

**Environmental & Social Impact Assessment for the
Feasibility Study: Upgrading Scenario for MR033 Mata-Mata
Border Post-Gochas-Stampriet (256.04km) in the Hardap
and //Karas Regions, Namibia**

Environmental and Social Management Plan (ESMP)

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Proponent: Roads Authority



Prepared for ADA JV



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Contents

1. CHAPTER ONE: BACKGROUND.....	4
1.1. OVERVIEW	4
1.2. THE ENVIRONMENTAL CONSULTANT	6
1.3. PROJECT LOCATION	7
1.4. ROAD CHARACTERISTICS	8
1.5. MATERIALS REQUIREMENTS.....	8
1.5.1. MATERIAL INVESTIGATION: OCCURRENCE OF MATERIALS ALONG THE ROUTE.....	9
1.5.2. CENTRELINE MATERIALS INVESTIGATION	9
1.6. PAVEMENT AND MATERIALS: BORROW PITS	9
1.6.1. BORROW PIT INVESTIGATIONS	9
2. CHAPTER TWO: POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK.....	11
2.1. INTRODUCTION	11
3. CHAPTER THREE: ENVIRONMENTAL MANAGEMENT PLAN (EMP).....	15
3.1. EMP ORGANISATION, RESPONSIBILITY AND AUTHORITY	15
3.1.1. SITE INSTRUCTION ENTRIES	15
3.1.2. ECO DIARY ENTRIES	15
3.1.3. METHOD STATEMENTS	15
3.2. ENVIRONMENTAL EDUCATION	19
3.3. RECORD KEEPING	19
3.4. ENVIRONMENTAL COMPLETION STATEMENT	19
3.5. ROLES AND RESPONSIBILITIES.....	19
3.5.1. DUTIES AND POWERS OF THE ENVIRONMENTAL CONSULTANT (EC)	19
3.5.2. DUTIES AND POWERS OF THE RESIDENT ENGINEER	20
3.5.3. DUTIES AND POWERS OF THE ENVIRONMENTAL CONTROL OFFICER	20
3.5.4. DUTIES OF THE CONTRACTOR.....	21
3.6. FINANCING OF ENVIRONMENTAL CONTROL.....	22
3.7. AMENDMENTS OF THE EMP	22
3.8. PROCEDURES FOR NON-COMPLIANCE	23
3.9. FINES AND PENALTIES	24
4. CHAPTER FOUR: ENVIRONMENTAL MANAGEMENT PLAN	26
4.1. PLANNING AND DESIGN PHASE	26
4.2. CONSTRUCTION PHASE.....	32
4.3. POST-CONSTRUCTION PHASE	60
5. CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS	61
5.1. CONCLUSION	61
5.2. RECOMMENDATIONS.....	61
5.2.1. ENVIRONMENT MANAGEMENT PLAN RECOMMENDATIONS.....	61
5.3. EXTERNAL AUDITING	61
5.4. RECOMMENDATION TO MEFT	61
6. ENVIRONMENTAL MONITORING AND REPORTING	62

EC: ENVIRONMENTAL MONITORING REPORT 63

LIST OF FIGURES

Figure 1: MR033 Route Locality 7
 Figure 2: Locality map of the Borrow pits along the MR033 route 10

LIST OF TABLES

Table 1: Listed Activities -Environmental Management Act No. of 2007..... 5
 Table 2: Project Details 8
 Table 3: Summary of policies, legal and administrative regulations..... 11
 Table 4: List of policies, legal and administrative regulations that require permits, authorisations and or consents..... 12
 Table 5:The following penalties are suggested for transgressions: 25

ACRONYMS

TERMS	DEFINITION
AASHTO	American Association of State Highway and Transportation Officials
ADA JV	Archetype Project Consultants, D&P Engineers and Environmental Consultants, and Amir Consulting Services Joint Venture
CBR	California Bearing Ratio
CE	Consulting Engineer
DCP Test	Dynamic Cone Penetration Test
EAP	Environmental Assessment Practitioners
EC	Environment Consultant
ECC	Environmental Clearance Certificate
ECO	Environmental Control Officer
EIA (R)	Environmental Impact Assessment (Report)

TERMS	DEFINITION
EMA	Environmental Management Act
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
GHGs	Greenhouse Gasses
ISO	International Organization for Standardization
I&APs	Interested and Affected Parties
MAWLR	Ministry of Agriculture Water and Land Reform
MEFT: DEAF	Ministry of Environment, Forestry and Tourism's Directorate of Environmental Affairs and Forestry
MR033	Main Road 33
NHC	National Heritage Council
PCP	Public Consultatio Plan
RA	Roads Authority
RE	Resident Engineer
ToR	Terms of Reference

DEFINITION OF TERMS

The '**Consultant**' – this refers to the team that is conducting the ESIA and the preparation of the EMP for the 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., Roads Authority of Namibia.

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

The '**Environment**' – this refers to the ecology, economy, society and politics.

1. CHAPTER ONE: BACKGROUND

1.1. Overview

The Roads Authority of Namibia (the Proponent) appointed ADA JV to conduct a Feasibility Study: Upgrading Scenario for the Main Road (MR) 33 (MR033) Mata-Mata Border Post-Gochas-Stampriet (256.04km) in the Hardap and //Karas Regions, Namibia (*The Project*). RA intends to upgrade the MR033 from gravel to bituminous standard. The proposed project will oversee the upgrade of the entire road and its structures to accommodate bitumen standard requirements.

