ENVIRONMENTAL and SOCIAL IMPACT ASSESSMENT (ESIA)
SCOPING REPORT

CONSTRUCTION TO GRAVEL STANDARD DR3682 IN ELIM AND OTAMANZI CONSTITUENCIES, OMUSATI REGION (NAMIBIA)

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PROJECT PROPONENT:

ROADS AUTHORITY
SAFE ROADS TO PROSPERITY

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ACRONYMS

BID	Background Information Document
DEA	Directorate of Environmental Affairs
DR	District Road
EAP	Environmental Assessment Practitioner
ECC	Environmental Clearance Certificate
ECO	Environmental Control Officer
EIA (R)	Environmental Impact Assessment (Report)
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
I&APs	Interested and Affected Parties
MEFT	Ministry of Environment, Forestry and Tourism's
NHC	National Heritage Council
NEMA	Namibia Environmental Management Act
RA	Roads Authority

CHAPTER 1: INTRODUCTION

1.1 Executive Summary and Overview

Throughout all its operations, the Roads Authority (RA) is committed to environmental sustainability and therefore has produced its own manual (Environmental manual, 1st Edition October 2014) that seeks to inform practitioners as to the legal and contractual framework within which roads must be designed and built and to give guidance regarding the requirements of the RA in respect of environmental issues. Therefore, the RA is fully committed to environmental protection, and complement national legislative framework, such as the Environmental Impact Assessment Act (NEMA), while fulfilling its mandate. Which is; "The Roads Authority aspires to manage a sustainable road sector which is ahead of national and regional socio-economic needs in pursuit of Namibia's Vision 2030." The proposed construction of the 14.75km long DR3862 to gravel standards is just one of the many initiatives for 2022/2023 financial year.

It should be noted that DR3682 is a proclaimed road located in the Omusati Region. This proclamation was achieved in the late 1990s. The road is situated in the rural areas which are underdeveloped. In terms of the Governments policy to provide rural access roads into regions previously neglected and thereby opening up underdeveloped land for further development and use, the Roads Authority on behalf of the Ministry of Works and Transport has decided to proceed with the design, tender documentation and construction to gravel standards of DR3682 from Onaanda to Otamanzi. See Figure 1 and Figure 2.

Figure 1: DR3682 Locality (Google earth, 2022)

Figure 2: DR3682 Route from Onaanda to Otamanzi (red line) (Google earth, 2022)

Presently these farming communities in and surrounding Onaanda and Otamanzi have very poor access to the markets in Okahao and Oshakati. The construction of this road would provide improved access to the markets and services to these towns. With a gravel road, linking the above existing settlements to the markets it can be expected that more people will settle along the road thereby increasing the agricultural output.

The proposed works will affect an already proclaimed 14.75km long existing earth track with limited realignment needed. At least 3500 people leaving along the development will experience long-term benefits, and also the many hundreds who will be travelling between the urban centers and rural farming areas. Especially considering that over 70% of the residents in the affected area are unemployed.

Trinity Environmental Solutions (TES) was appointed by EMCON on-behalf of the Proponent (Roads Authority) to conduct an independent Environmental Impact Assessment (EIA) for the proposed development. In terms of Namibia's Environmental Management Act (No. 7 of 2007, Section 27(2)), Government Notice No. 29 Listed Activities, Section 6) and Government Notice No. 30 (EIA Regulations), the above proposed activity constitutes a number of listed activities which require Environmental Clearance prior to commencement of the project.

1.2 Project Proponent

In accordance with the Roads Authority Act (Act 17 of 199) the Roads Authority was given the mandate to develop and preserve the national road network with a view of attaining a safe and efficient roads sub-sector. The purpose is to support the national, social and economic development agenda. Road transport is the dominant mode of transport for goods and people, and the condition of roads affect all sectors of the economy and every inhabitant of this vast country. Constructing new roads for providing access and for enabling trade and other economic activities, upgrading existing roads to higher standards to reduce transport costs, travel times and accidents and improve the competitiveness of Namibia's economy are activities that all require large financial resources.

Over the past years, the RA has implemented important road development programmes as part of the Harambee Prosperity Plan. Progress on most of these projects has been affected by timely flow of funding to these projects which delayed completion.

The RA must maintain all sections of some 43,000 km of the road network to the required standards with the view to preserving the asset and in so doing minimising the cost of road transport to the economy. The financial resources allocated to the RA for achieving this objective have been below requirements in the past years. But this now has improved, and hence engaging various roads projects including the construction of DR3682 to Gravel Standards. This planned development will be co-finance by the KfW Development Bank of the German Federal Government.

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1.3 Purpose of the EIA

This EIA study serves to determine, analyse and present the environmental impacts (positive and negative) of the proposed developmental project and associated infrastructure. The EIA will also formulate remedial measures to minimise and mitigate the negative impacts and plan in such a way that enables a rational decision to be made regarding the implementation and management of the proposed project.

This EIA will further contribute to the reduction or mitigation of adverse impacts by generating a number of project alternatives for the proposed development. In general, the purpose of this EIA is to anticipate and prevent, minimise and/or manage, potentially significant negative impacts of development that may:

- Cost too much money to rectify in the future;
- Pose risk to lives, livelihood or health of current and future generations;
- Result in irreplaceable loss of resources and reduced options for future well-being; and,
- Help to seek opportunities to optimise potential benefits of development.

As a responsible Conservation organisation, the Proponent is committed to enhancing positive biophysical and social environmental impacts of the project while mitigating negative impacts of the project. During the scoping exercise, the Proponent has emphasized that it attaches great importance to environmental sustainability and human well-being. The Proponent also recognizes the strong correlation between environmental sustainability and human well-being through good health that depends on healthy ecosystems, clean water and air. All of the above is further appreciated by the decades of direct experience in sustainable roads construction, upgrading and maintenance.

Therefore, this Environmental Impact Report has been prepared with a view to comply with RA's Environmental Manual, the Namibia's Environmental Assessment Policy of 1995, the Environmental Management Act No. 7 of 2007 (Section 27 (2a&c)), Government Notice No. 29 of 2012 (Listed Activities, No. 3.1 & 10.1b) and the Government Notice No. 30 of 2012 (EIA Regulations).

1.4 Scope of the EIA Study

Trinity Environmental Solutions (TES) undertook to carry out the EIA study by following a well-defined framework. Owing to the importance of Interested and Affected Parties (I&APs) involvement in environmental studies. The EIA team ensured that I&APs consultations were central to every step of this EIA process.

The scope of the EIA study comprised of public meetings, I&APs consultations and detailed site-specific investigations. Details of each process component are elaborated below.

