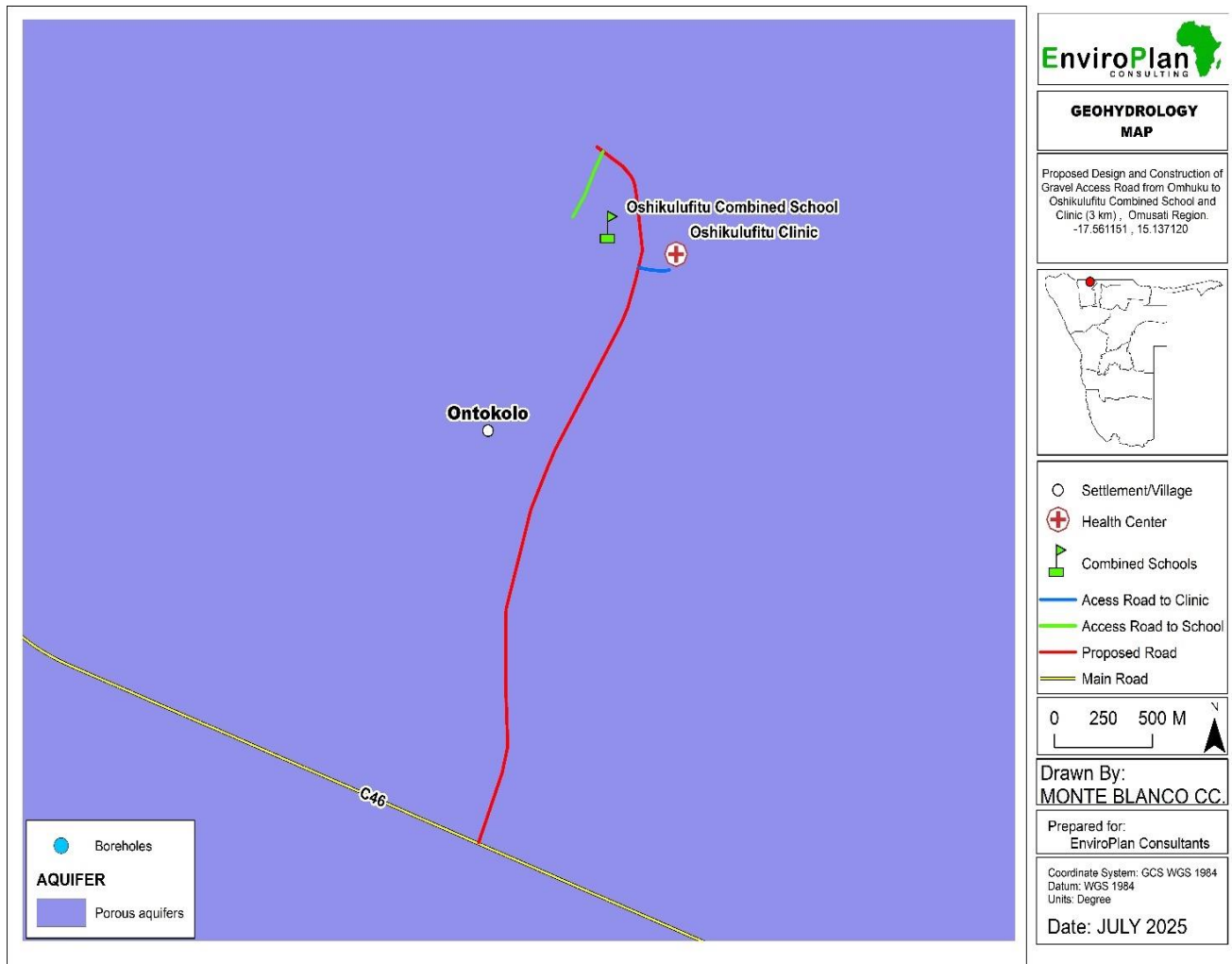


Figure 15: Geohydrology map

3.7. Topography

For the purposes of this report, the geographical coordinates of Outapi are -17.500 deg latitude, 14.983 deg longitude, and 3,645 ft elevation. The topography within 2 miles of Outapi is essentially flat, with a maximum elevation change of 62 feet and an average elevation above sea level of 3,647 feet. Within 10 miles is essentially flat (121 feet). Within 50 miles contains only modest variations in elevation (1,450 feet). The area within 2 miles of Outapi is covered by grassland (100%), within 10 miles by grassland (99%), and within 50 miles by grassland (92%).

