



**ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE
REHABILITATION PROJECT OF THE N1 / N10 ROAD BETWEEN
QUELIMANE-NICOADALA-NAMACURRA IN
ZAMBÉZIA PROVINCE**

CONTRACT N.º 45/DIPRO/2012



Final Report

Preparado para:



Administração Nacional de Estradas
Av. de Moçambique 1225,
Tel.: (+258) 21476163 /7
Fax: (+258) 21477235

Preparado por:

Eng. Eulália Esperança Lucas Macome
(Titular do Certificado de Consultor de AIA
n.º 31/2012)
para a
Civil & Planning Group
Correspondence address:
Avenida Kwame Nkrumah 1335
Maputo
Tel : +258 21 414506
Fax : +258 21 414515

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Acronyms

ANE	National Roads Administration
ARPAC	Socio-Cultural Research Institute
CNCS	National Council for AIDS
DIPREME	Direcção Provincial de Recursos Minerais e Energia
DNTF	National Directorate of Land and Forests
DPA	Provincial Directorate of Agriculture
DTS	Sexual Transmission Diseases
EIA	Environmental Impact Assessment
EIAS	Environmental and Social Impact Assessment
EPDA	Environmental Pre-Feasibility and Scoping Study
ESMP	Environmental and Social Impact Assessment
HIV/SIDA	Acquired Immunodeficiency Syndrome
MICOA	Ministry for Environmental Coordination
MINAG	Ministry of Agriculture and Food Security
MIREME	Ministry of Mineral Resources and Energy
MITADER	Ministry of Land, Environment and Rural Development
OPRC	Output- and Performance-based Roads Contract
PA	Affected Parties
PGA	Environmental Management Plan
SDAE	District Services for Economic Activities
SPFF	Provincial Forestry and Wildlife Services
TdR	Terms of Reference
WB	World Bank

NON-TECHNICAL SUMMARY

INTRODUCTION AND OBJECTIVE

The Government of Mozambique, through the Project for the Management and Maintenance of Roads and Bridges, APL-2, with funding from the World Bank (IDA), intends to invest part of the funds in the rehabilitation of the road between Quelimane-Nicoadala- Namacurra, in Zambézia Province. The rehabilitation works are expected to be accomplished through an Output- and Performance-based Road Contract (OPRC).

The road section under study has a length of 68 km and is part of the Zambézia corridor, extending from Quelimane City (km 0) to Nicoadala Village (Km 31.5) and then to Namacurra (Km 67.6). The road section between Quelimane and Nicoadala is part of the N1, which is part of Mozambique's primary road system and connects the north and south of the country. The road section between Nicoadala and Namacurra is part of the N10, ensuring the connection of Quelimane to the rest of the country.

This document comprises the preliminary Environmental and Social Impact Assessment (ESIA) related to the project described above and aims **to identify and evaluate the potential environmental and social impacts of the N10 / N1 road construction and operation phase and propose measures for mitigation and impact management of the project, in order to minimizing adverse effects and enhancing the benefits resulting from the project.** An updated ESIA will be prepared by the contractor, based on the final design and reviewed by the National Road Administration (ANE) and the World Bank, prior to construction.

CPG is a consultant hired by the ANE to prepare the Implementation Project for the rehabilitation of the road under analysis, to do the environmental and social impact assessment of the project part of its scope of work. To this end, the consultant hired the services of a duly accredited environmental consultant, who conducted the Environmental Impact Assessment (EIA) of the activity. The Environmental Impact Assessment Reports (REIA) will be submitted to the Ministry of Land, Environment and Rural Development (MITADER) for approval, in accordance with the provisions of the Environmental Impact Assessment Process (Decree nº54 / 2015 of 31 December) for Category A projects.

○ **PROJECT PROPONENT**

The Project Proponent is the **National Road Administration**, the national authority accountable and responsible for the development and maintenance of national roads in Mozambique.

N1/N10 baseline cross section is:

Lane width: 2 x 3.0 m
Coated shoulder: 1.0 m
Uncoated shoulder: 0.5 m.

With the rehabilitation the cross section will be as follows:

Administração Nacional de Estradas
Av. de Moçambique, 1225, C.P. 403
Maputo, MOÇAMBIQUE
Tel. (258) 21476163/7
Fax (258) 21477235

○ **SUMMARY DESCRIPTION OF THE PROJECT**

Project Location

The target road section of the study is located in the Quelimane Municipality and in Nicoadala and Namacurra Districts for a length of 68 km, connecting Quelimane - Nicoadala - Namacurra, as shown in the following figure.



Figure 1: Road N1/N10 between Quelimane, Nicoadala and Namacurra

Purpose of the Project

The project aims to rehabilitate the road identified above, increasing its useful life and improving traffic safety. Thus, a number of activities have been defined regarding mainly with the widening of the road and the construction of a new pavement. N1/N10 baseline cross section is:

- Lane width: 2 x 3.0 m
- Coated shoulder: 1.0 m
- Uncoated shoulder: 0.5 m.

The cross-sectional type to be implemented is shown in the figure below and has the following dimensions:

- Lane width: 3.5 x 2 m wide
- Coated shoulder: 1.5 to 2.5 m
- Uncoated shoulder: 0.5 to 1.0 m
- In the urban area of Quelimane: pavement 1.5 m.

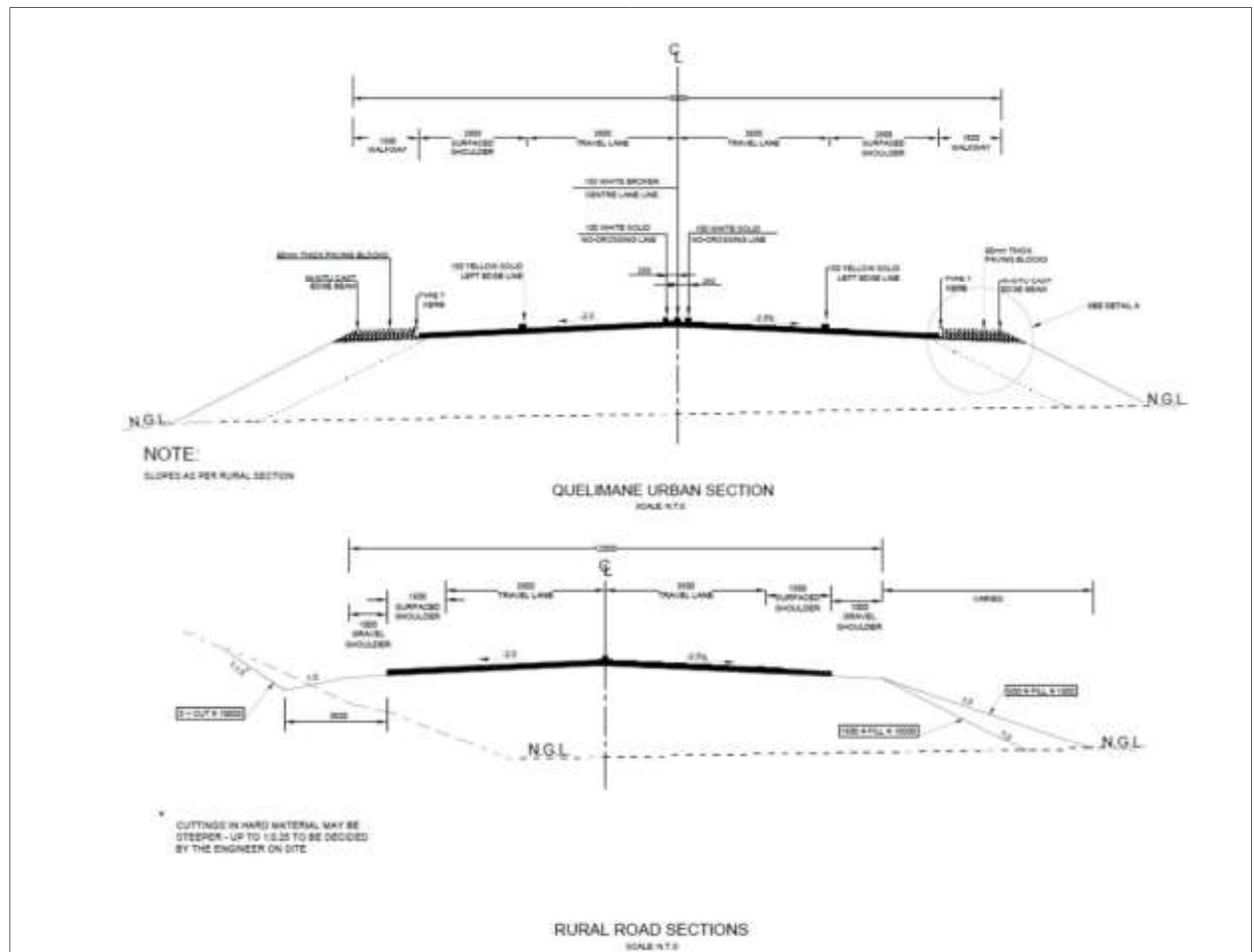


Figure 2 New Cross-Sectional Profiles Type

For the construction of the road, a range of activities will be carried out, of which the following are highlighted:

- Construction site and camp site;
- Cleaning and vegetation clearance;
- Excavation and landfill;
- Extension and repair (treatment of pathologies: fences, cracks, holes) of the existing road;
- Construction of sub-base stabilized with cement;
- Construction of the base with crushed stones;
- Rehabilitation and improvement of the existing drainage system;
- Improvement of existing drainage infrastructures;
- Punctual improvement of the plant layout and the existing vertical contour;
- Improvement of crossings and other intersections;
- Vertical and horizontal placement of traffic signs;

- Rehabilitation, reinforcement and / or extension of bridges and aqueducts, where necessary;
- Rehabilitation of the borrow pit that may be used.

During the construction phase, there will be a need mainly of the following materials: stone, sand, soils, iron, cement, bitumen and water.

○ LEGAL AND INSTITUTIONAL FRAMEWORK

The Constitution of Mozambique states that all citizens, have rights to live in a balanced environment, as well as the duty to defend. Thus, the environment and its components must be properly managed.

One of the basic premises of the implementation of the Environmental Framework Law is the preparation of Environmental Impact Assessment for economic and social development projects, which is regulated by Decree 54/2015, which revokes Decree 45/2004 and Decree 42 / 2004. The Decree is complemented by the General Impact Assessment Directive (Ministerial Diploma 129/2006) and by the Public Participation Regulation in the EIA process (Ministerial Diploma 130/2006). The laws of land and forests, as well as the environmental quality regulations are complementary for the elaboration of the Environmental Impact Assessment.

In addition to national legislation, at the international level, Mozambique, as a member of the United Nations, signed and ratified several treaties and conventions that contribute for the management of the environment and for the natural resources conservation.

Regarding this project, began with the instruction process by ANE with MITADER, previously designated MICOA. As a result, the project was classified as being "A", which is therefore subject to an Environmental and Social Impact Study under the terms defined in the applicable legislation.

Prior to this environmental and social impact assessment was carried out, took place an Environmental Pre-feasibility and Scope Definition (EPDA) study and definition of Terms of Reference (ToR) submitted to the Provincial Directorate for of Environmental Affairs of Zambézia, as well as to MITADER, in accordance with the pre-evaluation report prepared by that entity and applicable legislation.

The project will be funded by the World Bank the elaboration of the ESIA, ESMP and RAP shall be done in line with the Bank Safeguards and policies. Four out of ten World Bank operation policy will be triggered by the project, these are OP 4.01 – Environmental Assessment; OP 4.04 – Natural Habitats; OP 4.11 – Physical and Cultural Resources; and OP 4.12 – Involuntary Resettlement (for the small sections of road in Quelimane Town

and Nicoadala Township). The **World Bank Group Environmental, Health, and Safety General Guidelines dated April 30, 2007** also apply. Additionally, the Bank's new operation guidelines on Gender Based Violence (GBV) and Children Abuse Exploitation (CAE) as well as labour influx specifically for the road sector, shall be taken into consideration by the contractor when implementing the project. Where the legislation of Mozambique is silent the World Bank operation policy will be applied.

○ **METHODOLOGY FOR IDENTIFICATION AND IMPACT ASSESSMENT**

For the identification of environmental and social impacts, the consultation was carried out for the existing literature and the secondary data available in the feasibility study report, as well as government documents and statistics. The bibliographic consultation was complemented by fieldwork conducted along the road and in Quelimane, Nicoadala and Namacurra.

Phases of the assessment:

- 1st Step: Analysis of topographic maps, forest maps to identify the main environmental and social components related to topography, forest cover, arable land, village infrastructure and water resources;
- Step 2: Field research, focused on the implementation area of the Project along the road (Quelimane - Nicoadala - Namacurra) in order to identify environmental and social critical elements to be affected within the zone of direct influence, including social and Cultural sites (including cemeteries), water and sanitation, health, flora and fauna, soils and local economy, as well as to complement and to confirm bibliographical information collected (physical environment, ecology, socio-economic aspects, economic development activities , Health, education, cultural aspects, etc.);
- Stage 3: Identification of potential and significant anticipated impacts of the Project, taking into account the stages of the Project, namely, Design and Planning, Construction, Operation and Maintenance, and Conclusion.

Throughout the process, public consultations were held with various stakeholders along the road, in order to obtaining additional information on socio-cultural and economic aspects as well as their views on the various aspects of the project. The consultations were also seeking for relevant information on the impact assessment and to the environmental management plan by identifying any area of concern.

Based on the methodology described above, the environmental and social impacts associated with the pre-construction, construction and operation phases of the project were identified.

Impacts were identified for the biophysical and socioeconomic environment. Efficient measures to mitigate the negative impacts or potentiation of the positive ones were recommended. These measures form the basis of the Environmental Management Plan (EMP), giving details for the proposed work program.

In keeping with the OPRC nature of the planned contract, once the Contractor is selected, the ESIA/ESMP and RAP will be updated by the Contractor and those documents will be cleared by ANE and the World Bank prior to the start of construction. The contractor will be legally bound to implement the final ESIA/ESMP as part of the OPRC. Noting that Mozambique suffers from periodic and often catastrophic flooding, the final design and revised ESIA/ESMP is expected to particularly address issues related to climate resilience. Additionally, the ESIA/ESMP will address issues related to labor influx and potential GBV.

○ CONCLUSIONS AND RECOMMENDATIONS

From the study and assessment carried out, it was concluded that the impacts of the project on soils, water, flora and fauna will be negative, but of low to moderate significance. With regard to socio-economic impacts, it is expected that there will be negative impacts on quality of life, health and road safety (during construction) and positive impacts on employment generation and income generation activities, as well as improvements in road safety (during operation).

It can be concluded that the negative impacts of this project on the environment and socially are low, localized and of short duration. These impacts, by the nature and location of the project, will have a greater incidence in the quality of life of the communities along the way.

On the other hand, the benefits are expected to be high in improving the movement of people and goods between the Quelimane region and the rest of the country.

In general, it is recommended that the identified impacts and the respective mitigation measures proposed in this report and in the attached Environmental Management Plan are an integral part of the specifications for the execution of the project and that their implementation is properly supervised by the proponent of the project. In mitigating negative impacts and enhancing positive impacts at the socioeconomic level, interaction and involvement with communities through their respective authorities and official representatives are of particular importance.

INTRODUCTION

○ BACKGROUND

The Government of Mozambique, through Bridges and Roads Management and Maintenance Project, APL-2, funded by the World Bank, intends to invest part of the funds in the rehabilitation of the N10 Roads between Quelimane and Nicoadala and N1 between Nicoadala and Namacurra, in Zambézia Province.

The section of the road under assessment has a length of 68 km and is part of the Zambézia corridor, extending from the Quelimane City (km 0) to the Nicoadala Village (Km 31.5) and then to Namacurra (Km 67.6). The section of the road between Quelimane and Nicoadala is part of the N1, which is part of Mozambique's primary road system and connects the north and south of the country. The section of the road between Nicoadala and Namacurra is part of the N10, ensuring the connection of Quelimane to the rest of the country.

The road was rehabilitated and widened in 1999. The cross-sectional type implemented consisted of 2 x 3.0 m of lane and 2 x 1.0 m to 1.5 m of covered berms. In 2011 it underwent an emergency intervention, only in a stretch of 17 km between Quelimane and Nicoadala, which essentially consisted of an intervention at the level of the pavement wear layer.

In September 2013, the Ministry of Public Works and Housing, represented by the National Road Administration (ANE), informed the Consultant Civil Planning Group (CPG) that had been selected to provide consulting services to elaborate the execution Project for the Rehabilitation of Road N1 between Quelimane and Nicoadala and the N10 Road between Nicoadala and Namacurra. The objective of the consultancy services was to draw up an implementation plan for the rehabilitation of roads as described above, taking into account a 15-year structural design horizon and 20-year analysis.

The environmental and social impact assessment, in accordance with the Mozambican legislation in force, is part of the Consultant's work, and the Consultant awarded the services to an environmental consultant duly accredited by MITADER. This document forms part of this process.

○ **OBJECTIVES OF THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT**

This document is one of the requirements for obtaining the environmental license of the project. It describes the process of assessing environmental and social impacts and presents its results, as well as the environmental and social management plan.

The main objective of the study is to identify and assess the potential environmental and social impacts of the N1/N10 road construction and operation phase and to propose mitigation measures and project impact management to minimize adverse effects and benefits of the endeavor.

○ **NAME AND ADDRESS OF PROPONENT**

The Project Proponent is the National Road Administration, the national authority accountable and responsible for the construction, rehabilitation and maintenance of national roads in Mozambique. The respective detailed contacts are as follows:

Administração Nacional de Estradas
 Av. de Moçambique, 1225, C.P. 403
 Maputo, MOÇAMBIQUE
 Tel. (258) 21476163/7
 Fax (258) 21477 8235

○ **COMPOSITION OF THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT TEAM**

The environmental and social impact assessment team under overall management of CPG consists of the following key (technical) members:

Name	Position	Activities
Eulália Macome	Environmental Specialist	Public consultation Data collection and analysis Production of report
Jorge Utui	Socio-economist	Field research Data collection and analysis Public consultation
Mário Henriques	Field Logistics Technician / GIS	Field Logistics Field survey
Peter de Aguiar	Civil Engineer	Project Team Leader
Sandra Simões	Civil Engineer	Member of the Project Team

Table 1: Composition of the AIAS team

○ **PROJECT DESCRIPTION**

2.5.1. Geographic Location of the Project

The target road section of the assessment is carried out in Quelimane Municipality, Nicoadala and Namacurra Districts in Zambézia Province, for a length of 68 km, connecting Quelimane - Nicoadala - Namacurra. The map below illustrates the location of the project and the photos show the beginning and the end of the route. There are no protected areas or critical habitats located within the corridor.



Figure 3: Quelimane City: Beginning of the Project



Figure 4: Namacurra: End of the Project



Figure 5: Localization map

Annex 1. Presents the implementation of the road in Zambezia Province

1.1.2. ACTIVITIES AND MATERIALS INVOLVED

The Road Rehabilitation project between Quelimane - Niquadala - Namacurra will have activities along different phases, which are summarized below.

a) Project

The elaboration of the Road Execution Project includes carrying out field research (materials, pavement status, surveying of existing structures, etc.), topographic survey to define road alignment, preparation of drawings, determination of quantities and Reporting.

The preparation of the environmental and social impact assessment report with recommendations and the environmental management plan are also included at this stage.

b) Construction

The N1/N10 baseline cross section is:

- Lane width: 2 x 3.0 m
- Coated shoulder: 1.0 m
- Uncoated shoulder: 0.5 m.

The project foresees the rehabilitation of the road, implementing a transversal profile with the following dimensions:

- Lane width: 3.5 x 2 m wide
- Coated shoulder: 1.5 to 2.5 m
- Uncoated shoulder: 0.5 to 1.0 m
- in the urban area of Quelimane the shoulder will be paved: 1.5 m.

The following cross-sections are to be implemented on the road at the time of their rehabilitation.