Scoping Exercise

The scoping exercise aimed at identifying and screening all relevant issues related to the development project as well as identifying at the earliest possible time whether any adverse effects existed that could render the proposed project environmentally unacceptable. Specifically, scoping assisted in:

- Focusing the impact assessment on a manageable number of important questions on which decision making is expected to focus;
- Ensuring that only key issues and reasonable alternatives are examined;
- Informing the interested and affected parties and other key stakeholders about the project and to obtain their inputs, issues and concerns; and,
- Identifying fatal flaws in the proposed project planning.

Existing Environmental Conditions

To establish prevailing environmental conditions for the project area, environmental and socio-economic data including surrounding areas was collected, compiled and analysed. Findings of the analysis are presented in the following Sections. Biological, zoological, botanical and socio-economic studies carried out in the past for the area provided secondary data for the report.

Descriptions of Project Activities

Project inputs, activities and outputs during project preparation, construction and operational life stages were reviewed and are described in this section. This section also includes description of project alternatives.

Analysis of Potential Environmental Impacts

An assessment of environmental effects and benefits of the proposed project regarding biophysical and socio-economic environment has been undertaken as well as an analysis of the impacts' extent, duration, intensity and significance.

Formulation of Possible Mitigating Measures

Based on the analysis of findings, a number of measures and plans for mitigating the identified possible adverse environmental impacts of the project are proposed. Further,

the report proposes measures and plans for enhancing positive environmental impacts of the project. And wherever possible, the costs and benefits of these environmental measures are quantified.

Elaboration of an Environmental Management Plan

An Environmental Management Plan (EMP) for implementing the proposed mitigating measures during the project preparation, construction and operation phases of the project was developed. The EMP further indicates management responsibilities and time frames. See **Appendix C.**

1.5 Stakeholder Consultations

TES's approach to environmental assessment studies is aimed at ensuring that wide stakeholder participation and involvement is achieved. Recognising this, and as part of the transparent consultative process aimed at taking public views into account in determining the scope of the EIA, a public consultative process started in the area early as February 2022. Public meetings were on the 29- June 2022 in Otamanzi and Onaanda. The meetings were announced locally by the Constituency Councilors of Elim and Otamanzi and local headmen. Newspapers advertisements where also placed in the Namibian and New Era.

The total number of participants in all the meeting were over 100 (Figure 3 and Figure 4) representing the local community of which the youth was the majority, Traditional Authority leaders, Constituency Councilors, Namibian Police, Government Departments, Private Sector, etc. Telephonic conversation took place and Background Information was shared with the various stakeholders and I&APs via email.

Figure 3: Public Meeting held at Otamanzi Village (29 June 2022)

Figure 4: Public Meeting held at Onaanda Village (29 June 2022)

Please Note: *No one registered as an Interested and Affected Party.*

Key Interested and Affected Parties consulted include:

- Governor of Omusati Region - Hon. Governor Erginus Endjala
- Elim Constituency - Hon. Councillor G. Shiimi
- Otamanzi Constituency - Hon. Councillor J. Iyambo
- All Headmen from the area communicated with via the relevant Constituency Councillors

1.5.1 Methodology

The Interested and Affected Parties (I&APs) consultative process involved meetings, open discussions and interviews with relevant government institutions and representatives from the local community. Through this interaction the EIA team tried to establish how Interested and Affected Parties understood the dynamics of the environment in which the proposed project is located and any possible underlying causes that could lead to changes over time as a result of implementing the project.

Where the EIA team felt it necessary to go more in-depth on a particular matter, Interested and Affected Parties within the project area or surrounding area with either experience or expert knowledge of the study area were identified and interviewed to validate the data already obtained, as well as to get their advice on any additional sources of information that was not readily available. This was useful in interpreting any underlying factors of the trends already observed.

The outcome of these Interested and Affected Parties consultations and interviews further provided relevant background information to this report and helped identify potential environmental issues of concerns within the project area.

1.5.2 Stakeholder Consultation Outcome

The meetings and informal interviews conducted did not raise any objections against the proposed development. Key component of the proposed development is that it is a brown fields activity that will affect an existing earth track with a similar use - which a road way. Some of the local communities didn't fully comprehend why we still needed such an extensive to consultation about the proposed development, since the need for a reliable road is one of the area's priority needs.

Key issues raised and discussed during the public consultations include:

- Contractors pay employees late, or even leave the project without paying employees.
- Borrow pits should be rehabilitated and turned into waterpoints for the community.
- The need to employ local people for especially unskilled jobs.
- Requested that engineers should study the flooding and topography of the area carefully so that correct culverts are put up and the correct locations and for engineers to head the advised of the local community about flooding regimes.
- RA should make sure that employees working on the project are paid on time, as lack of salaries can create conflicts at household level.
- Raised a concern that the road construction might lead to scarcity of water.
- Appeal that the replaced fences to serve the purpose they were built for especially for keeping livestock and people out of the crop fields and grazing area.
- Need for repairs of damaged underground water pipelines in a timeously manner.
- Recommended that access roads be constructed to schools, clinics and that proper off-ramps be built to made it easy to leave the road.

During the various formal consultations from February 2022 to July 2022 with members of the local community, Political Leadership, Traditional Leadership, MEFT and the Namibian Police, no objections were raised against the construction of the DR3682. The proposed project is seen as a priority, a must development desperately needed to facilitate access to services and efficient transport, and creating much needed jobs to over 70% unemployed youth.

1.5.3 EIA Study Team

TES is a firm of environmental consultants that has been active in Namibia since its establishment in 2012. TES staff have extensive experience in a variety of projects related to EIAs, socio-economic, water resources management, sustainable land management and on climate change mitigation.

Previous and Current Projects inter alia include:

- EIAs and EMPs for the upgrading of DR3427 to Gravel Standard.

- EIAs and EMPs for the upgrading of DR3403 to Bitumen standards.
- EIA and EMP for Osona Township development near Okahandja.
- EIA and EMP for the development of Ruacana Quarry.
- EIA and EMP the construction of an Industrial and Business Estate in Lubumbashi area, Democratic Republic of Congo.
- EIAs and EMPs for the upgrading of two gravel roads, DR3608 and MR67 to bitumen standards, approximately 185km in total length.
- EIA and EMP for new wastewater treatment ponds for Engela, Groot Aub, Andara, Onesi, Ogongo towns and villages.
- Supervision of the Environmental Monitoring and Auditing for the MR122 road upgrading from gravel road to bitumen standards.

Don Muroua, Environment Management Specialist: Mr. Muroua has compiled this Scoping Report and the EMP. He has also carried out the overall environmental assessment and public participation activities. Mr. Muroua is a qualified environmental manager and a founding member of the Environmental Assessment Practitioners of Namibia (EAPAN). He is familiar with conducting EIA studies, preparing EIA reports and EMPs, conducting specialist studies which include socio-economic assessments and ecological studies. Mr. Muroua is also a Professional Member of the Southern African Institute of Ecologists and Environmental Scientists (SAIEES).

Apart from Namibia, Mr. Muroua' experience extends across numerous countries including the Democratic Republic of Congo, South Africa, Malawi, Swaziland and Kenya.