The Main Road 33 (MR33 or M033) according to the Roads Authority's (RA) Road Management System's (RMS) Road Referencing System (RRS) lies along the initial portion of route C23. The MR033 encapsulates the entirety of the C15 route starting in central Namibia in the Windhoek magisterial district near Kaapsfarm (km 0+000) in the Khomas Region and ends at the Mata-Mata Border Post (km 510.56) in the //Karas Region. The route is comprised of multiple links with varying surfacing types with the majority being gravel surfaced. According to the Project's Inception Report prepared by ADA JV (2022), the link of interest to the study is in the southern side of MR33 starting at km 254.52 in Stampriet in the Hardap Region and ends at km 510.56 in Mata-Mata in the //Karas Region. The road link under review therefore measures approximately 256.04 km and terminates at the national border between Namibia and the Republic of South Africa. The length of the project route is thus not 291 km as initially indicated in the Request for Proposals. It should be noted that the last 23km of the project route lies within the //Karas Region. Thus, the updated project title includes both the Hardap and //Karas Regions.

The MR33 portion under review is constructed to gravel standards and is located for the most part within the Auob River basin in a south-easterly direction.

According to preliminary Traffic information provided by ADA JV (2022), from the historical traffic data, the following deductions were made:

- Average Daily Traffic along the project road sections have decreased in the last 10 years. This can be attributed to the economic recession.
- Historic Traffic Growth at Counting Station 148:
 - Traffic increased steadily and slowly from 20 in 2012 to 27 (in 2018)
 - In 2019 traffic declined due to general economic decline, this was further exacerbated by Covid-19 in 2020.

- **Historic Traffic Growth at Counting Station 359:**
 - Traffic increased steadily and slowly from 68 in 2013 to 79 (in 2019)
 - The growth was largely in light vehicle traffic from 56 to 67 (between 2013 and 2019)
 - In 2019 traffic decreased due to general economic decline, this was further exacerbated by Covid-19 in 2020.
- **Historic Traffic Growth at Counting Station 379:**
 - Traffic increased very slowly from 49 in 2015 to 53 in 2018
 - The growth was largely in heavy vehicle traffic from 9 to 12 for 2015 and 2018
 - In 2019 total traffic decreased due to general economic decline, this was further exacerbated by Covid-19 in 2020.

The objective of the project is to investigate the feasibility of options to improve the existing road (C15) given the social, environmental, and technical assessments and considerations related to the existing contextual conditions and forecasted future potential of the area addressing the overall regional and national context.

The upgrade is intended to follow the existing alignment as far as practicable to limit the impact on the environment.

For the road upgrade and its associated activities to commence, in terms of the Namibian environmental legislation (Environmental Management Act (No. 7 of 2007 and the Environmental Impact Assessment Regulations of 2012), an EIA is required to obtain an Environmental Clearance Certificate from the Ministry of Environment, Forestry and Tourism (MEFT) before the project can proceed. The 2012 Environmental Impact Assessment (EIA) Regulations of the Environmental Management Act (EMA) No. 7 of 2007 stipulate that the proposed development is a listed activity that may not be undertaken without an Environmental Clearance Certificate (ECC).

This activity is listed under the following relevant sections:

Table 1: Listed Activities -Environmental Management Act No. of 2007

<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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Furthermore, as per the requirements of the Environmental Management Act No. 7 of 2007, Roads Authority has under the ADA JV appointed EnviroPlan Consulting cc to conduct an Environmental and Social Impact Assessment (ESIA) Study and develop an Environmental & Social Management Plan (ESMP) for the proposed project.

This has been followed by an application for an Environmental Clearance Certificate (ECC) to the Ministry of Environment, Forestry and Tourism (MEFT): Directorate of Environmental Affairs and Forestry (DEAF).

In this respect, this document forms part of the application to be made to the DEAF’s office for an Environmental Clearance Certificate (ECC) for the proposed upgrade of the MR033 road and abstraction of construction materials. The document is compiled in accordance with the guidelines and statutes of the Environmental Management Act No.7 of 2007 and the environmental impacts assessment regulations (GN 30 in GG 4878 of 6 February 2012).

1.2. The Environmental Consultant

The Roads Authority has appointed ADA JV as the engineer to undertake the feasibility study to investigate the options to upgrade the road to bituminous standard. ADA JV subsequently appointed EnviroPlan Consulting CC (EnviroPlan hereafter), on behalf of the Roads Authority, as the independent environmental consultant conducting the ESIA for the feasibility study.

Tendai E. Kasinganeti, a qualified Environmental Assessment Practitioner (EAP) conducted this ESIA Study and developed this ESMP with the assistance of Ms. Fredrika Shagama (a qualified and experienced water and environmental consultant).

1.3. Project Location

The project route, i.e., MR033: Mata-Mata Border Post-Gochas-Stampriet (256.04km) is found in the Hardap and //Karas Regions, Namibia. RA intends to upgrade the MR033 from gravel to bituminous standard. The proposed project will oversee the upgrade of the entire road and its structures to accommodate bitumen standard requirements.

The MR033 lies along the initial portion of route C23 and MR033 encapsulates the entirety of the C15 route starting in central Namibia in the Windhoek magisterial district near Kaapsfarm (km 0+000) in the Khomas Region and ends at the Mata-Mata Border Post (km 510.56) in the //Karas Region. The MR033 route is comprised of multiple links with varying surfacing types with the majority being gravel surfaced. The link of interest to the study is in the southern side of MR33 starting at km 254.52 in Stampriet in the Hardap Region and ends at km 510.56 in Mata-Mata in the //Karas Region (ADA JV, 2022). The road link under review therefore measures approximately 256.04 km and terminates at the national border between Namibia and the Republic of South Africa. The route map of the MR033 is shown in Figure 1.