Please kindly refer to Figure 16 topography Map overleaf.

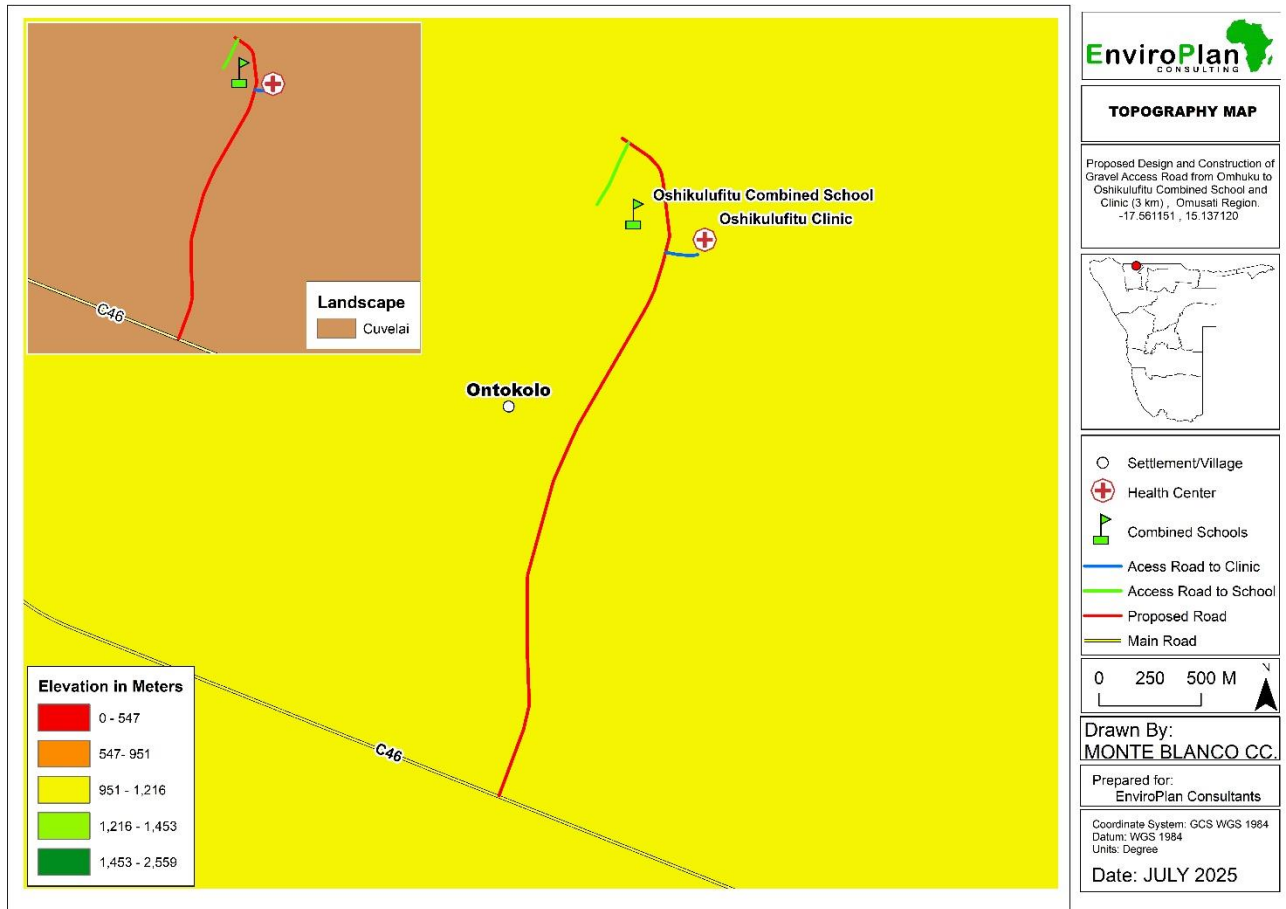


Figure 16: Site topography map

4. CHAPTER FOUR: PUBLIC CONSULTATION

Public and Stakeholder involvement, is a key component of the EA process. The public consultation process, as set out in Section 21 of Regulation No 30 of EMA, has been followed during this assessment and the details thereof documented below. This assessment process incorporated various means of publicity like invitations through local notices, distributed through local authorities, newspaper public notices, community meetings and electronic mails. The Environmental consultant was convinced that the Interested and Affected Parties were given the opportunity to participate and contribute to the design of the ESMP.

4.1. Printed Media

4.1.1. Background Information Document

A Background Information Document (BID) was drafted at the onset of the EA process to act as a useful information handout about the proposed project development. In addition, the BID provided details on the public consultation process with contact details for further information. Please refer to Appendix (ii) of this report.

4.1.2. Newspaper Advertisements & Articles

Newspaper notices about the proposed project and related Environmental Assessment processes was circulated in two newspapers for two consecutive weeks. These notices appeared in the “**The New Era**” (of 30th June 2025 and 4th July 2025) and “**Confidente**” (27th -03 and 4th – 10th July 2025) newspapers as evidenced in the appendix (ii) of this report. Further call for public participation was done locally by the counsellor and local headman.

4.1.3. Building a Stakeholder Database

A stakeholder database for the project collected through a variety of means. During the advertisement of the project, a list was compiled as Interested & Affected Parties (I&AP) registered and contact information of stakeholders updated, please refer to Appendix (ii).

Table 5: Stakeholder database

Stakeholder	Comments for the proposed project
Omusati Regional council	<i>They consider the project as crucial for the rural development of the region</i>