CHAPTER 2: DESCRIPTION OF PROPOSED PROJECT

2.1 Location

The Environmental Clearance Certificate is applied for the construction of DR3682 to gravel standards of the earth track which is approximately 14.75km in length stretching from Onaanda to Otamanzi in the Omusati. DR 3682 is a proclaimed road and community is fully aware of this status.

The approximate starting point in Onaanda is S -17.917124° E 15.353611°, ending in Otamanzi at approximately S -17.992188° E 15.254189°, Figure 5.

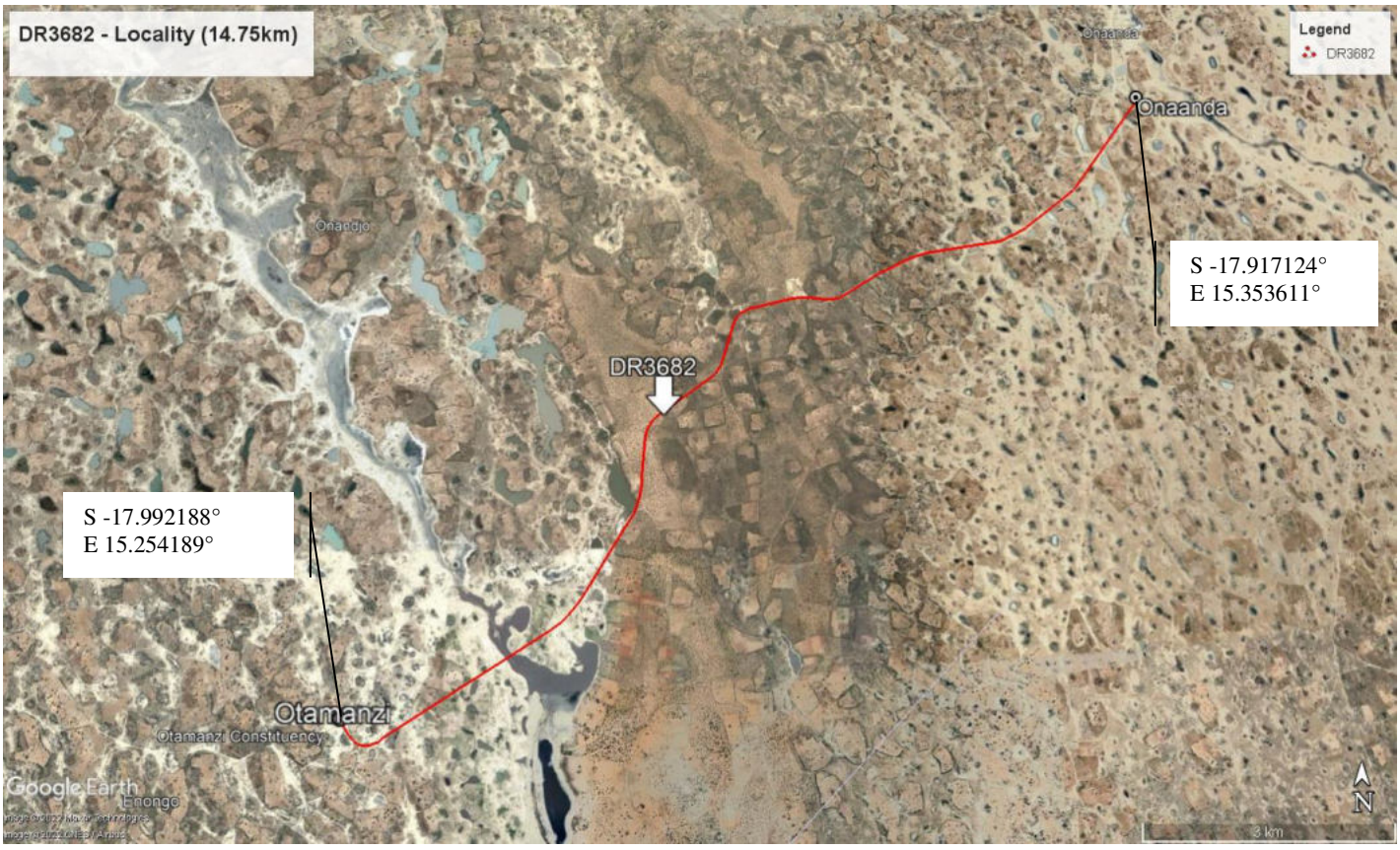

Figure 5: DR3682 PGS coordinates (Google Earth, 2022)

2.2 Project Rationale

The Roads Authority aspires to manage a sustainable road sector which is ahead of national and regional socio-economic needs in pursuit of Namibia's Vision 2030." The proposed upgrading from an earth track to gravel road standards of the DR3682 is just one of the many initiatives for 2022/2023.

The project is aimed to construct a gravel standard road of District Road 3682 from Onaanda to Otamanzi. Presently these farming communities have very poor access to the markets and services Okahao and Oshakati. Currently the communities travel on earth tracks passing through sections of loose sandy soils and sections through water ponds during the rainy season. The existing track width varies between 4.5 m to 6 m.

The construction of this road will provide improved access to the markets and to critical services. With a gravel road, linking the above existing settlements to the markets, it can be expected that more people will not migrate to urban centers thereby increasing the agricultural output, and the general rural economy of the surrounding area.

The construction of this road will contribute to poverty alleviation as outlined in NDP5 and Harambee Prosperity Plan (HPP). The construction will provide jobs to the surrounding communities with the labour-based construction of the road and after construction, it will encourage offices, Ministries and service providers (NamPower, NamPol, NamWater and others) to easily access these communities and provide them with the necessary services.

2.3 Project Description and Alternatives

2.3.1 Project Description

Application for the Environmental Clearance (ECC) from the Directorate of Environmental Affairs and Forestry (DEAF) is being made for the upgrading of the 14.75km DR3682 to gravel standards.

The constructions work envisaged will be as follows:

- The layer works for the entire 14.75km from Onaanda to Otamanzi.
- The widening of the existing earth track to gravel standards.
- Prospecting of suitable road materials in two (2) borrow pits.

In total, five (5) potential borrow pits were identified, investigated and tested, of which only two (2) were deemed to have suitable material to be used for this project (i.e. use as selected subgrade and wearing course materials). Three prospected borrow pits have been discarded due to insufficient suitable materials and poor-quality materials of type G10 class. The two Borrow Pits (BP1 and BP2), earmarked for material use are located at positions of 4km and 9.8km respectively along the centreline of the Project.

Borrow pits GPS coordinates are as follows:

a) Borrow Pit (PB) 1: S -17.994278°, E 15.309889° (new borrow pit)

b) Borrow Pit 2: S -17.941556°, E 15.307806° (existing borrow pit)

Graders, roller compactors, front loaders, excavators, survey equipment, water dozers, tipper trucks and fog spray trucks, are some of the equipment to be used during the 15 months construction period starting next year.