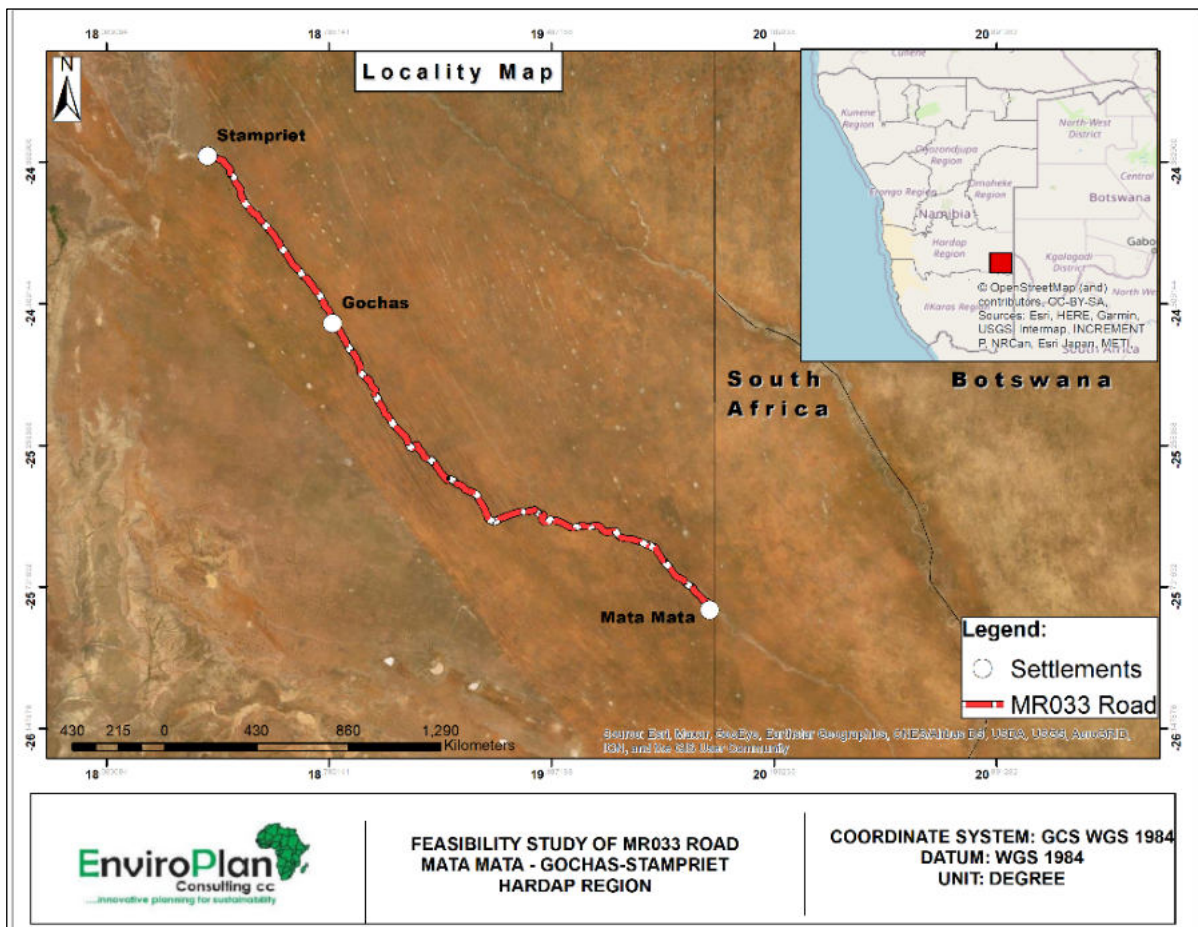


Figure 1: MR033 Route Locality

1.4. Road characteristics

The project road for the feasibility (MR033) is a gravel road with relatively good riding quality and is being investigated for its feasibility to be upgraded to a bitumen standard road. The project road is approximately 265.04km in length. The route is constructed to gravel standards and is located for the most part within the Auob River basin in a south-easterly direction. The Stampriet-Gochas section of the route heads out in an Eastern direction for 73.4 km until Gochas. The Gochas-Mata-Mata Border Post route starts from Gochas in an Eastern direction and follows a hilly terrain toward Mata Mata border post for 217.6 km.

The details of the road under investigation are provided in Table 2 below and the condition of the road at some sections are shown in **Error! Reference source not found.**

Table 2: Project Details

Length of Road	256.04km
Road reserve edge limit	30m
Regional Administration	Hardap and //Karas
Towns and settlements serviced by the road	Stampriet, Gochas and Mata-Mata Border Post

1.5. Materials Requirements

According to the TOR, the Consultant is required to undertake soil investigations and tests to identify type and sources of construction materials necessary for the subsequent design and construction phases of the project. The materials investigations undertaken on this project involved centreline soil investigations on the existing pavement, borrow pits for fills / selected layers, borrow pits wearing course material, as well as the availability of sand for concrete works. The scope of this task involved the search and quantification of materials appropriate for the strategic assessment of the quantity of the availability of materials to undertake the project successfully.

It should also be noted that the materials investigation was conducted in accordance with the Roads Authority's Materials Manual. The description of the Pavement Materials Investigations has been sourced from ADA JV (2022) as provided below.

1.5.1. Material Investigation: Occurrence of materials along the route

The surface and near surface materials identified in the study area, that would affect road building, comprise mainly of calcrete gravel. It is noted from investigation that the project site is surrounded by commercial farmers, and all identified borrow pits are located along the route.

1.5.2. Centreline Materials Investigation

The aim of the investigation was to confirm the existing pavement structure and to determine the material quality of the respective layers.

The field investigation was carried out on the 20th to the 23rd of April 2022, a preliminary investigation was conducted which involves the familiarisation of the project route and inspection of existing borrow pits. The centreline field work comprised of the following:

- Excavation of test holes to a minimum depth of 750mm or refusal. These test holes were spaced at 10.0km intervals.
- Profiling of test holes and sampling of pavement layer material,
- Sampling to determine grading, Atterberg limits and CBR/Mod AASHTO density,
- Dynamic Cone Penetrometer (DCP) tests at each test hole

In total twenty-six (26) test pits were investigated along the road alignment by means of manual excavation. DCP tests were conducted at every test pit investigated. Representative disturbed samples were retrieved from test pits for laboratory analyses. A total of fifty-two (52) Road Indicator Tests (grading to 0.075mm, Atterberg limits, linear shrinkage), fifty-one (51) CBR tests and Mod AASHTO density tests were carried out on different road layerworks.

1.6. Pavement and Materials: Borrow pits

1.6.1. Borrow Pit Investigations

The initial exploration for borrow-pits was carried out during the centreline investigations. The purpose of this phase was to locate the existing potential borrow-pits, to sample and test extracted representative samples.

The field work was carried out from the 02nd of May 2022 to 04th of May 2022, whereby, in total eighteen (18) borrow pits were identified, whereby seventeen (17) were gravel borrow pits and one (1) sand borrow pits. Out of 17 identified gravel borrow pits, only 16 borrow pits were investigated and tested.

Reason being NCEL personnel were denied access into the farm (Wildmoor Farm) in which one of the borrow pit is located. These are already existing borrow pits and trial-holes were excavated at each site to a depth of approximately 1.0m or refusal and these pits were dug by manual excavation method. In total thirty-nine (39) Road Indicator (grading to 0.075 mm, Atterberg limits, linear shrinkage) and CBR and Mod AASHTO density representative disturbed samples were retrieved from test holes for laboratory analyses. The locations of the 18 borrow pits along the MR033 route are shown on the map in Figure 2.

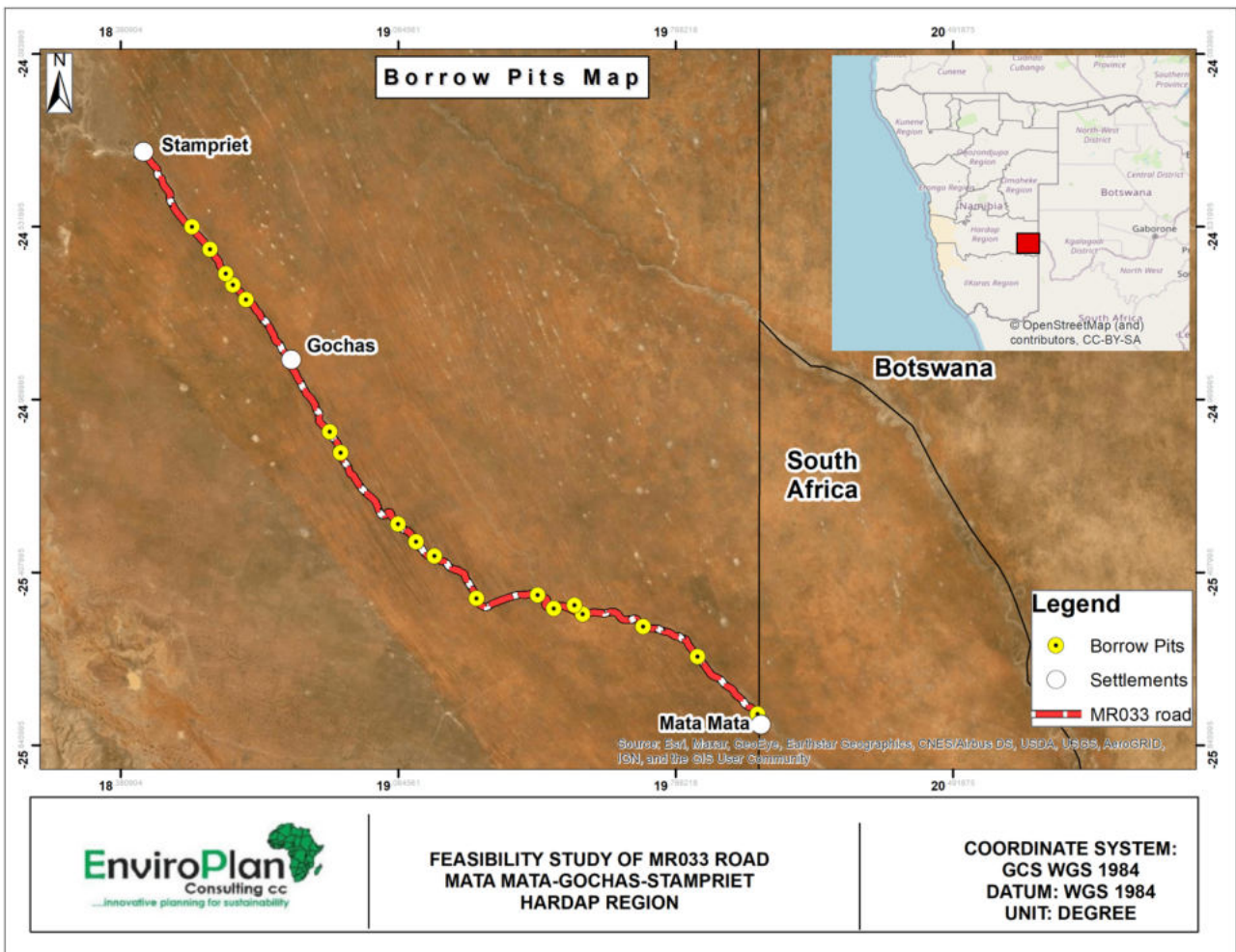


Figure 2: Locality map of the Borrow pits along the MR033 route

2. CHAPTER TWO: POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

2.1. Introduction

An important part of the ESMP is identifying and reviewing the administrative, policy and legislative situation concerning the proposed activity, to inform the Proponent about the requirements to be fulfilled in the project development and implementation. The focus is on the compliance with the legislation during the planning, construction, and operational phases. The detailed presentation of the legal framework (legislations, policies and international statutes) as summarized in Table 3 governing the project have been provided in the ESIA/Scoping Report.