Anamulenge constituency	<i>They consider that their constituency is left out in terms of development and remains disconnected from the other parts of the region</i>
Oshikulufitu combined school	<i>They believe that learner’s attendance during rainy season is affected by flooding and in accessibility to the school of some learners across Oshanas and due to poor road network</i>
Onhokolo traditional authority	<i>They proposed that the project was long overdue and it deterring learners to their education rights especially during rainy season due to seasonal flooding</i>
Ministry of Works and Transport	<i>It proposed to construct a gravel road and gives access to disconnected remote areas of the Anamulenge constituency</i>
Ministry of Environment, Forestry and Tourism	<i>They want a sustainable development of the project</i>
NAMPOWER/ NORED	<i>The proposed access road will run parallel with the powerlines and a 30 m distance should be kept where applicable</i>

4.1.4. Stakeholder Meetings & Key Conversations

An introductory and inception meeting was also held with the following stakeholders:

Omusati Regional Council

Ministry of Works and Transport

Local authorities

The meeting was held on 13th of June 2025 at Omusati Regional council boardroom and the second meeting was held at Oshikulufitu combined school church hall on the 11th of July 2025 and was well attended by community residents and local leaders. Questionnaires were administered during the

2nd public meeting and attendance registers was made available for recording purposes, kindly refer to appendix (ii) of ES report.



Figure 17: Plate (a) and (b): Meeting with Omusati Regional Council and local leadership (Outapi 13/06/2025) Meeting with community members and engagement through public meeting in pictures (Onhokolo 11/07/25)

Both the stakeholder and community engagement meetings held were recorded in the form of minutes and are attached as appendix (ii) of this report.

Further consultations will be done by providing for an online platform for commenting through email to all members who registered as well the MEFT provided the general public to comment on the proposed activities. The consultant was satisfied with the coverage held to capture public; stakeholders view on the proposed activity.