It is anticipated that the existing alignment will be used as far as possible with minor adjustments to comply with the Roads Authority's standards. Properly constructed accesses will be provided to adjacent settlements, villages, schools and at any other locations where it is evident that traffic accesses or leaves the road to be constructed. The positions of the intersections and accesses have to be determined through stakeholder consultations.

2.3.2 Design and Layout

The design and construction will be performed in accordance with various RA's Manuals such Section 4 (Detailed Design Stage) of the RA Procedures Manual. Any proposed deviation from the requirements of the RA Manuals must be brought to the attention of the Roads Authority.

The appropriate manuals to be consulted i.e.

- RA Materials Manual (1st Edition, October 2014).
- Technical Recommendations for Highways (TRH20).
- Code of Practice for Pavement Design (Southern Africa Transport and Communications Commission (SATCC), 1998).

The road will have a 30m wide reserve that will include the following, Figure 6:

- Road reserve 30m total. Vegetation clearing required for at least 15m total area and fences will be moved. No building will be affected, especially since most buildings are at least 50 away from the edge of the proposed road.
- Road way, about 7.5m wide. Area to be used as carriage way for goods and public. Vegetation clearance not really needed since this road-way already exist and most vegetation already cleared.
- Road Shoulders and Side Slope, 6m wide. Vegetation clearing will be required to improve visibility of road users and pedestrians.

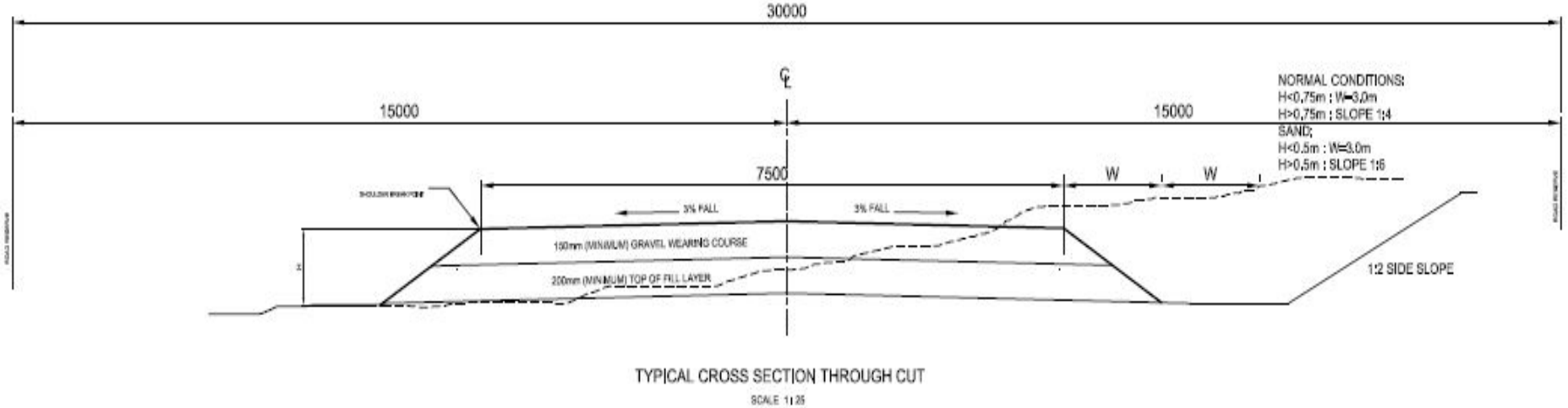

Figure 6: Typical cross section of a gravel standard road

See also **Appendix A**.

2.3.3 Project Alignment Alternatives

There are no alternative alignments proposed. The current proclaimed DR3682 earth track alignment will be kept.

2.4 No-Go Alternative

No-Go Alternative: If this option is selected, the development will not proceed. In essence, the no-go alternative would ultimately imply that the status quo would be retained as it is presently, with obvious advantages and disadvantages. The benefits of continuing with this proposed construction of the DR 3682 to gravel standards significantly outweigh the loss of less than 50ha of grazing and crop lands. The Department of Environmental Affairs and Forestry (DEAF) of the MEFT stresses that the no-go alternative should only be considered in cases where the proposed development will have a significant negative impact that cannot be effectively or satisfactorily mitigated against.

CHAPTER 3: LEGAL, REGULATION AND POLICY FRAMEWORK

The Table 1 below summarises the legislation and policy guidelines that are relevant to the proposed project and is not exhaustive.

Table 1: Relevant legislations and policy guidelines

Title of legislation, policy or guideline	Implications for proposed project (Please read all Acts with their Regulations)
The Namibian Constitution of 1990	The Constitution clearly indicates that the State shall actively promote and maintain the welfare of the people by adopting policies aimed at management of ecosystems, essential ecological processes and biological diversity of Namibia for the benefit of all Namibians, both present and future.
Water Resources Management Act No. 11 of 2013	This Act protects all water resources in Namibia. The Act also laid down conditions to ensure that proper wastewater treatment is provided, including requirement for wastewater discharge permit from the Directorate of Water Affairs.
Environmental Assessment Policy of Namibia (1995)	The Policy seeks to ensure that the environmental consequences of development projects and policies are considered, understood and incorporated into the planning process, and that the term ENVIRONMENT is broadly interpreted to include biophysical, social, economic, cultural, historical and political components.
Environmental Management Act No. 7 of 2007	The Act provides a list of projects requiring an Environmental Assessment. It aims to promote the sustainable management of the environment and the use of natural resources and to provide for a process of assessment and control of activities which may have significant effects on the environment.
Roads Authority Manuals	These are various manuals all contractors are or must be aware of when dealing with road construction works in Namibia. These manuals are on, but not limited to: • Procedures Manual (1st Edition, October 2014) • Materials Manual (1st Edition, October 2014) • Structures Manual (1st Edition, October 2014) • Drainage Manual (1st Edition, October 2014) • Survey Manual (1st Edition, October 2014) • Geometrics Manual (1st Edition, October 2014) • Environmental Manual (1st Edition, October 2014) • Construction Manual (1st Edition, October 2014) • Economic Evaluation Manual (1st Edition, October 2014) • Standard Drawings Manual (1st Edition, October 2014)
Labour Act No. 11 of 2007)	Consolidate and amend the labour law; to establish a comprehensive labour law for all employers and employees; to entrench fundamental labour rights and protections; to regulate basic terms and conditions of employment; to ensure the health, safety and welfare of employees; to protect employees from unfair labour practices; to regulate the registration of trade unions and employers' organisations; to regulate collective labour relations; to provide for the systematic prevention and resolution of labour disputes; to establish the Labour Advisory Council, the Labour Court, the Wages Commission and