Before the construction starts ANE will have to implement RAP and clean the area for the contractors. The RAP is done based on the Mozambican legislation and the World Bank operation policy "OP 4.11". Was identified around 1000 people that will be totally or partial affected by the road construction. The table below summarized physical and economic expected losses:

Type of assets	Total Affected	Description
Commercial Infrastructures	154	Infrastructures for the sale of basic needs products and second-hand clothes
Private Services	50	Small workshops; barber shops; hair salons and carpentry
Garages	6	Balconies in block
Fences	6	Woods, bamboos and hedge
Wall	8	Blocks
EDM Poles	33	Concrete and eucalyptus
Advertisements	3	Metal
Drinking fountains (Number)	7	Blocks and cement
Memorials / Cemeteries (number)	9	Blocks and cement
Economic trees 9Nr)	125	Coconuts trees, mango trees, cashew trees and banana trees
Forest trees (Number)	265	Acacias, eucalyptus and casuarinas
Agricultural areas (area)	18	Rice production (Nicoadala)

For the construction of the road, a range of activities will be carried out, of which the following are highlighted:

- Construction site and camp site;
- Cleaning and vegetation clearance;
- Excavation and landfill;
- Extension and repair (treatment of pathologies: fences, cracks, holes) of the existing road;
- Construction of sub-base stabilized with cement;
- Construction of the base with crushed stones;
- Rehabilitation and improvement of the existing drainage system;
- Improvement of existing drainage infrastructures;
- Punctual improvement of the plant layout and the existing vertical contour;
- Improvement of crossings and other intersections;
- Vertical and horizontal placement of traffic signs;
- Rehabilitation, reinforcement and / or extension of bridges and aqueducts, where necessary;
- Rehabilitation of the borrow pit that may be used.

During the construction phase, the following equipment and materials will be required:

Project Phase	Machines	Material
Preparation of the deployment area	<ul style="list-style-type: none"> • Motor grader • Excavators • Bulldozers 	Water
Road repair and widening	<ul style="list-style-type: none"> • Motor grader • Excavator and loader • Asphalt pavers • Bitumen spreader • Cylinders, compactors • Dump truck 	Soils, stone, sand, cement, bitumen and water
Bridges, small bridges (points) and drainage elements	<ul style="list-style-type: none"> • Dump truck • Excavator and loader • Vibrators • Cylinders, compactors • Concrete mixers 	Stone, sand, cement, iron and water.

Table 2: Main Equipment and Materials for the Construction Phase

The main negative impacts will occur at this stage, in particular during the implementation of the following activities:

- **Cleaning for the establishment of campsites and construction yards**
Although it is recommended that camp sites and sites be established at sites that have already been degraded or used as camps in previous rehabilitation, cleaning and vegetation clearing activities may take place at selected sites. This activity consists of the removal and destruction of material such as trees, shrubs, roots, grass, trash and topsoil up to 150mm in depth in work areas where it is considered not appropriate to maintain it. It also includes activities of excavation and filling of the holes resulting from vegetation clearing to a desired level of compaction, handling, recovery and deposition of deforested material. Sites for construction of campsites and construction yards in Nicoadala were identified, in an area that served as a site and camp in the rehabilitation previously done so the impact of this activity will be minimized.
- **Earthwork**
This work consists of the removal and organization of all materials that are not suitable for road construction, side ditches and drainage water channels. It also includes dragging and stacking of material appropriate to the landfill site and disposal of unsuitable materials in an environmentally safe manner. When performing the above earthworks, measures to control soil erosion, sedimentation, and water pollution are implanted through sedimentation ponds, fibre mats, roofs, grass, drains and other measures.
- **Removal or recycling of pavement**

The rehabilitation of the road includes the recycling of existing pavement and construction of new pavement. The existing pavement material represents a potential source of pollution due to its constituents. However, they will be reintegrated in the new pavement, in order to minimize the risks of pollution.

- Rehabilitation of bridges and hydraulic passages

The following rehabilitation measures will be carried out on bridges along the road:

- Extension or construction of walks in existing structures
- Construction or repair of railings
- Construction of transitional bodies and slabs
- Improvement of slopes near the buttresses of bridges
- Repair of expansion joints
- Verification of concrete strength, diagnosis and destructive tests – Modelling of the riverbed when necessary, cleaning work.
- Slope repair including erosion protection at the exit and entrance through construction of paved surfaces
- Maintenance and repair of reinforced concrete elements
- Demolition of destroyed parts and extension of slopes

In order to minimize the risks of slope erosion, its slope will be defined according to its height and soil characteristics. Some erosion protection measures will be implemented where and as needed.

- Extraction of building materials.

As indicated in more detail in section 5.1.7 of this report, 18 potential borrow pit along the road rehabilitated were identified. These are located in agricultural or highly degraded forest areas.

Concerning quarry, the use of quarries already in operation, located between Namacurra and Mocuba, is taken into account.

Environmental and social impacts are anticipated during a construction phase, in regards to extract and transport the resource. These should be mitigated through the implementation of the environmental and social management plan, by enforcing the mitigation measures indicated therein.

- Socio-economic.

Cultural and social conflicts may arise when outside workers get in contact with locals of different cultural background. Often conflicts may be

associated with increased consume and availability and consumption of alcohol and drugs as well as a Gender Based Violence (GBV) and Children Abuse Exploitation (CAE). Adequate efforts should be made to maintain social harmony and cooperation among the workers and local residents.

c) Operation and Maintenance

Operational activities are basically related to the use of the road for travel and transportation of goods. The main negative impacts during the operation phase are road accidents, which can result in loss of life and destruction of property. The positive impacts come from reduced travel time and easy access to services, as well as increased trade transitions.

The impacts of road maintenance activities depend on the magnitude of the work. Routine maintenance makes use of labour intensive (cutting of grass, cleaning of aqueducts and ditches) and light equipment, necessary for the capping of holes, replacement of signs, sealing of cracks, etc. Periodic maintenance operations involve the use of machinery and heavy equipment and may have similar impacts to construction activities, but in this case, it is also important to point out blockages in the traffic causing delays, since no deviations are generally built.

○ PROJECT ALTERNATIVES

Within this project, two alternatives can be considered: one in which there is no rehabilitation, maintaining the current conditions of the road, and another in which the rehabilitation is carried out as per the project execution and improved road conditions.

The alternative "Without the Project" would maintain the current impacts, characterized by difficult conditions of movement of people and goods between the provincial capital of Zambézia and the rest of the Province and of the Country, which would entail enormous costs for the drivers and consequently increase of the cost of living.

The "With the Project" alternative will improve road quality, which implies an increase in traffic speed and safety, which may contribute to a better integration between consumption and production zones.

This document assumes the alternative "With the Project", being elaborated in accordance with the applicable legislation and the classification made by MICOA, now MITADER.

d) Output- and Performance-based Road Contract (OPRC).

The OPRC is adopted to ensure a consistent and affordable level of service for road users in the long term. The OPRC format has been widely proven to be an effective approach to road asset management; it can provide better service quality at a similar or lower cost compared to conventional contracting for a project. This approach has been piloted in Mozambique in the ongoing RBMMPII roadworks in Gaza Province contracted in January 2017. Lessons learned will be incorporated into the rehabilitation and maintenance works for the project, which will measure performance indicators of the maintenance services for defining payments to the contractors.

The OPRC will include performance standards (service levels) for environmental and social safeguard compliance for construction as well as maintenance phase and the payments will be linked to service levels realized. Under the terms of the contract, the contractor will also be responsible for the continuous monitoring and control of road conditions and service levels for all roads or road sections included in the contract. This will not only be necessary to fulfill the contract requirements, but it is an activity which will provide the contractor with the information needed (i) to ascertain the degree of its own compliance with service level requirements, and (ii) to define and plan, in a timely fashion, all interventions required to ensure that service quality indicators never fall below the prescribed thresholds. The role of the ANE and the monitoring consultant shall be responsible for verifying compliance with the agreed service levels and with all applicable legislation and regulations.

In keeping with the OPRC nature of the planned contract, once the Contractor is selected, the ESIA/ESMP and RAP will be updated by the Contractor and those documents will be cleared by ANE and the World Bank prior to the start of construction. The contractor will be legally bound to implement the final ESIA/ESMP as part of the OPRC. Noting that Mozambique suffers from periodic and often catastrophic flooding, the final design and revised ESIA/ESMP is expected to particularly address issues related to climate resilience. Additionally, the ESIA/ESMP will address issues related to labor influx and potential GBV.

INSTITUTIONAL FRAMEWORK AND METHODOLOGY

○ INTRODUCTION

The Constitution of Mozambique enshrines to all citizens the right to live in a balanced environment, as well as the responsibility to defend it. Thus, the environment and its components must be properly managed.

The National Environmental Policy, approved by Decree 5/95 establishes the bases of environmental legislation. The aim of this policy is to ensure an acceptable link between socioeconomic development and environmental protection for present and future generations. As a way of implementing that policy, the Law of the Environment was approved by the Assembly of the Republic Law No. 20/97 of 1997. This law applies to all public or private activities that may directly or indirectly influence environmental components.

One of the basic premises of the implementation of the Environmental Framework Law is the elaboration of Environmental Impact Assessment for economic and social development projects, which is regulated by Decree 54/2015, which revokes Decree 45/2004 and Decree 42 / 2004. The Decree is complemented by the General Impact Assessment Directive (Ministerial Diploma 129/2006) and by the Public Participation Regulation in the EIA process (Ministerial Diploma 130/2006).

The National Road Administration, the owner of the project, instructed the process with the Provincial Directorate for the Environmental Affairs of Zambézia, having in its Environmental Pre-assessment Report classified the project as being of category "A". Thus, the attribution of the Environmental License requires an environmental impact assessment, following the legally defined phases. These phases are illustrated in figure 3.1.

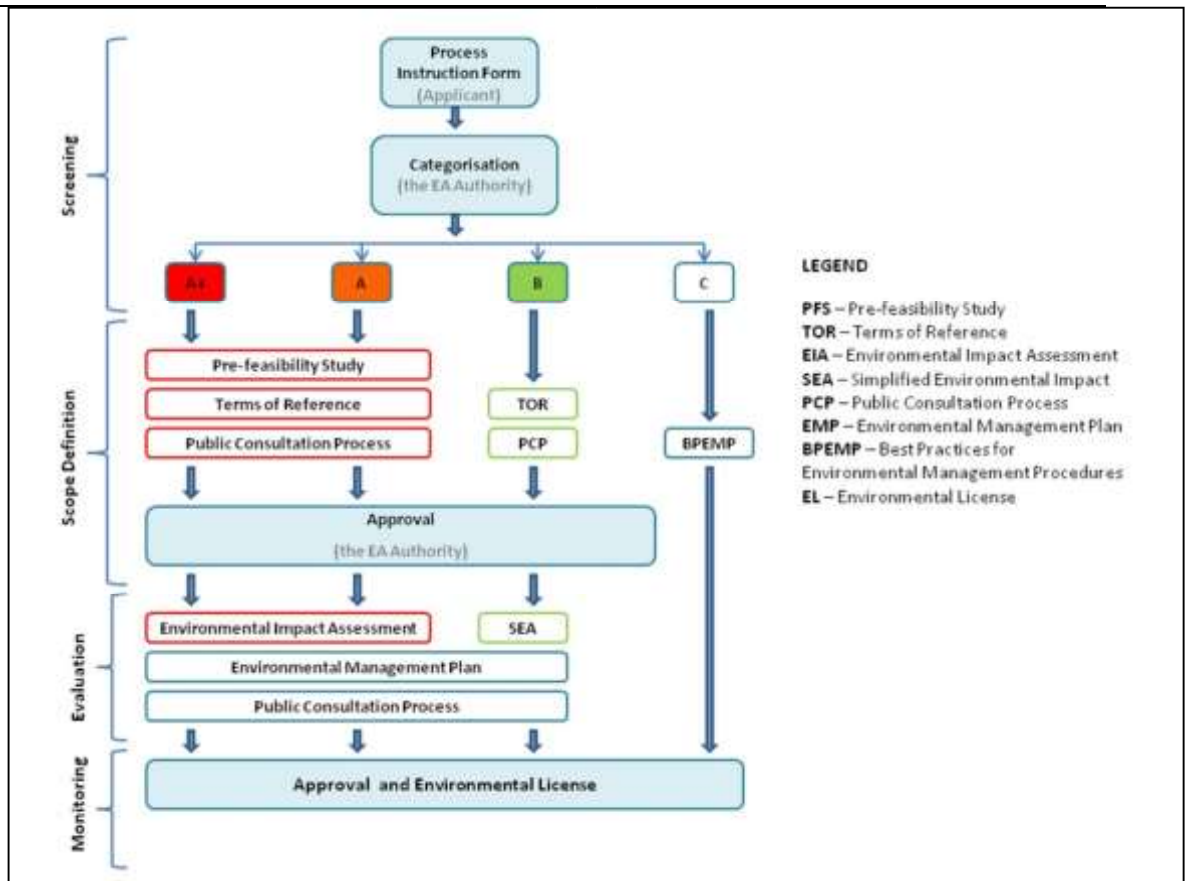


Figure 6: Required phases to obtain an Environmental License

In addition to Decree 54/2015, there are complementary legislation for the sustainable management of the environment and should be considered in the implementation of Roads projects, namely:

- Regulation of emissions and air quality. The regulation of environmental standards and emission of effluents, approved by Decree 18/2004, aims to ensure effective control of environmental quality and natural resources. In its Article 20 establishes that the MITADER will approve norms regarding the sound emissions, considering the source of emission of noise. To date, these standards have not yet been published. However, it is expected that with the implementation of the project the levels of dust and noise will increase, and it should be ensured that acceptable levels are respected.
- Article 11 of Decree 18-2004 introduces categories of water for public consumption, based on quality. The Ministry of Health is responsible for ensuring the quality control of water for human consumption. In addition, its Article 16 determines that the release of

industrial effluents into the environment must comply with the standards established for several industries in Annex III of the decree. Discharge of domestic effluents must comply with the emission standards of Annex IV.

- Waste management regulation. Decree 13/2006 - regulates the management of waste in relation to the disposal in the soil, subsoil, water and atmosphere of toxic substances or polluting substances in order to minimize the impacts on health and the environment, in accordance with the art. 33 of Environmental Law 20/97 and art. 204 of the Constitution. This decree classifies waste as hazardous and non-hazardous. Hazards include explosives and liquefied gases. Non-hazardous waste includes household and commercial solid waste, demolition waste, garden waste and industrial solid waste.
- Legislation on water resources and water quality. The management of water resources is determined by water policy (Decree 46/2007) and Water Law 16/91. This new policy includes important issues that were not included in the previous policy, such as improved sanitation in urban, peri-urban and rural areas, hydrological networks, development of new water infrastructures and integrated water resources management with the participation of interested parts.
- Law on Cultural Heritage. Law No. 10/88 - defines as a "group of materials and material goods created or integrated by the Mozambican people throughout history, with relevance to the Mozambican identity". Material goods include: monuments, groups of buildings with historical, artistic or scientific importance places (with archaeological, historical, aesthetic, ethnological or anthropological interest) and natural elements (physical and biological formations, with particular interest in the aesthetic point of view or scientific view). During the construction of the road, sacred sites and archaeological sites that may be discovered should be protected considering this law.
- Land Law 19/1997: establishes Zones of Total and Partial Protection of Nature. The latter include reserve of 30m and 15m respectively for primary roads to secondary or tertiary roads.
- Forest and Wildlife Law 10/1999: This law defines the rules for the use of forest and wildlife resources. Article 10 defines areas for the protection of biodiversity, fragile ecosystems and animal and plant species to be conserved. The country also defined in the red list the species and the levels of protection that each one of them requires.

This ESIA will also consider the World Bank Safeguards policies. The operations of World Bank are guided by a comprehensive set of policies and procedures, taking into account the Bank's core development objectives and goals, the instrument for pursuing them, and specific requirements for Bank financed operations. The core of this guidance lies in the Operational Policies (OPs) which are short, focused statements. The Bank has identified ten key policies that are critical to ensuring that potentially adverse environmental and social consequences are identified, minimized and mitigated. This project will trigger 4 (four) of the 10 World Bank Operational Safeguards Policies, namely **Environmental Assessment (OP/BP 4.01) Involuntary Resettlement (OP/BP 4.12)**

Land acquisition under the project may be necessary to enlarge the existing road and accommodate the traffic during the rehabilitation. The need of land will be identified during subproject screening that under the World Bank Safeguard Policy (OP/BP 4.12 - "Involuntary Resettlement") might require resettlement or compensation. This operational policy will be well dealt in the Resettlement Framework policy.

Natural Habitats (OP/BP 4.04)

This policy applies to activities, which could have a potential impact on important natural habitats outside and inside formally protected areas. Significant conversion of natural habitats is allowed under this policy if there are no viable alternatives, but the affected natural habitat needs to be compensated by an ecologically similar area of the same or larger size and the area needs to be better managed and protected. The project area cross some significant natural habitats such as wetlands and rivers that have to protected during the construction phase. Impacts of project activities within the protected areas is not expected neither for forest clearance, therefore this OP/BP will be triggered and the ESMF has made some provisions to ensure that adequate measures are considered.

Physical Cultural Resources (OP/BP 4.11)

This policy applies to subprojects where important physical cultural resources (i.e. archaeological sites, special architecture, important cemeteries, forests or where unique immaterial cultural resources) exist or are affected. In case none of these physical cultural resources exists in a subproject area, the bidding documents and the contractor contracts need to include a "Chance Find Procedure", which specifies that in case that during construction/installation an important arte-fact is found, construction should be stopped and the responsible Mozambican authorities be warned and involved in an investigation of the site. Construction/installation can only resume after the green light has been given by the responsible Mozambican authorities. The ESMF has made some provisions to ensure that adequate measures are considered to minimize the negative impacts that may occur. Especially because it is normal in Mozambique and many other African countries and beyond to find forests/species that have special value for local communities, groups or families. The importance of identifying and recognizing such forests/species in project development and particularly in forests and other agricultural programs/projects has been part of the standard practice and is streamlined in this ESIA document.

In addition to national legislation, at the international level Mozambique, as a member of the United Nations, signed and ratified several treaties and conventions that contribute to the management of the environment and the conservation of natural resources.

○ **INSTITUTIONAL FRAMEWORK**

In order to ensure the implementation of the legislative package on the Environment, the Government of Mozambique created the Ministry of Environmental Affairs (MICOA) and now Ministry of Land, Environment and Rural Development (MITADER).

The organization of MITADER includes the National Directorate of Environmental Impact Assessment (DNAIA), which has as one of the main functions to ensure the implementation of regulations on the ESIA.

Other entities, namely at the Provincial level, may be involved according to the nature and scale of the Project under analysis.

○ **METHODOLOGY FOR IDENTIFICATION AND IMPACT ASSESSMENT**

The completion of this assessment was preceded by the instruction of the process by ANE with MITADER. This resulted in the classification of the project by MITADER as "A", which is therefore subject to an Environmental Impact Assessment under the terms defined in the applicable legislation.

This Environmental and Social Impact Assessment was preceded by an Environmental Prefeasibility and Scoping Study (EPDA) and Terms of Reference (ToR) submitted to the Provincial Directorate for Land, Environmental and Rural Development of Zambézia, as well as to MITADER, as specified in the Pre-Evaluation Report prepared by that entity and applicable legislation.

The EPDA was designed to identify the key aspects and impacts that can occur in the various phases of road construction and operation. This phase focused on identifying the most important environmental aspects.

The EPDA received the comments contained in the MITADER ref. 113GM / MITADER / 183/14 dated 15.09.2014, which were taken into account in the preparation of this document and its ESMP.

For the identification of environmental and social impacts, the existing bibliography and secondary data available in the feasibility study report and Government documents and statistics were consulted, complemented by field work carried out in Quelimane, Nicoadala and Namacurra and along of the road. The assessment had the following steps:

- Stage 1: Collection of available information - Analysis of topographic maps, forest maps in order to identify the main environmental and social components related to topography, forest cover, arable land, village infrastructure and water resources;
- Stage 2: Fieldwork and Public Consultations - Field research, focused on the area of implementation of the Project along the road (Quelimane-Nicoadala-Namacurra) in order to identify critical environmental and social elements to be affected within the zone (Including cemeteries), water and sanitation, health, flora and fauna, soils and the local economy;
- Stage 3: Selection of potential and significant anticipated impacts of the Project, taking into account the stages of the Project, namely Design and Planning, Construction, Operation and Maintenance, and Conclusion.

Gathering of Available Information

The bibliographic consultation of legislation, national and international procedures and relevant policies was carried out. Census information, relevant maps and reports were collected from relevant institutions such as MITADER, MASA / DNTF, MIREME, National Directorate of Geology and Mineral Resources, and a review of the various reports and data available. Initial identification of the environmental attributes of the project area was carried out. From these sources it was possible to obtain information on the environmental conditions of the project area, which represent the basic information for the identification and evaluation of impacts. Specific laws and regulations as well as the institutional framework have also been consulted. The identified attributes were subject to a prior verification at the first site visit in January 2014.

Fieldwork and Public Consultations

During the site visit (January 2014) and the fieldwork phase (April 2014) key aspects of the biophysical and socioeconomic environment were identified. Field visits were made to improve existing information, with greater emphasis on the areas identified as of greatest interest during scope definition. During the trip, information on the physical environment, ecology, socioeconomic aspects,

economic development activities, health, education, cultural aspects and other values were collected.

Consultations were held with various stakeholders along the route, with the aim of obtaining additional information on socio-cultural and economic aspects as well as their views on the various aspects of the project. The consultation also aimed to gather relevant information to the assessment of impacts and to the environmental management plan identifying any area of concern.