4.1.5. Comments and review period

From the onset of the stakeholders, Interested and Affected Parties engagement and the initial information sharing through the BID, newspaper and site notices, various stakeholders have registered and provided comments. All comments were incorporated in the ESMP (Appendix i) for the proposed activity. Questionnaires and proof of stakeholder’s engagement are attached as appendix (ii) of this scoping report.

5. CHAPTER FIVE: ENVIRONMENTAL AND SOCIO-ECONOMIC IMPACTS

5.1. Overview

The Ministry of Works and Transport (proponent) has committed to sustainability and environmental compliance through coming up with a corrective action plan for all anticipated environmental impacts associated with the project. This is also in line with the Namibian Environmental Management legislation and International best practices on sustainable project implementation. The proponent will implement an Environmental Social Management Plan (EMP) in order to prevent, minimise and mitigate negative impacts. The environmental management plan is being developed to address all the identified expected impacts, the plan will be monitored and updated on a continuous basis with aim for continuous improvement to addressing impacts.

5.2. Assessment of Impacts

This section sets out the overall approach that was adopted to assess the potential environmental and social impacts associated with the project. To fully understand the significance of each of the potential impacts each impact must be evaluated and assessed. The definitions and explanations for each impact criteria are set out in table 6 below.

Table 6: Assessment Criteria

Duration – What is the length of the negative impact?	
None	No Effect
Short	Less than one year
Moderate	One to ten years
Permanent	Irreversible
Magnitude – What is the effect on the resource within the study area?	
None	No Effect
Small	Affecting less than 1% of the resource
Moderate	Affecting 1-10% of the resource
Great	Affecting greater than 10% of the resource

Spatial Extent – what is the scale of the impact in terms of area, considering cumulative impacts and international importance?	
Local	In the immediate area of the impact
Regional / National	Having large scale impacts
International	Having international importance
Type – What is the impact	
Direct	Caused by the project and occur simultaneously with project activities
Indirect	Associated with the project and may occur at a later time or wider area
Cumulative	Combined effects of the project with other existing / planned activities
Probability	
Low	<25%
Medium	25-75%
High	>75%

(Adopted from ECC-Namibia, 2017)

Table 7: Impact Significance

Class	Significance	Descriptions
1	Major Impact	Impacts are expected to be permanent and non- reversible on a national scale and/or have international significance or result in a legislative non- compliance.
2	Moderate Impact	Impacts are long term, but reversible and/or have regional significance.
3	Minor	Impacts are considered short term, reversible and/or localized in extent.
4	Insignificant	No impact is expected.
5	Unknown	There are insufficient data on which to assess significance.
6	Positive	Impacts are beneficial

(Adopted from ECC-Namibia, 2017)

Table 8: Environmental Impacts and Aspects Assessment

Environmental Impact	Valued Ecosystem Component	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance	Infrastructure
TOPOGRAPHY	Landscape Scenery	Visual aesthetic impact	Construction	Moderate	Moderate	Local	Direct	Medium 25 - 75%	Minor	Gravel Access Road
SOIL	Soil	Contamination to soil from waste disposal	Construction	Moderate	Small	Local	Direct	Low <25%	Minor	Gravel Access Road
	Soil	Spillages of fuel, oil and lubricants.	Construction	Short	Small	Local	Direct	Low <25%	Minor	Gravel Access Road
	Soil	Erosion	Construction	Moderate	Small	Local	Direct	Low <25%	Minor	Gravel Access Road
LAND CAPABILITY	Terrestrial ecology and aquatic ecosystems	Change in land use	Construction and Operations	Permanent	Great	Local	Direct	Low <25%	Moderate	Gravel Access Road
	Carrying capacity	Increase in human activities in the environment	Construction	Moderate	Moderate	Regional	Direct	Medium 25 - 75%	Moderate	Gravel Access Road
WATER	Surface water quality	Water pollution from oils and lubricants from vehicles and machinery.	Construction	Moderate	Moderate	Local	Direct	Medium 25 - 75%	Moderate	Gravel Access Road
	Surface water quality	Turbidity and high sediment load	Construction	Moderate	Small	Local	Direct	Low <25%	Moderate	Gravel Access Road