	the labour inspectorate; to provide for the appointment of the Labour Commissioner and the Deputy Labour Commissioner; and to provide for incidental matters.
Nature Conservation Ordinance Number 4 of 1975 (as amended)	Guide the conservation of nature; the establishment of game parks and nature reserves; the control of problem animals; and to provide for matters incidental thereto.
Public Health Act, No. 36 of 1919 and Amendments and Regulations	This Act makes provision for the prevention and control of infectious diseases, venereal diseases and epidemics. It also regulates sanitation, food and public water supplies.
MEFT Policy Document - Community-Based Tourism Development (June 1995)	This document contains the approved Ministry policy for providing support to, and encouraging the development of, community-run tourism activities and enterprises on communal land. This policy document provides a framework for ensuring that local communities have access to opportunities in tourism development and are able to share in the benefits of tourism activities that take place on their land. Support for the involvement of rural communities in tourism enterprises is important: a) to implement the government policy of giving communities access to development opportunities and b) because where tourism is linked to wildlife and wild landscapes, the benefits to local communities can provide important incentives for conservation of these resources.
Act No.5, 1996 Nature Conservation Amendment ACT, 1996	This amendment to the Nature Conservation Ordinance of 1975, provide for an economically based system of sustainable management and utilisation of game in communal areas. This amend allows for the formation of Conservancies in communal areas.
Hazardous Substances Ordinance No. 14 of 1974	The Ordinance applies to the manufacture, sale, use, disposal and dumping of hazardous substances, as well as their import and export. Its primary purpose is to prevent hazardous substances from causing injury, ill-health or the death of human beings. Hydrocarbons handled during the construction phase may be hazardous thus careful handling and management is vital to prevent spills, explosions, ill-health or death.
Pollution Control and Waste Management Bill of 1999	The Bill promotes sustainable development and the establishment of the Pollution Control and Waste Management Unit; to prevent and regulate the discharge of pollutants to the air, water and land; to make provision for the establishment of an appropriate framework for integrated pollution prevention and control; to regulate noise, dust and odour pollution; to establish a system of waste planning and management; and to enable Namibia to comply with its obligations under international law in this regard.
Draft Wetlands Policy of 2004	This policy strives to complement existing policy instruments regarding sustainable development and sound natural resource management in Namibia. Its implementation provides a platform for the conservation and wise use of wetlands, thus promoting inter-generational equity regarding wetland resource utilisation. Furthermore, it facilitates the Nation's efforts to meet its commitments as a signatory to the International Convention on Wetlands (Ramsar) and other Multinational Environmental Agreements (MEA's).
National Waste Management Policy, 2010	This policy is focusing specifically on Waste Management and use of various technologies waste treatment and disposal to minimize health risks. It is also geared to have a unified waste management system country wide. This policy provides the necessary guidance on the processes related to waste management in the MOHSS, wider Namibia health and social welfare sectors, and other relevant stakeholders. It is taking into consideration the process of integrated waste management from generation

	to final disposal. This practice also focus on medical, household, mining, agricultural, and construction waste.
Forest Act No. 12 of 2001 and its amendments	The purpose of this Act guides the use and management of forestry and related resources. The aims of the forest management as per the Act, is to achieve manage of forest “for which forest resources are managed and developed, including the planting of trees where necessary, to conserve soil and water resources, maintain biological diversity and to use forest produce in a way which is compatible with the forest's primary role as the protector and enhancer of the natural environment.”
National Heritage Act No. 27 of 2004	The Act provide for the protection and conservation of places and objects of heritage significance and the registration of such places and objects; to establish a National Heritage Council; to establish a National Heritage Register; and to provide for incidental matters.

CHAPTER 4: DESCRIPTION OF EXISTING ENVIRONMENT

The project area is largely the same as the current proclaimed earth track DR3682 as shown in Figure 1 and Figure 2 above, located in both the Elim and Otamanzi Constituencies in the Omusati Region.

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, see Figure 9.

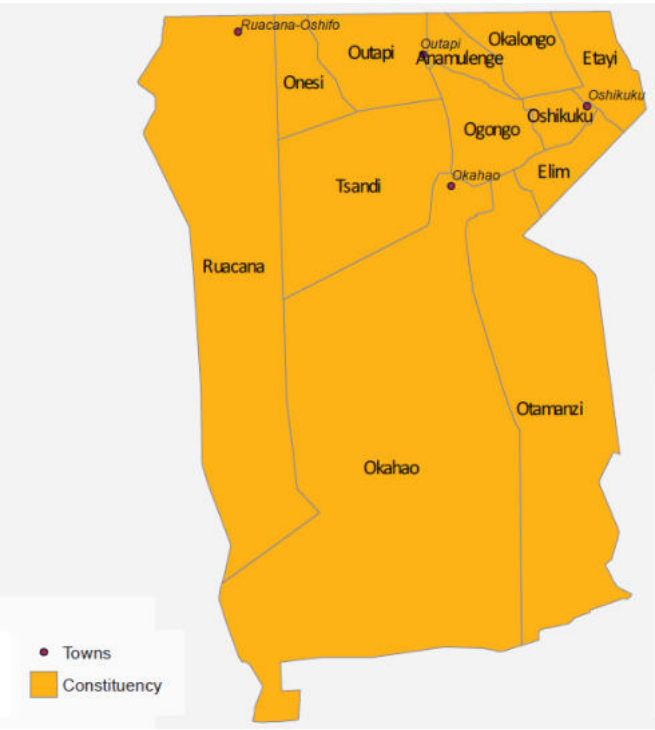

Figure 7: Omusati Region

4.1 Physical Environment

4.1.1 Climate and Temperature

Omusati Region is in a semi-arid, characterized by high temperatures ranging between 25-37 degrees Celsius. The average rainfall per year is about 350-500 mm mainly experienced between November to April. The Region and project site falls under the very flat hydro-geological 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.

The relatively high and reliable average rainfall allows for crop farming. After the rainy 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. (Mendelsohn, Jarvis, Roberts, & Robertson, 2002)

The amount, timing and effectiveness of rainfall varies greatly from year to year and also from place to place, making rain-fed crop production very risky. For instance, a period of about four weeks with dry, hot weather can cause failure of mahangu fields, the staple and favourite crop for most smallholder farmers.

4.1.2 Soils, Geology and hydrogeology

The DR3682 areas are part of the greater Kalahari Basin, which covers most of the northern and eastern parts of Namibia and extends across the Namibian border into Angola and Botswana. The bedrock underlying the basin filled with Kalahari Sequence deposits is poorly understood but presumably consists of basal rocks of the Damara Sequence, followed by the Karoo Sequence sediments intruded by volcanics of Karoo age as defined below.