The pursuit of sustainability by an Organisation is operationalised by a sound policy and legislative framework that gives operating parameters within its sphere of operation.

Table 3: Summary of policies, legal and administrative regulations

Aspect	Legislation
The Constitution	-Namibian Constitution First Amendment Act 34 of 1998
Archaeology and Heritage	-National Heritage Act 27 of 2004 -National Monuments Act of Namibia (No. 28 of 1969) as amended until 1979
Environmental	-Environmental Management Act 7 of 2007 -EIA Regulations GN 57/2007 (GG 3812) -National Solid Waste Management Strategy -Pollution and Waste Management Bill (draft) -National Waste Management Policy -Soil Conservation Act 76 of 1969 -Hazardous Substance Ordinance (No. 15 of 1973) -Atmospheric Pollution Prevention Ordinance, 1976 -National Policy on Climate Change for Namibia, 2010 -National Biodiversity Strategy and Action Plan (NBSAP2) -Roads Authority Environmental Manual (October 2014)

Aspect	Legislation
Forestry	-Forest Act 12 of 2001
Water resources	-Water Act 54 of 1956 -Water Resources Management Act, 2013 (Act No. 11 of 2013)
Land Use and ownership	-Agricultural (Commercial) Land Act No. 6 of 1995
Health and Safety	-Labour Act (No 11 of 2007) in conjunction with Regulation 156, 'Regulations Relating to the Health and Safety of Employees at work'.
	-Public Health and Environmental Act, 2015
Services and Infrastructure	-Road Ordinance 1972 (Ordinance 17 of 1972) -Roads Authority Act No 17 of 1999 -National Road Safety Act No 9 of 1972

In this section, relevant legal instruments presented herein are those that require certain consents, permits and authorisations from landowners, for instance as well as certain government institutions. These authorizations are what the Roads Authority and their respective contractors will be required to obtain prior to certain activities as well as throughout the project lifespan. These permitting legal requirements are provided under Table 4. The details of the contact persons (offices) responsible for issuing the required permits.

Table 4: List of policies, legal and administrative regulations that require permits, authorisations and or consents

Legislation/Policy/ Guideline	Relevant Provisions	Contact persons & details for obtaining permits or authorization
Environmental Management Act (No. 7 of 2007)	The EMA has stipulated requirements to complete the required documentation to obtain an Environmental Clearance Certificate (ECC) for permission to undertake certain listed activities.	The ECC should be renewed every 3 years, counting from the date of its issuance. Contact details at MEFT's DEAF Contact: Office of the Environmental Commissioner Mr. Timoteus Mufeti

Legislation/Policy/ Guideline	Relevant Provisions	Contact persons & details for obtaining permits or authorization
2012 Environmental Impact Assessment (EIA) Regulations (Government Gazette (GG) No. 4878 Government Notice (GN) No. 30)		Tel: +264 61 284 2701
Water Act 54 of 1956 Water Resources Management Act (No 11 of 2013)	Prohibits the pollution of water and implements the principle that a person disposing of effluent or waste has a duty of care to prevent pollution (S3 (k)). 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 (S68).	These permits include Borehole Drilling Permits, Groundwater Abstraction & Use Permits, and when required, the Wastewater / Effluent Discharge Permits). Contact: Mr. Franciskus Witbooi Division: Water Policy and Water Law Administration Division Tel: +264 61 208 7158 Water Environment Division Contact: Ms. Elise Mbandeka Tel: +264 61 208 7167
Forestry Act 12 of 2001, Amended Act 13 of 2005: Ministry of Environment, Forestry and Tourism (MEFT)	Prohibits the removal of any vegetation within 100 m from a watercourse (Forestry Act S22 (1)). The Act prohibits the removal of and transport of various protected plant species.	Should there be protected plant species, occurring along the project route such as camelthorn trees that need to be removed, a permit should be obtained from the nearest MEFT' Forestry office. Mr. Johnson Ndokosho (Forestry Director) Tel: +264 61 208 7666 OR Nearest Forestry Office (Mariental, Hardap Region)