Environmental Impact	Valued Ecosystem Component	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance	Infrastructure
	Soil, Vegetation, Infrastructure	Surface runoff	Construction & Operation	Permanent	Moderate	Local	Direct	Medium 25 - 75%	Moderate	Gravel Access Road
AIR QUALITY	Air Quality	Construction phase	Construction and operation	Permanent	Small	Local	Direct	Low <25%	Minor	Gravel Access Road
WASTE	Groundwater quality	Hazardous waste such as waste oil and lubricants.	Construction	Short	Small	Local	Direct	Low <25%	Minor	Gravel Access Road
	Surface water quality	Threatened from plant stormwater discharge into the river.	Construction and operations	Short	Moderate	Regional	Direct	Medium 25 - 75%	Moderate	Gravel Access Road
	Topography and Landscape	Visual impacts due to use of unsustainable disposal methods	Construction	Short	Small	Local	Direct	Low <25%	Minor	Gravel Access Road
FAUNA	Terrestrial ecology and biodiversity	Loss of habitat and driving away of local animals and aquatic animal species	Construction	Moderate	Moderate	Local	Direct	High >75%	Minor	Gravel Access Road
	Avifauna	Birds can encounter physical crashes	Construction and Operations	Moderate	Small	Local	Direct	Low <25%	Minor	Gravel Access Road
	Aquatic life	Antifouling paints	Construction	Short	Small	local	Direct	Low <25%	Minor	Gravel Access Road

Environmental Impact	Valued Ecosystem Component	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance	Infrastructure
	Terrestrial ecology and biodiversity	Destruction of vertebrate fauna (e.g., road kills)	Construction and Operations	Small	Moderate	Local	Direct	Low <25%	Minor	Gravel Access Road
FLORA	Terrestrial ecology and biodiversity	Proliferation of invasive species inland	Construction	Small	Moderate	Local	Direct	High >75%	Moderate	Gravel Access Road
	Terrestrial ecology and biodiversity	Illegal collection of firewood	Construction	Short	Moderate	Local	Direct	Low <25%	Minor	Gravel Access Road
	Terrestrial ecology and biodiversity	Loss of unique flora and special habitats in the local environment because of general nuisance and animal migrate.	Construction	None	Small	Local	Direct	Low <25%	Moderate	Gravel Access Road
SOCIAL	Noise Pollution	Increased noise levels	Construction and operations	Moderate	Small	Local	Direct	Low <25%	Minor	Gravel Access Road
	Socio Economic Activities	Temporary employment prospects.	Construction and operations	Short	Moderate	Regional	Direct	Medium 25 – 75%	Positive	Gravel Access Road
	Socio Economic Activities	Climate change impacts	Construction	Long	Moderate	Regional	Direct	High >75%	Positive	Gravel Access Road

Environmental Impact	Valued Ecosystem Component	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance	Infrastructure
	Contribution to National Economy	Employment, local procurement, duties and taxes.	Construction and Operations	Short	None	Regional / National	Direct	Low <25%	Positive	Gravel Access Road
Heritage/Archaeology	Artefacts, archaeological high value components	Destruction or affecting paleontological and archaeological artefacts	Construction	small	Moderate	Local	Direct	Medium 25 – 75%	Moderate	Gravel Access Road
HEALTH AND SAFETY	Health Sanitation	Poor ablution and waste management facilities may be detrimental to human health.	Construction	Moderate	Moderate	Local	Direct	Medium 25 – 75%	Moderate	Gravel Access Road
	Property and human life	Electrocution, fires resulting in fatalities, damage to properties, veldt fires	Construction	Moderate	Great	Local	Direct	Medium 25 – 75%	Major	Gravel Access Road

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6. APPENDIX (i): Environmental and Social Management Plan

7. APPENDIX (ii): Public and Stakeholders consultations

8. APPENDIX (iii): Curriculum Vitae of the Environmental Assessment Practitioner

9. APPENDIX (iv): Pictures, site layout plans and Map