North-central Namibia lies in the Owambo basin, comprising a topographic depression filled with sediments. Along the rim of the basin in the north, west and south there are older rock formations near or at the surface, manifesting as hills and low ridges of rock outcrops

The flat landscape and low permeability of the Cambisols (Figure 8 and Figure 9) soil produce a lot of surface runoff and water collections in the form pans/oshanas. Water collects and flows in many of the shallow omurambas (Etaka, main river), or the pans in shallow depressions, these events can be short-lived of seasonal.

Figure 8: Water collecting in pans/oshanas

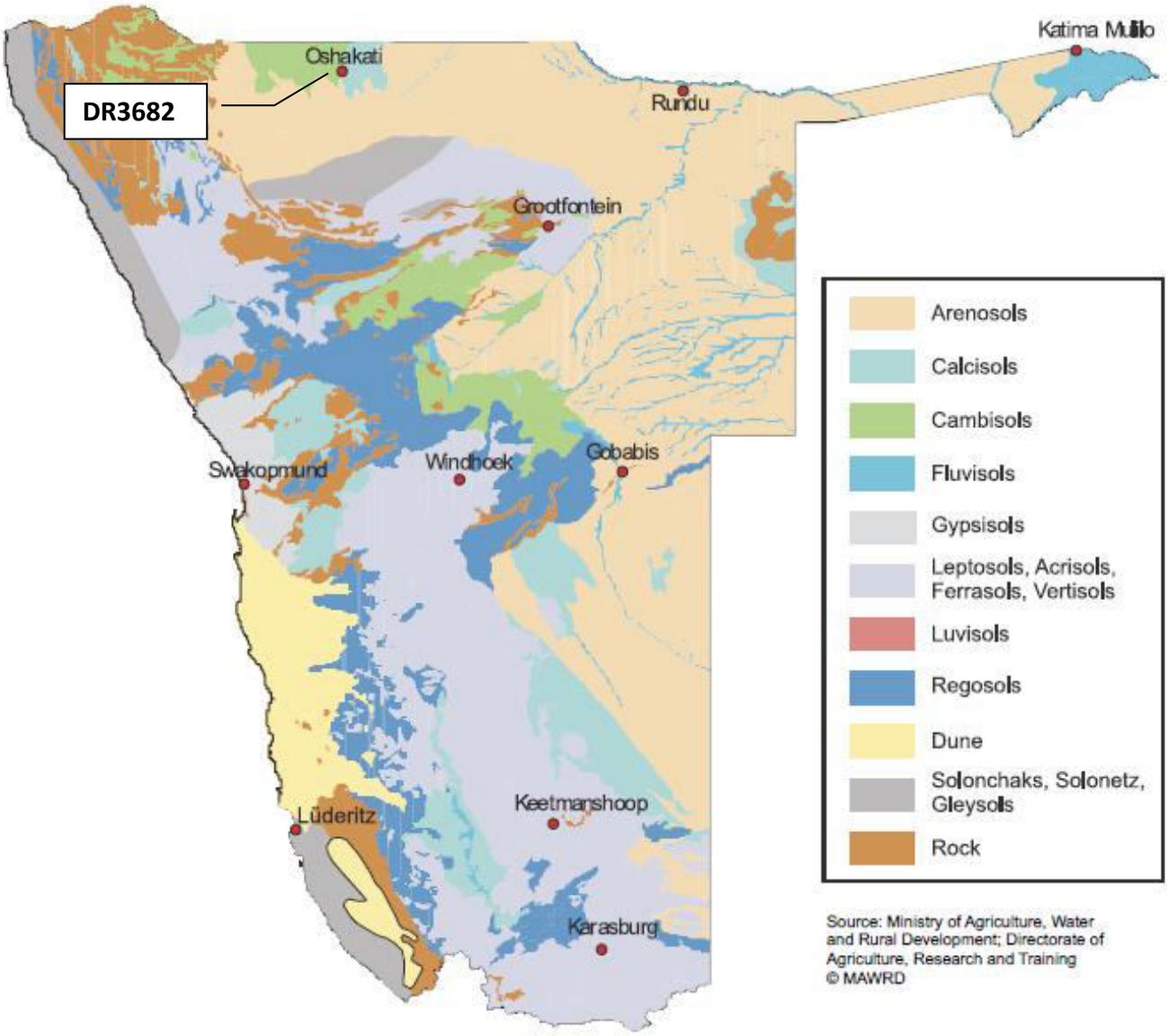

Figure 9: Soils, Geology and hydrogeology

4.1.4 Air Quality

An assessment of the baseline air quality status in the project area and surroundings was carried out in order to assess the possible impacts on the air quality due to certain project activities with the potential of releasing pollutants to the ambient air. Field surveys showed that fugitive dust from vehicles using the earth tracks are the main source of air pollution. Noise population is also emanating from vehicles using these tracks.

The observed air pollution did not remain hanging over the area for prolonged periods and as such no haze was reported to be a distinctive result of vehicles use. Apart from pollution caused by vehicles, the air quality in the area was found to be very good.

4.2 Biological Environment

4.2.1 Approach

The methodology used to describe the site's biological environment took into consideration the purpose of the study, extent of development site, and the flora and fauna species composition.

It should be noted that over 60% of the proposed activity will be on an existing roadway, DR3682.

4.2.2 Flora

Due to the limitations of the climate, the vegetation in the Region is fairly homogeneous Mopane Woodland that is comprised of broad-leafed, deciduous woodlands that vary according to topography and the nature of the soils that support them. Broadly speaking, the relatively larger and deep-rooted trees, such as Mopane are most prevalent, while various species of shrubs and grasses can be found in the shallower soils. See Figure 10 and Figure 11. Also what was observed was that 99% of the trees (Mopane) are coppicing.

Figure 10: Main biomass is Mopane trees

Figure 11: Coppicing Mopane trees

From the above three Figures, it can be clearly determined that the area have various types of development and disturbances such track roads and crops fields. Hence impact on the general vegetation will not be on significance.

4.2.3 Fauna

Due to the clearing of land, hunting and human activities, much of the wildlife that used to occur along the area has now disappeared and most of the remaining wildlife is now concentrated in National Parks. The DR3682 area do not support a viable wildlife population and none of the large or rare and endangered species were observed or reported to inhabiting the area.

The most common animals of importance found in the area are livestock, mainly cattle (99% of biomass).

4.3. Socio-economic Environment

4.3.1 Introduction and Demography

The current population residing in the target area between Onaanda and Otamanzi is less than 15000, of over 50% of the youth is unemployed (NSA, 2011 Population and Housing Census).

The tendency to migrate to urban areas due to the (often incorrect) perception of more employment opportunities can also be seen in the urban centers of especially Okahao and Oshakati that has both the highest proportion of its men and women participating in the labour force, as well as the highest proportion of its men and women unable to find employment.

The residents living along the DR3682 are subsistence farmers with very few employees. These farmers mostly produce food for their own survival with little surplus left to sell to

earn a significant income. In addition, as these farmers have no paid employees, there is no benefit of job-creation to address the high levels of unemployment in the area.