In addition, two public consultations were held during the process of preparing this document.

The first public consultation took place on January 21, 2014, at the beginning of the assessment, within the framework of preparation of the EPDA and the second took place on November 7, 2014 in the preparation of this document. Consultations took place in Quelimane due to the availability of adequate space and equipment, but free transportation was provided to participants from Nicoadala and Namacurra Districts so that all interested and affected could be present. During the consultations the project was presented as well as potential impacts, in the first one in a more generic way and the second in a more detailed way in view of the state of progress of the Implementation Project.

In summary, the aspects that were most highlighted during the first consultation were:

- Loss or lack of infrastructures, farms, fruit trees that communities put up, sowed and planted along the way - to what extent they would be affected (what size area should be resettled) and what forms of compensation;
- Final destination of borrow pit (large depressions in areas close to population clusters);
- Employment: criteria for obtaining employment and protection of workers' rights with contractors;
- The role of women in the construction work process

The participants referred to aspects that should be answered during the consultation process: contractors' deadlines, lack of or weak signposting (vertical and horizontal), interruptions and

diversions of traffic that increase traffic accidents, absence of legal instruments enforce responsibility for offenders.

The participants recommended that ANE, contractors and administrative bodies support the organization of orientation seminars for local population, on how to take advantage of the business opportunities that arise with the project / and in the development of skills, that is, training for the desired jobs.

Based on the concerns raised during the first consultation and the field surveys, the second consultation was held to present the Environmental and Social Impact Assessment Study and the proposed mitigation measures. Additional concerns have been raised on road safety at the intersection between the road and the Moatize to Macuse rail line, the strategy for hiring workers and the role of traditional leaders in the compensation process, as well as the treatment that should be given to new constructions in the area of direct influence in the Quelimane Municipality and Nicoadala. Regarding this point, the management representative of Nicoadala reported that the administration already has a new market where they can be transferred, in an area slightly distant from the road.

Community leaders questioned what would be done about family burial sites within the area of direct influence. They were informed that the project was designed such a way that would not disturb those areas, for example by using retaining walls to secure landfills, without incurring additional costs.

The aspects raised during the consultations were taken into consideration in this report and in the Environmental and Social Management Plan.

The reports on public consultations are presented in Annex 3 of this document.

At this stage, the review of the drawings and reports was also carried out. Designers were consulted with particular reference to the establishment of forms and scope of work, possible construction methods and materials to be used, operational characteristics, etc., In order to identify the potential sources of project impacts on the environment. The characteristics of the project that were considered are:

- Size of the project,
- Use of natural resources,
- Waste production,
- Pollution and discomfort,
- Risk of accidents (road safety).

Identification and Mitigation of Environmental and Social Impacts

In this phase, the potential positive and negative impacts in the physical, biological and socioeconomic environments associated with the pre-construction, construction and operation phases of the project were identified, according to the

criteria for identification of impacts, summarized in table 3.1 below. Efficient and cost-effective mitigation measures have been recommended that can reduce potential significant negative impacts to acceptable levels and maximize benefits. These measures form the basis of the ESMP.

The ESMP was developed based on the identification of the impacts arising from the project and on the proposed measures for their minimization and enhancement as required. The ESMP will be included in the Execution Project proposal, being part of the Contract Documents for contracting the Contractor, as well as the Contract of the consultant. The ESMP also includes an impact monitoring plan for the construction phase and after construction.

The final step is the preparation of the environmental and social impact assessment report, which responds to the points requested in the terms of reference, including the concerns raised by local communities and other organizations in the area.

○ CLASSIFICATION OF IMPACTS

The table below provides a summary of the criteria used for impact assessment.

Criteria	Definition
Status: Nature of impact Positive Negative	<ul style="list-style-type: none"> • A beneficial environmental change. • An adverse environmental change
Extension: Area affected by impact	
Local Sub-regional Nacional Internacional	<ul style="list-style-type: none"> • The proposed area for construction. • The surrounding districts • The surrounding Provinces. Mozambique. • Neighbouring country(ies).
Duration: Period during which the impacts will be felt	
Short term In the medium term Long term Permanent	<ul style="list-style-type: none"> • For a period of 6 months. • From 6 months to 2 years. • Throughout the life of the project. Permanent - residual impacts.
Intensity: Severity of the impact on-site	
Low Average High	<ul style="list-style-type: none"> • Impact of low gravity - minor effects. • Medium gravity - greater effects. High gravity impacts.
Probability: Description of probability of occurrence of impact:	
Definitive Highly probable Likely Unlikely	<ul style="list-style-type: none"> • Definitive. • Very likely. • A different possibility. The occurrence is not likely.

Criteria	Definition
Meaningfulness:	
None / low significance	<ul style="list-style-type: none"> No further investigation, or mitigation management is required. Requires mitigation and management to reduce impacts to acceptable levels (if they are negative). It must influence a decision on the project if the impact cannot be mitigated or managed.
Moderate Significance	
High significance	

Table 3: Summary of the criteria used for the assessment of impacts

○ AREA OF INFLUENCE OF THE PROJECT

The area of influence of the project was defined based on the ESIA guidelines and confirmed during the reconnaissance visit and initial consultations. This was divided into two areas:

- **Direct impact area:** Resetting range between 5 and 10 m from the road axis depending on the road level. This dimension was defined with the proponent and the project team, analyzing the ecological conditions of the area;
- **Indirect impact area:** Within a radius of 15 km on either side of the road axis. In this area are the quarries and borrow pit and most of the communities that will directly benefit from the Quelimane - Nicoadala - Namacurra road improvement.

• DESCRIPTION OF THE REAL STATUS OF THE AREA

Based on the information available on the results of the field surveys, a description is made of the social and environmental conditions of the area that is the subject of construction activities.

At the bibliographical level, vegetation maps, topographic and geological / soil were analyzed in the scale of 1: 50,000 and 1: 250,000.

○ **BIOPHYSICAL ENVIRONMENT**

Geology and Soil

The Zambézia Province is characterized by granitic-gneissic complexes, which belong to the belt of Mozambique, in all its extension. The geochronology of the predominant soils for coastal zones are Holocene alluvium and Holocene sand dunes. In the interior zones, the characteristic geology of the predominant soils is the sediments of *mananga* in layers smaller than 20 m and hard sodic deposits of the Pleistocene.

Overall, the soils of the Province, especially in the area of project implementation, are characterized by clayey alluvial soils, red soils, coastal dune soils, and estuarine marine sediment soils with loamy sandy texture, with a higher risk of erosion as shown in Figures 4.1 and 4.2 below.

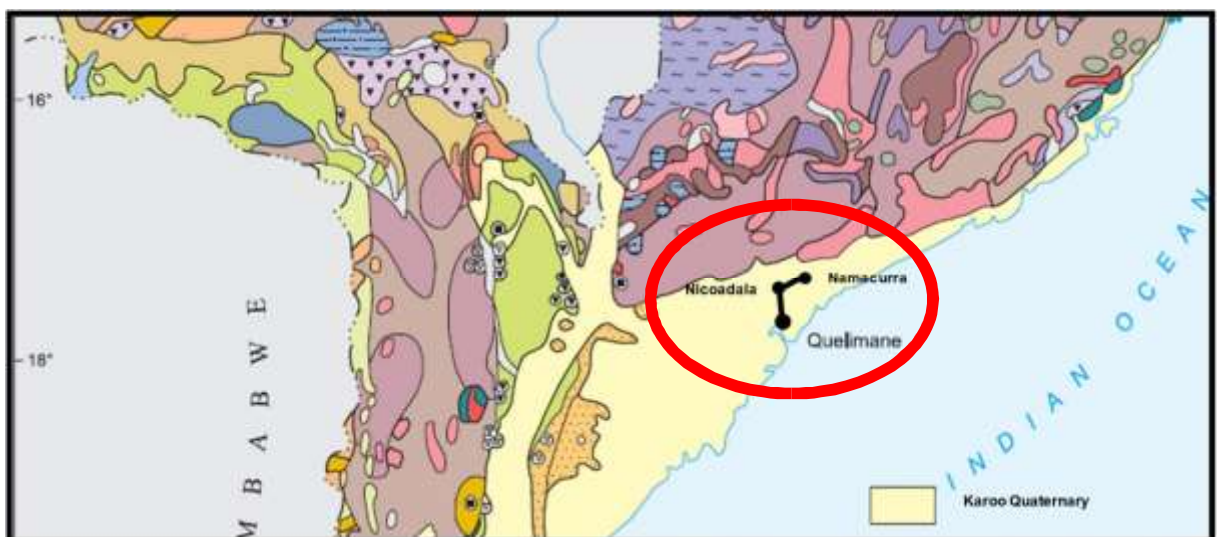


Figure 7 Geology in the Project area

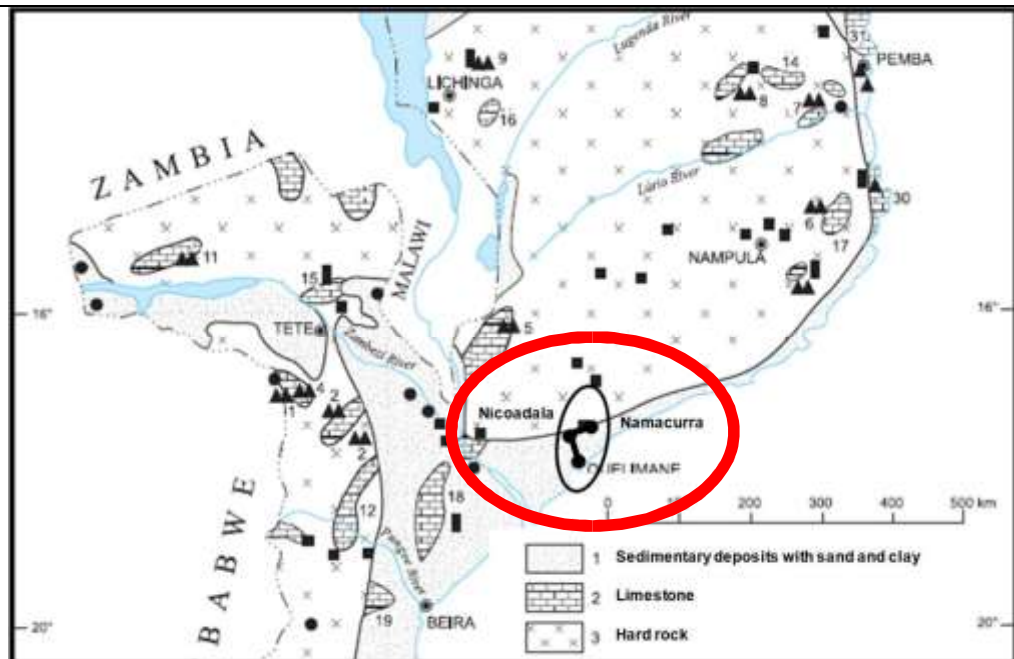


Figure 8 Predominant Sites in the Project Area

Climate

The climate of the region is tropical semi-humid (Aw), as a result of the influence of the warm airstream of the Mozambique Channel. In the high zones of the interior of Zambézia, the tropical climate of altitude predominates. The tropical character is guaranteed by the existence of two clearly differentiated seasons: rainy and dry. The rainy season lasts approximately 7 months, starting in November, ending in May. The dry season is short and runs from June to November.

The average precipitation is 1 240 mm year (in the period 2003 - 2012), with thermal amplitudes between 16 ° C (minimum) and 30.4 ° C (maximum).

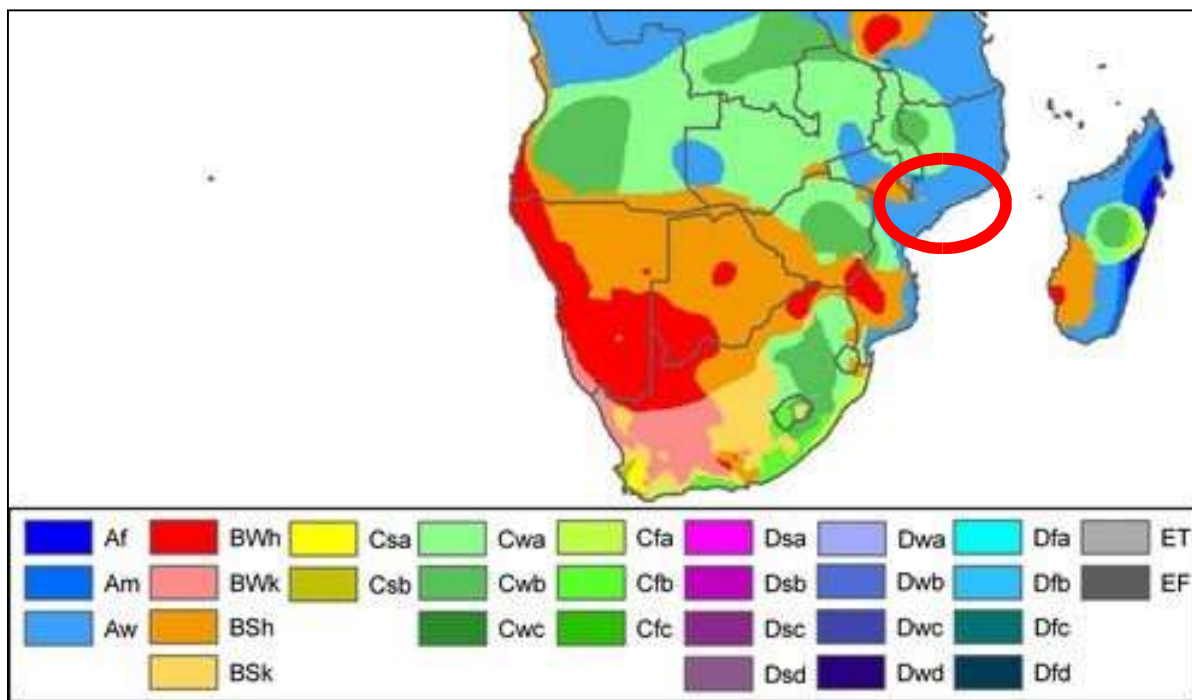


Figure 9: Climate in the Project area according to the Koppen classification

The monthly and total precipitation data for the period 2003 to 2012 obtained from the Directorate of the National Institute of Meteorology in Zambézia Province are presented in tables 4.1 and 4.2 below. The tables also indicate the number of days in each month that precipitation exceeded 10 mm ("D> 10").

YEAR	JAN		FEB		MAR		APR		MAY		JUN		JUL		AUG		SEP		OCT		NOV		DEC	
	Qty	D>10	Qty	D>10	Qty	D>10	Qty	D>10	Qty	D>10	Qty	D>10	Qty	D>10	Qty	D>10	Qty	D>10	Qty	D>10	Qty	D>10	Qty	D>10
2003	387.3	10	256.0	8	326.7	5	71.2	3	38.6	0	94.2	2	50.9	2	14.6	0	12.6	0	0.3	0	35.0	1	86.4	2
2004	138.1	4	289.9	6	101.7	3	256.1	8	155.2	4	137.9	4	34.3	1	9.5	0	42.1	1	4.7	0	59.5	2	129.1	4
2005	145.3	8	205.1	4	300.7	5	53.6	2	62.9	1	34.0	0	38.1	0	2.3	0	20.4	0	2.9	0	1.8	0	264.0	5
2006	165.1	4	81.7	5	194.9	5	132.7	4	103.2	6	62.7	2	7.8	0	1.0	0	34.5	1	14.7	1	91.3	4	141.9	5
2007	639.5	9	150.8	4	211.9	5	161.1	2	77.6	2	24.3	1	58.6	1	12.1	0	0.0	0	3.6	0	195.2	4	262.5	6
2008	249.1	5	144.9	6	170.0	7	27.2	0	39.4	2	33.0	1	18.6	0	34.6	1	4.9	0	0.3	0	2.6	0	216.1	4
2009	109.1	4	209.5	4	241.4	8	111.2	3	32.7	1	5.9	0	66.9	2	26.0	0	1.9	0	14.5	0	18.3	1	145.0	4
2010	85.9	3	174.2	4	105.4	4	88.6	4	44.5	1	127.5	2	70.6	0	17.5	0	0.8	0	1.5	0	32.6	1	219.6	4
2011	174.3	5	296.3	8	247.8	9	237.9	7	48.3	2	12.8	0	107.9	4	48.6	1	9.9	0	26.5	1	32.3	1	97.3	3
2012	618.7	13	131.1	2	272.1	6	121.5	3	12.6	0	60.4	2	5.7	0	0.5	0	1.2	0	12.0	0	95.1	1	146.7	4
AVG	271.2	6.5	194.0	5.1	217.3	5.7	126.1	3.6	61.5	1.9	59.3	1.4	45.9	1.0	16.7	0.2	12.8	0.2	8.1	0.2	56.4	1.5	170.9	4.1

Table 4: Average monthly rainfall in the period 2003 to 2012

YEAR	TOTAL	
	Qty	D>10
2003	1,373.8	33
2004	1,358.1	37
2005	1,131.1	25
2006	1,031.5	37
2007	1,797.2	34
2008	940.7	26
2009	982.4	27
2010	968.7	23
2011	1,339.9	41
2012	1,477.6	31
AVG	1,240.1	31.4

Table 5: Total average rainfall in the period 2003 to 2012

Hydrography

The Zambezia Province has a well-distributed system of river basins, being crossed by the country's largest basin, the Zambezi River. In the coastal zone of Nicoadala several streams. Along the way there are several tributaries of Bons Sinais River (Cuácu River).

The section between Quelimane and Nicoadala is characterized at hydrographic level by lowlying areas prone to flooding due to the high level of the water table and flat orography. The map below shows the water courses that cross the road between Nicoadala and Namacurra. Musselo River and the Namacurra River are among the main rivers.



Figure 10: Water courses in the Project area

The following table gives the rivers crossing the road per district. Most of these rivers crossing the road are tributaries of Cuacua and Namacurra rivers and The area between these two river systems is very flat with extensive grasslands and wetlands, but few trees. Part of the wetlands are used as rice paddies.

Table 6: Rivers crossing the project area

District	Description	Name Of the river ¹	Road Crossing point (bridge) KMs from start
Nicodala District	Population 241,659. About 112,370 are male. The main language spoken is Chuabo	1. Tomele	17.3
		2. Mucelo	26.8
	Between 26.8 km and 31 km the area is used as agricultural land (rice paddies)	Baixa de Mucelo	26.8-31.0
Namacurra district	Population of the district is about 253,348, being 123,348 males. The main language spoken is Chuabo	3. Nevide	37.1
		4. Elegue	40.9
		5. Elege	42.3
		6. Abado	45.2
		7. Mapala	64.7
		8. Namacurra	65.7
	9. Nadobe	67.6	

Flora

The Province of Zambézia has a rich diversity of flora and fauna. This province represents one of the greatest contributions to the country's economy, in terms of timber extraction. In the interior, there is a predominantly miombo forest (with a mosaic of species of several strata), the characteristic species being *Brachystegias* and *Jubernadias* (Saket, 1994). From the economic point of view, the species of umbila, chanfuta and, on a smaller scale, the mondzo are of particular importance. Figure 11 illustrates the location of forests in the Province.

Along the road under analysis, there was reconversion of previously forested areas to agricultural and housing areas, these being interspersed by marshy areas.