Legislation/Policy/ Guideline	Relevant Provisions	Contact persons & details for obtaining permits or authorization
Agricultural (Commercial) Land Act No. 6 of 1995	The Proponent should comply with the requirements of temporarily leasing or interference with private/commercial land during road upgrade. This will include thorough engagements with the landowners (farmers) to negotiate land access and agreements for the duration of the road upgrade works. Land use consents and access permits should be obtained prior.	No specific contact details but the Roads Authority should reach an agreement with the directly affected farmers in which the borrow pits are sited and for the farm fences that need to be displaced for the road reserve.
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 licence or a certificate, excluding a person who possesses or stores such fuel in a quantity of 600 litres or less in any container kept at a place outside a local authority area”	The Proponent should obtain the necessary authorisation from the Ministry of Mines and Energy: for the storage of bulk fuel on-site. Contact: Mr. Carlo Mcleod (Acting Director – Petroleum Affairs) Tel: +264 61 284 8291
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 an NHC; to establish a National Heritage Register; and to provide for incidental matters. This impact is likely during site preparation for the construction of the cemetery when there is a potential of inadvertent unearthing and damage of heritage resources such as old and unmarked graves.	This applies for any findings of subsurface resources such as unmarked old graves and unknown buried object encountered during earthworks. These should be reported to the National Heritage Council (NHC) of Namibia Contact the NHC:
The National Monuments Act (No. 28 of 1969)	The Act enables the proclamation of national monuments and protects archaeological sites.	Mrs. Erica Ndalikokule (NHC Director) Tel: +264 61 301 903

3. CHAPTER THREE: ENVIRONMENTAL MANAGEMENT PLAN (EMP)

3.1. EMP Organisation, Responsibility and Authority

This section describes the key functionaries in the planning, implementation, and monitoring of the EMP. Copies of this EMP shall be kept at the site office and will be distributed to all senior contract personnel. All senior personnel shall be required to familiarise themselves with the contents of this document.

The implementation of this EMP requires the involvement of several stakeholders, each fulfilling a different but vital role to ensure sound environmental management during each phase.

3.1.1. Site instruction entries

The Site Instruction Book entries will be used for the recording of general site instructions as they relate to the works on site and EMP measures. It will also be used for the issuing of stop-work orders issued by the ECO for the purposes of immediately halting any activities of the Contractor in lieu of the environmental risk that they may pose.

3.1.2. ECO diary entries

The purpose of these entries will be to record the comments of the ECO as they relate to activities on the site including infringements, possible changes to the EMP or work stop orders.

3.1.3. Method statements

Method statements from the Contractor will be required for specific sensitive actions on request of the authorities or ESM. A method statement forms the baseline information on which sensitive area work takes place and is thus considered a “live document” in that modifications can be negotiated between the Contractor and EC if or as required. The Contractor (and, where relevant, any subcontractors) must also sign the Method Statement, thereby indicating that the works will be carried out according to the approved methodology. Changes in the methodology must be reflected by amendments to the original approved Method Statement. Amendments must be signed by both the Environmental Consultant (EC) and Resident Engineer (RE), denoting that the change is environmentally acceptable. The Contractor must also sign the amended Method Statement.

All method statements will form part of the EMP documentation and are subject to all terms and conditions contained within the EMP main document. The Method Statement shall cover applicable details about:

- Construction procedures,
- Materials and equipment to be used,
- How and where materials will be sourced and stored,
- The containment of accidental leaks or spills,
- Timing and location of activities, and
- Any other information deemed necessary by the ESM.

The Contractor must submit the method statement two weeks before any construction activity is due to start, especially with respect to impacts on sensitive ecosystems. Work may not commence until the method statement has been accepted by the EC and Engineer, and clearly communicated to the workforce. The Contractor shall, except in the case of emergency activities, allow 14 days for consideration and approval of the Method Statement. The RE or EC may require changes to a Method Statement if the proposal does not comply with the specifications or if, in the reasonable opinion of the RE or ESM, the proposal may result in damage to the environment in excess of that permitted by the specifications. Approved Method Statements shall be communicated to all relevant personnel.

All Method Statements listed below, shall be provided by the Contractor before the activity commences:

(i) Bundling

Method of bundling for static plant and bulk fuel storage.

(ii) Camp establishment and fencing

- *Location and layout of the Contractor's Camp.*
- *Method of installing fences required for working areas and Contractor's Camp.*

(iii) Concrete batching

Location, layout and preparation of concrete batching facilities, including the methods employed for mixing of concrete and management of runoff water from such areas.

(iv) Bulk earthworks

Location, layout, silt/sediment management and the management of runoff from bulk earthworks areas.

(v) Demolition

Proposed method of demolition, including handling and disposal of materials.

(vi) Dust

Dust control protocol.

(vii) Fire and hazardous substances

- *Handling and storage of hazardous wastes.*
- *Emergency spillage procedures and compounds to be used.*
- *Emergency procedures for accidental fire.*
- *Methods for the disposal of hazardous materials.*

(viii) Fuels and fuel spills

- *Methods of refuelling vehicles.*
- *Details of methods for fuel spills and clean-up operations.*

(ix) Protection of archaeological resources

Methods for dealing with archaeological resources in the event that any are found.

(x) Protection of environmentally sensitive resources (fauna and flora)

- *Methods for dealing with conservation areas or areas identified as environmentally sensitive requiring protection.*
- *Locality and preparation of onsite nursery to house vegetation relocated from construction areas or propagated locally for replanting purposes.*
- *Details of methods dealing with the identification, transportation and transplanting of flora species of conservation value.*
- *Details of methods dealing with the identification, capture and relocation of fauna*

species of conservation value.

(xi) Rehabilitation

Rehabilitation of disturbed areas and borrow pits after construction is complete.

(xii) Settlement ponds and sumps

Layout and preparation of settlement ponds and sumps.

(xiii) Solid waste management

Solid waste control and removal of waste from Site.

(xiv) Sources of materials

Details of materials imported to the Site (where applicable).

(xv) Topsoil handling and stockpiling

Details on stripping, handling and stockpiling of topsoil.

(xvi) Wash areas

Location, layout, preparation and operation of all wash areas.

(xvii) Storm water management

Details of how storm water is to be handled on Site.

3.2. Environmental Education

Before any work is commenced on the Site, the entire Contractor's staff including foremen shall attend an environmental education talk, presented by the Environmental Consultant (EC) with the assistance of the Contractor. The Contractor shall liaise with the Environmental Consultant prior to the commencement date to fix a date and venue for the talk. The Contractor shall ensure that all the employees attend the talk.

Follow-up education talks shall be held for any new employee/s coming onto Site from time to time. The EC shall ensure that all attendees sign an attendance register and shall provide the ECO with a copy of the attendance register.

3.3. Record Keeping

All records related to the implementation of this management plan (e.g., site instruction book, ECO diary, induction records, method statements) must be kept together in an office where it is safe and can be retrieved easily. All relevant records should be kept for a minimum of two years after construction and should at any time be available for scrutiny by any relevant authority or stakeholder.

It is recommended that photographs (fixed point photographs for better comparisons before/during/after) are taken of the site prior to, during and immediately after construction as a visual reference. These photographs should be stored with related documents and other records related to this EMP.

3.4. Environmental Completion Statement

An Environmental Completion Statement will be prepared by the EC for submission to the Department of Environmental Affairs and Forestry (Ministry of Environment, Forestry and Tourism) indicating completion of the project and compliance with the EMP and conditions. This statement will be prepared after the final audit after the rehabilitation phase.

3.5. Roles And Responsibilities

3.5.1. Duties and Powers of the Environmental Consultant (EC)

The Environmental Consultant is ultimately responsible for:

- The environmental and social consultant will be responsible for the periodic monitoring and evaluation of EMP implementation.
- Assisting the Contractor in finding environmentally responsible solutions to problems.

- Monitoring the undertaking by the Contractor of environmental awareness training for all new personnel coming onto site.
- Advising on the removal of person(s) and/or equipment not complying with the specifications via the RE.
- Auditing the implementation of the EMP and EMP compliance monthly.
- Undertaking a continual review of the EMP and recommending additions and/or changes to the document.
- The management and continuous monitoring of the implementation of the EMP daily will be the responsibility of the Resident Engineer.

3.5.2. Duties and Powers of the Resident Engineer

The Resident Engineer is ultimately responsible for:

- The Resident Engineer (RE) of the Consulting Team will act with restricted powers and responsibilities as delegated by the Engineer in writing.
- For this project it is envisioned that the function of the Environmental Control Officer (ECO) will only require part time inputs. The RE may fulfil the function of the ECO thereby taking responsibility of the ECO's duties (see below) on this project.
- Any on-site decisions regarding environmental management are ultimately the responsibility of the RE with consultation with the environmental Consultant. Therefore, the RE must assign the role of ECO to a competent member of its site supervising team. The RE shall assist the ECO where necessary and will have the following responsibilities in terms of the implementation of this EMP:
 - Ensuring that the necessary environmental authorisations and permits have been obtained by the Contractor.
 - Assisting the Contractor in finding environmentally responsible solutions to problems with input from the ECO where necessary.
 - Ordering the removal of person(s) and/or equipment not complying with the EMP specifications.
 - Issuing fines for transgressions of site rules and penalties for contravention of the EMP.

3.5.3. Duties and Powers of the Environmental Control Officer

The Environmental Control Officer (ECO) will be a competent person determined by the RE to fulfil the role as the Employer's representative to monitor and review the on-site environmental management and implementation of this EMP by the Contractor.

The ECO's duties will include the following:

- Assisting the RE in ensuring that the necessary environmental authorisations and permits have been obtained.
- Maintaining open and direct lines of communication between the RE, Employer, Contractor, and interested and affected parties regarding environmental matters.
- Facilitating all communication between the local community and the contractor.
- Regular site inspections of all construction areas regarding compliance with the EMP.
- Monitoring and verifying adherence to the EMP by verifying that environmental impacts are kept to a minimum.
- Taking appropriate action if the specifications are not followed.
- Recommending the issuing of fines for transgressions of site rules and penalties for contraventions of the EMP via the RE.

3.5.4. Duties of the Contractor

The contractor shall be responsible for the implementation of the EMP and the action plan, onsite monitoring and evaluation of the EMP through the following:

On the on-set of the project, the contractor through an Environmental Officer shall:

- Develop a Hazard Identification and Risk Assessment report on the on-set of the project to be approved by the environmental Consultant.
- Developing a waste and contractors camp management plan to be approved by the environmental consultant
- Submit a monthly Environmental Performance report to the Environment Consultant.

In addition, the Contractor shall furthermore ensure that adequate environmental awareness training of senior site personnel takes place and that all construction workers receive an induction presentation on the importance and implications of the EMP.

The presentation shall be conducted, as far as is possible, in the employees' language of choice.

As a minimum, training should include:

- Explanation of the importance of complying with the EMP.
- Discussion of the potential environmental impacts of construction activities.
- The benefits of improved personal performance.
- Employees' roles and responsibilities, including emergency preparedness.
- Explanation of the specifics of this EMP and its specification (no-go areas, etc.) and of the mitigation measures that must be implemented when carrying out their activities.
- Explanation of the management structure of individuals responsible for matters pertaining to the EMP.
- The contractor shall keep records of all environmental training sessions, including names, dates and the information presented.

The induction programme should be developed and submitted to the RE and environmental consultant for approval.

NB: The Contractor shall clearly describe the overall methodology proposed for the task specific related activities in particular method statements.

All method statements must take environmental requirements into account.

3.6. Financing Of Environmental Control

Financing of the environmental requirements as outlined in this document, apart from the appointment of the ESM and specialists, is the sole responsibility of the Contractor appointed by RA.

Therefore, it is accepted that the cost incurred for implementing this EMP by the Contractor would be allocated for in the tender document. Any responsibilities not defined in this document or where any uncertainties arise in this matter will be the responsibility of RA.

3.7. Amendments Of The EMP

Any party involved with the project can suggest changes to the EMP via the EC or RE. Such suggestions will be discussed with the Environmental Forum. Approved changes will be minute and drafted into the existing EMP in the form of an appendix or amendments.

3.8. Procedures for non-compliance

The Contractor shall comply with the environmental specifications and requirements on an ongoing basis and any failure on his part to do so will entitle the RE to impose a penalty. This applies to the Environmental Management Plan (EMP).

In the event of non-compliance, the following recommended process shall be followed:

- The RE shall consult the environmental consultant and if agreed, issue a notice of non-compliance to the Contractor, stating the nature and magnitude of the contravention. A copy shall be provided to the ECO.
- The Contractor shall act to correct the non-conformance within 24 hours of receipt of the notice, or within a period that may be specified within the notice.
- The Contractor shall provide the RE with a written statement describing the actions to be taken to discontinue the non-conformance, the actions taken to mitigate its effects and the expected results of the actions. A copy shall be provided to the ECO.
- In the case of the Contractor failing to remedy the situation within the predetermined time frame, the RE shall impose a monetary penalty based on the conditions of contract.
- In the case of the Contractor being unable to remedy the situation due to permanent environmental damage already incurred, the RE shall impose a monetary penalty based on the conditions of contract.
- In the case of non-compliance giving rise to physical environmental damage or destruction, the RE shall be entitled to undertake or to cause to be undertaken such remedial works as may be required to make good such damage and to recover from the Contractor the full costs incurred in doing so.
- In the event of a dispute, difference of opinion etc, between any parties regarding or arising out of interpretation of the conditions of the EMP, disagreement regarding the implementation or method of implementation of conditions of the EMP etc., any party shall be entitled to require that the issue be referred to independent specialists for determination.
- The RE shall always have the right to stop work and/or certain activities on site in the case of safety and EMP non-compliance or failure to implement remediation measures.

3.9. Fines and Penalties

The following fines and penalties are in place for transgressions listed below. It will be issued after the set procedure has been duly followed and only in severe cases and after repeated non-compliance. The graveness of the transgression is justified by each specific penalty.

FINES

Fines may be issued per incident at the discretion of the RE. Such fines will be issued in addition to any remedial costs incurred because of noncompliance with the EMP. The RE will inform the Contractor of the contravention and the amount of the fine and will deduct the amount from monies due under the Contract.

Fines for the activities detailed below, will be imposed by the RE on the Contractor and/or his Subcontractors.

OFFENCE	FEE
Any persons, vehicles, plant, or thing related to the Contractors operations within the designated boundaries of a “no-go” area.	N\$2,000
Any vehicle guilty of reckless driving on and in the vicinity of the site, including excessive speeds.	N\$1,000
Any vehicle being driven and items of plant or materials being parked or stored outside the demarcated boundaries of the site.	N\$2,000
Persons repeatedly walking outside the demarcated boundaries of the site.	N\$1,000
Persistent and un-repaired spilling of hazardous materials and materials causing pollution.	N\$3,000
Persistent littering on site.	N\$500
Individuals repeatedly not making use of the designated toilet facilities.	N\$200
Disposal of waste other than agreed on in the waste management plan.	N\$5,000
Deliberate lighting of illegal fires on site (e.g., outside of the designated camp site).	N\$2,000

For each subsequent similar offence, the fine may, at the discretion of the RE, be doubled in value.

The RE shall be the judge as to what constitutes a transgression in terms of this document.

PENALTIES

Where the Contractor inflicts non-repairable damage upon the environment or fails to comply with any of the environmental specifications, he shall be liable to pay a penalty fine over and above any other contractual consequence.

The Contractor is deemed NOT to have complied with this specification if:

- within the boundaries of the site, site extensions and haul/ access roads there is evidence of contravention of the specification; environmental damage due to negligence;
- Safety of contractor personnel and public being compromised due to negligence;
- the Contractor fails to comply with corrective or other instructions issued by the Engineer within a specific time;
- the Contractor fails to respond adequately to complaints from the public; and
- Payment of any fines in terms of the contract shall not absolve the offender from being liable from prosecution in terms of any law.

The RE will be responsible for a report on the non-repairable damage and / or non-compliance with visual and other evidence as well as issuing the penalty to the contractor with the report attached.

A copy must be handed to the ECO.

Table 5: The following penalties are suggested for transgressions:

<i>Actions leading to erosion:</i>	A penalty equivalent in value to the cost of rehabilitation plus 20%.
<i>Oil spills:</i>	A penalty equivalent in value to the cost of clean-up operation plus N\$1,000.
<i>Damage to indigenous vegetation:</i>	A penalty equivalent in value to the cost of restoration plus N\$2,000.
<i>Damage to trees:</i>	A penalty to a maximum of N\$5,000 shall be paid for each tree removed without prior permission, or a maximum of N\$2,000 for damage to any tree, which is to be retained on site.
<i>Damage to indigenous vegetation:</i>	A penalty equivalent in value to the cost of restoration operation plus N\$2,000.
<i>Damage to sensitive environment:</i>	A penalty equivalent in value to the cost of restoration operation plus 20%.
<i>Damage to cultural sites:</i>	A penalty to a maximum of N\$100,000 shall be paid for any damage to any cultural historical site.
<i>Damage to natural fauna:</i>	A penalty to a maximum of N\$2,000 for damages to any natural occurring animal.
<i>Accident due to safety negligence:</i>	A penalty to a maximum of N\$50,000 for injuries to personnel or public.