The area is rural without urban centers, and with a Police Stations in Onaanda and a Primary School in Otamanzi. There are also no shops in the area apart for Cuca Shops.

4.3.2 Land Tenure

The land where the project area is located is a proclaimed DR3682 gravel road and under the authority of the Roads Authority. No physical long-term construction will take outside the existing road reserve of 30m. There are about fifteen (15) sets of fences that could be affected and requested to be moved, at most 10m.

There will be no significant loss of land for both crops and gazing from this proposed development. Compensation will then be done according National Compensation Guidelines, should it be necessary, especially for the loss of part of a crop field.

4.3.3 Archaeological and Cultural Sites

No sites of archaeological and cultural importance were recorded or reported to be present.

4.3.4 Existing Infrastructure

The only infrastructure types along the DR3682 are fences made from wires and wood. These are mainly fences for homesteads, crop fields and camps. In total, there are about fifteen (15) fences potentially within the 30m road reserve, depending on the final road alignment.

CHAPTER 5: POTENTIAL ENVIRONMENTAL AND SOCIO-ECONOMIC IMPACTS

5.1 General Considerations

The objective of assessing the potential effects of the proposed project was essentially to permit planning of actions to avoid or reduce undesirable effects and/or to enhance secondary benefits of the project. Implementation of a project may exert a suite of effects during the construction and operation stages. It is therefore common practice to discuss the effects of the project construction and operations (including preparatory phase) before the project commences.

Therefore, this section of the report addresses the interactions of the project with the natural and socio-economic resources in and around the project site. These interactions are normally known as 'impacts'. It is worthwhile separating project effects into direct (or primary) effects resulting from direct interaction of some components of the project with one or more environmental resources, and indirect (or secondary) effects which arise from the primary effects. Note that a classification of negative effect does not necessarily imply a long-term adverse effect on the environment. It may as well indicate an irreversible change to the physical environment from original conditions. In some cases, these irreversible changes can result in favourable long-term effects.

5.2 Prediction of Impacts

The Proponent is aware of the fact that the proposed project will have both negative and positive impacts. Importantly, the negative impacts are mainly related to the construction and operation activities, and limited to the site. In predicting possible impacts, the following impact zones were applied:

a) Zones influenced by land use changes: area where the development will be carried out.
b) Zones influenced by activities associated with the construction: road upgrading and construction impact zone, camp establishment area, access roads and local communities.

c) Zones influenced by activities associated with the operations of the development: area that will be impacted on due to human activities arising from the upgraded road and support infrastructure.

Prediction of impacts of the proposed project was carried out with the aid of appropriate analytical techniques. However, certain ecological aspects do not lend themselves to straight forward quantification. In such instances, expert judgement by members of the multi-disciplinary EIA team was employed.

5.3 General Impacts

A number of impacts (positive and negative) were identified with due consideration to issues discussed in the earlier Sections. These impacts are based on the design of the infrastructure development, project details, environmental and socio-economic baseline studies, stakeholder consultations as well as expert judgment.

5.4 Impact Criterion and Classification

For purposes of this report, classification of possible impacts and criterion used are highlighted in the Table 2 below.

Table 2: Criterion and classification of impacts

Assessment Evaluation Criteria	**Rating (Severity)**	
Impact Type	**-**	Negative
	=	No Impact or Negligible Impact
	+	Positive
Extent of impact	**I**	Immediate (the site and immediate surroundings)
	L	Local
	R	Regional
	N	National
	IT	International
Duration of impact	**ST**	Short term (0-5 years)
	MT	Medium term (5-15 years)
	LT	Long term (lifetime of the development)
Intensity of impact	**L**	Low (where natural, cultural and social functions and processes are not affected)
	M	Medium (where the affected environment is altered but natural, cultural and social functions and processes can continue)
	H	High (where the affected environment is altered to the extent that natural, cultural and social functions and processes will temporarily or permanently cease)
Probability of impact	**LP**	Low probability (possibility of impact occurring is low)
	P	Probable (where there is a distinct possibility that it will occur)
	HP	Highly probable (where the impact is most likely to occur)
	D	Definite (where the impact will occur)
Significance of impact	**L**	Low (where natural, cultural and social and economic functions and processes are not affected). In the case of adverse impacts, mitigation is either easily achieved or little will be required, or both. In the case of beneficial impacts, alternative means of achieving this benefit are likely to be easier, cheaper, more effective and less time-consuming
	M	Medium (where the affected environment is altered but natural, cultural, social and economic functions and processes can continue). An impact exists but is not substantial in relation to other impacts that might take effect within the bounds of those that could occur. In the case of beneficial impacts, other means of achieving this benefit are about equal in time, cost and effort.
	H	High (where the affected environment is altered to the extent that natural, cultural, social and economic functions and processes will temporarily or permanently cease). In the case of adverse impacts, there is no possible mitigation that could offset the impact, or mitigation is difficult, expensive, time consuming or a combination of these. In the case of beneficial impacts, the impact is of a Substantial order within the bounds of impacts that could occur.

5.5 Potential Impacts

5.5.1 Socio-Economic Impacts

Impact: Increased Employment Opportunities

The development will create job opportunities for the local community members of the Constituency, and Namibia in general. At preparatory, construction and operational stages, local community members will be employed and consequently livelihood support for family members will be improved (short-term and long-term) – in particular as on average, support from one job benefit five family members. ***Currently, there are limited job opportunities in the target area. This development could potentially positively impacts at least 800 members of the local community***. And reduce the long-term unemployment by 10%.

Impact: Increase in Local Population

The development will not have a significant impact on the population size of the area. The proposed development will source a very small number of highly skilled personnel from outside the Constituency during the construction phases, and the rest from the local community. All semi-skilled and unskilled staff will be employed from the area and appropriate training provided. Hence, the possibility of the project to significantly increase the local population is very low. Human presence in the remote project site will though increase temporally.

Impact: Increase in Local Economic Activities

Trading opportunities among the local people are expected to increase. Increased in people employed in the Constituency will also support local trade through increased income in the area.

This will lead to a snow-ball of positive growth for the area, for at least 2 years. Possibly, creating longer-term safety-nets for many families.

Impact: Water Supply Availability

The development is likely to put pressure on water demand in the area and could overwhelm the water resources. Therefore, new boreholes exclusively for the purpose of the construction should be drilled. These boreholes should be place so not to negatively impact the long-term water security of the communities.

Impact: Loss on Cultural Sites

No significant impact determined.

Impact: Increased Demand for Health Services

During construction, when most labour will be needed, all occupational health related injuries will be referred to the local health facilities for immediate attention. This will not have a significant impact on the capacity of the medical staff and facilities to meet the demand for health care, since most of the employed people will be from the area and already residing within the area. HIV and AIDS programs for the Contractors, Staff and local communities need to be developed and provided so to ensure that the participating people are not exposed to increased risk of contracting HIV and/or spreading it.

Impact: Worker Safety

During the construction phase, heavy machinery will be employed for the various works associated with the upgrade of DR3682. Absence of clear safety guidelines may lead to accidents affecting worker's safety and productivity, however, this will not be the case during the construction of this development and clear safety guidelines will be available and all workers will be briefed and trained accordingly as per industry and RAs' standards and guidelines.

Impact: Increased Traffic

Increased traffic flow in and out of the area is expected during construction and especially during operations. During operations, this increase is expected to be significant. An increase in local traffic can be expected during operational phase, however, negative impacts can be mitigated through the appropriated road signage and other speed control techniques.

Impact: Blasting noise and vibration

No blasting will take place, but limited vibrations from machinery and tools could be perceived as intrusion. This will only occur during limited construction time and at irregular times.

5.5.2 Environmental Impacts

Impact: Displacement of people

No impact. There will be very limited request to move some fences and not loss of entire properties.

Impact: Machinery noise and vibration

During the construction and operational phases, noise and vibrations from the vehicles and machineries will result into noise and vibration. This impact will be insignificant. The construction workers are the most vulnerable and therefore they should wear protective gear.

Impact: Water quality

No impact.

Impact: Solid Waste Disposal

Waste will be produced at the site during the setting up of supporting infrastructure and construction phases. Piles of gravel cleared are not environmental pollutant hazard, but can reduce the area aesthetics value.

Impact: Air Pollution

The major source of the impact will be dust from vehicles ferrying materials. Due to distance from local communities, this impact can be significant. Care should be taken not to expose the local community and workers to excessive dust and exhaust fumes.

Impact: Loss of Historical and Cultural Sites:

No impact is expected.

Impact: Loss of Productive Land

60% of the development will take place on an existing road, DR3682. Hence, very little area will be affected, requiring loss of significant property. As a fact, the whole road will occupy only about 100ha (14,750m X 30m = 442,500m^2). The 442,500m^2 is equal to 44.25ha. Take into account that most of the 44.25ha consist already of an at least 4.5m-6m wide earth track and other infrastructure.

Impact: Loss of Wildlife Habitat, Indigenous Flora and Fauna

Wildlife their habitants will minimally impacted, due to their very low populations. There will be loss of vegetation and this is the expected trade-off for these types of developments. The direct impact is loss of vegetation on parts of the 44.25ha, and additionally from borrow pits (not exceeding 5ha). Hence, we expect the project direct footprint to be less than 55ha).

Impact: Erosion of the Top-Soil

The nature of the project demands the use of machinery during construction. This may lead to instability of the soil in the area and as a result may cause soil erosion. This though will not lead to gully formation, unless site rehabilitation is not done properly after construction and no regular maintenance is carried out during the operational phase of the project.

Special attention should be given to material excavation in the borrow pits as shown in. A special Environmental and Social Management Plan for the Excavation and Rehabilitation of Borrow Pits on DR3682 was developed.

The following Tables below present the proposed impact analysis.

Table 3: Evaluation of impacts during pre-construction phase

PRE-CONSTRUCTION PHASE							
Identified Impact	**Impact Type**	**Extent**	**Duration**	**Intensity**	**Probability**	**Significance**	
						Unmitigated	**Mitigated**
Surface water pollution	**=**						
Ground water pollution	**=**						
Soil erosion	**=**						
Soil pollution	**=**						
Air pollution	**=**						
Land use potential	**=**						
Habitat transformation	**=**						
Fauna displacement	**=**						
Damage to Flora	**=**						
Traffic impacts	**=**						
Visual & aesthetic impacts	**=**						
Social	**+**	**L**	**ST**	**M**	**D**	**L**	**M**
Economic	**+**	**L**	**ST**	**M**	**D**	**L**	**M**

Table 4: Evaluation of impacts during construction phase

CONSTRUCTION PHASE							
Identified Impact	**Impact Type**	**Extent**	**Duration**	**Intensity**	**Probability**	**Significance**	
						Unmitigated	**Mitigated**
Surface water pollution	**=**						
Ground water pollution	**=**						
Soil erosion	**-**	**I**	**ST**	**L**	**LP**	**L**	**=**
Soil pollution	**-**	**I**	**ST**	**L**	**LP**	**L**	**=**
Air pollution	**-**	**I**	**ST**	**L**	**P**	**L**	**=**
Land use potential	**-**	**I**	**ST**	**L**	**P**	**L**	**=**
Habitat transformation	**-**	**I**	**LT**	**L**	**D**	**L**	**=**
Fauna displacement	**-**	**I**	**ST**	**L**	**LP**	**L**	**=**
Damage to Flora	**-**	**I**	**LT**	**L**	**D**	**L**	**=**
Traffic impacts	**-**	**I**	**ST**	**L**	**P**	**L**	**=**
Visual & aesthetic impacts	**-**	**I**	**ST**	**L**	**P**	**L**	**=**
Social	**+**	**L**	**ST**	**M**	**D**	**M**	**H**
Economic	**+**	**L**	**ST**	**M**	**D**	**M**	**H**

Table 5: Evaluation of impacts during operational phase

OPERATIONS PHASE							
Identified Impact	**Impact Type**	**Extent**	**Duration**	**Intensity**	**Probability**	**Significance**	
						Unmitigated	**Mitigated**
Surface water pollution	=						
Ground water pollution	=						
Soil erosion	-	I	ST	L	P	L	=
Soil pollution	-	I	ST	L	P	L	=
Air pollution	=						
Land use potential	+	L	LT	M	D	M	H
Habitat transformation	=						
Fauna displacement	=						
Damage to Flora	=						
Traffic impacts	+	L	LT	M	D	M	H
Visual & aesthetic impacts	+	L	LT	M	D	M	H
Social	+	L	LT	M	D	M	H
Economic	+	N	LT	M	D	M	H

CHAPTER 6: ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN (EMP)

From the above identification of adverse and positive impacts measures have been proposed for mitigation. In order to achieve this, an Environmental Management Plan (EMP) has been developed. See Appendix B.

CHAPTER 7: RECOMMENDATION AND CONCLUSION

A project of this magnitude will bring with it both positive and negative environmental and socio-economic impacts. These can be localized to the project site or can also affect areas beyond the project's vicinity. While positive impacts from this development are expected to affect the wider local community and region, the adverse affects can be considered very localized. For this development project, the positive impacts outweigh the negative impacts to which amelioration measures have been proposed to cushion their impacts.

Therefore, we recommend that the project be considered for approval for implementation, especially since the proposed development will based on the upgrading of an existing DR3682, hence very little new area is expected to be affected. Thus unlikely to generate long-term significant negative impacts.

This Scoping Report has revealed that a full EIA will not be required in order to identify gaps in information or to accurately identify all project's aspects that could generate significant negative impacts.

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