¹ Information From the Detailed Engineering Design for the Rehabilitation of Roads N1/N10 Between Quelimane, Nicoadala and Namacurra

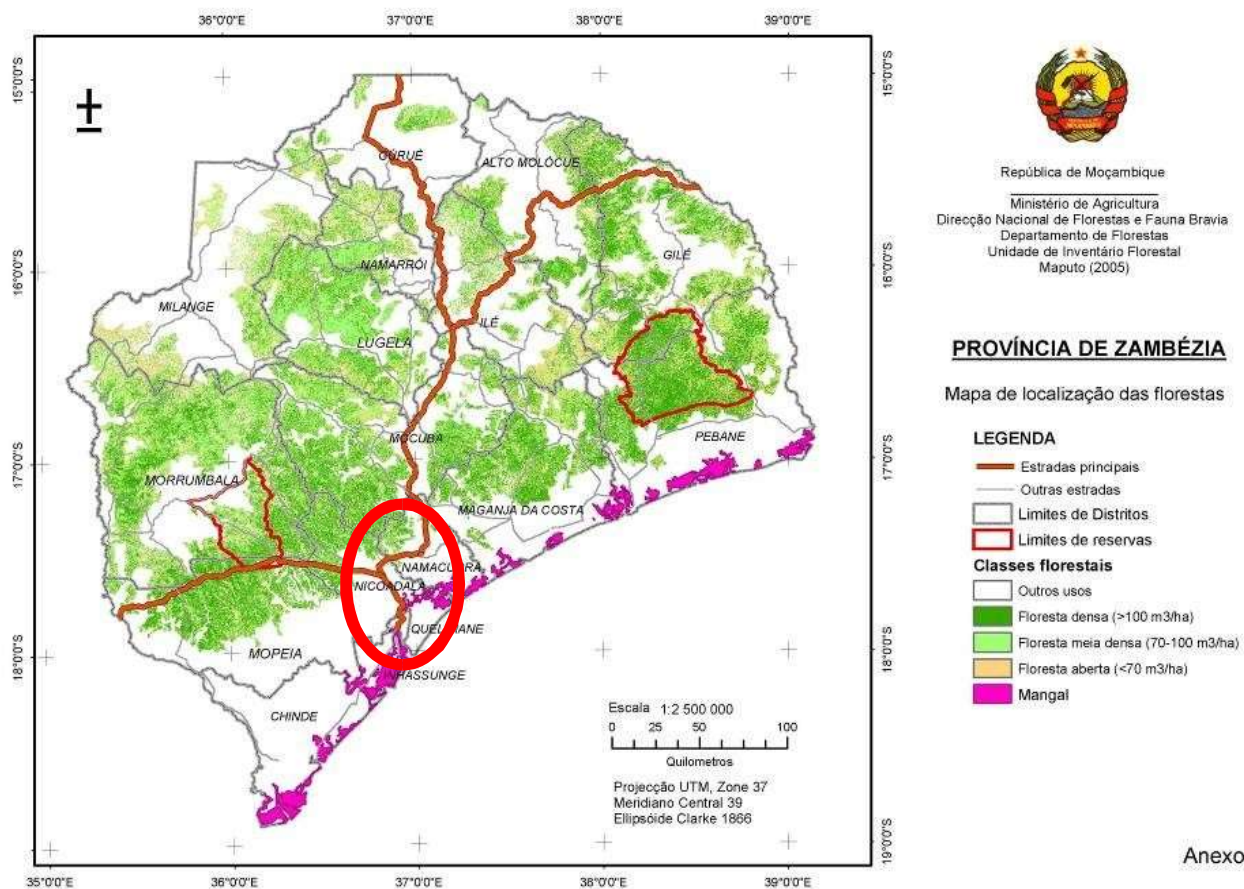


Figure 11: Zambezia Province: Location Map of Forests

Fauna

Mozambique is a country that shelters in its forests a great diversity of wild animals, from the small ones to the large ones. The miombo forests that characterize the Zambézia Province hosts a diversity of large faunal species (elephants, buffalos, hippopotamuses, among others), medium (ilande, zebras and ox horse) and small (antelopes, reptiles, rabbits). Although diversity remains, the amount of wildlife there is low due to the great pressure imposed during the 16 years of civil war and the illegal hunting to which the resources are exposed.

There are no records of significant or threatened species along the road under analysis.

Natural Reserves

Although rich in terrestrial and marine ecosystems, the Province of Zambézia has only two conservation areas: the Gilé Game Reserve and the Derre Forest Reserve. This last one was proclaimed with the aim of preserving the forest species,

especially the Tule, which was being threatened by uncontrolled logging. The Gilé reserve was proclaimed to protect the black rhino.

No conservation area was identified along the rehabilitation route.

○ SOCIOECONOMIC ENVIRONMENT

Population and Existing Communities

The Zambézia Province represents one of the most populous provinces in Mozambique, as shown in the table below.

Geographical area	Total population (1)	Density (2)	Male Population (3)	Female Population (4)
Zambézia Province	4,563,018	44.1	2,203,257	2,359,761
Quelimane City	230,461	1887.7	116,608	113,853
Namacurra	241,659	119.1	112,370	129,288
Nicoadala	253,348	74.7	123,348	130,000

Fonte: INE, Annual Projections of Total Population of the Province and Districts 2007-2040

Table 7: Demographic data Zambézia Province

The section of the road in rehabilitation begins in the municipality of Quelimane and crosses two districts: Nicoadala and Namacurra.

In the area of the project, there is a diversity of religions being practiced, with a greater incidence for the Muslim religion, representing more than 50% of the population of the zone.

At the community level, the traditional structure is led by “régulos” (tradicional leaders), who delegate to land leaders (zones) well defined tasks, which include the process of allocation of areas for good faith occupation in the area.

In the two districts, along the 68 km of the road to be rehabilitated, the predominant group is Chuabo-speaking.

Health and HIV / AIDS

In terms of infrastructure, the Province of Zambézia is not different from the majority of the country. According to INE (2010), the Zambezia Province has 143 health infrastructures, with a greater predominance of basic care units (health centres and health units).

The rate of HIV seropositivity has been increasing in recent years. According to INE 2007 data, the prevalence rate in Zambézia was estimated at 16.2%.

Education

Regarding education, the Zambézia Province has a school network that goes up to higher education (in Quelimane). Secondary education is located in the districts' headquarters. This structure of the school network has resulted in low admission of students to secondary education. The schooling rate is higher for males than for females.

Land Use

In the study area and in terms of land use, there is a mosaic that includes: agriculture, livestock production (albeit on a small scale), forestry and wildlife exploitation, fisheries, and land concessions in general. According to district profile data, agriculture is one of the most prevalent occupations. The type of occupation and access to land predominant in this area, is based on customary laws or occupation in good faith. Although in Mozambique, land and natural resources are owned by the State, the law recognizes customary rights of the community on the land.

Agriculture

The Province is rich in natural resources (flora, fauna, mineral resources and fisheries), contributing to its development

In the area under study, the most important economic activities are trade, production and sale of coal, inland fishing and agriculture. Agriculture is the dominant economic activity with about 70% of the total population involved in this activity. Subsistence agriculture is the main type, being practiced by the family sector with sizes varying from 0.5 to 1 ha. In riverside areas, the cultivation of rice and vegetables is commonly practiced, while in the higher areas maize and sorghum are grown. Family farming is dependent on rainfall and a low level of input use, which affects levels of productivity and production.

As far as income crops are concerned, communities practice the cultivating of cotton, sesame, and boer beans and forest plantations. The marketing of these products is guaranteed by the investors. For the farmer located in the innermost areas, commercialization has been an embarrassment to increase production levels and this is exacerbated by poor road conditions.

Gender-based Violence Risk Assessment

Gender-based violence, including sexual exploitation and abuse, is persistent and pervasive in Mozambique. The Gender Profile 2016 from the Ministry of Gender, Children and Social Protection (with data from the Demographic and Health Survey 2011) highlights the following data: one-third of 15-year-old adolescents surveyed said they were survivors of physical violence, 12 percent of women declared themselves survivors of sexual violence, and 46 percent said they were survivors of domestic, sexual, or emotional violence from their partners. Given the existence of stigma and underreporting, there is a likelihood that these numbers will be higher. Moreover, acceptance of gender-based violence is widespread, with 23 percent of women surveyed pointing to at least one reason that makes it acceptable for a husband to beat his wife.

This culture of violence increases women’s and girl’s vulnerability to the labor influx expected under the project. As established by the International Finance Corporation’s Handbook to Address Project Induced Migration, evidence shows that in-migration is associated with negative environmental, social, and economic impacts that often lead to deterioration in the social context in which the project’s host communities reside and the project is operating. Because they are far from home and need to socialize, influx populations may hasten the introduction and/or increased expression of vices such as prostitution, gambling, alcoholism, and drug use, which can have significant negative social impacts and consequences. The handbook also identifies risks related to a rise in the "four Ms": men, money, movement (influx), and mixing (that is, the interaction between high and low disease prevalence groups).

The described risks derived from the influx of workers resonates with the risks identified in the Environment and Social Impact Assessment. Cultural and social conflicts may arise when outside workers are in contact with locals of different cultural backgrounds. Conflicts may often be associated with increased consumption and availability of alcohol and drugs as well as a gender-based violence and child abuse and exploitation. Adequate effort should be made to maintain social harmony and cooperation among workers and local residents.

Component 2 investments will result in labor influx of around 100–150 skilled and non-local/international workers, and the absorption capacity will be relatively high; communities in Nicoalada, and Quelimane are large and semi-urbanized, which reduces the marginal impact of each worker on the population. Accordingly, and based on the Labor Influx Guidance Note, for Component 2, risks are rated as “medium”. Although Component 1 investments will be in remote and relatively sparsely populated areas with low absorptive capacity, the size of labor influx will be very low, namely around 50 skilled/non-local workers in the 10 districts in the two target provinces. Based on the Labor Influx Guidance Note, for Component 1, risk is rated as “low/medium”.

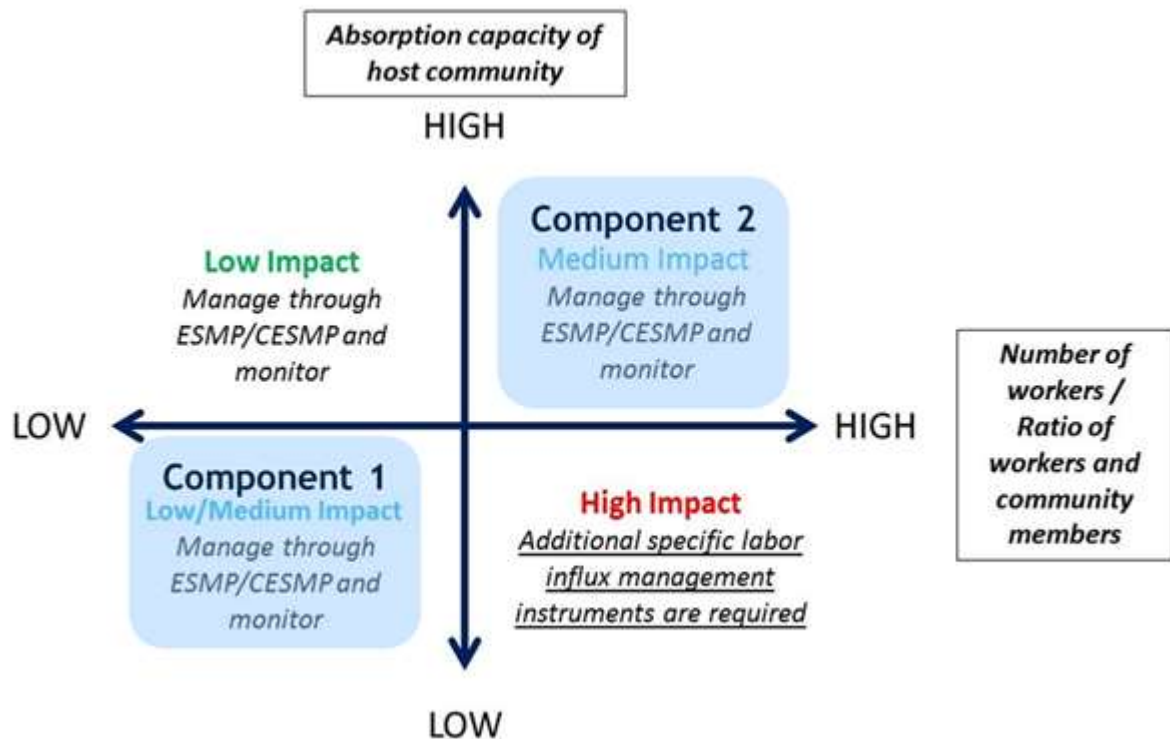


Figure 12: Project Risk Classification of Labor-Influx Impact

Regardless of the low influx of labor, the overall social risks are substantial. This is because of additional risks in the data from secondary sources that identify high rates of sexual exploitation and abuse/gender-based violence and approval attitudes towards violence in the community. It is also because of information from the initial Environment and Social Impact Assessment, which includes risks such as (a) increased exposure to sexually transmitted infection and HIV/AIDS leading to opportunistic diseases; (b) community health and safety; (c) increased prostitution; (e) road-related accidents during construction; (f) negative quality of life impacts in communities; (g) conflict with communities; and (h) crime.

ASSESSMENT OF IMPACTS AND MITIGATION MEASURES

○ BIOFÍSTIC IMPACTS

A. PROJECT PHASE

The elaboration of the Road Execution Project includes carrying out of the field research (materials, pavement status, survey of existing structures, etc.), topographic survey to define road alignment, preparation of drawings, determining the quantities and reporting. These activities do not have an impact on the biophysical environment.

B. CONSTRUCTION PHASE

TEMPORARY LOSS OF EARTH AND HABITATS

Potential impacts:

During the construction phase it is expected that there will be a need for land for the operations of the machinery along the road as well as for the establishment of camps and construction yard. Part of this land after construction may be back to its original use which will have a negative impact on the current users of this land.

There is no information on setting up of infrastructures, such as camps for temporary workers, residential areas, storage rooms (for storage of oils, lubricants, diesel, heavy vehicles, machinery, etc.) and construction yards due to the nature of the land between Quelimane and Nicoadala it is recommended that these be located between Nicoadala and Namacurra where the water table level is lower. In that section, there are at least two suitable areas. It has not been possible to indicate the number of sites required for the contractor's installation, although the cost efficiency point of view is recommended by a set of support infrastructures.

It is not expected that during construction detour will be built, but rather that the road be constructed in halves, with traffic conditioning. The 5 to 10m range will be used for vehicle maneuvers during the construction process.

Impact Rating:

Type: Negative

Probability: Probable

Extension: Local - Surrounding area

Duration: **Medium-term**

Intensity: **Medium**

Significance without mitigation: Moderate to high

Significance with mitigation: Moderate

Mitigation:

Sites for construction work should be carefully selected to reduce impacts on habitats. Camps, offices, and storage enclosures should be constructed in areas with minimal negative impacts. Whenever possible, the contractor should prioritize public lands and previously used areas to establish their camps and yards.

Infrastructure should not be built:

- (i) any area with intact vegetation;
- (ii) in areas of special sensitivity (areas of cultural heritage, riverine areas and intact forests);
- (iii) in areas less than 100 meters from a watercourse or in marshy areas (Quelimane/Nicoadala case);
- (iv) areas close to local communities.

It is recommended that sites used temporarily be recovered. In the case of camps, structures erected by the contractor must be dismantled and removed, but wherever possible, camps may be donated to local administrative institutions for future use.

In case of previously occupied areas, once the area cleared of all material, the land must be rehabilitated and returned to its owners.

In case of temporary use, a resettlement plan should be implemented in order to ensure that the PAs are properly compensated and guarantee the means of survival.

WATER RESOURCES

Potential Impacts:

Rivers, lakes and groundwater are important sources of water for community use throughout the project (for drinking, washing, and other uses). There are several sources throughout the project, so water quality preservation plays a key role in the public health of adjacent communities.

The presence, storage, and use of chemicals and fuels near sources of water may result in localized contamination and decreased water quality. Pollution could have a negative impact on those who depend on these resources. In cases of fuel spills, the effect for groundwater may be long term and with serious consequences for water quality.

In addition, increased pollution at campsites or work areas is anticipated as a result of inadequate sanitary facilities and garbage collection, accidental or deliberate spills of polluting materials (asphalt, fuel, etc.). Ensuring water quality in the area is in the interest of contractors.

During the construction phase of the road, substantial quantities of water will be required for the various construction operations, such as adjusting the moisture content of the base and subbase, building the base and sub-base of the road, watering for dust reduction and also to the camps and to the workers. It is likely that some contractor's water needs will be guaranteed by these water sources. During the dry season, much of the rivers that cross the road dry or reduce flow rates and under these conditions any withdrawal of water by the contractor may reduce the availability of water for downstream uses. Due to this contractor's need for water, the impact is expected to be significant and affect local communities.

Impact Rating:

Type: negative

Probability: Probable

Extension: Located

Duration: Long-term

Intensity: Average

Significance without mitigation: Moderate to high

Significance with mitigation: Moderate

Mitigation:

Every effort should be made to avoid pollution of water resources, wherever possible, or to minimize its effects.

Measures must be taken to ensure that all activities involving the transfer, storage of chemicals with potential for contamination are confined to properly identified

areas. The landfill and access areas must be properly sealed, having sufficient drainage to safely remove any potential contaminants.

The white and black waters of the camps should be collected for septic tanks.

Pollution of water sources is directly related to the storage, transportation, management and proper disposal of hazardous and non-hazardous waste in residential shipyards, storage and campgrounds.

Mitigation measures for household and hazardous waste as described in the following sections and in the ESMP should be adopted.

The contractor shall, whenever possible, ensure a proper water supply system for its workers and camps.

AIR QUALITY

Potential impacts:

The quality of air in the project area can be considered good, as it is not in a industrial zone or a zone with noise business. Exception on the informal market at the starting point (in Quelimane) and Nicoadala informal market. In these specific area music and barracas selling alcohol area the main sources. While the majority of the project traverses rural areas, with the project implementation is expected that the air quality deteriorate even with areas that are not polluted. The main source of pollution are dust, odours and noise this will impact on communities along the entire route.

During construction, air pollution levels are expected to increase as a result of increased levels of dust, noise, and carbon dioxide (CO₂) emissions. On the basis of the figures collected, it was concluded that on average about 1182 vehicles / day (in the section Quelimane - Nicoadala) and 650 vehicles / day (in the Nicoadala - Namacurra section) circulate between light and heavy vehicles, with the magnitude of noise Acceptable range for humans, evaluated at 80-85 dB (A) at a distance of about 50 m from the centre of the roadway.

During construction, noise levels are expected to be much higher than normal in certain areas, such as: cement mixing yards, the use of explosives for quarrying, equipment movement, etc.

It is also expected that dust levels will increase during construction and will be reduced to a minimum in the operating phase. The main sources are the movement

of equipment in the roadway under construction during the formation phase of the base and base, the diversions and the access roads, which are usually made on compacted earth, at the landing sites.

Heavy vehicles and the presence of work equipment in the area during construction will increase carbon emissions, but this will not have a significant effect globally.

Impact Rating:

Type: negative

Probability: Probable

Extension: Located

Duration: Short-term

Intensity: Average

Significance without mitigation: low to Moderate

Significance with mitigation: low

Mitigation:

The management plan to reduce the impact on air quality includes:

- Construct and maintain deviations and regularly or whenever necessary, moisten the area;
- Use some materials to mix with water for soil wetting;
- Adoption of good construction and management practices for the operations in the borrow pits of borrow pits, storage of thin plots of stone (sandstone), sand and soil;
- Barriers to break noise should be created in schools where there are a considerable number of students. These barriers will reduce the impact of the work;
- Build threads to reduce speed near schools and hospitals to avoid high speeds that could raise dust in temporary unpaved roads.

It should always be possible to establish and operate quarries located more than 500 m from the communities in order to minimize the impact of noise, dust and vibration. If that is not possible, in case of communities located within 500 m of the quarries, they must be relocated. Whenever it's possible should avoid performing any overnight work and any quarrying activity (use of explosives) should be reported in the local authorities in order to reporting in the communities.

Preventive and protective measures should be ensured for workers on front lines with many vibrations and noises (gloves, boots, masks, ear protectors, etc.).

MANAGEMENT OF SEMI-DANGEROUS AND DANGEROUS WASTE

Potential impacts:

The presence and operation of machinery along the road represents a potential for pollution due to the spillage of oils and lubricants as well as fuel.

In addition, solid waste is expected to be produced on various fronts, as well as in camps and construction yards. These materials consist of building materials, concrete and cement remnants, packaging and household waste. These products may contaminate the soil, surface / groundwater and air quality.

For hazardous products such as chemicals (asphalt / bitumen), fuels, oils and lubricants, oil filters, tires and other materials related to the operation and maintenance of vehicles, their bad packaging or spillage can contaminate if mitigation measures are not taken.

These potential contaminations can have impacts on the quality of water, which ultimately will affect the surrounding population, which uses groundwater and surface water for their daily needs.

Impact Rating:

Type: Negative

Probability: Probable

Extension: Surrounding area

Duration: Medium-term

Intensity: Average

Significance without mitigation: Moderate to high

Significance with mitigation: Moderate

Mitigation:

The contractor shall submit a program for the management of hazardous and semi-hazardous substances, subject to inspection approval, which shall include, among others, the following aspects:

- Plan of collection and deposition of the residues in the construction sites, warehouses and encampments of the workers;
- Waste produced should not be burned, buried or abandoned indiscriminately.
- There should be a team responsible for maintaining on-site cleaning and collecting all the solid waste produced by the workers involved in the project.

Solid wastes should be disposed in temporary landfills. These should be opened according to the following recommendations:

- The surface soil should be assembled in a separate area, free from any contamination, to be used later in the closure and rehabilitation of the trash.
- Landfills should be located more than 50 meters from residential areas and drainage areas, with a depth not exceeding 2 meters. Packaging made from biodegradable materials (such as paper, paperboard, wood) should be disposed of in trash cans.
- Concrete and cement residues that cannot be used (e.g. sidewalks, septic tanks, drainage lines, etc.) should be broken into small pieces and stored in appropriate disposal locations.
- The contractor must have an environmental education program for the workers which should include the following aspects:
 - Non-pollution of the environment;
 - Waste management procedures;
 - Penalties for pollution of the environment.
- All wastewater from domestic use should be treated in septic tanks, properly sized according to the number of workers involved in the project, before being released into the surrounding environment.
- The location of septic tanks should be carefully planned and should never be situated less than 50 meters from any well or other source of drinking water.

The place of final disposal of the waste must be defined in accordance with the indications given by the relevant provincial authorities.

In the case of semi-hazardous and hazardous waste the following mitigation actions should be implemented:

- Pollutants such as fuel, lubricants, asphalt, cement and others should be used with special care in order to avoid spills and be stored in properly marked areas and built on cemented and impermeable bays to contain possible spills.
- All workers involved in the use of these materials should receive appropriate instruction and protective equipment (such as gloves, masks, uniforms, etc.).
- The landfill and all access areas must be properly sealed, with sufficient drainage to safely remove any potential contaminants.

The following precautions are recommended in storage and handling of fuels and lubricants, and asphalt to avoid possible spills:

- Fixed fuel deposits must not be located in any area outside those approved for the execution of the work and for the construction of the camps.
- Fuel tanks with a capacity of more than 1000 litres should be located on a flat or slightly sloping ground. There should be a walk around the area of the deposits. The walkway and floor of the tanks area must be made of waterproof material or be coated to ensure that the petroleum products can not escape.

- All areas of the fixed tanks must be insulated by a safety seal, with a lockable door. Symbolic signs with indications such as 'no smoking', 'no smoking' and 'danger' should be affixed to a recognized standard. The use of local languages, besides Portuguese, is advised.
- Have fire extinguishers installed at all locations with flammable material and ensure their maintenance during the period of the work, as well as train the workers in their use.
- The fuel yard and the maintenance or refuelling of vehicles or equipment should be conducted at a distance of not less than 50 meters from any living area, watercourse, or where there is potential for fuel spills to contaminate the groundwater course.
- The fixed fuel tank should always be located within the limits of the camp.
- Maintenance of vehicles and machinery must be carried out regularly to prevent spills during operation. Maintenance should only be done at camp workshops. Maintenance should not be allowed outside designated areas.
- If it is not possible to take the vehicle to the camp workshop, maintenance may be permitted provided that the following recommendations are met:
 - Cover the floor under the machinery with a plastic sheet to catch any spill;
 - Avoid any oil or fuel spills to the ground or river;
 - In case the soil has been contaminated, it must be immediately removed and treated in the main camp;
 - Spill cleaning and collection procedures should be followed;
 - Contaminated soil should be treated (e.g., biodegradation of soil contaminated with bacteria);
 - Clean and rehabilitate areas affected or contaminated with oils, fuels or other hazardous or semi-hazardous materials.

- Used oil should be stored in sealed drums and should not be mixed with other substances such as gasoline, solvents and antifreeze. The used oil can be returned to the supplier for further recycling. However, the contractor can supply the used oil to the local population, if it so requests.
- Packaging or drums containing toxic products, such as fuels or lubricants or lubricants, must be returned to the distributors of these products.

- Used tires must be returned to the retreaders.
- Packaging or drums that had no toxic products could be offered to the local population to be used as water tanks.

FLORA, FAUNA AND PROTECTED AREAS

Potential impacts:

The road crosses an area with low forest potential, with some areas between Nicoadala and Namacurra with highly degraded and recovering forests. In relation to the fauna, in this type of forest inhabit species of small size.

With the project's activities, this resource may be at risk due to the need for land to open borrow pit and / or quarrying, the need for wood material and the intensification of coal production to supply the camps, as well as the potential for forest fires. In the case of fauna, due to the need for animal protein, construction work may lead to intensification of illegal slaughters with the consequences that ensue.

Impact Rating:

Type: Negative

Probability: Probable

Extension: Localized

Duration: Short-term

Intensity: Average

Significance without mitigation: Low to Moderate

Significance with mitigation: Low

Mitigation:

The contractor must ensure the supply of domestic fuel to workers in order to reduce pressure on forest resources.

Any clearing of a particular area is subject to a declaration of method and prior approval by the prosecutor. The declaration of method should include the predominant species and the identification of species of high economic value. In case of need to open forest areas, the appropriate authorizations from the competent institutions (SDAE and DPA/SPFF) must be obtained.

Workers should not be allowed to light fire or smoke near forest areas.

Uncontrolled fires should be prevented through awareness campaigns.

BORROW PIT AND QUARRIES

During the road construction phase, large amounts of material from borrow pit and quarries will be required for the preparation of the sub-base and base for paving the track.

At present, existing borrow pit and quarry areas with potential for use have been identified according to the figure below:

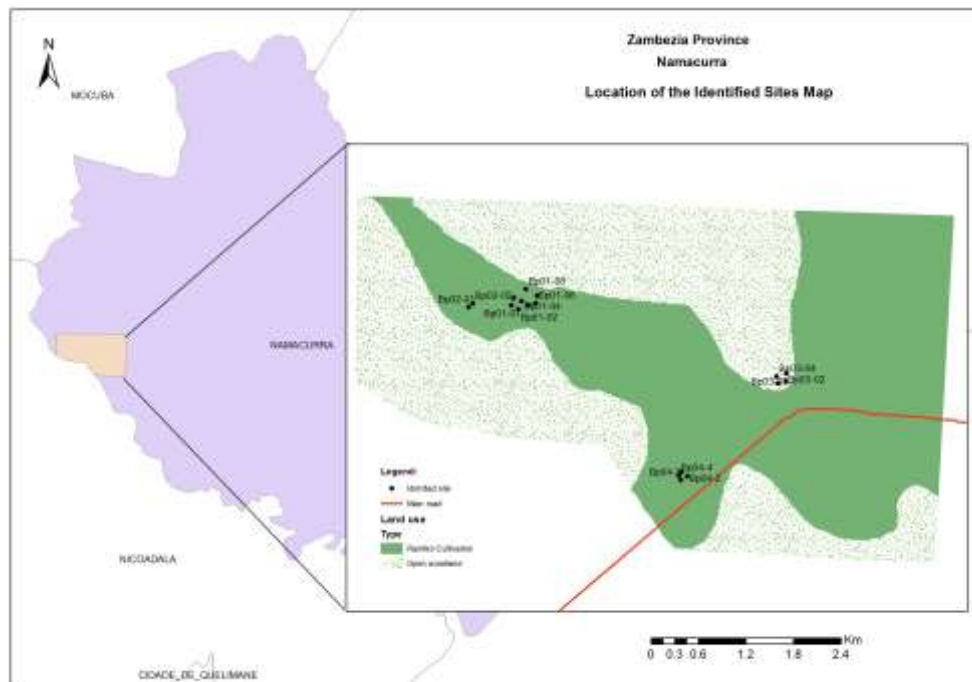


Figure 13: Location of Borrow pits

Identified borrow pits are located mainly in agricultural land that use to be in production or in woodland, as well as highly degraded vegetation areas. Therefore, a land will have to be expropriated from their previous land owners and the aesthetic beauty will be affected.

For stone there is two area operating to the North between Namacurra and Mocuba and another one in the south between Mopeia and Chimuarua. Is not expected that the contractor open new quarry areas. However, the contractor shall open a new borrow pits potential, the expected impacts will be:

Table

- Destruction of vegetation;
- Loss of income, because of lost production and the exclusion of land from production; • Dust and noise;
- Potential for pollution of water resources;

- Increased soil erosion;
- Loss of landscape aesthetics.

Impact Rating:

Type: negative

Probability: High

Extension: Located

Duration: Medium-term

Intensity: High

Significance without mitigation: Moderate to high

Significance with mitigation: Moderate

Mitigation measures:

When the new lending areas are explored, it is necessary that:

- Remove and store surface soil, rich in organic matter, in a flat and stable area. The depth of the stored surface soil and the storage sites will be defined based on the quality of required material, but the 10 to 20 cm layer of soil should be considered;
- Where feasible, excavation of the lending area should avoid reaching the groundwater table and in cases of identifying an underground water source it should be protected and improved for future water uses by the communities;
- Drainage and erosion associated with each lending operation should be controlled to minimize disruption of the land and future accidents to communities;
- Circulation of equipment will be restricted to a 30-meter work area at the entrance to the lending area and to the excavation area during the opening of the area to avoid unnecessary disturbance of the heaps of soil and the surrounding forested areas;
- Slope slopes of the borrow pit should be 2: 1 or less to minimize susceptibility to erosion;

Restoration and rehabilitation

- Landfills should be levelled, slopes reduced to 25% and surface soil replenished and spread over landfill;
- Root material and removed vegetation should be spread over the topsoil to promote natural re-vegetation;
- Where practicable, future potential uses of the borrow pits should be accommodated, for example transformation of some borrow pits into dams.

Before the start of activities, it is important that the preparatory phase include the following:

Planning

- The contractor should obtain the authorization from the competent authorities of DIPREME. In case of areas occupied by community or private property, it is necessary to obtain the authorization from the landowners before the opening of the borrow pit. Authorization will identify the future land use, required by landowner for area which will be used as borrow pit;
- The contractor should develop specific plans for each area to optimize material extraction, minimize disturbances and facilitate rehabilitation. These specific plans for each area will be used by the contractors during the planning of the operation. Operation and final rehabilitation should clearly indicate the location and delimitation of the borrow pit, among other data that may be required by the inspection.

Location of borrow pit areas

Whenever possible, use existing borrow pit and access areas.

Where practicable, borrow pit areas should be located high up and away from water lines and streams and ponds by a buffer strip with a width of 200 meters of undisturbed soil in order to minimize silting.

In identifying areas as possible borrow pit areas, the following aspects should be considered:

- Current land use;
- Land use in the vicinity;
- The natural vegetation;
- The depth and quality of available surface soil;
- The estimated depth of the water table.

Access roads

Borrow pit areas should be adjacent to those of the activities to reduce long trips

It should always be possible to avoid opening new access roads to the borrow pit areas.

In case of need to open access roads, the contractor must submit to the approval of the appointed supervisor.

CAMPING CONSTRUCTION

Potential Impacts:

In order to house the workers, install administrative services, store materials, park, maintain and protect equipment, the contractor will have to build camps, mixing plants, offices, laboratories,

etc., which will require land. These lands should be located within the perimeter of indirect impact areas.

Being an inhabited area there is possibility for the identified areas to have previous occupations.

Camps during their operation will require large quantities of water for domestic purposes (kitchen, laundry, bathrooms, etc.).

Any lack of adequate sanitation and sanitation facilities at campsites and work front lines may have direct negative impacts on land, soil and groundwater, as well as the health of workers and neighboring communities.

Impact Rating:

Type: Negative

Probability: likely

Extension: Surrounding area

Duration: Medium-term

Intensity: Medium

Significance without mitigation: Moderate to high

Significance with mitigation: Moderate to low

Mitigation:

Construction sites should be carefully selected to minimize interference with land and habitats. Camps, offices, and storage facilities should be constructed in areas that minimize the potential for adverse ecological impacts, thus should avoid the following areas:

- Any area with intact vegetation;
- Areas of special sensitivity (wetlands, riparian areas, and intact forests);
- Less than 100 meters from any water course;
- Obtain the necessary permits and consents from the local authorities and / or owner of the area concerned;
- Special provisions for workers' camps with specifications, drawings and required quantities (BOQ) must be implemented;
- Although it is the contractor's decision, it is recommended that whenever possible the camps be handed over to the administrative or community authorities for future use.

The Contractor must provide mobile latrines, in an adequate number on all work fronts and ensure they are properly functioning throughout the duration of the project.

CONSTRUCTION PHASE AND OPERATION

LANDS, TRAINING AND EROSION OF SOILS

Potential impacts:

During the construction phase, the contractor will need areas to accommodate his workers and equipment, building his camps and yards there. Between Quelimane and Nicoadala the availability of suitable areas (non-marshy areas) is scarce, however after Nicoadala at least two suitable sites can be identified for that purpose.

The work of cleaning, levelling and compaction of necessary soils requires preparation of the chosen areas for the construction of the camps and shipyards, can reduce the infiltration capacity of surface water and cause erosion.

In the borrow pit areas used to obtain the soils and aggregates required for the works, there is potential of disfiguring the landscape in sensitive areas and land collapse, as well as increased soil erosion due to extraction and removal of the materials from their original location.

The extraction and transportation of necessary materials for the work requires the movement of heavy machinery, which can result in situations of soil compaction observed along the accesses to the borrow pit areas, contributing to the erosion and waterproofing of soils by surface runoff.

Erosion problems can also be observed on the slopes/slopes of bridges and on roads with higher board due to run-off. In addition to erosion, spills of polluting materials such as bitumen, oils and fuels can pollute the soil and render it inert.

Impact Rating:

Type: Negative

Probability: Likely

Extension: Located

Duration: Long-term

Intensity: Medium

Significance without mitigation: low to Moderate

Significance with mitigation: Low

Mitigation:

The contractor shall, in collaboration with local communities and district authorities, request the areas for establishment of campsites and construction yards. It should, whenever possible, occupy free and degraded areas. In the case of areas of the communities and with occupations, it is necessary to guarantee the payment of fair compensation, according to the implementation of the RAP.

The contractor shall restrict the use of heavy machinery to the dry period. In the months of December and January, the use of machines must be conditioned according to rainfall, in order to reduce soil damage.

In order to reduce the impact of hazardous product spills, these must be stored and handled at a considerable distance from residential areas and tanks should be made or placed on a waterproofed base above ground level.

The construction of a drainage system is an integral part of the project to reduce erosion. The drainage system will also contribute to improving public health by reducing habitat for disease vectors such as malaria, which is a problem in the project area.

In areas of great slope, stabilization of slopes should be ensured by planting plants, for example vetiver grass. Engineering solutions such as the establishment of gabions should be used wherever it is deemed essential, particularly along bridges.

Maintenance work during the operation phase should ensure the cleaning of drainage systems and the implementation of additional erosion protection measures when and where necessary.

For quarrying areas and borrow pit, erosion prevention rules are described in section 5.1.6 of this report and in the PGA.

D. OPERATING PHASE

Possible impacts on the biophysical environment during the operation phase are related to road maintenance activities.

The impacts of road maintenance activities depend on the magnitude of the work. Routine maintenance makes use of labour intensive (cutting of grass, cleaning of aqueducts and ditches) and light equipment, necessary for the capping of holes, replacement of signs, sealing of cracks, etc. Periodic maintenance operations involve the use of machinery and heavy equipment and may have similar impacts to construction activities, but in this case, there must also be blockages in the traffic causing delays as no deviations are generally built. The impacts generated by the maintenance activities are therefore similar to some that do occur during the construction phase. Maintenance contracts, routine or periodic, will define the procedures and the mitigation measures to be implemented by the respective contractors during the maintenance activities, according to ANE.

○ **SOCIOECONOMIC IMPACTS**

A. PROJECT PHASE

The fieldwork required to prepare the Road Execution Project includes fieldwork, which requires field assistants to assist in collecting samples, transporting materials, samples and equipment, taking measurements, securing sights, etc.

Hiring of such helpers from communities along the road, as well as car rental in the project area, use of accommodation and purchase of food, contribute to the local economy and the improvement of the living conditions of the population.

Thus, although temporarily and on a small scale, as activities related to the realization of the road rehabilitation project have a positive impact, on Employment and Local Economy, which are addressed in sections 5.2.2 and 5.2.5 of this report, respectively.

B. CONSTRUCTION PHASE

HEALTH AND PUBLIC SAFETY

Potential Impacts:

With road construction activities, the level of dust is expected to rise above the current levels in the area. This level may increase the potential for lung diseases to occur among the employees, as well as in communities along the route, with a higher potential for children (students) in schools located in the direct impact area and in hospitals (e.g. in the village of Nicoadala).

In addition to this, there is a strong likelihood of increased circulation of financial resources, which may stimulate the emergence of prostitution outbreaks with a potential increase in levels of HIV and STD infection due to the practice of unprotected casual sex and by contact with groups with high-risk, that are outside their households for long periods. The districts of Nicoadala and Namacurra are among those with the highest prevalence rate in the Province. This phenomenon could be even greater if the camps are located in the communities or if the workers have to provide their own housing in the communities.

During project implementation, the contractor will employ workers from various areas with attitudes and values that may conflict with the values of local communities. Although the project does not intend to interfere negatively with communities, the existence of workers with money and with different cultural values may have impacts on cultural and social cohesion and be the focus of conflicts.

With this potential risk to the health of populations and employees, there may be greater pressure on hospitals and health centres in the region. During the road construction phase the demand for health services is expected to grow partly due to:

- (I) Presence of the contractor's workforce,
- (ii) Increased exposure and infection of HIV/AIDS leading to an increase in opportunistic diseases,
- (iii) Increase of accidents in the work areas during construction;
- (iv) Increased exposure to dust from residents during construction.

In order to reduce the pressure on existing health infrastructures, the contractor should create the minimum conditions of primary care for his labour.

From the safety point of view, the existence of employees from other regions and with financial availability can increase behaviours and crimes, i.e. GBV, robberies, and excess consumption of alcoholic beverages.

Impact Rating:

Type: Negative

Probability: Likely

Extension: Located

Duration: Medium-term

Intensity: Medium

Significance without mitigation: low to Moderate

Significance with mitigation: Low

Mitigation:

- The contractor must establish a first-aid unit that is properly equipped and able to carry out certain diagnoses with a full-time paramedical technician.
- Medical facilities provided for the contractors for own use should, whenever possible, be made available in emergency situations to local communities at a symbolic cost, as a gesture of goodwill.
- To implement a program for the control and prevention of HIV/AIDS for employees and for surrounding communities. This program should be designed by a specialized provider on this matter and who has previously been approved and who has an insertion in the communities. The strategy to combat HIV/AIDS should be implemented in accordance with the CNCS guidelines for communication and should be targeted at the most vulnerable groups, including women and girls.
- The program should consider the following actions: ○ Regular distribution of free condoms to workers throughout the duration of the project;

- Seminars and awareness campaigns on HIV/AIDS and other diseases caused by poor sanitation of the environment;
 - The Voluntary Testing Program;
- The contractor should sensitize the workers in respect to the local customs and values of surrounding communities.
- Establish a liaison committee between the community and the contractor, with the involvement of the prosecutor in order to minimize the emergence of conflicts and expedite the resolution of conflicts between workers and communities.

EMPLOYMENT

Potential Impacts:

The project is expected to employ an estimated workforce of 200 people between skilled and unskilled workers. The contractor's needs for unskilled labour may range from 30% to 40% of the total labour force. Skilled and semi-skilled workers are likely to be recruited outside the project, therefore bringing into the area a considerable influx of workers as a result of the shortage of suitably skilled and experienced construction workers in the area. The influx of workers may have detrimental impacts on the existing communities or on their relation with labour contracted locally.

100% of the unskilled workers requirement will be recruited locally, which will result in a positive impact on the creation of full-time jobs in a 2-year contract. The benefits of employment can be extended to more families than the number of full-time jobs.

Construction activities are normally considered male activities. In several cases women are not given the same opportunities and treatment as the male workers. Women capacity is neglected and most of the decisions taken are gender biased.

In some cases the contractor employs children for specific "minor workers" to avoid responsibilities, and therefore violating children's rights and labour regulation. Due to the HIV/AIDS impacts in the country some households are headed by children or elder people, for these vulnerable families a specific attention for their employment will be given.

The contractor shall promote/adopt a Code of Conduct for the and put in place GBV and CAE protection mechanisms to prevent and deal with situations of abuse and of labour and sexual exploitation and to follow any disclaimers on breaches of the Code of Conduct. Contractor, must include in the working contract with its staff a Child Protection Code of Conduct that protects children.

The benefits of employment can be extended to more families than the number of full-time jobs.

Impact Rating:

Type: Positive

Probability: Likely

Extension: Located

Duration: Medium-term

Intensity: Medium

Significance without mitigation: low to Moderate

Significance with mitigation: Moderate

Potential:

The contractor shall design, implement and disseminate an effective labour contracting program with the following elements:

- (i) Estimated number of jobs per location (District?, Administrative Post, Locality);
- (ii) Types of contractors offered (temporary/permanent),
- (iii) Hiring rules (applications, people involved and decision-makers);
Termination of employment contract.

Although the decision on who to hire falls on the contractor, it is recommended that should balance up with local needs of the municipality of Quelimane, District of Nicoadala and Namacurra.

Mutual respect and fair treatment between those working on the project and local communities is critical to a safe, respectful, and productive workplace and operating environment. GBV and VAC can be one of the most serious violations of respect and fair treatment which can harm the local community, and significantly damage trust and cooperation between parties. No disparity contract between women and man for the same job description will be accepted;

The contractor is forbidden by the law to contract people below 18 years old, in an case that the contractor is obligated to contract children shall be at least 15 year old and shall seek approval from the engineer;

The Contractor shall engage (besides his technical staff) as much labor as possible from the area where the works are being performed and 100% of unskilled labor as to be local. The contractor shall give the same opportunities to both women and man. Based on ANE regulation at least 25% of the work force must be women. Use of child work force is prohibited under the Mozambican regulation.

Employment of children that is economically exploitative, or is likely to be hazardous to or interfere with, the child's education, or to be harmful to the child's

health, or his/her physical, mental, spiritual, moral or social development should not be allowed. The Contractor shall ensure that work schedules comply with the laws and regulations in force. The Contractor shall avoid performing work during the rest hours, Sundays and holidays.

The Contractor shall contract majority of labourers are expected to be local, which might substantially reduce labor-influx related sexual exploitation and abuse risks.

The Contractor shall enter into agreement with one service provider to undertake the GBV and CAE IEC campaign. Ensuring that all project staff understand the values of the project, understand expectations for all employees, and acknowledge the consequences for violations of these values, will help to create a smoother, more respectful and productive project implementation thereby helping ensure that the project's objectives will be achieved.

A contractor shall Promote/ adopt a Code of Conduct for the and put in place GBV and CAE protection mechanisms to prevent and deal with situations of abuse and of labour and sexual exploitation and to follow any disclaims on breaches of the Code of Conduct. Contractor, must include in the working contract with its staff a Child Protection Code of Conduct that protects children;

In all dealings with the community and workforce employed from within the community, the Contractor shall take due cognizance of the character, culture and circumstances of the community and shall at all times endeavor to avoid the development of disputes and to foster a spirit of co-operation and harmony towards the project.

The contractor, engineer and ANE shall establish a Project Liaison Committee (PLC). The PLC is the primary mechanism for establishing and maintaining communication with the local authorities and the community. This committee has a key role in monitoring the overall impact of the project on the community including protection to vulnerable groups. When PLC² is unable to give satisfactory response, then the grievance will be submitted to ANE HdQ for a proper resolution.

²The PLC comprises of the following members, although its structure is flexible:

- ANE representatives (ANE Delegate and/or HdQ)
- Engineer representative
- Contractor representative
- A representatives from the Workers' Union (syndicate)
- A representative of the Child Protection/ HIV&AIDS Service provider (at least during the discussion of the social component)
- Representatives of local district authorities at site area for Health, education, agriculture and police
- A representative local authorities
- Other relevant participants

The Contractor shall attend all meetings of the Project Liaison Committee as may be reasonably required by the Engineer and shall provide adequate information to the committee related with the implementation of the ESIA in order for it to fulfill its responsibilities. The meetings will be held in Portuguese, with translation into local language as appropriate .

Gender-based Violence Risk Assessment

Gender-based violence, including sexual exploitation and abuse, is persistent and pervasive in Mozambique . This culture of violence increases women’s and girl’s vulnerability to the labor influx expected under the project.

Cultural and social conflicts may arise when outside workers are in contact with locals of different cultural backgrounds. Conflicts may often be associated with increased consumption and availability of alcohol and drugs as well as a gender-based violence and child abuse and exploitation. Adequate effort should be made to maintain social harmony and cooperation among workers and local residents.

N1/N10 project will result in labor influx of around 100–150 skilled and non-local/ international workers, and the absorption capacity will be relatively high; communities in Nicoalada, and Quelimane are large and semi-urbanized, which reduces the marginal impact of each worker on the population. Accordingly, and based on the Labor Influx Guidance Note, for Component 2, risks are rated as “medium”.

Impact Rating:

Type: Negative

Probability: Likely

Extension: Located

Duration: Long-term

Intensity: Medium

Significance without mitigation: low to Moderate

Significance with mitigation: Low

-
- Representatives of local district authorities at site area for Health, education, agriculture and police
 - A representative local authorities
 - Other relevant participants

Mitigation Measures

The majority of laborers hired for roadworks are expected to be local, which might substantially reduce labor-influx related sexual exploitation and abuse risks. The bidding documents will include specific requirements that minimize the use of expatriate workers and encourage local hiring of workers, minimizing labor influx.

The project will undertake several activities to counteract the gender-based violence/sexual exploitation and abuse risks emanating from project activities.

They include:

(a) contractor's contractual obligations to reduce the gender-based violence/sexual exploitation and abuse risks; (b) strengthening the Grievance Redress Mechanism to effectively handle gender-based violence/sexual exploitation and abuse complaints, through collaboration with NGO;

(c) capacity building of the implementing agency on gender-based violence/sexual exploitation and abuse; and

(d) articulated monitoring mechanism.

CULTURAL HERITAGE

Impacts: Cultural heritage can be sites, structures, and remains of archaeological, historical, religious, cultural, and aesthetic value. Cultural heritage is a particular form of expression of human values which serves to record past achievements and discoveries. It is important to assess site to understand the significance of a site, according to its aesthetic, historic, scientific, and social value, in addition to its amenity value. Cultural and historic sites may be threatened by road construction and associated works such as excavation, filling, quarrying and spoil disposal, and unregulated/increased access to cultural heritage sites. It can destroy the sites or alter their character. Road activities may result in illegal occupation or encroachment of the culturally and historically important areas (religious sites, graveyards, traditional site,) or the land belonging to these sectors. On the other hand, the increased accessibility may attract visitors to these areas which encourage better use, care and conservation of the same. Additionally, construction activities result in chance finds of previously unknown cultural artefacts for which contractors and supervising engineers should be prepared and know how to contact the proper authorities.

Impact Rating:

Type: Negative

Probability: Likely

Extension: Located

Duration: Medium-term Intensity:

Medium Significance without mitigation: low to Moderate
Significance with mitigation: low

If the archaeological sites are found in the course of the work, the contractor must notify the appropriate authorities, namely the Provincial Directorate of Culture, the ARPAC or the History Department of Eduardo Mondlane University. Tombs and sacred sites should not be disturbed by construction work, unless an agreement is reached with the affected communities. The contractor must provide specific training and information on these issues to the technicians working in the field. The Contractor shall take all necessary measures to respect the cultural and cultural sites (cemeteries, sacred sites and tree species/forests, etc.) existing in the vicinity of the works and not interfere them with. For this purpose he must first identify their type and location before starting the works.

If, during construction, remains of places of interest for worship, historic or archaeological value are discovered, the Contractor shall follow the following procedure: (i) stop work in the area, (ii) immediately notify the Project Manager who must take steps to protect the site to avoid destruction by defining a protection perimeter on the site within which no activity shall be carried on, and (iii) to refrain from removing and moving objects and relics. The work must be suspended within the scope of protection until ARPAC for historic and archaeological sites has given permission to continue.

REAL ESTATE, EQUIPMENT AND CULTURAL HERITAGE

Potential Impacts:

Realignment, enlargement, construction of berms and rides for cyclists can be accommodated in the road reserve range in most of the road without significant land needs and expropriation of the property.

However, in some areas (from Km 0 to Km 2 - Quelimane and entrance of Nicoadala) some properties will be affected, either partially or totally. During the survey work, all the properties that must be compensated and resettled were identified, if applicable. Most of the properties to be affected are construction tents with traditional material of temporary occupation where there are commercial activities of sale of several products. The survey carried out for the preparation of the resettlement plan indicates that within 5 m no housing will be affected.

Along the Quelimane - Nicoadala - Namacurra road, two cemeteries and several cult zones were identified and are located within the 15-meter area of the shoulder, which can be affected by the movement of the machines. There will be no need to relocate the cemeteries because constructive measures (retaining walls) are planned to prevent the slopes of the road from extending over the cemeteries.

Impact Rating:

Type: Negative

Probability: Likely

Extension: Located

Duration: Short-term

Intensity: Medium

Significance without mitigation: Moderate to high

Significance with mitigation: Moderate

Mitigation:

The project should minimize the need for resettlement, respecting current land use.

The resettlement plan must be implemented prior to commencement of work to compensate those affected.

The ANE / Provincial Delegation, in collaboration with other competent local entities, should prevent the construction of new structures in the direct project influence zone and in the reserve zone

If the archaeological sites are found in the course of the work, the contractor must notify the appropriate authorities, namely the Provincial Directorate of Culture, the ARPAC or the History Department of Eduardo Mondlane University. Tombs and sacred sites should not be disturbed by construction work, unless an agreement is reached with the affected communities. The contractor must provide specific training and information on these issues to the technicians working in the field.

C. CONSTRUCTION PHASE AND OPERATION

ROAD SAFETY FOR MOTORISTS, CYCLES AND PEDESTRIANS

Potential Impacts:

Road safety for motorists, cyclists and pedestrians is expected to decrease during the construction phase because there will be a greater volume of heavy traffic circulating and machines to manoeuvring, which can negatively influence road safety.

Given the nature of the work area and the deployment area, it is expected that the construction will be done in halves of the roads, without the use of detours. Thus, the traffic in the road will be very conditioned with the circulation in a single lane while the work takes place in the other lane, and with this construction option the level of accidents tends to increase. The movement of

pedestrians and cyclists will be conditioned in the construction zones. In areas of crossing or access to schools also increases insecurity. At these points, the greatest risks may occur during the operation phase due to the high speeds that tend to be practiced on recently rehabilitated roads. This may also contribute to an increase in accidents at intersections with existing roads.

During the operation phase the negative impacts will result from the excess speed of the vehicles, due to good road conditions, which will result in the increase on the severity and on the number of road accidents. Increased speed will reduce pedestrian safety, especially when crossing the road.

Impact Rating:

Type: Negative

Probability: Likely

Extension: Located

Duration: Medium-term

Intensity: Medium

Significance without mitigation: Low to Moderate

Significance with mitigation: Low

Mitigation:

Impacts on road users may not be completely mitigated but minimized by the following measures:

- Install temporary signs, warning of the existence of works, changes in traffic, various hazards, etc. In accordance with the plan previously approved by the supervisor;
- Place flags and light signals whenever necessary and in accordance with the above plan;
- Limit work areas to 3 km in a row and provide a comfort zone (2-3 km) so that traffic returns to normal speed and conditions before being again subject to limits (in the next working section);
- The sequence of opening up sections already rehabilitated while work is still taking place in other sections should be carefully planned;
- Establish specific plans to accommodate activities and trafficking in villages or urban areas including diversion, seeking assistance from the police and/or local authorities and prior probation of the prosecutor;
- Night parking of equipment and construction vehicles must be done at least 5 m from the road;
- Keep an acceptable area for cyclists and pedestrians in the construction zones;
- Limit the speed of movement in the villages, near schools and hospitals, through the installation of adequate signs and speed bumps;
- Implement an accident prevention program for communities, especially children, during construction and soon after completion, alert to traffic rules, safe ways of crossing and use of road, etc.

LOCAL ECONOMY AND INCOMES GENERATING ACTIVITIES

Impactos Potenciais:

The presence of paid workers hired by the Project, promotes the creation of informal small business opportunities along the way, particularly interested in selling food, clothing, basic necessities, beverages, confection and sale of food, to mention the most important. This will contribute significantly for improvement of the living conditions of the local population, through the diversification of activities, to generate income, as well as to increase such income.

In general, the local financial impact of the work is evaluated as being low, mainly due to the relatively small number of local people working directly. However, it is recognized that for those individuals who will be employed and those who will be providers of goods and services, the impact on family income will be relatively high.

Road rehabilitation will reduce travel times and vehicle operating costs. Thus, during the operation phase, these factors will have a positive impact on the economy of the region as it facilitates and makes less expensive the movement of goods.

Impact Rating:

Type: Positive

Probability: Likely

Extension: Located

Duration: Short-term

Intensity: Medium

Significance without mitigation: Low to Moderate

Significance with mitigation: Moderate

Potenciation

- The contractor should encourage workers to make local purchases.
- The contractor should, whenever possible, purchase goods and services locally.
- Local authorities can, through an existing service provider or associations and organizations, provide training and training for small local entrepreneurs to equip them to better respond to market needs in quantitative and qualitative terms.
- Ensure timely and adequate maintenance of the road after rehabilitation, in order to maintain and extend its lifespan in good conditions.

AGRICULTURE AND LIVESTOCK

Impactos Potenciais:

Agriculture is the main economic activity of Nicoadala and Namacurra districts. The project covers vast areas of agricultural land. It is expected that with a conclusion of the road the agricultural

marketing in the zone increases, there will be an improvement of the channels for outflow. However, during a construction phase, access roads, gravel, and quarrying are often located on agricultural or forest land, requiring that previously existing activities be discontinued and relocated elsewhere. The use of agricultural land can have an impact on the reduction of fertility due to soil compaction.

According to the execution project and as well as its proposal for the implementation, there is no expectation that there will be large land needs. In addition, the project recommends the use of borrow pit areas already in use, with a minimum opening of new ones.

Most of the land crossed by the road is under cultivation with annual crops and another, in smaller numbers, are grazing areas. According to the legislation only fields in cultivation will be compensated based on the production value tables defined by the Agriculture sector. In cases where agricultural fields are not in use, local authorities and community in coordination with the owner will identify new areas during the construction period. In cases where the required land has perennial crops (mangoes, banana trees, etc.), the owners will receive the corresponding compensation.

The potential impacts associated with the use of agricultural land are related to the partial or total loss of an asset that provides subsistence and family income. However, the existence of a workforce in the zone could bring benefits in the sales of agricultural products in the zone during construction and in the phase of operation of the road could reduce the costs of movement of products.

Impact Rating:

- Type:** Negative
- Probability:** Likely
- Extension:** Located
- Duration:** Short-term
- Intensity:** Medium
- Significance without mitigation:** Low to Moderate
- Significance with mitigation:** Low

Mitigation:

In the case of permanent or temporary crop losses, the PAR should be implemented and compensations established for fields in production and for fruit trees.

Impact Rating:

- Type:** Positive
- Probability:** Likely
- Extension:** Located

Duration: Short to long-term

Intensity: Medium

Significance without mitigation: Low to Moderate

Significance with mitigation: Moderate

Potenciation:

- The contractor should encourage workers to make local purchases.
- The contractor should, whenever possible, purchase goods and services locally.
- A program to support the family sector in the production of horticulture and livestock products should be adopted with the aim of providing workers with fresh produce and developing production in the medium/long term. This may include support to NGOs, associations and cooperatives operating in the region through the provision of seeds and technologies.

QUALITY OF LIFE

Potential impacts:

In settlements near quarries, in communities, schools and hospitals along the road, road quality will decline during the construction phase due to noise and vibration, increased levels of dust and air pollution. The communities near the areas of extraction may have a permanent loss of beauty and aesthetics due to the removal of vegetation, the opening of gravel and quarries.

Due to the increased circulation of money in the area and increased demand, price increase for some key products can be observed. This price increase may favour store owners but may have a negative impact on communities that may lose their purchasing power.

With the completion of the work there may be a considerable reduction in the operating costs of the vehicles, which could translate into a decrease in the cost of living.

Impact Rating (during Construction):

Type: Negative

Probability: Likely

Extension: Located

Duration: Short-term

Intensity: Medium

Significance without mitigation: Low to Moderate

Significance with mitigation: Low

Mitigation:

- Ensure that all employees have protective equipment (work clothes, boots, gloves, masks, etc.) and supervise the effective use of the equipment.
- In quarrying activities, local communities should be informed through community leaders the days in which these activities will occur.
- Avoid doing noisy work at night to ensure peacefully rest of communities.
- Implement planned mitigation measures to reduce impacts related to air quality and noise.
- Should, wherever possible, avoid opening detours from schools or hospitals.
- Sound barriers, e.g. tree planting, should be installed to reduce noise levels, even after construction.

Impact Rating (during Operation):

Type: Positive

Probability: Likely

Extension: Located

Duration: Medium to long-term

Intensity: Medium

Significance without mitigation: Low to Moderate

Significance with mitigation: Moderate

Potenciation

- Ensure timely and adequate maintenance of the road after rehabilitation, in order to maintain and extend its useful life in good conditions.

Grievance Redress Mechanism (GRM)

Conflicts or grievances may arise when the construction process occur without a pre negotiation process or contractor does not respect the concerns of the PAP's.

Grievances Redress Mechanism will be available for the project affected persons to be able to address their issues and to solve prior to use formal legal grievance system. Through this mechanism, AP's will be able to react on any damages occurred during the construction works of the N1/N10, including aspects related with GBV, CAE and misbehavior of contractor workers.

The grievances authority will be ANE at local level . Project Communication Plans should prioritise awareness-raising about the structures that are available to redress more serious grievances that cannot be addressed satisfactorily locally.

At local level community leaders will be trained in communication and initial grievances reception. A Project Liasion Committte (PLC) will be established per district and members

of localities or villages along the road will be representing the communities at PLC .

Existing GRM to capture and refer to gender-based violence/sexual exploitation and abuse related grievances. This will be done with inputs from mapping exercise findings, already being done by a team of local consultants, to identify partners that can provide or refer services for survivors of violence. The link between service providers and informal resources (CBOs, NGOs) will be enhanced with the GRM at the District and project level. Protocols will also be developed to track sexual exploitation and abuse related complaints, including monitoring of timeliness of the responses to complaints. The idea is for survivors of sexual exploitation and abuse to have different entry points to the referral pathway besides the GRM, which at the same time will be in close collaboration with it. Under this context, the project will support developing a grievance redress policy for the road sector.

In particular, the project has identified a local NGO to enhance the Grievance Redress Mechanism (GRM) to adequately and promptly address any potential grievance from survivors of sexual exploitation and abuse. If the GRM receives a case on sexual exploitation and abuse related to the project, it will be recorded, and the survivor will be referred to the NGO for assistance and, if needed, for referral to other service providers. Service providers will also be trained about the availability of the GRM, so that they can refer survivors of gender-based violence in the project area. The contracted NGO will keep the information confidential to protect privacy of survivors. The project intends to strengthen the GRM through information and communication technology to ensure that all complaints regarding sexual exploitation and abuse are immediately reported to the Government and to the World Bank. In cases, where the perpetrator(s) is linked to project activities then the contractor will take appropriate actions as per the Code of Conduct signed by the particular person. However, it will not preclude prosecuting the perpetrator(s) as per Mozambique's existing laws.

The project, in partnership with the local NGO will launch activities and learning modules to enhance the Project Implementation Unit's ability to address sexual exploitation and abuse and properly design a project-level GRM with the capacity to generate protocols for tracking sexual exploitation and abuse complaints, including a feedback system for timely response to complaints. The project will also support the Government's efforts to enhance its response to sexual exploitation and abuse and gender-based violence by mapping ongoing initiatives through multi-sectoral coordination.

Moreover, community dialogue and awareness raising will be carried out in the communities to make sure people potentially affected by the project identify the different entry points to the referral pathway if they are victims of sexual exploitation and abuse (including specifications about the role of the GRM).

The project will hire an independent social and environmental consultant. The consultant will monitor the fulfilment of sexual exploitation and abuse related obligations by the contractor, the supervision consultant, the NGO, the government and other potential partners. The supervision consultant will also have on their team a social specialist with knowledge of sexual exploitation and abuse for a periodic assessment of

the concessionaire’s compliance with sexual exploitation and abuse obligations as defined in the Action Plan developed by the concessionaire at the inception of the concession.

The project will continue to use “project liaison committees” on the pattern of RBMMPII. These committees will monitor follow-up of cases reported to the GRM, police, NGOs, and others, ensuring the supervising consultant and the World Bank receive information on the number of cases from the project.

Entry Points for Gender-Based Violence Survivors to Access Project



The implementing agency will appoint a gender focal point for coordinating activities linked to the gender-based violence and sexual exploitation and abuse mitigation. This person will lead mitigation of gender-based violence and sexual exploitation and abuse risks from the implementation agency side. The focal point will also be in constant communication with the project liaison committees.

CONCLUSIONS AND RECOMMENDATIONS

Due to the project characteristics (extension of an existing road and rehabilitation of existing bridges) and deployment area, it will have less significant environmental and social impacts.

With the application of the measures proposed and detailed in the ESMP, the rehabilitation works for the Quelimane - Nicoadala - Namacurra road will have environmental and social impacts mitigated both at the biophysical level and at the socioeconomic level. In this context, the conclusions are as follow:

- The most important environmental impacts for this project are:
 - Reduction of the quality of life due to noise pollution (noise) and emissions;
 - Health and road safety;
 - Temporary reduction of economic activities in Km 0 + 2 (Municipality of Quelimane) and Km 31.5 +2 (Nicoadala);
- At social level, the establishment of employment, although temporary, is a direct result of the implementation of the project;
- The N1/N10 rehabilitation project will facilitate the movement of people and goods between the city of Quelimane and the rest of the country, reducing costs and time spent.

Thus, it is recommended:

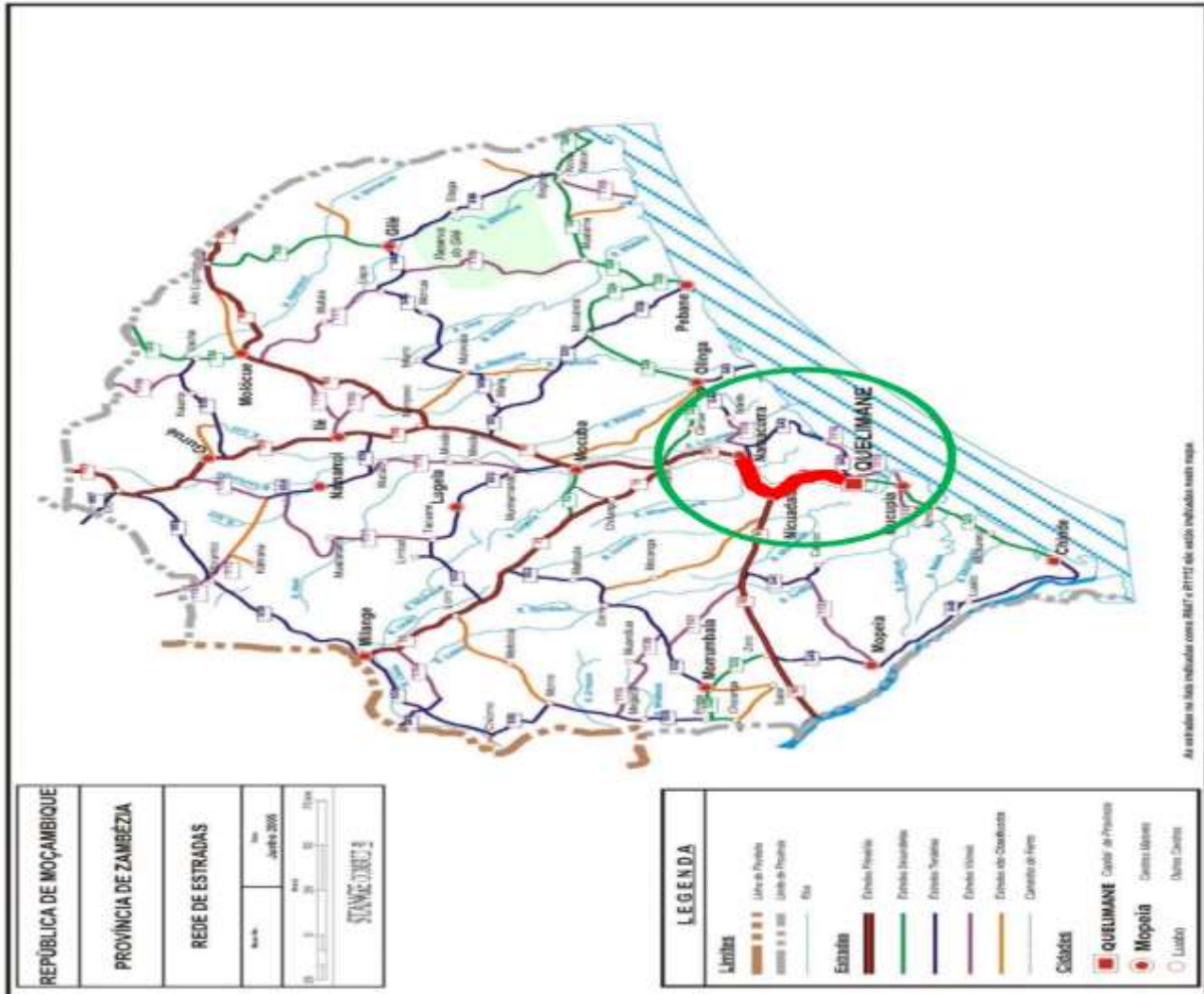
- The Environmental Impact Assessment and its respective Environmental and Social Management Plan form an integral part of the tender documents for the execution and inspection of the works;
- The Environment unit or other department that is responsible for these matters at ANE is ultimately responsible for the implementation of these measures;
- In regard to employment, the construction contract should include a clause requiring the contractor to hire locally 100% of the unskilled workers according to their skills, as well as the application of the current labour law, and should offer equal opportunities for Men and women, and ensuring that at least 25% are women.
- For the hiring of local workers, it is recommended that the contractor keep the leaders/administrations of the three districts (Quelimane, Nicoadala and Namacurra) informed about their labour needs;

- Due to the need to establish a transparent process in the contracting and resolution of conflicts between the contractor, workers and the community, a liaison committee should be established between local communities, contractor and supervisor under the supervision of ANE.

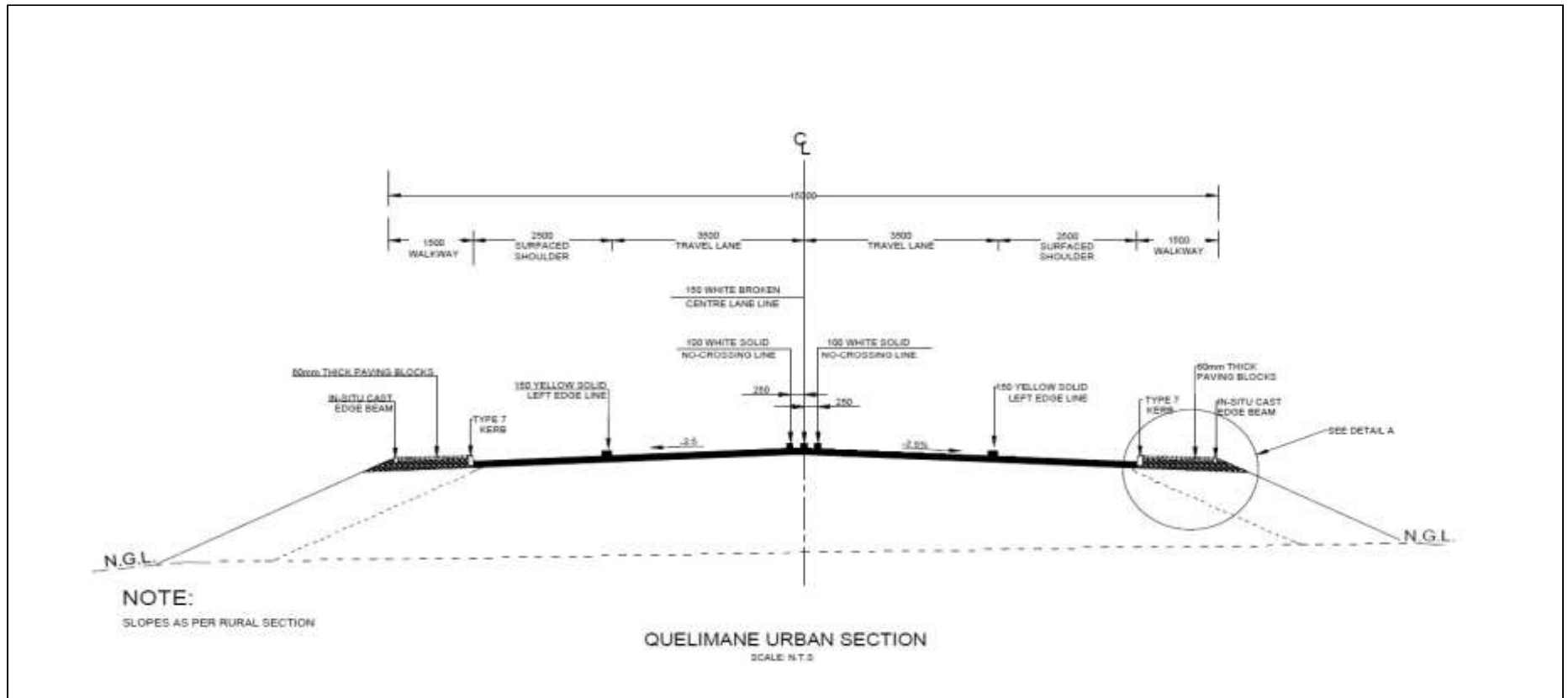
In general, it is recommended that the identified impacts and the respective mitigation measures proposed in this report and in the attached Environmental and Social Management Plan are an integral part of the specifications for the execution of the work and that their implementation is properly supervised by the project proponent.

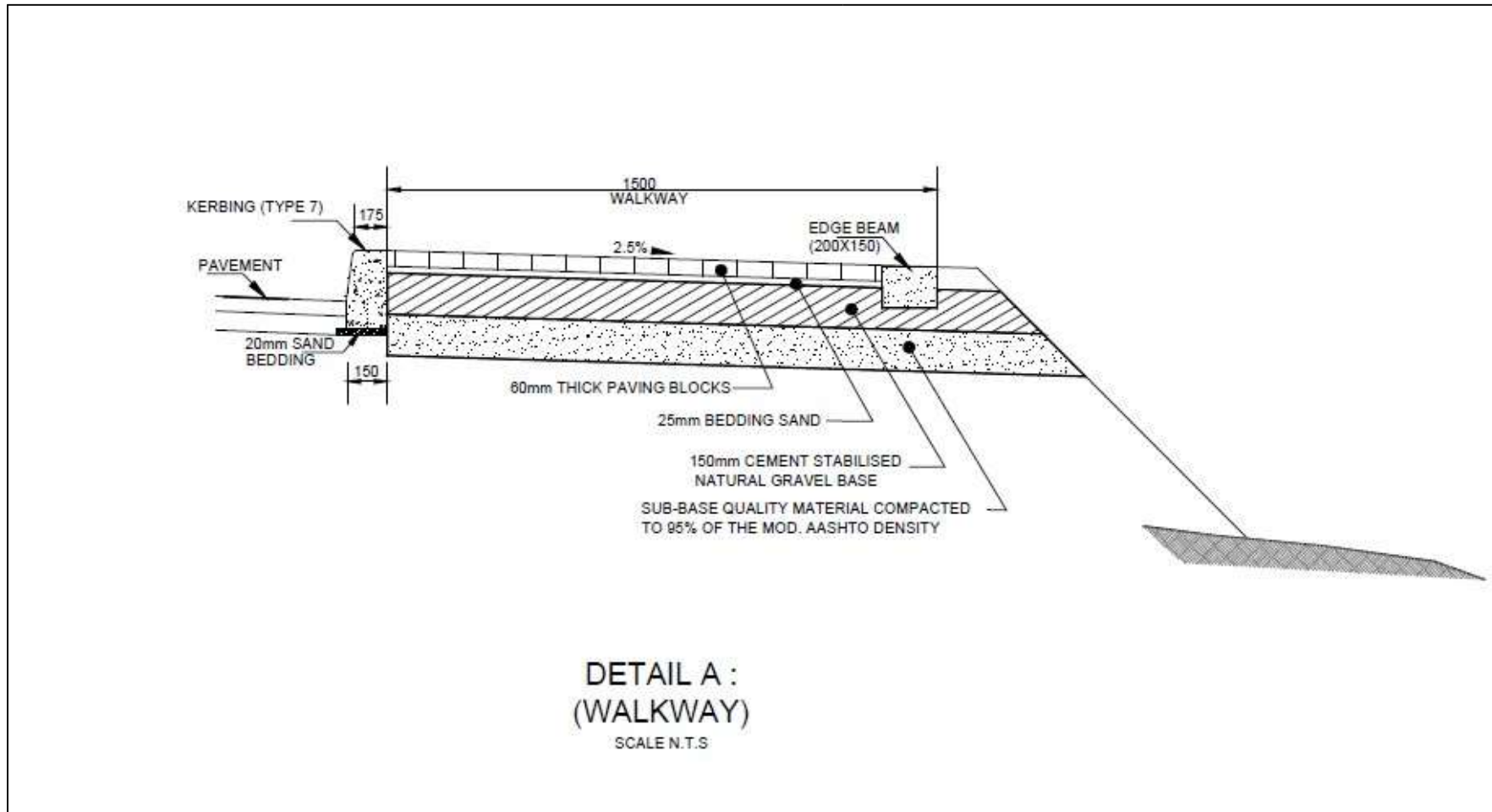
ATTACHMENTS

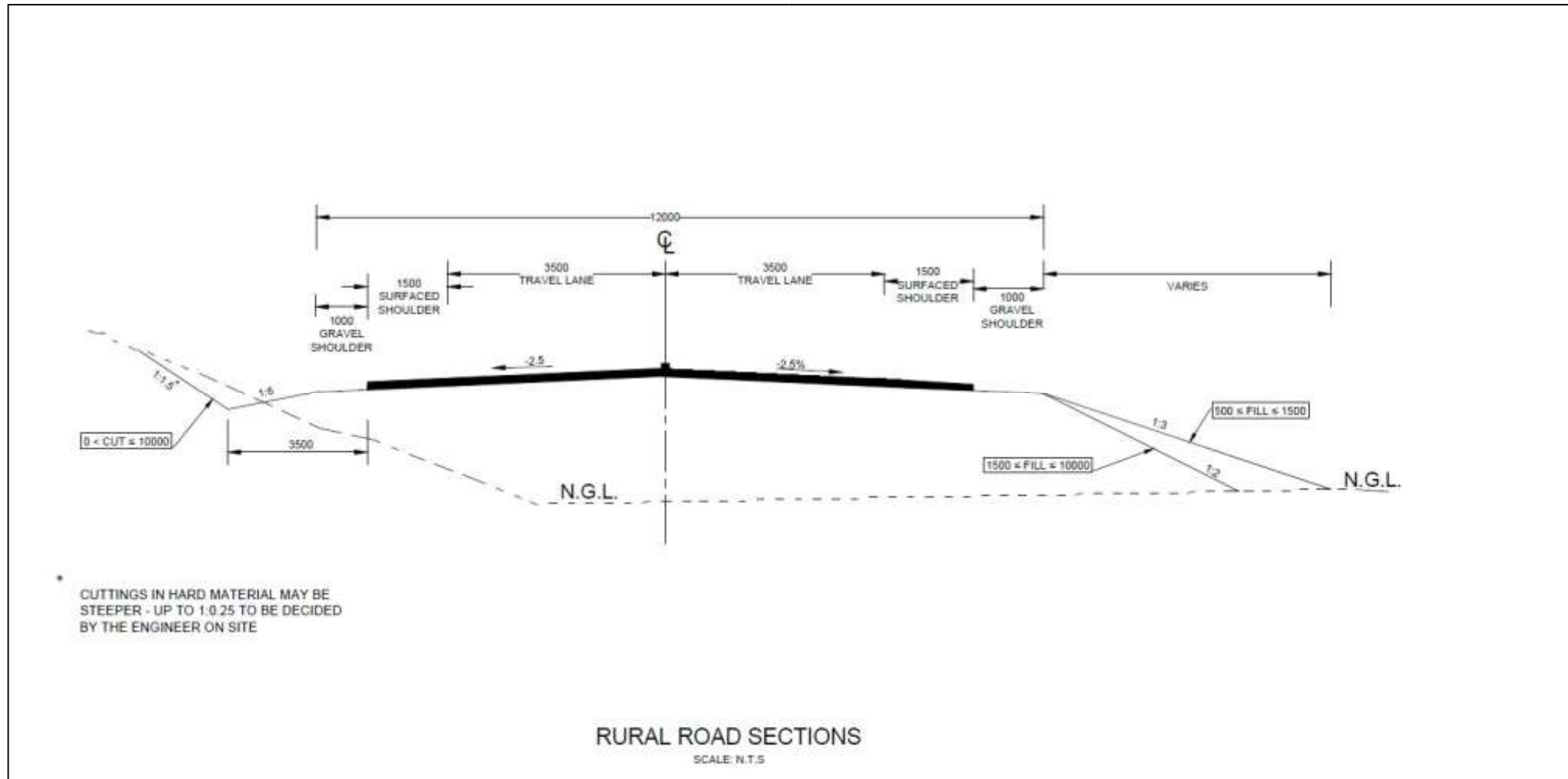
ANNEX 1. IMPLEMENTATION OF THE PROJECT IN THE ZAMBÉZIA PROVINCE



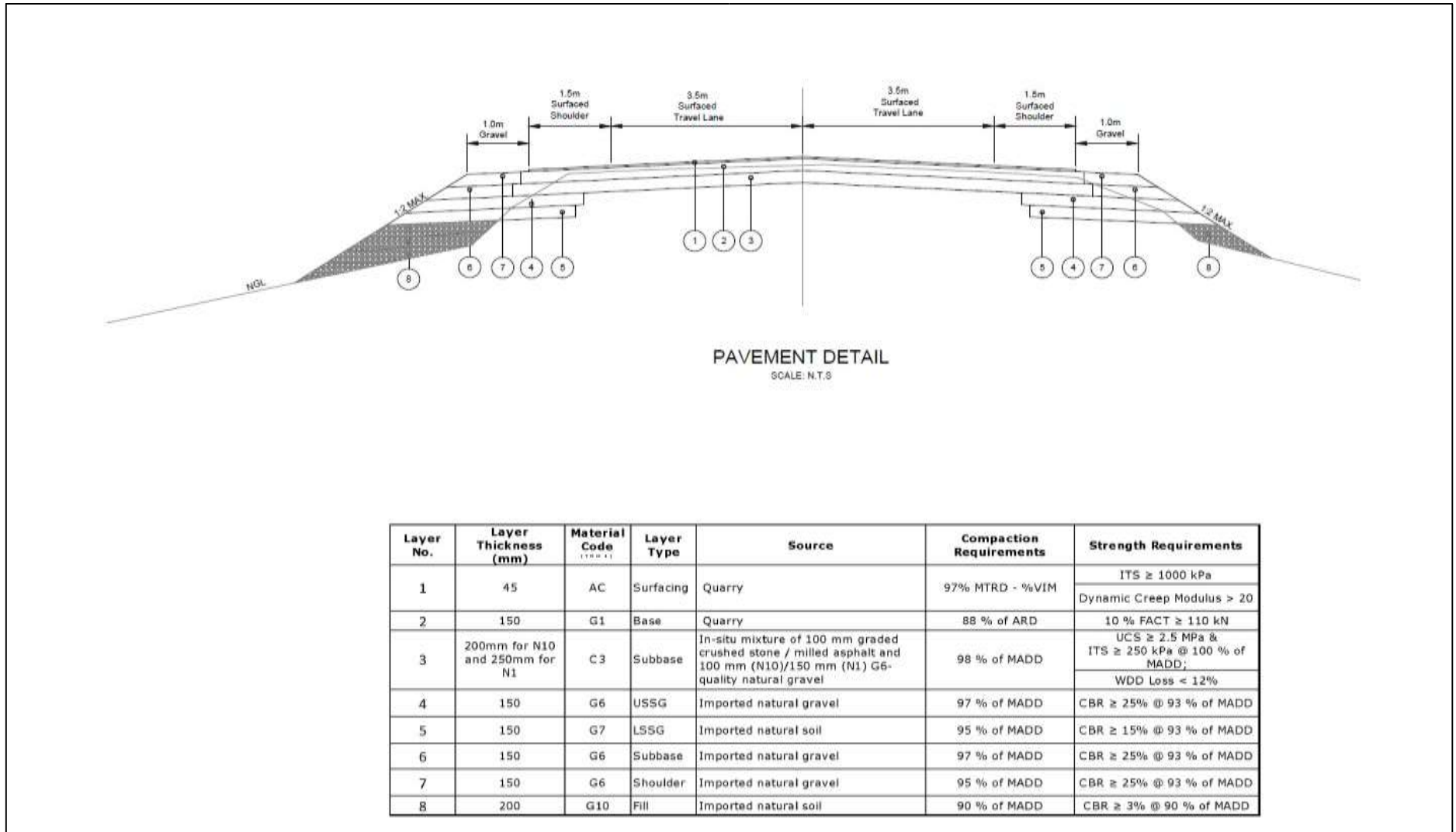
ANNEX 2. TYPES OF TRANSVERSAL SECTIONS TYPES TO BE IMPLEMENTED







* CUTTINGS IN HARD MATERIAL MAY BE STEEPER - UP TO 1:0.25 TO BE DECIDED BY THE ENGINEER ON SITE



ANNEX 3: PUBLIC CONSULTATION



ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR THE N1/N10: QUELIMANE - NICOADALA - NAMACURRA ROAD REHABILITATION PROJECT CONTRACT No. 16/DIPRO-ANE/313/2017



PUBLIC CONSULTATION REPORT

July, 2017

Prepared for:



Administração Nacional de Estradas
Av. de Moçambique 1225,
Tel.: (+258) 21476163 /7
Fax: (+258) 21477235
Maputo – Mozambique

Prepared by:



Opus International
Consultants
6 Ossian Street, Ahuriri,
Napier
NEW ZEALAND.
Facsimile Number: +64 6835
0881
Email Address:
Keryn.Kliskey@opus.co.nz

ACRONYMS

ANE	National Roads Administration
AP	Affected Parts
CPCS	Provincial Council Against AIDS
DPASA and Food Security	Provincial Directorate of Agriculture
DPTADER Environment and Rural Development	Provincial Directorate of Land,
DPCI Industry	Provincial Directorate of Trade and
DPOHRH Water Resources	Provincial Directorate of Works and
ESMP Management Plan	Environmental and Social
ESIA Assessment	Environmental and Social Impact
HdQ	Head Quarter
RAP	Resettlement Action Plan
SDAE	Economic Activities District Offices
SDPI Offices	Planning and Infrastructure District
SPFF	Forest and Wildlife District Office

1. Introduction

The Government of Mozambique, through Roads and Bridges Management and Maintenance Project (RBMMP), APL-2, funded by The World Bank, intends to invest part of the funds in the rehabilitation of the N10 road between Quelimane and Nicoadala and N1 between Nicoadala and Namacurra, in Zambézia Province.

The section of the road under assessment has a length of approximately 70 km, and is part of the Zambézia corridor, extending from the Quelimane City (km 0) to the Nicoadala Village (Km 35) and then to Namacurra (Km 70). For the execution of the construction activities extensions of RoW, area of work, borrow pits represents the project activities that may trigger land acquisition. In this regards, a RAP was prepared to identified the affected assets and project affected people to compensate them adequately. As a standard requirement, a public consultation is a fundamental tool to engage and guarantee participation of the Project Affected People (PAP) in the project. Therefore, in Mozambique a public consultation is mandatory process under national legislation Decree 54/2015 of December 31, for Environmental Impact Assessment (EIA) and Decree 31/2012 of August 8, for Resettlement process. As well as under the general directives for public consultation process (Ministerial Diploma 130/2006 of July 19). The public consultation meeting was held in Nicoadala on the 11 of July 2017.

1.1 Objective of the public consultation

The meeting aim to:

- To share and inform of the ESIA and ESMP reports of N10/N1;
- Consult with the affected people and discuss their views and concern over the ESIA, ESMP and RAP;

The newspaper announcement of the public meeting follows the requirements under the Mozambican legislation and The World Bank Group. It was announced, 15 days prior to the public consultation

meeting through the “*Jornal Noticias*” national newspaper, the provincial and national radio station and invitation letters sent to the main institutions. To guarantee the participation representatives of villages along the road, the consultant provide transport condition for Interested and Affected Parties along the road section to attend the public consultation in Nicoadala.

2. Methodology

The public consultation focus on presentation of the ESIA and RAP prepared in 2015 by CPG. These documents were adjusted to be in line with the World Bank safeguards and RPF prepared under the IFRDP. Information and data for preparation of the documents were collected in April 2014.

The presentation was divided in two parts namely:

i) Presentation and discussion of the Environmental and Social Impact Assessment (ESIA) and ii) the presentation and discussion of the Resettlement Action Plan (RAP).

After the ESIA presentation Mr. Roberto Tonissai head of the Technical Department of the ANE Zambezia Delegation, who was acting as moderator, commented briefly on the presentation and drawing attention to the participants on the second presentation and then making room to the questions and answers. Its is important to stress that the main concern of the participants were related with RAP.

After the presentation of th reports and explanation of all the points constituting the presentation, the moderator of the meeting, Mr. Roberto opened space for the intervention of the participants.



Picture 2-1: Intervention of Mr. Mutemba about the project

3. Participants and Location

Date: 11/07/2017

Time: started at 9:30h and finished at 13:15h

Venue: Nicosadala district Government meeting room

The meeting began at nine thirty minutes and was attended by 62 people being around 10% (7 participants) women. From the total participants 54% were representatives of government institutions from target districts, province of Zambezia and Central from ANE HdQ. 40% were representatives of the PAP's through community leaders and 6% represents non governmental organization.

The meeting was attended by representatives of SDAE, SDPI of Nicosadala, Namacurra, Murrumbala and Mopeia Districts. From the provincial level there were representatives of DPTADER, DPCI, DPASA, DPOHRH, ANE delegation, CPCS and representatives from ANE HdQ.

4. Matrix of Question and Response

After the presentation the participants were invited to comment, recommend or ask for additional clarification. Out of 62 participants around 10 people requested additional clarification and made recommended, representing 16% of the total participants. The following table is summarizing the questions and answers given.

Table 0-1: Matrix of Question and Response

Question	Response
<p>Mr. Chagane: Made the first intervention, questioning whether there was any coordination with community leaders, in order to inform them about the rehabilitation of the Quelimane – Nicoadala - Namacurra road project. He asked also if ANE is doing any awareness campaign to inform communities not to use ROW. Because, when communities are not properly informed and clarified can create problems.</p>	<p>Having been answered that: During the first public consultation done in January 2014, in Quelimane with the participation of the community leaders, Consultant (CPG) and ANE informed about the project. A special campaign about the rules to use the ROW was not undertaken. But, in the public consultation, and during the census survey done in April 2014 an informal information was given to the community leaders along the road, not to allow new construction after the Census be done. With ANE and RPF the Cut of Date for this specific project is the date that the PAP's was identified and surveyed. With the approval of the Ministerial Diploma 109/14 ANE has a power to undertake awareness campaign.</p>
<p>Mr. Anivaldo Luis, the District Director of infrastructures of Nicoadala spoke about the occupation of the road reserve area (ROW) that is verified throughout the district of Nicoadala. Said there will be some conflict situations because some constructions were built without any authorization from the district government.</p>	<p>All conflicts arise from the implementation of the project shall be resolved through the Grievance Redress Mechanism (GRM) of the project. all PAP's in the Corridor of Impacts (COI) were identified regardless having DUAT or not. Absence of DUAT is not a reason for no compensation. All PAP's identified in April 2014, during the census are eligible for compensation.</p>

	<p>It is important understand that on the basis of Land Law, no DUAT is given under the ROW (30m in rural areas and 15 m in urban areas).</p>
<p>The local leaders of the communities crossed by the project; present at the meeting made a point of reminding those present that this public consultation was the Third; local leaders left the first meeting with the recommendation to sensitize communities not to use the roads reserve area. Communities are properly informed about the rehabilitation of the N10/N1 road.</p>	<p>This was a comments. And the Consultant and ANE emphasis that the community leaders shall continue to inform the PAP's, particularly those doing agriculture and having informal business in the COI that they should abandon their activities in that place as soon as they are advised of the progress of the road rehabilitation activities. And also to invite those who have activities on ROW not the install permanent infra-structures in this area to avoid future conflicts.</p>
<p>Mr. Isac, a merchant: spoke of his concern because he could not continue to do his activity in the place where he use to. Because it is near the road. He request that the new place for business activities be close to the road so that traders continue to have incomes close to those they now have</p>	<p>It was explained to him that withdrawal of any activity and structure is a matter of security and safety. A RAP implementation process will take this aspect into consideration.</p>
<p>Mr. Sauca: trader, suggested that the 30 meters of the road reserve area should be only one side of the road, where there are no infrastructures; to avoid demolishing the <i>barracas</i> that are inside the roads reserve area.</p>	<p>It was explained to him that the definition of the size of the ROW is done by law and shall be respected. Is not a responsibility of ANE to change it. Secondly, the road obeys an alignment. The alignment is adjust in a very special case when (improvement of road safety, sensitive ecological or social area).</p>
<p>The Community Leader Namacata recommended that attention has to be paid to the cemeteries that are everywhere throughout the project; he also said that cultural habits should be respected in relation to the subject matter of the cemeteries;</p>	<p>The recommendation was accepted.</p>

<p>The Regulo Maltes: asked for explanation of the procedures to be used for people who built after the year 2014;</p>	<p>In April 2014 a census survey was done and a person entitled to compensation was registered. A data base was generated. April 2014 was defined as a cut of date. The RAP implementation consultant will have to re-confirm the information in the data base. In a case that a new PAP is identified, the RAP implementation team will register all them. And in liaison with the Resettlement Committee, case by case, will evaluate if the PAP is subject to be compensate or not.</p>
<p>Mr. Fakir: participant of the technical meeting of the District Services of Infrastructure of Namacura; asked what measures will be taken for the people who have built their infrastructures in the reserve area and without the permission of the institutions with a mandate to authorize;</p>	<p>The Nicoadala District Director of Infrastructure responded to this concern by saying that all such persons were duly informed and notified of the sense of being in compliance with the land law.</p>
<p>Mr. Moises SDPI technician from Namacura spoke about the lack of coordination of the various institutions and therefore there are social infrastructures in the road reserve area, namely health centers and schools, asked how these infrastructures would be accommodated if the alignment does not change;</p>	<p>it was answered that this group deserves attention given the delicacy of the subject.</p>

5. Final remarks







The Participants requested that there be clear and permanent information in ways that would guide the near future agricultural campaigns, because the communities practice agriculture in the road reserve areas. Mr Antonio Mutemba informed about the stage of the project and the forecast of the work schedule.







In the absence of any further interventions, the Consultant Ms. Eulalia Macome appealed to those present to disseminate the information about the project so that all people are informed and will avoid conflicts; being sure that there were no more interventions, the meeting was finished at thirteen hours and fifteen minutes.









Picture 0-2: Local Leaders of different levels

ANNEX 4: ROAD SIGNAL TO BE USED IN A ROAD IN CONSTRUCTION

	<p>The ROADWORK AHEAD sign gives advanced warning of roadwork sites. Be prepared for changed road conditions. Slow down.</p>
	<p>The WORKERS sign is used to warn motorists that there are road-workers ahead, on or adjacent to the travelled path. This sign is only used while workers are in the area.</p>
	<p>This multi-message sign is used to give advance warning of roadwork sites. It imposes a speed restriction which applies until the next speed control sign.</p>
	<p>This multi-message sign warns motorists that there are road workers ahead on or adjacent to the travelled path. It imposes a speed restriction which applies until the next speed control sign.</p>
	<p>The SPEED RESTRICTION sign is used at road-works to create a temporary speed zone. It indicates the speed limit which applies until the next speed restriction sign.</p>
	<p>The STOP/SLOW bat is used by a traffic controller. Drivers must stop and wait at a "STOP" bat and may proceed with caution at a "SLOW" bat.</p>

	<p>The TRAFFIC CONTROLLER AHEAD/PREPARE TO STOP sign is used to give advanced warning that traffic may be required to stop as directed by a traffic controller. It is only used when the traffic controller is on duty.</p>
	<p>This multi-message sign gives advance warning that traffic may be required to stop in compliance with the directions of a traffic controller. Drivers must not overtake other vehicles when approaching the traffic controller.</p>
	<p>The PREPARE TO STOP and SIGNALS AHEAD signs are used to give advanced warning of temporary traffic signals.</p>
	<p>The STOP HERE ON RED SIGNAL sign is used to indicate where traffic must stop when faced with a red light. There is no stop line marked on the pavement.</p>
	<p>The TRAFFIC HAZARD AHEAD sign is only used for emergency purposes to warn of an unexpected hazard.</p>
	<p>The SLIPPERY and LOOSE STONES signs are to warn of hazardous road surface conditions ahead.</p>

	<p>The LANE STATUS signs are used to give advanced warning that one or more lanes of a multi-lane roadway are closed ahead. The 'bars' indicate the closed lanes and the arrows indicate lanes available to traffic.</p>
	<p>The LINE MARKERS ON ROAD and SURVEYORS AHEAD signs are used to warn motorists that there are line markers or surveyors working ahead, on or adjacent to the travelled path. This sign is only used while workers are in the area.</p>
	<p>The ROAD PLANT AHEAD sign is used at work sites where machinery is working on the roadway.</p>
	<p>The ROAD WORK supplementary plate may be used with a SPEED RESTRICTION sign at road-works.</p>
	<p>The END ROADWORK sign defines the end of the work site. This sign does not cancel out previous speed signs.</p>
	<p>This multi-message sign is used to define the end of a work site and reinstates the speed limit.</p>

ANNEX 5: GRIEVANCES REDRESS MECHANISM

Conflicts or grievances may arise when the construction process occur without a pre negotiation process or contractor does not respect the concerns of the PAP's.

Conflicts generally arise from poor communication, inadequate or lack of consultation, inadequate flow of accurate information, or restrictions that may be imposed on people through the implementation of Project activities. Grievances Redress Mechanism will be available for the sub-project affected persons to be able to address their issues and to solve prior to use formal legal grievance system. Through this mechanism, AP's will be able to react on any damages occurred during the construction works of the N1/N10, including aspects related with GBV, CAE and misbehaviour of contractor workers.

Communication strategy may prevent or reduce misunderstanding and grievances, therefore awareness-raising about Project activities will be one of strategy that ANE will adopt. Consultations and negotiations will be carried out with PAPs where there are indications of potential conflicts. Contractors and engineer have to be aware of managing conflicts and communities to know their rights and obligations, how to obtain legal advice and representation, and how to seek redress against what they regard as unfair practices by contractor or its workers.

The grievances authority will be ANE at local level . Project Communication Plans should prioritise awareness-raising about the structures that are available to redress more serious grievances that cannot be addressed satisfactorily locally.

At local level community leaders will be trained in communication and initial grievances reception. A Project Liaison Committee (PLC) will be established per district and members of localities or villages along the road will be representing the communities at PLC . The composition of the PLC is above. It expected that the community members at local or village community level submit their grievances to be given a solution initial to the local authorities. They may also require penalties such as compensation for damages caused by the offense and / or, public criticism, community service, small fines, refraining from carrying out the activity that caused the case. Unresolved cases may be turned over to the PLC meetings or to the ESO of the project

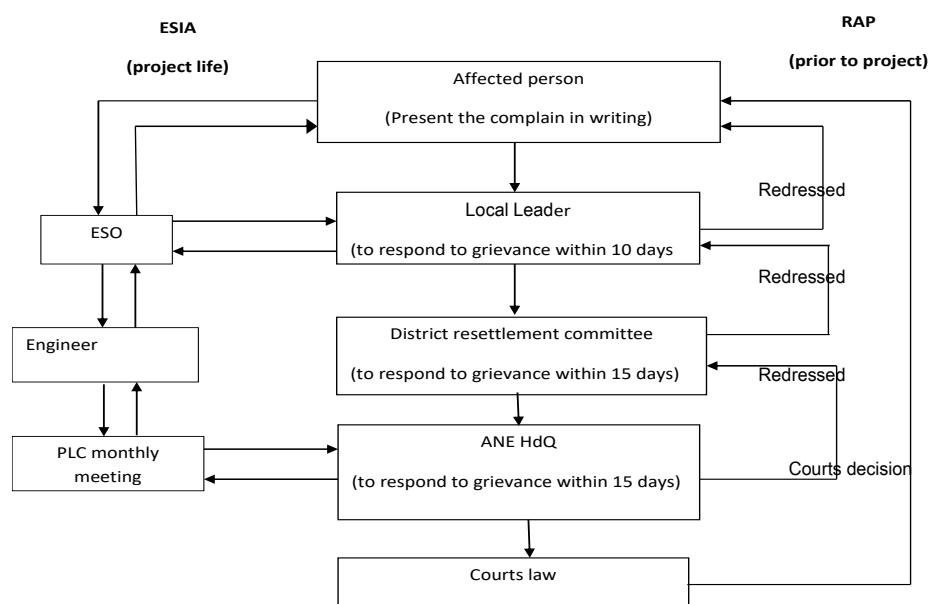
For all grievances related with non-fulfilment of community related contracts, levels of compensation, unauthorised taking of assets without compensation Project affected people must first try to resolve these conflicts through presentation to the local influence leaders or authorities, or to the ESO of the contractor for attention and either immediate redress action of channelling to the appropriate higher authority. General principles and procedures must be established by the Projects and publicised including:

- ✓ Verbal communication should be in locally relevant languages but all records of communications must be in Portuguese.
- ✓ Grievance forms should be prepared by ANE HdQ and be available to the entry grievance point (District authorities and Representative of ANE), PAPs may also lodge their own documented grievances as they wish;
- ✓ An initial response must be provided to the communities in a recommended period of 10 days. Detailed procedures to redress grievances and the appeal process should be disseminated among PAPs who should be empowered to use them. The participatory processes in this Process Framework should, among other aspects, focus on these procedures.

- ✓ Measures must thus be put in place to ensure that solutions are reached by consensus based on negotiation and agreement.
- ✓ Specific people should be chosen to represent their local communities during the implementation of the project, especially for grievance presentation and to accompany the redress process. These men and women will provide a first level of listening and informal resolution.

The ANE delegate, with the assistance of service provider, should create awareness that they may also be used for the communication of grievances for informal resolution. Efforts will be made to ensure that be include representatives of women and youth with whom leaders will consult to offer tangible solutions.

Grievance Register Forms to be provided by ANE delegation to the District Service for Infra Structure and Service Providers for making available at local level at publicised sites and via publicly recognised community representatives. Community representatives should be encouraged to explain this entitlement whenever needed and at no time should filing a grievance be discouraged by community representatives, local authorities or Project officers. Each grievance will be captured in the Grievance/Issues Register that must be maintained at the site and ANE delegate. Reports on grievances will be regularly presented at monthly PLC meeting. Grievance reports should track complaints, responses, redress action and close-out of all community grievances with dates and responsible parties clearly indicated. ANE HdQ and Delegation will periodically verify response management and redress through to close-out of each grievance. Each of the following steps should be limited to a maximum of 15 days from receiving a grievance to communicating a decision. Resolution should be sought at the lowest level possible in all cases. The GRM represented as follow:



ANNEX 6: SAMPLE GRIEVANCE FORM

Name (Complaint): _____

PAPs ID Number: _____

Contact Information: _____ (Community; mobile phone)

Nature of Grievance or Complaint:

Date Individuals Contacted Summary of Discussion

Signature

PAPs: _____ Date: _____

RAP Consultant representative: _____ Date: _____

Local Authorities: _____ Date: _____

ANNEX 7: SAMPLE RESOLUTION FORM

Name of Person: _____

Position: _____

Review/Resolution

Date of Meeting on Grievance: _____

People Present at Meeting (see attachment):

Was field verification of complaint conducted? Yes ___ No ___

Findings of field investigation:

Summary of Conclusions from the Meeting:

Key Issues:

Was agreement reached on the issues? Yes ___ No ___

If agreement was reached, detail the agreement below:

If agreement was not reached, specify the points of disagreement below and Next Action Step Agreed:

Signed (Conciliator): _____ Signed (person): _____

Signed (Independent Observer): _____

Date: _____

ANNEX 8: EMPLOYER'S CHILD PROTECTION CODE OF CONDUCT

To Be Signed by All Employees, Sub-contractors, engineer, and Any Personnel thereof

I, _____ agree that in the course of my association with the Employer, I must:

- treat children with respect regardless of race, colour, gender, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status;
- not use language or behaviour towards children that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate;
- not engage children under the age of 18 in any form of sexual intercourse or sexual activity (other than in the context of legal unions that took place between parties under the laws of the country), including paying for sexual services or acts;
- wherever possible, ensure that another adult is present when working in the proximity of children;
- not invite unaccompanied children into my place of residence, unless they are at immediate risk of injury or in physical danger;
- not sleep close to unsupervised children unless absolutely necessary, in which case I must obtain my supervisor's permission, and ensure that another adult is present if possible;
- use any computers, mobile phones, video cameras, cameras or social media appropriately, and never to exploit or harass children or access child exploitation material through any medium;
- not use physical punishment on children;
- not hire children for domestic or other labor which is inappropriate given their age or developmental stage, which interferes with their time available for education and recreational activities, or which places them at significant risk of injury;
- comply with all relevant local legislation, including labor laws in relation to child labor;
- immediately report concerns or allegations of child exploitation and abuse and policy non-compliance in accordance with appropriate procedures;
- immediately disclose all charges, convictions and other outcomes of an offence, which occurred before or occurs during my association with the Employer that relate to child exploitation and abuse.

When photographing or filming a child or using children's images for work-related purposes, must:

- assess and endeavour to comply with local traditions or restrictions for reproducing personal images before photographing or filming a child;
- Obtain informed consent from the child and parent or guardian of the child before photographing or filming a child. As part of this I must explain how the photograph or film will be used;
- ensure photographs, films, videos and DVDs present children in a dignified and respectful manner and not in a vulnerable or submissive manner. Children should be adequately clothed and not in poses that could be seen as sexually suggestive;
- ensure images are honest representations of the context and the facts;
- ensure file labels, meta data or text descriptions do not reveal identifying information about a child when sending images electronically or publishing images in any form;

I understand that the onus is on me, as a person associated with the Employer, to use common sense and avoid actions or behaviours that could be construed as child exploitation and abuse.

Signed:

Date: