**ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENTFOR UP-GRADING OF DUGA-AIRPORT ROAD (TO ASPHALT CONCRETE FINISHED SURFACE) LOCATED IN TANGA CITY, TANGA REGION, TANZANIA**

E4516 V2

**Environmental and Social Impact Statement**

PROPONENT

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On behalf of Tanga City Council

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# EXECUTIVE SUMMARY

**Background**

The Government of Tanzania (GoT) through the Prime Minister's Office – Regional Administration and Local Government (PMO-RALG) has received credit from the International Development Association (IDA), housed by the World Bank to invest in additional sub-projects that were not financed and thus not implemented in the first round of Tanzania Strategic Cities Project (TSCP). The objective of TSCP, amongst others, is to improve the quality of and access to basic urban services. The upgrading of Duga-Airport Road project in Tanga City Council is among sub-projects that were prioritized during the first round of TSCP design and preparation but not financed due to cost estimates being far above the available funds under the IDA credit.

Under the proposed TSCP Additional Financing project, an Environmental and Social Management Framework (ESMF) and Resettlement Policy Framework (RPF) have been prepared to guide Participating Local Government Authorities (LGAs) during planning and implementation of sub-projects. This Environmental and Social Impact Statement (ESIS) presents the Environmental and Social Impact Assessment (ESIA) for the Duga-Airport Road which was chosen as a sample sub-project for the preparation of ESIA and Resettlement Action Plan (RAP) reports that will demonstrate and uptake the principles and approaches proposed and depicted in the ESMF and RPF.

The EIS for upgrading of Duga-Airport Road project was also guided by the principles under the National Environmental Policy (NEP), 1997; the Environmental Management Act (EMA), Cap 191 (2004) and the Environmental Impact Assessment and Audit Regulations (2005) as well as the Local Government (Urban Authority) Act bof 1982.

**Project Description**

The renewed proposal for Duga-Airport road is upgrading of the 2.8 km road from earth to asphalt concrete standard. The project road passes through through 14 sub wards within Duga and Mwanzange wards, in Tanga city. The works include:

The project involves upgrading the road from gravel to asphalt concrete. The works include:

* Rehabilitation works involve grading followed by asphalt concrete surfacing, also demolition of existing the structures
* New Construction works; i.e, excavation, grading, followed by surfacing earth road to asphalt concreate finishing
* Construction of side drains and installation of various road furniture.

**Stakeholders Identification and Public Involvement**

This ESIA statement involved consultation with various stakeholders at different levels including national and City authorities, and local communities. Participatory methods including stakeholders’ consultative meetings, observations, and structured interviews were applied. Other relevant information was obtained through discussions with relevant stakeholders and by reviewing available literature, documentation and studies. The main stakeholders were Tanga City and Tanga District Council; TANROADS Tanga Regional Manager; Tanzania Airports Authority (TAA), Tanga; Tanga Airport; TANESCO, Tanga Region Office; Tanga-UWASA; Duga Ward Development Committee (WDC) and residents of Duga Community.

From the consultations the following environmental and social management issues were raised:

* Need for stakeholder involvement and participation in project cycle. This includes LGA officers, leaders and community members in the ESIA process.
* Inter-agency coordination is still a challenge in implementing LGA projects
* Vandalism and mismanagement of infrastructure is a major challenge
* The importance for contractors to take safety measures to ensure minimal impact of the project on local communities
* Local communities should be sensitised to take part in monitoring of project activities to minimise conflicts between contractor and communities
* There should be resources set aside for supervision and monitoring of projects especially during the construction and operation phases

**Potential Significant Environmental and Social Impacts**

Potential impacts are categorized into zones: Primary corridor of impact (i.e core impact zone where the rehabilitation works will concentrate); Secondary impact area (off-site locations linked to the road rehabilitation works e.g. borrow areas) and general project area of influence (includes the wider geographical area that is influenced by this project – Tanga City Council and beyond).

Potential direct environmental impacts include: impacts on periurban flora and fauna; impacts on water resources and management; impacts on land, soil and construction mineral resources; materials efficiency and wastes; impacts on landscape and visual amenity; and impacts on air quality and climate change. Potential direct social impacts include: impacts on built environment; impacts on land use, land rights and user rights; impacts on community livelihoods; impacts on public wellbeing, health and safety; occupational health and safety risks; risks to sub-project from natural factors and processes; risks from neighbouring anthropogenic activities.

The causes of impacts will extend through entire sub-project cycle from site selection, mobilization, construction and operation to decommissioning of the whole or components of the road. Activities likely to cause Environmental and Social Effects (albeit of varying degrees along the 2.8km road route and at different areas within project area of influence) include: include:

* Rehabilitation works involve grading followed by asphalt concrete surfacing, also demolition of existing the structure
* New Construction works; i.e. side drains, passenger waiting sheds and bus bay, upgrading from earth road to asphalt concrete finishing
* Installation of various road furniture

**Mitigation Measures and Environmental and Social Management Plan (ESMP)**

This report also presents mitigation measures and a monitoring plan on how to minimize or prevent the potential adverse social and environmental impacts. The Environmental and Social Management Plan (ESMP) presented in this report describes the implementation schedule of the proposed mitigation measures as well as planning for long-term monitoring activities. It defines roles and responsibility of different actors in mitigating and monitoring of the adverse environmental and social impacts.

The LGA Project Team for the upgrading of the Duga-Airport Road is responsible for project implementation including environmental and social management requirements. PMO - RALG is to provide overall coordination and technical support to the LGA Project Team including necessary link with national authorities (i.e. Ministry of Lands,Housing and Human Settlement Development, NEMC). The approved ESIA report (and RAP report for this project is fed back to Tanga City Council to guide implementation and monitoring by Council Teams, CDOs, EMOs, Construction supervision Consultant and Contractors.

The estimated cost for environmental and social management of the proposed upgrading of the Duga-Airport Road is to be included in the Contractor's BOQ. Additional costs for implementing environmental and social management measures have been estimated at USD 1,200 annually (United States Dollar One Thousand Two Hundred).

**Conclusion**

The proposed upgrading of the Duga-Airport Road does not pose any adverse effects on the natural habitats and biodiversity because the project road is located in a peri-urban area mainly with secondary vegetation. Other moderate environmental impacts are related to management of waste.

The proposed upgrading of the Duga-Airport Road at Magomeni Street will necessitate realignment in order to straighten the road and to avoid demolition of residential structures. In other cases expansion of the width of the existing road and road side drains will increase the size of the way leave extending into other land uses such as grave yards and Tanga airport land. This is a potentially significant impact to the community along the project road. A Resettlement Action Plan has been prepared for the upgrade of the Duga-Airport Road to guide the compensation process to PAPs.

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# ACRONYMS

BOQ Bill of Quantities

CDO Community Development Officer

CEMO City Environmental Management Officer

CMT Council Management Team

CO2 Carbon dioxide

EIA Environmental Impact Assessment

EIC Education Information and Communication

EIS Environmental Impact Statement

EMA Environmental Management Act

EMO Environmental Management Officer

EMoP Environmental Monitoring Plan

EMP Environmental Management Plan

ESIA Environmental and Social Impact Assessment

ESMF Environmental and Social Management Framework

ESMoP Environmental and Social Monitoring Plan

ESMPs Environmental and Social Management Plans

GHGs Green House Gases

GoT Government of Tanzania

HIV/AIDS Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome

IAPs Interested and Affected Parties

IDA International Development Association

IEC Information Education and Communication

LGAs Local Government Authorities

NEMC National Environment Management Council

NGO Non Governmental Organisation

NOx Nitrogen Oxides

NSGRP National Strategy for Growth Reduction of Poverty

OSHA Occupational Health And Safety Authority

PAPs Project Affected Persons

PHA Public Health Act

PMO-RALG Prime Minister’s Office, Regional Administration and Local Government

PPE Personal Protective Equipment

RAPs Resettlement Action Plans

RAS Regional Administrative Secretary

RC Regional Commissioner

RPF Resettlement Policy Framework

SO2 Sulphur Dioxide

TAA Tanzania Airports Authority

TAUWASA Tanga Urban Water Supply and Sanitation

TANESCO Tanzania Electric Supply Company

TANROADS Tanzania National Roads Agency

ToR Terms of Reference

TOT Training of Trainers

TSCP Tanzania Strategic Cities Project

TSCP – AFP TSCP Additional Financing Project

ULGA Urban Local Government Authorities

ULGSP Urban Local Government Strengthening Programme

URT United Republic of Tanzania

VPO Vice President’s Office

WB World Bank

WB/OP World Bank/Operational Policy

WDC Ward Development Committee

WEO Ward Executive Officer

# INTRODUCTION

## Project background and justification

The Duga-Aiport Road is being proposed under auspices of Tanzania Strategic Cities Project (TSCP) whose main objective is to improve the quality of and access to basic urban services in seven selected Participating Local Government Authorities (LGAs) Tanga City Council being one of them. The TSCP was prepared in a response to a request from the Government of Tanzania (GOT) to assist with the financing of an investment operation that would provide finance for critical infrastructure in key urban LGAs and support for improved fiscal and management capacity for urban development and management.

Tanga City was chosen because of its close proximity to Indian Ocean neighbouring Kenya. Tanga is also connected by central railway line linking it with Dar es Salaam city. Itis one of the industrial hubs of Tanzania and tourist destination. Tanga City is also served by Tanga port linking it with Mombasa port.

The project road is among sub-projects that were prioritized during the TSCP project design and preparation but not financed under the first round of TSCP implementation, due to cost estimates being far above the available funds under the credit. The subproject is in project documents but has not carried out. The Government of Tanzania (GOT) through the Prime Minister's Office Regional Administration and Local Government (PMO-RALG) is now preparing a new credit for the TSCP Additional Financing (TSCP-AF) project under the World Bank (through the International Development Association (IDA)) to fund the sub-projects that were not financed and thus not implemented.

The renewed proposal for Duga-Airport road is upgrading of the 2.8 km road from earth to asphalt concrete standard. The Duga-Airport road is a ring road interlinking the Dar-Tanga Road near Tanga Airport with the Pangani-Tanga Road at the Duga residential area. Economic and social facilities serviced by the road include Tanzania Plastic Pharmaceutical Limited and health centre (see chapter 4). The road cut across and services 14 sub-wards (mitaa) as well as a criticalconnection to the Tanzania Airport Autority (TAA) offices in Tanga.

The works include road side drainage structures, box culverts and associated road furniture's.

## Rationale of the Environmental and Social Impact Assessment Study

The subprojects tabled by Tanga City Council for funding through the first phase of TSCP had an overall Environmental and Social Impact Assessment (ESIA) prepared encompassing all subprojects proposed.Upon submission of the ESIA report to the National Environment Management Council (NEMC) all subprojects were collectively cleared and approved and Tanga City Council issued an Environmental Impact Assessment (EIA) Certificate.

Under the proposed TSCP Additional Financing project a Resettlement Policy Framework (RPF) and Environmental and Social Management Framework (ESMF) have been prepared to guide Participating Urban LGAs during planning and implementation of subproject under the current financing application by the World Bank (WB).Duga-Airport road was chosen as sample subproject for the preparation of ESIA and Resettlement Action Plan (RAP) reports that will demonstrate and uptake the principal and approaches proposed and depicted in the RPF and ESMF.This environmental impact statement presents the ESIA for the Duga-AiportRoad.

## Objectives of the Environmental and Social Impact Assessment

The objectives of carrying out the ESIA study are to:

1. Ensure that environmental considerations are explicitly addressed and incorporated into the development decision making process;
2. Identify major adverse (negative) and positive impacts which may arise from project implementation before a decision is made to authorise the project;
3. Propose mitigation measures that will avoid, minimise or offset any adverse significant biophysical, socio-economic effects of the developmental proposal;
4. Develop an Environmental and Social Management Plan and Monitoring Plan for the project during mobilization, construction and operation phases of the project.

## Scope of Work

The scope of work for the ESIA of Duga-Aiport Road includes:

1. To provide a description of the project, it's components and activities throughout all project phases;
2. To provide baseline information of bio-physical and socio-economic conditions within the project area of influence;
3. A description of the legislative and institutional framework relevant to the project, including relevant World Bank Safeguard Policies triggered if project is implemented;
4. Conducting public consultation with relevant authorities and communities that may be affected by the proposed project;
5. Identifying potential impacts on the bio-physical and socio-economic environment that may arise from project implementation and determining their significance of Impacts;
6. Identifying mitigation and management options to avoid, minimize or offset any adverse significant biophysical and socio-economic impacts;
7. Propose an environmental and social management and monitoring plan to be used by the Urban Local Government Authorities(ULGA) throughout the project cycle.

## Methodology

The ESIA study was carried out by a multi-disciplinary team including environmental planners, sociologists and land management experts who worked in close collaboration with the relevant ULGA technical staff. The study included the following main tasks:

### Desk Review

Literature pertaining to TSCP and the specific sub-project i.e. Duga-Aiport Road were reviewed. This included the previous overall ESIA report prepared under the first round of TSCP, and Tanga City Council Profiles. In addition relevant policies, Acts and regulations were reviewed for the legislative framework and institutional framework of the project

### Field visit

Field visits to TangaCity Council and along the Duga-Aiport Rd were undertaken in February 2014. The objectives of the visit were to record bio-physical and socio-economic conditions of the project area through direct observations. In addition, secondary information was collected from the City Council.

### Public Participation

During the field visit consultations were carried out with relevant authorities and the community within the project area of influence. Consultations carried out included (refer to chapter 5 for more details):

1. Two public meetings with the community in the project area i.e. with Project Affected Persons (PAPs).
2. Interviews with the City Council sector experts.
3. Interview with district commissioner
4. Interviews with the TangaUrban Water and Sanitation Authority.

These consultations were conducted as either direct, personal interviews with selected informants, or focus group discussions with authorities and technical personnel.

### Identification of Impacts

Potential direct environmental and social impacts are a result of interactions between sub-projects’ activities with the relevant baseline aspects (valued receptorsTable 8). Principles guiding impact identification involve the following:

Impacts identification link to causes of impacts (cause-effect interactions) and identification shall extend through entire subproject cycle

All valued receptors – physical, chemical, biological, built or human on subproject site, immediate vicinity or off site locations needs to be considered as required during the planning, designing and implementing stages of sub-projects.

The impacts were categorised as direct verses indirect and whether they are positive or negative.

### Impact Evaluation

Evaluation of impacts was based on the following criteria:

Extent - the spatial boundary where impacts will occur i.e. within the project primary corridor of impact, secondary impact area or general project area of influence.

Duration - whether the impact shall be temporary or permanent.

Magnitude - the extent in which the impact will alter the natural or social systems and baseline conditions.

Impacts were then classified in terms of significance as follows:

|  |  |  |
| --- | --- | --- |
| **Acronym** | **Classification** | **Comments** |
| IN | Insignificant | Impacts that have minimal extent, duration and magnitude |
| VL | Very Low | Impacts that have a combination of a small extent and short duration with low or moderate magnitude |
| L | Low |
| M | Moderate | Impacts that have a combination of moderate extent, duration or magnitude |
| H | High | Impacts that have a combination of large extent, long duration or high magnitude |
| VH | Very High |

## Report Structure

Chapter 1: Introduction

Provides the general overview of the project including how the project background and justification, objectives and scope of the study and methodology used for conducting the study.

Chapter 2: Project Description

This chapter details the project components and further outlines activities and materials used in all phases of the project i.e. (mobilization, construction and operation and decommissioning).

Chapter 3: Policy, Legal & Institutional Framework

The main policy, legal and institutional frameworks which govern ESIA studies in Tanzania are highlighted in this chapter. It provides details of important policies, acts and regulations that govern the project.

Chapter 4: Baseline Environmental and Social Conditions

The first part of this chapter elaborates the project influence area and boundaries. Subsequently the chapter outlines the baseline / existing conditions of the study area divided into physical environment, biological environment and socio-cultural environment.

Chapter 5: Stakeholders Identification and Analysis

Chapter five explains how the stakeholders were involved during the ESIA process and presents their views regarding the project.

Chapter 6: Identification and Assessment of Impacts

This chapter discusses environmental and social impacts associated with the project analysed according to impacts significance.

Chapter 7: Impact Mitigation Measures

Mitigation measures are summarized in response to the adverse impacts identified in chapter 6 of the report.

Chapter 8: Environmental & Social Management Plan

The Environmental and Social Management Plan (ESMP) presents how the identified impacts during design, construction and operation phases of the project will be managed avoid, minimise or offset any adverse significant biophysical and socio-economic effects of the proposed development.

Chapter 9: Environmental and Social Monitoring Plan

Environmental and Social Monitoring Plan elaborates how the implementation of the ESMP will be monitored throughout the phases of the project. It is a plan to monitor the efficiency of the proposed project mitigation measures.

Chapter 10: Decommissioning

This chapter presents the activities involved when the proposed project is no longer operational and potential impacts to be managed.

Chapter 11: Summary and Conclusions

Summary and conclusion summarizes findings with regards to how feasible, viable and environmentally acceptable the project is and provides recommendations to the proponent on the feasibility of the project.

In addition the report presents references and appendices which are attached herein.

List of Annexes:

Annexes 1 - 4

# PROJECT DESCRIPTION

## Project location

The Duga-airport road is 2.8km passing through 14 sub wards (Mitaa). Administratively the road sections planned for upgrading is wholly within Duga and Mwanzange wards, in Tanga city in Tanga region (Fig 1 below)



TANZANIA

*Figure 1Administrative map of project area*

## Project Components

The project involves upgrading the road from gravel to asphalt concrete. The works (*Table* ***1***) include:

* Rehabilitation works involve grading followed by asphalt concrete surfacing, also demolition of existing the structures
* New Construction works; i.e, excavation, grading, followed by surfacing earth road to asphalt concreate finishing
* Construction of side drains and installation of various road furniture.

*Table 1: Summary of activities associated with proposed subprojects*

|  |  |
| --- | --- |
| **Subproject Infrastructure Type** | **Activities** |
| Road | Rehabilitation by grading, gravelling, brick paving or tarmac/asphalt concrete finished surface |
| Road side drains | New construction concrete finishing |
| Drainage channels | New construction |
| Culverts | New construction, rehabilitation by of existing structures |
| Pedestrian crossing slabs, walkways, speed humps, rumble strips, road shoulders | New construction |
| Road furniture (street lights, signing etc.) | New installations |
| Bus stops | Passenger waiting sheds, bus bay |

## 

## Project activities

### Site selection

*Land take/Land acquisition*

The project is Upgrading/undertaking and not a new establishment. Tanga City Council will acquire small portions of new land necessary for road realignment and not for the entire road. The Duga-Aiport road is a link road within the Tanga City thus administered and managed by city council. At some point such as Magomeni Street will necessitate realignment in order to straighten the road and to avoid demolition of residential structures. In other cases expansion of diameters of existing roads and drainage channels will increase the size of the way leave extending into other land uses such as grave yards and Tanga airport land.

The Council shall use a Resettlement Action Plan (RAP) specifically prepared for this road sub-project to take inventory of property and people affected and compensate for any losses of land and property and damages to structures incurred by the Project Affected Persons (PAPs).

### Mobilisation

Mobilization entails delivery of materials, equipment and crew/staff to the road location.

*Sourcing of materials and resources*

*Table 2: Summary of sources of materials and means of delivery*

|  |  |  |  |
| --- | --- | --- | --- |
| **Type of Material** | **Source** | **Estimated Distance to site** | **Quantity Estimated** |
| Water | TBD | TBD | TBD |
| Sand | TBD | TBD | TBD |
| Fill Materials | TBD | TBD | TBD |
| Aggregates | TBD | TBD | TBD |
| Labour force | Local Communities, Tanga, Dar es Salaam | TBD | TBD |
| Fuel | TBD | TBD | TBD |
| Asphalt | Imported (China, India ) | Various | XX drums |
| Industrial material (cement, Steel, aluminium) | Tanga, Arusha, Dar es Salaam | 3kilometres | Cement-  Steel-  Fuel- |
| Machinery | TBD | TBD | TBD |

*TBD- to be determined*

*Labour Force*

Both skilled and unskilled labourers will be required to expedite the project successful including the following staffs:

* Resident Engineer (RE) to oversee overall project implementation
* Other engineers for general supervision of construction works
* Technicians for supervision of artisans
* Artisans specialized in woodwork, concrete works, metal work,
* Operators and drivers to operate construction machinery and equipment and heavy duty as well as light vehicles
* Unskilled labour for manual works.

It is anticipated that most of the labour will come from the Tanga City Council and Tanga Region.

*Preparation of construction camps*

The upgrading of the Duga-Airport Road will not require the construction of a large contractors construction camp. A small office and working area shall be established at a hired premise at Duga area.

*Works at borrow pits*

The upgrading of the Duga-Airport Road will use existing borrow pits for sourcing fill material and aggregate. These are located in Neema and Tongoni for gravel 10-15 km and,Amboni for aggregates around6 km from the project road.

Works involved at the borrow pits include rehabilitation of the pits.

### Construction

Upgrading of the Duga- Airport road will entail the erection or layingdown of structures on the project site. Construction activities include:

* New small scale construction of side drains for storm water collection.
* Upgrading the road from earth to asphalt concrete surface that will involve digging
* Erection of road furnitures
* Culverts and bridges
* Piling of excavated materials

*Vegetation clearance*

All the vegetation found within the carriage way and near areas including working areas will be cleared off. The cleared vegetation and top soil (overburden) will be stored for future landscaping and protection of embankment for grassing by the contractor.

*Civil works*

Trenching, excavation, digging, moving of soils, filling in with material, demolition of existing structures and disposal of rubble which is minimal in quantities will be used a backfill in gullies and destroyed earth road surfaces by the contractor.

*Finishing works*

After the civil works are completed the road surface is finished by compaction of the fill material, grading and resurfacing with gravel and finished with asphalt concrete.

*Operation of construction of equipment*

Activities will also include operations of construction equipment for example bull dozers, compactors, water boozer, asphalt plant, concrete mixer, etc. Most of these will run by diesel powered engines.

*Erection of structures/road furniture*

Some structures will be pre-fabricated (i.e speed limit signs, passenger sheds) and assembled on site while others (i.e drainage crossing slabs) will be made/constructed on site.

### Operation

*Use of the road*

Road operations are a long term activities related to the use of the developed road by vehicle and motored means of transport of various kinds. Maximum permissible 40 tones, sidewalks will be included for pedestrians and cyclist.

*Repair and maintenance*

This includes preventive maintenance of drains of unclogging deposited waste and soils, preventive maintenance of road surface to avoid trenches, potholes, etc, control of theft and vandalism. Street sweeping, unclogging of side drains is the function of City's Health Department. Repair of damaged parts will be a function of City's Engineering Department.

### Decommissioning

Decommissioning at the end of its life or rehabilitation or up-grading an infrastructure or its component may involve demolition of structures and site restoration. Depending on the design, standard decommissioning for this asphalt road is after 15 years where the road undergoes major rehabilitation and resurfacing.

## Design considerations

The upgrading of the road is designed to last at least 15 years with necessary rehabilitation / strengthening over period of time. The road design will involve some minor re-alignments. This includes alignment at Mwanzage for 0.6 km. The existing Right of way 30m including carriageway width of 6m is to be maintained with 4m shoulders that will include road side drains added with a 15m road reserve. The design speed adopted ranges from 50kph to 110kph.

The road design includes oneround culvert.

Safety design considerations include:

* 4m wide surfaced shoulders provides some surfaced space for walking or cycling and other for non-motorized transport.
* 6bus stops are proposed. These furniture will provide stopping areas off the carriageway reducing the need for hazardous overtaking manoeuvres.
* Rumble strips and speed humps where speed restrictions are implemented
* Approximately 10 of pedestrianzebra-crossings planned to enable pedestrian including 60 Nos. Street lighting.

## Waste Generation

During Construction phase various types of waste will be produced. Solid waste generated include demolished debris, rubble, cleared vegetation, sanitary waste, paper, plastic bottles, aluminium/metal scraps, food wastes etc as depicted in *Table* ***3*** below.

Specific disposal methods will be determined by the Contractor. Generally all wastes will be collected and stored in containers at work areas for later disposal; or transported by tracks for immediate disposal at designated areas. Chemical spills from ground on construction site and storage areas will be collected by skimmers, shovels, absorbent materials, pitchforks, rakes, wheelbarrows, buckets and barrels. The contaminated soils will be removed to avoid contaminating ground water. Contaminated soils and absorbent materials used to remove spilled oils will be covered and stored in concrete surface within the storage yard in sheds sheltered from rain and runoff.

*Table 3 Type and Sources of wastes generated during Construction Phase*

|  |  |  |  |
| --- | --- | --- | --- |
| **Waste Type/Site** | **Source** | **Approximate Quantity** | **Disposal Method/Site** |
| Earth, green cuttings (vegetation wastes) | Site clearing and excavation | TBD | TBD |
| Concrete, blocks, hessian cement bags, waste concrete slurry, | Construction of foundation(s): block/concrete works | TBD | TBD |
| Metal (reinforcements, nails, timber, iron sheet) | Construction of structures- bridge, culverts | TBD | TBD |
| Conduit pipes, cables | Installation of electrical infrastructure | TBD | TBD |
| Food wastes | Labour force | TBD | TBD |
| Waste water | Construction works | TBD | TBD |
| Sanitary waste | Labour force | TBD | TBD |
| Air / dust pollution | Site clearing and excavation | TBD | TBD |

TBD- To be determined

# POLICY, ADMINISTRATIVE AND LEGAL FRAMEWORK

Tanzania has a good policy, legal and institutional framework for management of environment and social issues enshrined in the National Constitution, National Environment Management Policy and National Environmental Management Act, the Land Policy and Land Acts as well as supporting local laws and bye-laws. A few policies and laws that are relevant to the environmental and social management of the upgrading of the Duga-Airport Road are presented below.

## National Policies

The National policies that address environmental management as far as this project is concerned include the following:

### National Transport Policy, 2003

The key objective of the transport policy is to smooth the transport infrastructure to enable easy movement of agricultural inputs and output to and fro rural and urban areas. The key issue is that the quality and quantity of rural transport services profoundly affect the daily lives of millions of residents of rural communities. Agricultural inputs need to be transported into villages and surplus outputs should be transported to the markets, which are normally located in urban areas. To facilitate such goals, efficient and all weather roads are needed. This road projects fulfils the envisaged policy objective.

### National Environmental Policy (NEP) of 1997

Tanzania currently aims to achieve sustainable development through the rational and sustainable use of natural resources and to incorporate measures that safeguard the environment in any development activities. The environmental policy document seeks to provide the framework for making the fundamental changes that are needed to bring consideration of the environment into the mainstream of the decision making processes in the country. The National Environmental Policy, 1997 stresses that for a framework law to be effective, environmental standards and procedures have to be in place. For example, Chapter 4 of the policy (Instruments for Environmental; Policy), Section 61, states that “As part of the (National Environmental Policy) strategy in the implementation of the National Environmental Guidelines, specific criteria for EIA conduct will be formulated”.

The National Environmental Policy as a national framework for environmental management emphasized that the transport sector shall focus on the following environmental objectives:

* Ensuring sustainability, security and the equitable use of resources for meeting the basic needs of the present and future generations without degrading the environment or risking health or safety;
* To prevent and control degradation of land, water, vegetation and air which constitute our life support system;
* To conserve and enhance our natural and man-made heritage, including the biological diversity of the unique ecosystem of Tanzania;
* To improve the condition and productivity of degraded areas including rural and urban settlement in order that all Tanzanians may live in safe, healthful, productive and aesthetically pleasing surroundings;
* To raise public awareness and understanding of the essential linkages between environment and development and to promote individual and community participation in the environmental action;
* To promote international co-operation on the environment and expand our participation and contribution to relevant bilateral, sub-regional, regional, and global organizations and programs, including implementation of treaties.

With specific regard to the transport sector, the National Environmental Policy (in Section 51) focuses on the following:

* Improvement in mass transport systems to reduce fuel consumption, traffic congestion and pollution;
* Control and minimization of transport emission gases, noise, dust and particulates;
* Disaster/spills prevention and response plans and standards shall be formulated for transportation of hazardous/dangerous materials.

### National Land Policy (1995)

The National Land Policy advocates equitable distribution and access to land by all citizens. It aims to ensure that existing rights in land especially customary rights of small holders (i.e. peasants and herdsmen who form the majority of the country’s population) are recognized, clarified, and secured in law. Among other objectives under the policy framework, land is to be put to its most productive use to promote rapid social and economic development of the country without upsetting or endangering the ecological balance of the environment.

### National Water Policy, 2002

Two components from the National Water Policy have a bearing on the road upgrading project. These address proper use, conservation and protection for human consumption and the environment.

Protection and Conservation of Water Resources: The "polluter pays principle" shall apply and water conservation for all aspects of water use are to be enforced. "Demand management" is to be used in conjunction with water supply provision.

Water and the Environment: Water related activities should aim to enhance or to cause least detrimental effect on the natural environment. Furthermore the allocation and consumption of water for environmental purposes shall be recognized and given appropriate considerations.Water for the environment shall be determined based on scientific information available considering both the temporal and spatial water requirements to maintain the health and viability of riverine and estuary ecosystems.

### National Human Settlements Development Policy (2000)

Part of the central thesis of this policy is that: "there aren’t enough surveyed areas and services land for human settlements development. Furthermore the procedures for securing land are difficult and cumbersome". The policy urges to lease land to both private and public investors in accordance with existing laws and land leasers have to pay adequate and fair compensation to holders of land required for expansion. The Policy is relevant for this project as there will be some section of the road where land take will be involved therefore government has to adhere to pay compensation to affected land owners. The ultimate future vision of this policy is to have well organized, efficient, healthy, safe and secure and aesthetic sustainable human settlements and infrastructure services.

Among the objectives of this policy to improve the level of the provision of infrastructure and social services for the development of sustainable human settlements and to make serviced land available for shelter to all sections of the community. Such infrastructure and services constitute the backbone of urban/rural economic activities. All weather roads and a reliable and efficient transport system, commuter bus stations, drainage channels, and proper collection and disposal of solid waste are essential to increase productivity and the establishment of manufacturing industries.

### National Policy on HIV/AIDS, 2001

The overall goal of the National Policy on HIV/AIDS is to provide a framework for leadership and coordination of the National multi-sectoral response to the HIV/AIDS epidemic. This includes formulation, by all sectors, of appropriate interventions which will be effective in preventing transmission of HIV/AIDS and other sexually transmitted infections, protecting and supporting vulnerable groups, mitigating the social and economic impact of HIV/AIDS.

Many studies have shown that women who work as food vendors and other small businesses in villages areas are at risk and vulnerable of contracting HIV/AIDS infection due to integration of seasonal contractual workers and vice versa. Thus the National Policy on HIV/AIDS is relevant in this respect since it provide the larger framework for intervention and protection of HIV/AIDS for all people.

### National Gender Policy, 1999

The key objective of the policy is to provide guidelines that will ensure that gender sensitive plans and strategies in all sectors and institutions are developed. While the policy aims at establishing strategies to eradicate poverty, it puts emphasis on gender quality and equally opportunity of both men and women to participate in development undertakings and to value the role-played by each member of the society.

Therefore this policy advocates for opportunities to both men and women in projects including road works and related activities, and for women to be involved at all levels of the project planning to implementation.

### National Strategy for Growth and Reduction of Poverty, 2005

The strategy concentrates on efforts aimed at reducing income imbalances by improving human capabilities, survival and social well-being. The National Strategy for Growth Reduction of Poverty (NSGRP) is informed by the aspirations of Tanzania’s Development Vision (Vision 2025) for high and shared growth, high quality livelihood, peace, stability and unity, good governance, high quality education and international competitiveness. It is committed to the Millennium Development Goals (MDGs), as internationally agreed targets for reducing poverty, hunger, diseases, illiteracy, environmental degradation and discrimination against women by 2015.

Implementation of the Duga-Airport road project will create employment, improve business and contribute to the growth rate of the Gross Domestic Product (GDP).

### Construction Industry Policy, 2002

The road sector is among key areas embraced by the construction policy. Among the major objective of the policy, which support sustainable road development sector include: to promote application of costs effective and innovative technologies and practice to support socio-economic development activities such as road-works, water supply, sanitation, shelter delivery and income generating activities and to ensure application of practices, technologies and products which are not harmful to both the environment and human health.

## Legal Framework

### The Constitution of the United Republic of Tanzania Cap 2 (1977)

The constitution is the supreme law. However there is no specific Article that address the right to clean and safe environment directly. The main tenet of the Constitution are the various rights bestowed to individuals which encompass all social matters and issues related to the environment which will be realized by the Duga-Airport Road project. Article 24 has irrevocable provisions for the rights for a person to own property, for its protection and to fair and adequate compensation when deprived of the property.

### General Environmental Management

***Environmental Management Act (EMA), Cap 191 (2004)***

The Act stipulates the procedure and institutional arrangements for preparation and approval of environmental and social management instruments: ESIA reports, Environmental Management Plans (EMPs) for subprojects are in line with rights, duties, and powers to individuals and institutions bestowed by EMA at all administrative levels (including the National Environmental Management Council, officers and committees at LGAs).

***Environmental Impact Assessment and Audit Regulations (2005)***

It is an offence for LGAs to commence, finance, permit or license a project without EIA authorization. The EIA and Audit Regulations Part IX, Regulation 42, Sub-regulation (1); (2)(b); and (4), require that in situations such as this proposed upgrading of the Duga-Airport Rd project, where an EIA Certificate is still valid (under the overall ESIA for Tanga City Council under the first round of TSCP), and a Proponent wishes to make changes to the development, extra work should be done to supplement the existing Environmental Impact Statement (EIS). The nature of additional information required to supplement the EIS should be provided by the National Environment Management Council (NEMC). The EIS supplement is undertaken by the Proponent. At the completion of the assessment, the supplement report is reviewed and approved by NEMC. The Proponent is issued with a Variation Certificate in accordance with Part VII, Regulation 35, Sub-regulations (1) – (3)) of the EIA and Audit Regulations, 2005.

***Environmental (Registration of Environmental Experts) Regulations (2005)***

Sub-project EIAs, where required, will be conducted by person or firm of experts registered and certified by the Registrar at NEMC. Prime Minister's Office - Regional Administration and Local Government (PMO-RALG) will commission Consulting firms certified to undertake EIAs. Local Government Authorities (LGAs) will strive to assign qualified staff to prepare sub-project Environmental and Social Management Plan (ESMP); or support and supervise external experts where screening determines a need to follow national procedures and obtaining EIA certificate issued by Minister responsible for environment. LGAs will ensure that, through capacity building, its relevant Staff attain qualifications required under this regulations to conduct EIAs and Audits or related studies and are registered / certified by Registrar (NEMC).

### Management of Air emissions and Ambient Air Quality

***Environmental Management Act (EMA), Cap 191 (Sections 74, 75 and 130-132)***

EMA has provisions for three main areas: General Atmosphere; Climate Change and Management of Gaseous Wastes from Various Sources. The Act directs LGA to adopt national standards on air emissions.

***Environmental Management (Air Quality Standards) Regulations, (2007)***

The Environmental Management (Air Quality Standards) Regulations prohibits emissions/release of hazardous substance into the environment. The Duga-Airport Road project will adhere to permissible emission limits and quantities of emissions of SOX, CO, black smoke and suspended particulate matters, NOX, O3, hydrocarbon, dust, lead and substances in exhaust of motor vehicles prescribed by the regulations. If need be, LGA seek air pollutant emission permit issued by NEMC.

***Public Health Act, Cap 336 (2009)***

The Public Health Act sets requirements for management of gaseous wastes from various sources including vehicles. The contractor for the Duga-Airport road project is to ensure the maintenance of equipment and machinery to minimize gaseous waste.

***Occupational Health and Safety Act, No.5 (2003)***

This Act deals with the protection of human health from occupational hazards. It requires the employer to ensure the safety of workers by providing safety gear at the work place, and also provides for the employer to ensure that Occupational Health and Safety issues are adequately considered during construction, operation and decommissioning. The project proponent will ensure that Contractors are aware and that labourers are provided with appropriate gears.

### Management of Solid Wastes

***Environmental Management Act (EMA), Cap 191 (Sections 114 – 118)***

By developing waste management infrastructure, the LGA have fulfilled their responsibility required by EMA which empower them to devise means for minimization of solid wastes and method of collection, transportation, treatment and disposal; as well as availing appropriate equipment and routes for collection; and designate transfer station / collection centers. The ESMP for the Duga-Airport road project will use the authorised waste management infrastructure and facilities set by the ULGA.

***Public Health Act, Cap 336 (2009)***

By developing waste management infrastructure, the LGA also have fulfilled PHA requirement that vest duty to LGA to set aside and manage areas in respect of solid (and liquid) wastes; collect, transport and dispose wastes from all sources; cleanse all receptacles; clean, maintain, and keep streets and public places, dumping sites and control scavengers at all waste sites. The ESMP for the Duga-Airport road project and specific Waste Management Plans will ensure that the LGA infrastructure and facilities operated as per these requirements.

***Environmental Management (Hazardous Waste Control and Management) Regulations (2009)***

Tanga City Council will ensure that there are infrastructure and facilities, specific procedures and practices for storage, transportation, treatment and disposal of all categories of hazardous and toxic wastes including health care wastes, electrical and electronic wastes, pesticides, radioactive, industrial and consumer and chemical wastes that may be produced during the implementation of the Duga-Airport road project.

### Management of Wastewater and Ambient Water quality

***Environmental Management Act (EMA), Cap 191 (Sections 61, 62, 123 – 129)***

By developing storm water management infrastructure, the LGA also have fulfilled EMA requirement that vest duty to LGA to prepare for placement of storm water drains. The Duga-Airport road project will adhere to provisions on discharge of sewage and management of liquid wastes and storm water.

***Environmental Management (Water Quality Standards) Regulations (2007)***

The upgrade of the Duga-Airport road project is to ensure safe distances of water supply systems from pollution sources for any project activity near water sources. The inclusion of Environmental Management Officers (EMOs) in the project monitoring will ensure no discharge of water polluting substances will go uncontrolled.

### Management of Soil Quality

***Environmental Management (Soil Quality Standards) Regulations (2007)***

The Duga-Airport road project will ensure main polluting activity and discharge effluent are prevented from contaminating soils or subsoil.

### Management of Noise

***Environmental Management Act (EMA), Cap 191 (Sections 147)***

In the course of constructing Duga-Airport road, the contractor will delineate all sorts of activities with potential to emitting noise and vibrations in order to control noise and vibration pollution into the environment.

***Environmental Management (Quality Standards for Control of Noise and Vibration Pollution) Regulations (2011)***

During the construction of Duga-Airport road, the contractor will incorporate measures in order to control noise and vibration pollution emanating from construction site, vehicles, workshop, and quarries that annoys, disturbs, injures or endangers the comfort, repose, health or safety of others and of the environment.

### Management of Land and Landuse

**The Constitution of the United Republic of Tanzania Cap 2 (1977); National Land Policy (1997); Land Act, Cap 113 (R.E 2002); Land Acquisition Act, Cap. 118 (R.E 2002); Urban Planning Act No.8 (2007); Land Use Planning Act No. 6 (2007); Land (Assessment of the Value of Land for Compensation) Regulations (2001); Land (Compensation Claims) regulations (2001); Courts (Land Disputes Settlements) Act, Cap. 216 (2002)**

These laws and regulations govern the use of land and other assets in urban areas including property and land rights, acquisition of land and other assets, rights and compensation, and dispute resolution and grievance mechanisms. The Duga-Airport road project will include component on Land acquisition and compensation procedures (Resettlement Action Plan) for each site that include comprehensive census of people whose land will be taken (even temporarily) and inventory of their assets and properties. Valuation and prompt compensation shall follow procedures laid down in land laws and regulations.

### Management of Public / Occupation Health and Safety

**Occupational Health and Safety Act No. 5 (2003); Employment and Labour Relation Act Cap. 366 (2004); National Policy on HIV/AIDS (2001); The HIV and Aids (Prevention and Control) No. 28 (2008); Law of the Child Act No. 21 (2009); and Disabilities Act No. 9 (2010)**

The Acts make provisions for safety, health and welfare of persons at work places and general public. The contractor will incorporate measures that ensure employment opportunities to all while protecting right of children and people with disabilities and control of STDs and HIV infections.

### Others Relevant to Infrastructure Development

***Water Resource Management Act No. 11 (2009) and Water Supply And Sanitation Act No. 12 (2009)***

The Acts provides for prevention and control of water pollution and degradation of water resources and penalties to be taken against one who pollutes the water resources.

***Road Act No. 13 (2007)***

Land acquisition and compensation procedures (Resettlement Action Plan) in the Duga-Airport road project will be guided and follow guidelines provided under this act i.e. give notice to affected people of plans for construction of a road (new road or to widen, deviate or re-align an existing road or road of access) and ensure compensation of owner of a land acquired.

## World Bank Safeguard Policies

Similar to the current project, environmental risk assessment for the proposed Additional Financing is rated Category B and triggers the same World Bank Safeguard Policies as the current project, which are listed below:

### Environmental Assessment (OP. 4.01)

The Duga-Airport road project involves the construction of an urban road and associated storm water drains, drainage channels from urban facilities, road furniture, etc.) that can have adverse environmental impacts. The World Bank’s safeguard policy OP 4.01 Environmental Assessment requires that all Bank-financed operations are screened for potential environmental and social impacts a view shared by the Tanzania National EIA procedures and processes. Both policies emphasize that the required environmental assessment be carried out on the basis of the screening results. Thus, this ESIA is consistent with the Tanzania legislation and the WB policy on environmental assessment.

### Involuntary resettlement (OP 4.12)

The WB Involuntary Resettlement Policy OP 4.12 requires that all projects screened for potential environmental and social impacts be supported/guided by a RPF that identifies involuntary resettlements under the planned project, identifies impacts i.e. severe economic, social and environmental risks and based on this defines the scope of the RAP for affected persons. A RPF has been prepared for the proposed TSCP-AF Project.

The upgrade of theDuga-Airport Road will involve removal of some graves for the new road re-alignment. A RAP specific for the upgrade of the Duga-Airport Road sub-project has been prepared based on the principles and approaches outlined under the Resettlement Policy Framework (RPF) guiding planning and implementation of the overall TSCP – Additional Financing Project.

As regards compensation the Tanzania laws requires that only the rightful land or property owner (statutory or customary rights of occupancy) should be compensated, while the WB OP 4.12 require that any person (whether is rightful owner or not) who lose or is denied or restricted access to economic resources – including tenants, encroachers, squatters - should be compensated. Although there are no significant discrepancies between WB requirements and GOT requirements regarding compensation and resettlement of Project Affected Persons (PAPs), as far as this ESIA (and RAP) for the upgrade of the Duga-Airport Road is concerned, the World Bank’s safeguard policy will prevail.

### Physical Cultural Resources (OP 4.11)

To mitigate against the potential for adverse impacts on cultural property, the the Urban Local Government Authorities (ULGA) project teams and management committees, in collaboration with local leaders, and the subproject planning have to ensure that cultural property resources are identified during subproject planning, and appropriate measures are taken to avoid damaging them. Chance find procedures will be incorporated into civil works contracts and buffer zones will be created to avoid damage to cultural resources, such as “sacred” forests and graveyards.

## Institutional Framework

### Environmental and Social Management Authorities

Environmental Management Authorities as per Environmental Management Act, Cap 191 (2004) and EIA Regulations include:

1. **National Environmental Advisory Committee:** Advice the Minister Responsible for Environment.
2. **Minister Responsible for Environment:** Issue guidelines and designate duties to various entities; approval by issuing of decision letter / EIA Certificate for development projects; delegate responsibility for EIA authorization to Director of Environment, LGAs and Sector Ministries.
3. **Director of Environment:** Coordinate, advise, assess, monitor and report environmental related aspects and activities; responsible for environmental policy and legal formulation and implementation; integration of environmental considerations into development policies, plans, programmes, strategies and projects; undertake strategic environmental assessment. The Director provides advice to Minister for approval of Environmental Impact Assessment report (EIS) and issuance of EIA Certificate.
4. **National Environment Management Council (A Body Corporate):** Undertake enforcement, compliance, review and monitoring of environmental impact assessment. NEMC role is to initiate /develop procedures and safeguards for the prevention of activities which may cause environmental degradation; provide advice and technical support to different stakeholders; enforce and ensure compliance of the national environmental quality standards.NEMC has specific roles and responsibilities to NEMC in the undertaking EIA / PEA for new development projects (Part III – XI); Environmental Audit for existing development projects (Part X); and Environmental Monitoring and Reporting (Part XI). Under the EMA, NEMC is empowered to establish specific offices or to appoint or designate officers to effectively perform its functions. Other functions include:

* **Registrar of EIA Expert /Firm of Experts /Environmental Auditor/Environmental Inspectors:** registers and keeps registry of qualified firms/individuals authorized to offer services in undertaking EIA, Initial and Control Environmental Audit Environmental Inspection, EIA training and other technical support.
* **Environmental Inspector (Appointed or Designated):** empowered to enter on any land, premise or facility of the project for the purpose of inspection, to examine records and to make enquiries on the project or for the purpose of monitoring the effects of activity carried out on that land, premise or facility upon the environment.
* **NEMC Zonal Offices:** headed by Environmental Management Coordinators replicate all functions and departments of NEMC including overseeing Compliance and Enforcement; EIA; Research and Planning etc. NEMC target 7 such offices namely: Lake Zone (Mwanza (center), Geita, Kagera, Mara and Shinyanga); North Zone (Arusha (center), Tanga, Kilimanjaro, Manyara,); Southern Zone (Mbeya (center), Iringa, Rukwa, Nkasi, Ruvuma); South-Coast Zone (Mtwara, Lindi); Central Zone (Tabora, Dodoma, Singida); and Coast Zone (Dar es Salaam, Pwani, Morogoro).

1. **Sector (Ministries) Environmental Sections:** Responsible for all sector–specific environmental matters within the Ministry including participation in Cross-Sectorial Advisory Committee for review of EIA Reports; review and verification of Environmental Audit Reports, monitoring on-going projects, and submit Monitoring reports to NEMC.
2. **Regional Secretariat:** Assist the Regional Commissioner; oversee/advise implementation of national policies, enforcement of laws and regulations at regional level. EMA, Cap. 191 Section 34 confers additional roles to the Regional Secretariat to coordinate all environmental matters within respective region.
3. **Local Government Authorities:** Perform basic functions including promoting social and economic wellbeing and development of areas and people within jurisdictions including relevant to environmental and social management. EMA, Cap. 191 Section 37 confer additional functions for the environment committees; give general powers to the LGAs including to undertake inquiries and investigations, summon any person, resolve conflicts among various parties, inspect and examine any premise, order to remove substance or article harmful to the environment and prosecute or sue any violator.

* **LGA Environment Management Officer (designated / appointed):** Enforces, advises the Environment Management Committee, gathers/ manages information, and reports on state of local environment. EMOs are tasked to monitor the preparation, review and approval of environmental impact assessment for local investments.
* **LGA Standing Committee on Urban Planning and Environment:** The Committee is established under Section 42 (1) of the Local Government (Urban Authorities) Act, 1982 as a standing committee responsible for urban planning. EMA covers additional functions for the environment committee, include overseeing proper management of environment within an urban area.
* **Standing Committees of Economic Affairs, Works and Environment of Township:** Established under Section 96(1) of the Local Government (District Authorities) Act, 1982 while EMA, Cap. Additional functions for the environment committee include overseeing proper management of environment within a township.

1. **Registered EIA Expert /Firm of Experts /Environmental Auditor/Environmental Inspectors:** Qualified firms/individuals authorized to offer services in undertaking EIA, Initial and Control Environmental Audit Environmental Inspection, EIA training and other technical support.
2. **Other Actors as per EIA and Audit Regulations, 2005**

* **Investor/ Developer / Project Proponent:** oversee and meet costs of Environmental assessment and implementation of EMP/EMoP; undertake Initial Environmental Audits and Environmental Control Audit, Self-auditing during implementation of EMP; undertake Baseline Survey before project implementation as basis for undertaking effective monitoring
* **General Public:** empowered by EMA and EIA Regulations to participate in all environmental management matters concerning them and at all stages of the EIA process specifically to raise issues and concerns and to appeal when dissatisfied.

### Land Management Authorities

Land Management Authorities as per various pieces of legislation identified in section 3.2.8 above include:

1. **Minister Responsible for Lands / Land Use Planning:** Sole authority over all land matters: duty of formulation and implementation of Land Policy and Act; issuing permit for using land (other than village or reserved land); urban planning and use and development of land; designate any Body or Organ as a planning authority and to declare any area of land to be a planning area.
2. **Commissioner for Lands:** Sole authority responsible for land administration: principal administrative officer and professional officer and advisor to the government in land matters at all levels; has power to delegate the powers to officers at Local Authority to work and comply with his/her directives.
3. **Qualified Valuers:** Land (Assessment of the Value of Land for Compensation) Regulations, 2001 (Regulation 5) directs that every assessment of the value of land and unexhausted improvement (properties / assets) is done by a qualified Valuer.
4. **Chief Valuer:** Land (Assessment of the Value of Land for Compensation) Regulations, 2001 (Regulation 6) directs that every assessment of the value of land and unexhausted improvement (properties / assets) done by a qualified Valuer is verified by the Chief Valuer of the Government or Representative.

### Other Authorities relevant to the Infrastructure Development

1. **Tanzania Electric Supply Company Limited (TANESCO)****:** Under the Ministry of Energy and Minerals, its core functions are generation, transmission, distribution, supply and use of electric energy. TANESCO uses road reserves for transmission infrastructure at some locations.
2. **Energy and Water Utilities Regulatory Authority(EWURA):** In the electricity sector to regulate transmission and distribution of petroleum and natural gas; in the water sector responsible for (i) licensing and regulating water supply and sanitation services (ii) establishing standards, guidelines and tariffs chargeable in relation to water supply and sanitation services (iii) Monitoring water quality.
3. **Water Basin Authority:** Established to manage water resources in nine (9) water basins. Extraction of any water for the construction of the project will have to be approved by the relevant Water Basin Authority. The relevant water basin for this project is the Internal Drainage Basin to Lake Eyasi.
4. **Water and Sewerage Authorities:** These are urban based, established to offer water supply and sanitation services in respective urban centers. The authorities issue permits for discharging liquid wastes.
5. **Occupational Safety and Health Authority (OSHA):** Oversee safety, health and welfare of persons at work, carries out all workplace inspections; hygiene surveys and measurements, occupational health examinations of workers, and offer advice on ergonomics.
6. **Ministry of Home Affairs, Fire and Rescue Services Force:** Responsible for the protection against fire hazards, to issue permit for use of fire-fighting equipment’s, Inspection of fire equipment commissioning of fire protection and detection system installed, to perform research on fire hazards and fire incidences.
7. **Tanzania Commission for AIDS (TACAIDS)****:** Prevention and control spread of HIV/AIDS, to promote advocacy and education on HIV/AIDS, to protect human and communal rights of people infected with and affected by HIV/AIDS

# Baseline Environmental and Social Conditions

## Spatial, Institutional and Temporal boundaries

### Spatial boundaries

The spatial boundaries extend from the carriage way, way leave and the area abutting the road. The spatial boundary of the Duga – Airport road is 2.8km length and its influence may extend to about 500m on either side of the road.

### Institutional boundaries

The Duga-Airport road is a ring road interlinking the Dar-Tanga Road near Tanga Airport with the Pangani-Tanga Road at the Duga residential area. The aim of upgrading of the Duga-Airport will is to improve access for vehicles travelling from Pangani to Dar without passing through the Tanga City central business area (CBD).Institutionally, Tanga City Council have the mandate to develop and maintain the urban infrastructures in the Council. The primary function of the City Council is to ensure maintenance and development of the infrastructures to support the economic and social development of the City. The Council will also be responsible for addressing the environmental issues posed by the subprojects. Roads and storm water drainage will be under the City Engineer while solid waste collection and disposal will be under the City Environmental Management Officer (CEMO).

### Temporal boundaries

The temporal boundary of the Duga-Airport Road refers to it's project cycle i.e. site selection, mobilization, construction, operation and decommissioning. The site selection phase includes land acquisition, for which compensation is to be paid within 6 months from the date the asset or property is valued (according to the national legislative requirements). Mobilization is to commence only after the land acquisition process is complete and is not expected to take more than 3 months as most materials and labor will be sourced locally inTanga region. The life of the project road is designed to be used for 30 years with periodic maintenance and repairs.

### Area and Administrative structure

Administratively the road sections planned for upgrading is wholly within Duga and Mwanzange wards, in Tanga city in Tanga region

## Physical environment

### Climatic Conditions and Rainfall

The climatic condition of the project area (Duga -Airport) is typical of Tanga City. The mean annual temperature is about 28°C and the mean annual rainfall varies from 900mm-1400mm.

### Topography and soils

The project road lies at an altitude of less than 300 m a.s.l. The topography along the project road and the near vicinity is flat inclining towards the Indian Ocean.

Soil in the project area is characterised by mixture of well drainingloam and sand soils.

## Biological environment

### Vegetation

The project area is characterised by secondary vegetation with ephemeral grass, weeds, and herbs none of which are marked as rare or endangered species. Few areas are grown with seasonal crops, and shade trees.

### Fauna

No wild animals other than arthropods, invertebrates and common small reptiles are likely to be found at the project site. The project road does not directly connect to any conservation area within Tanga Region therefore is not transversed by larger wild animals. Common animals seen along the project road or in the near vicinity of the project area include various livestock (section 4.4.4 below).

## Social services in the project area

### Health Services and Facilities

Duga ward has only one health centre with one Assistant Medical Officer, 6 clinical officer and 1dentist. The health centre serves other nearby wards like Mwanzange.

### Education

Duga ward has 4 primary schools and 1 secondary school both owned by government. Secondary school is located at ward level.

### Water supply

About 80% of people in Duga get water from Tanga Urban Water Supply and Sanitation Authority (Tanga-UWASA).

### Waste management

Solid waste is collected on site and later collected by contracted company and transferred to the designated dumping site at Mwang'ombe. The Tanga City Council's Health department carries out solid waste management. Solid waste generated in the ward is composed of household, market, commercial, institution and street waste.

Majority of residents in the Duga and Mwanzange wards use septic tanks connected to soak away pit and few use pit latrines. Liquid wastes are collected in sewerage system managed by the City Authority and such waste on-site sanitation is normally fed into the sewers at designated points.

## Economic activities in the project area

### Industries

There is one salt industry in the near vicinity of the project road area thtat provides employment to local residents if Tanga City.

### Commerce and Trade

There is no nearby market at Duga area. Shopping is done in small stalls located in every street.

## Demography

### Population

**Population**

According to the 2012 national Population and Housing Census, Duga ward has 18,704 people of which 8,895 people are men and 9,809 people are women. Mwanzange ward has 7,521 people. Duga ward has 14 streets but the road project traverses in 7 streets. Likewise, the Mwanzange ward has 4 streets but only 1 street will be impacted by road upgrading project as shown in Table 4 below.

*Table 4 Number of people along the Duga-Airport Road*

|  |  |  |
| --- | --- | --- |
| **Ward** | **Street** | **Population** |
| Duga | Magomeni A | 1,170 |
| Magomeni B | 1,809 |
| DugaBarabarani | 897 |
| Dugaviwandani | 1,040 |
| Majengo A | 1,072 |
| Mapinduzi | 1,355 |
| DugaMpya | 1,281 |
| Mwanzange | Mwakizaro | 3,480 |
| **Total** |  | **12,104** |

Source: National Bureau of statistics, 2012 Census Report - Volume 1: Population Distribution by Administrative Units

## Socio Economic profile of the Project Affected Persons

As previously mentioned, the project is Upgrading/undertaking and not a new establishment. The Duga-Aiport road is a link road within the Tanga City thus administered and managed by city council. At some point such as Magomeni Street the road updgrade will necessitate realignment in order to straighten the road and to avoid demolition of residential structures. In other cases expansion of diameters of existing roads and drainage channels will increase the size of the way leave extending into other land uses such as grave yards and Tanga airport land. At these points, the council will need to acquire the concerned pieces of land from current land holders i.e. PAPs. Their socio-economic profile is as follows.

### Sex of the Household Head

*Figure 2*below indicates that 53.33% of the household heads are female compared to 46.67 % who are male.

*Figure 2 Sex of the household head*

*Source: Household Census Duga-Aiport road, 2014*

### Age category of the PAPs

Most of the head of household interviewed had age between 40-60 years.

*Figure 3 Age category of the PAPs*

*Source: Household Census Duga-Aiport road, 2014*

### Housing Conditions

The quality of houses in the project area is good with majority of houses being made of Corrugated iron sheets and concrete brick structures. Few communal houses were also found in the project area i.e. government office and worship centres (i.e.mosques.) - See *Figure 4*, *Figure 5* and *Figure 6* below.

*Figure 4 Floor Type*

*Source: Household Census Duga-Aiport road, 2014*

*Figure 5 Wall material*

*Source: Household Census Duga-Aiport road, 2014*

*Figure 6 Roof Material*

Source: Household Census Duga-Aiport road, 2014

### Education

A good number of respondents in the project area have secondary education (see *Figure 7*) Households with high education normally have better income than families with low education. Poverty levels are strongly correlated with the education levels achieved by the heads of household.

*Figure 7 Education level of the PAPs*

Source: Household Census Duga-Aiport road, 2014

### Economic activities

Most of the population is engaged in trading of which industrial goods such as sugar, salt, soaps etc. can be purchased. Small portion of the community is engaged in civil services i.e. employed by government (see*Figure 8* below).

*Figure 8 Economic activities in the project area*

*Source: Field Data Duga-Aiport road, 2014*

### Water supply

Majority are connected to piped water inside their houses and few use communal stand pipe.

*Figure 9 Water supply in the project area*

*Source: Field Data Duga-Aiport road, 2014*

### Health

Only one dispensary is found in the project area which serves the entire Duga ward. The most dangerous disease is malaria followed by respiratory infections.

### Waste management and sanitation

The majority of residents take responsibility for their own waste. Waste is collected in container and transfer to collection area and disposed off to Murriet dumping site. About 66.67% use flush toilets while the remaining 33.33% use pit latrines (see*Table 5*below).

*Table 5 Toilet facilities*

|  |  |  |
| --- | --- | --- |
| **Toilet facilities** | **Frequency** | **Percent** |
| Flush toilet | 10 | 66.67 |
| Pit latrine | 5 | 33.33 |

*Source: Field Data Duga-Aiport road, 2014*

### Communication and travel

The project area is accessed by road. Mode of transport is motorcycle, bicycle and private vehicle. The project area is well catered for by telecommunication networks receiving service from 4 privately-owned mobile service providers i.e. Vodacom, Airtel, Zantel and Tigo.

### Cultural/ historical sites

Apart from the graves the remaining section of the road does not have any significance cultural/historical sites of particular attention.

### Type of Affected land

Most of the PAPs will loose residential plots (66.7%) Other categories of affected land are shown in *Figure 10* below. If PAPs are not fairly and adequately compensated they will end up homeless or have inadequate land to support their livelihoods.

*Figure 10 Category of affected land in the project area*

*Source: Field Data Duga-Aiport road, 2014*

# STAKEHOLDER CONSULTATIONS AND PUBLIC INVOLVEMENT

## Identification of Interested and Affected Parties

The overall goal of the consultation process was to disseminate Project information and to incorporate the views of stakeholders in the proposed upgrading of Duga-Airport Road project.

In the public consultation process four categories of Interested and Affected Parties (IAPs) were identified as follows:

### Consultative Meetings with City Councils

Consultative meetings atTanga City Councils include the following people;City Engineer, Resident Engineer, Land Officers, Surveyors, Water Engineer, Health Officers, Community Development officer, etc.

The Agenda for these consultations included:

* Presenting the Project:
* Discussing the Status and experience from the previous project
* Environmental and social issues regarding the proposed projects.

### National Institutions

Meetings were held with Tanga Urban Water and Sanitation Authority (Tanga-UWASA), and TANESCO.

The agenda for these consultations included:

* Presenting the Project by the consultants:
* Information sharing concerning the location of TANESCO or Tanga-UWASA infrastructures (i.e. electric poles/lines, water supply pipes and sewerage system) along the project area

### Community Consultation

PAPs along the upgrading of Duga-Airport Road project were identified in collaboration with the City Council officers and the ward officers. The process involved delineating the project road right of way and marking it's boundary. Thereafter, owners and/or users of land and/or structures within the demarcated boundaries were identified as PAPs. Two public meetings with PAPs were conducted. The agenda was:

* Presentation of the project
* Information on valuation exercise and compensation process
* Project's advantages and disadvantages
* Hearing their views of potential environmental and social issues as a result of the proposed project.

## Issues and concerns raised by stakeholders

Generally, the community at Dugais interested to see Duga-Airport road is upgraded. They realize the benefits of the project in terms of economic and social growth.

A summary of key issues raised during consultations with stakeholders are presented in

*Table 6* below.

*Table 6: Summary of Issues and Concerns Raised by Stakeholders*

| **Person/Institution Consulted** | **Issues Discussed** | **Response /Comments** |
| --- | --- | --- |
| Acting City Director | * Project briefing * Purpose of visit, that is, preparing ESMF/RPF and ESIA/RAP reports * Share past experience of TSCP phase 1 | * The City Council is aware of the project |
| City Engineer - Tanga | * Past experience on TSCP phase 1 implementation | * Misconception by local leaders on the budget allocated for project implementation * Lack of proper coordination with other institutions could lead to unnecessary cost to project   **Conclusion**   * Need for transparency of TSCP funds * Need for stakeholder involvement and participation in project cycle |
| TSCP/ Council Management Team (CMT) team members | * SWOT analysis | * Prioritization/site selection is challenging due to many needs within the LGA * Mechanisms to handle grievance issues exist within the City Council and there have been no complaints for the previous projects * The Planning Department is the relevant organ to handle prioritization of projects within the LGAs * A major challenge for LGA projects is resources to implement RAPs in urban areas; the compensation costs may be high compared to the value of the project considering that WB procedures should be followed * Some of the CMT members that form the TSCP group are not involved in the initial stages of the project   **Conclusion**   * All TSCP/CMT should be involved in the project cycle |
| Regional Manager - TANROADS, Tanga | * Past experience on TSCP phase 1 implementation | * Inter-agency coordination is still a challenge in implementing LGA projects |
|  | * Recommendation on possible project improvements | * There is need for better inter-agency coordination in the infrastructure sector to avoid overlap of similar projects at one site/area * Other stakeholders should be involved in the initial stages of the project, i.e. from project design |
| Senior Technician-Tanzania Airports Authority (TAA), Tanga  Civil Aviation Manager - Tanga Airport | * Recommendation on possible project improvements | * Need for stakeholder consultation in project implementation; this will ensure project implementation accommodating the plans of other institutions * Conditions of other institutions that are within project impact areas requirements should be accommodated in projects (or instance aviation safety requirements) |
| Principal Engineer - TANESCO,Tanga Region Office | * Past experience on TSCP phase 1 implementation | * Transmission/distribution lines is the property of TANESCO and have been acquired in accordance with relevant policies and laws * In case of any interference, developer needs to write a letter to TANESCO requesting relocation of the existing transmission line * The Applicant will be responsible for incurring all costs associated with relocation of transmission/distribution lines and relocation will be conducted by TANESCO experts |
|  | * Recommendation on possible project improvements | * Proper procedures and involvement of TANESCO should be adhered before any new development/project implementation with impacts on TANESCO infrastructures * It is important to involve TANESCO at the initial stage, so that relocation is done prior to engaging contractor to the site; this will minimize inconvenience to various stakeholders |
| Water Network Engineer, Tanga-UWASA | * Past experience on TSCP phase 1 implementation | * Payments/ compensation are not done before starting of projects, which increase cost and blames from customers when they do not get the service * There is no coordination with other utilities especially in initial stages of projects |
|  | * Recommendation on possible project improvements | * Payment for compensation to relocate other utilities should be paid prior to project implementation to reduce compensation cost * Project implementation should involve other stakeholders during the project cycle to ensure minimal impacts on utility users (e.g. losing water) |
| Tanga District Commissioner | * Roles in project implementation | * Projects should involve various stakeholders during identification and prioritization of projects or site selection to avoid any confusion that may arise during construction phase * Local leaders and local communities should be held accountable of any vandalism of infrastructures within their localities * Bylaws should be produced to ensure various mitigation measures for TSCP projects are accommodated |
|  | * SWOT analysis through project cycle | * In most projects under TSCP, the financing is not sufficient to complete projects leading to delays in the LGAs benefiting from the project * Coordination and perception of projects between LGA technicians and politicians is a major challenge in the project cycle * Lack of proper coordination between central Government institutions and those of the LGAs could lead to double allocation of projects * Local communities can be sensitize to accept projects without significant compensation * Vandalism and mismanagement of infrastructure is a major challenge |
| Duga Ward Development Committee (WDC) | * Discussion on general environmental and social issues * Collection of environmental and socio-economic data | * Leaders and members of the society are not involved in any process of the project * Involving leaders and community members in project cycle |
|  | * Discussion on the likely project impacts and mitigation measures | * HIV/AIDS and other diseases and social problems are to be taken into consideration during project implementation * The project should provide employment for local communities during the construction phase * Seminar/ education about HIV/AIDS and other STDs should be provided to the contractors and local community during project implementation |
|  | * Discussion of valuation and compensation procedures | * There is no committee responsible for grievance follow-up and compensation issues * There should be a committee responsible for grievances at the local level |
| Duga Community | * Discussion on general environmental and social issues * Collection of environmental and socio-economic data | * It is important for the LGAs to share information on actual time of take-off of a project * There is need for Government institutions to communicate about projects and their implementation to avoid overlap of projects within one area, as this creates confusion |
|  | * Discussion on the likely project impacts and mitigation measures | * Projects can increase HIV/AIDS infection rates * It is important for the contractor to take safety measures to ensure minimal impact of the project on local communities * Local communities should be sensitised to take part in monitoring of project activities to minimise conflicts between contractor and communities |
|  | * Discussion on valuation and compensation procedures | * The process of compensation and formulas used to ascertain compensation rates is not known by local residents |
| Mwanzange Ward Officials | * Discussion on general environmental and social issues | * Local communities are aware of the project as a valuation process has already been conducted * If the project implementation schedule has been changed, the community should be informed |
|  | * Discussion of valuation and compensation procedures | * The major challenge is related to delays in compensation payments * The compensation rates should be updated to current values |
| Mwanzange Community | * Discussion on the likely project impacts and mitigation measures | * For impacts of on graves, it is important for the MC to find alternative land to relocate the graves * Local religious institutions should be engaged in areas where projects are affecting graves |
|  | * Discussion of valuation and compensation procedures | * Valuation has been done but compensation has been delayed * The compensation rates should be updated as the valuation is out-dated * The Grievance committee should include project affected persons and their leaders |
| City Cleaning Officer | * Project design | * Project design should ensure that the project should not have negative environmental impact outside the project area, e.g. design of a storm water system |
|  | * Project operation | * Important for projects to consider a budget for monitoring the infrastructures during the project's operations phase |
| City Environmental Management Officer (CEMO) | * SWOT analysis through project cycle | * More engagement is required for LGAs especially in the EIA process of sub-projects * There should be resources set aside for supervision and monitoring of projects especially during the construction and operation phases * A major challenge is resources for decommissioning of project activities such as rehabilitation of borrow pits; this should be accommodated * Most LGAs have inadequate facilities/equipment for waste management |

# IDENTIFICATION AND ASSESSMENT OF IMPACTS

## Impact Zones

The geographical spread of the impacts (short term or long term) is likely to encompass the following areas. The actual spatial dimension will vary with the nature of the impact and the receptor environmental and social component.

1. **Primary corridor of impact**

This is the core impact zone where the rehabilitation works will concentrate. The site of the construction is the Right of Way of the total length of the Duga-Airport road of about 2.8km and the area immediately bordering it. The road will entail 30 metres wide of which 6metres is the carriage way while the remaining 24m is road reserve.

1. **Secondary impact area**

These are off-site locations linked to the road rehabilitation works including i.e. borrow areas, quarries and other sources of materials such as sand, gravel, aggregates, fill materials, water, etc involving civil works / extraction activities done by / or on behalf of the project. Other sites will be waste disposal sites, camp site (if so requires) or other location chosen for accommodation of crew and equipment and material storage. These secondary impact areas will be interspersed across the city and beyond (refer to chapter 2 on mobilisation phase).

1. **General project area of influence**

This includes the wider geographical areas that are influenced by this project (in Tanga City Council and beyond) including area in the near vicinity of the road within a 5km radius; transportation routes from sources of material to the project location.

## IMPACT IDENTIFICATION AND EVALUATION

### Activities Likely to Cause Environmental and Social Effects

Table 1 chapter 2 presents activities planned for upgrading the Duga-Aiport Road. Activities likely to cause environmental and social impacts (albeit of varying degrees along the 2.8km road route and at different areas within project area of influence) include:

* Rehabilitation works involve grading followed by asphalt concrete surfacing, also demolition of existing the structure
* New Construction works; i.e. side drains, passenger waiting sheds and bus bay, upgrading from earth road to asphalt concrete finishing
* Installation of various road furniture

The causes of impacts will extend through entire subproject cycle from siting (site selection), mobilization/construction and operation to decommissioning of whole or components of the road.

**Site selection phase**

Main cause at this stage will be land take or acquiring land and other assets: for various purpose both on temporary and permanent terms. Rehabilitation/upgrading of Duga-Airport roads at Magomeni Street will necessitate realignment in order to straighten the road and to avoid demolition of residential structures. In other cases expansion of the width of the existing road and drainage channels will increase the size of the way leave extending into other land uses such as grave yards and Tanga airport land.

Other cause of impacts will be land take on temporary terms for diversion of traffic during construction phase, stock piling building materials, excavated soils and overburden (cleared soils and vegetation). Also construction of drainage channels without addition of access/cuts across drains to houses/property causing restrictions or access to homes, business or services; and restrictions at points of extraction of construction materials, water and other local resources leading to restrictions to other local resource users.

**Mobilization phase**

Mobilization of materials, equipment and crew/staff to the subproject location extend the impact zone to include offsite locations – i.e. transportation routes and sources of materials. Delivery will happen throughout the life of a project with activity level anticipated to be high prior to construction phase and waning off during operation phase. Materials delivered to the project site will be stock piled either along the project road or in designated area near the contractor's office. Construction of a large contractor's camp will not be required because staff will reside within Tanga City Council. However, there will be a small contractor office for daily supervision and resting facility for workers.

**Construction phase**

Construction will entail site preparations and the erection or laying down of structures on the project site. With regard to the Duga - Airport Road construction activities will include:

* Upgrading from earth road to asphalt concrete
* New construction will involve construction of side drains for storm water collection
* Vegetation clearing, digging and trenching, filling, draining and
* Erection and installation of road furnitures
* Piling of excavated materials
* Culverts

Vegetation clearance and related site preparation works is another cause of environmental impact. Along the Duga-Aiport road, there is minimal vegetation cover because it an actively used urban road. Construction activities will involve excavation, and trenching /digging, filling, compaction and resurfacing; and operations of construction equipment for example bull dozers, compactors, water boozer, asphalt plant, concrete mixer, etc (refer to chapter 2 on project description).

**Operations phase**

Road operations will be long term activities related to the use of the upgraded road. Sources of likely impacts will be those commonly associated with deficiencies in management and monitoring procedures. This includes inadequacies in preventive maintenance i.e. wastes and soils deposited and clogging drains; road surface cracks, potholes etc; and theft and vandalism of road furniture.

**Decommissioning**

At the end of its life or rehabilitation or up-grading the road or its components will involve demolition of structures, demobilization and site restoration. Depending on the design, standard decommissioning for asphalt surfaced road is about 15 years where the road is abandoned.

### Potential Direct Environmental Impacts

1. **Impacts on periurban flora and fauna**

The proposed Duga-Airport Road is not likely to affect any natural habitat and/or biodiversity with local or national importance. The nearest natural habitat is the Indian Ocean which is within the general impact zone; cumulatively it can contribute impact by draining through other storm water infrastructures to the ocean.

Vegetation clearance will entail removal of secondary vegetation including grass, herbs, and other ephemerals. Few areas will have clearance of crops and trees with economic and social value. No wild animals other than arthropods and invertebrates, small reptiles likely to be found on the sites. None of which are rated as endangered, vulnerable or threatened.

Therefore loss and/or damage to periurban flora and fauna are likely to be very small in terms of extent and magnitude therefore the impact is rated insignificant and will not be discussed any further.

1. **Impacts on water resources and management**

There is no surface water body (natural or manmade) found on or crossing or near vicinity of the 2.8km length Duga-Airport road that is likely to be affected by the upgrading activities. The drainage system associated with the road is likely to improve the drainage system in the area and reduce risks associated with flooding considering the low lying nature of the area.

Potential to deplete water resources due to construction activities requirement for water inputs e.g. for mixing, cleaning, dust dousing etc. and water for drinking and ablution purposes for construction crew is unlikely as the construction activities anticipates to source water from city water supply authority (Tanga-UWASA).Therefore this impact is rated as insignificant and will not be discussed any further.

1. **Impacts on land, soil and construction mineral resources**

Soils at the project area are a mixture of loam and sand, well-draining soils. The slope of the terrain at the project area is flat inclining towards the Indian Ocean. Construction works will involve some degree of land disturbance and/or movement of soils and thus expose the soils to erosion by the elements (wind, rain) and lead to land degradation at construction sites. Main potential impacts are degradation of land and soils – substantially reducing their quality (nutrients, water retention, physical properties etc.) below acceptable levels; and depletion of land, soil and mineral resources. Considering that the terrain at the proposed site is flat and soils are sandy, the proposed activity is not likely to cause any impact on land or soils. Constructions of new road side drains will improve channelling storm water runoff from the road surface reducing soil erosion on land abutting the road.

Secondary impacts at points of extraction of the construction materials may include depletion of local construction materials e.g. stones/aggregates, sand, gravel, cobblestones, and fill materials. However, this is unlikely as the amount of materials is small and the sources of construction materials exist and authorised.

This impact is likely to be insignificant because materials will be sourced from existing authorised burrow pits.

1. **Materials Efficiency and Wastes**

Inadequacies in storage and use of construction materials delivered to the project site may lead to wastage (reducing materials available for use) and turning of the resources into wastes. If stockpiled materials are not put into immediate use they may disperse (by wind or runoff) into the environment.

Planned or accidental discharge of wastes directly onto land even in small amount has the potential to contaminate the natural habitat reducing its physical and chemical qualities albeit temporarily. This will emanate from accidental spillage of construction wastes: waste water from concrete works and wash down of aggregates, rubble and chunks of pavement, pieces of concrete and masonry and non-usable excavated materials discharged directly into the land or brought in by storm water runoff. Accidental discharge of oils and fuels into the land and waste generated by construction crew are other sources of possible pollution. Deposits into land may remain localised (unless washed into runoff) but the effects of oily and soluble components of wastes and spilt materials cumulatively can contribute impact by draining through other storm water infrastructures to the ocean.

Pollution of land from inadequate waste management is considered very low because the project area is sparsely populated with few airport staff residences and one institution (TAA office).

1. **Impacts on Air Quality and Climate Change**

Construction activities will lead to emissions emanated from fuel powered equipment i.e. vehicles engines and construction equipment etc. Exhaust contain pollutants notably carbon-dioxide (CO2) plus small quantities of noxious gases such as nitrogen oxides (NOx), sulphur dioxides (SOx), hydrocarbons and particulate matters (PM). These Green House Gases (GHGs) are known to interfere with temperature regime and cause climate change effects.

Clearance of vegetation reduces vegetation cover thus reducing sink for carbon-dioxide and consequent climate change effects. However, the impact on air quality will be minor and localized due to sizes and numbers of equipment used per site (refer to chapter 2 project description).

Construction works like excavation will produce dust decreasing local air quality and caking of surfaces of nearby features. However this is likely to be an impact of low significance because the length of the road is small therefore construction will take a short time.

1. **Impacts on Landscape and Visual Amenity**

Project aspects likely to affect landscape and visual quality are activities that cause modifications in the quality of the landscape features or do not blend with the natural setting of an area. Since the road upgrading will be on the existing alignment with minor modifications of some sections, and sources of fill material and aggregate will be from existing burrow pits, impact on landscape and visual amenity for the Duga-Airport road is insignificant and will not be discussed further.

### Potential Direct Social Impacts

1. **Impacts on Built Environment**

Consultations with the water authority (TUWASA) indicated the presence of water supply pipes along the project road. Upgrading of Duga-Airport road could cause physical damage to existing water supply pipes (below ground). This potential impact may disrupt water supply services in the immediate areas and wider area (albeit temporarily) during construction; therefore it is considered to be of moderate significance.

Upgrading of Duga-Airport road is not likely restrict access or delay access to homes, disruptions of business and services, institutions and other natural sites causing disturbances to local residents and users.

1. **Impacts on Land Use, Land Rights and User Rights**

Project activities that require land take or acquiring land and other assets are presented in the preceding section 6.2.1 including acquisition of land at the point of diversion or road realignment at expansion existing roads and drainage channels to achieve required construction standards and taking of land temporarily for diversion of traffic during construction phase, stock piling materials,

All project aspects that require acquisition of land albeit for small to medium construction, also those likely to cause involuntary restrictions or access to resources, property or asset will trigger involuntary resettlement.

The physical extension of the current corridor of the road for any of the above reasons will impact on the sitting landholders. The involuntary taking of land and other assets (permanent or temporary acquisition) may result in the following direct social and economic impacts:

**Relocation or loss of shelter (homes)**

Loss of home results in displacement or relocation of persons occupying the dwelling (owner; tenant; squatter/informal dweller). Upgrading works for the Duga-Aiport road will happen on existing road ways that does not have well demarcated right of way being a By-Pass.

**Loss of assets or access to assets**

Loss of land and/or property have been determined as the most likely impacts along the entire length of the road as the land in question is under use of some sort, communally, or individually. Thus, upon the involuntary removal from the area people will suffer lose of rights to pieces of land, and/or un-exhausted improvements on the land i.e. built structures and crops.

* *Loss of house structures*

Residential houses /dwelling, residential cum commercial houses, house annexed structures (e.g. kitchens, boundary wall / live fences, pit latrines, house foundations, stores, cottage industries, livestock pens/sheds etc.) or commercial structures (shop, stall); or house supply structures: water source/supply (well, pump, water line), electricity supply (underground, overhead etc.).

* *Loss of Structures only (not land*)

Encroachers and squatters (who will suffer loss of fixed structures but not land on which they are built).

* *Relocation of movable assets and property*

Privately own machinery, mobile structures, graves

* *Loss of agricultural assets*

Farm properties mainly constitute standing crops: permanent crops, trees, seasonal crops and vegetable gardens.

* *Loss of community infrastructure:*

Water line, electricity supply infrastructure, communication line (damage and temporary loss of service

* Public services and recreational grounds

Areas used by people permanently or periodically for activities that do not require built structures.

**Loss of income sources or means of livelihood of persons using the land or assets**

* *Loss of income sources*

PAPs incur loss of business premise or cash crops

* *Means of livelihood*

PAPs incur loss of farming, grazing area

* *Loss of rental accommodation or loss of business premises*

Indicate residential or business tenants who will incur loss of rental accommodation or loss of business premises i.e. places people rent premises for business or residential purposes

* *Natural assets*

Uunused farmland and natural vegetated / forested areas - sections not inhabited, benefits accrued will be lost to the communities that use them.

**Involuntary restrictions of access to resources, property or asset**

In areas where restrictions that prevent / limit access to resources, property or asset (result in adverse impacts on livelihoods and wellbeing of affected persons.

Loss of structures, residential and business premises at Duga-Airport road is occurring in a situation where people have intentionally or unknowingly built on land designated and used for the road. Duga Ward is a planned area with appropriate land use plan as the area for road is already well indicated in the plan, known to most if not all stakeholders. Thus loss of home resulting in displacement or relocation of persons occupying the dwelling and consequent impacts will be minimal.

1. **Impacts on Community Livelihoods**

The Duga-Airport road is a ring road interlinking the Dar-Tanga Road near Tanga Airport with the Pangani-Tanga Road at the Duga residential area. The upgrading of the Duga-Airport will result in improved access for vehicles travelling from Pangani to Dar by providing an alternative route that does not pass through the Tanga City central business area (CBD). Therefore this new interlink will reduce congestion of vehicles through Tanga CBD. This impact is of significance due to the strategic importance of Tanga City as one of the growing industrial hubs in Tanzania.

The upgrading of the road will require construction workers, creating employment opportunities all levels for local residents and contractors. The project will also indirectly give opportunity to local suppliers to sell goods and services to construction workers during construction. This impact will be temporary during construction, localised along the primary project area, therefore considered as a low significant positive impact.

Modification is necessary to access to business premises and damage to business structures leading to relocation or loss of income sources and means of livelihood to people using the land or assets. If not monitored improved road in the future might attract illegal developments reverting to the current situation

1. **Impacts on Public Wellbeing, Health and Safety**

With the upgrade of the Duga-Airport Road to asphalt concrete, traffic on the road will be travelling at higher speeds, increasing the risk of hitting livestock and people crossing the road resulting in accidents.

High piling of construction materials may decreases visibility of road users and cause accidents. In addition, dust emissions from construction works may cause nuisance to nearby local residents.

Lack of periodic maintenance of drains along the project road may create breeding grounds for water-borne vectors of diseases such as malaria mosquitoes and water-borne infections.

The impacts are rated moderate due to their effect on people’s wellbeing.

1. **Occupational Health and Safety Risks**

Construction works and routine repair and maintenance on the Duga-Airport Road will expose construction crew to some risk of accidents from elements and/or machinery resulting in injuries, discomfort and loss of productive time (Table 7 below). Albeit that the road is short and may not require a large workforce, the risk to injury during relative short construction period is moderate, therefore this impact is considered of moderate significance.

*Table 7 Summary of potential risks to workers*

|  |  |
| --- | --- |
| **Sub-project aspect / activity** | **Potential Risk** |
| Exposure to dust, noise | Disturbances / nuisance and discomfort |
| Injuries from heavy machinery and equipment | Serious injuries |
| Exposure to sun/heat | Sickness and ill-health (reduced manpower) |
| Negligence due to fatigue / loss of morale | Loss of production time |

1. **Risk to subproject from Natural factors and processes**

The topography of Duga-airport road is a low lying terrain. The upgrading of the Duga-Airport road includes side drains which will improve storm water drainage in the area and minimize flooding during rainy season.

The natural geology in the near vicinity of the project does not show evidence of high erosion or land landslides due to the relatively flat terrain and loamy soils. Therefore the significance of potential impacts from natural factors on the project is considered insignificant and shall not be discussed further.

1. **Risks from Neighboring Anthropogenic Activities**

It is common for existing road with road furniture of to be vandalized. Upgraded Duga-Aiport Road is no exception. The proximity of the project to residential and business premises with people of different economic status and social backgrounds exposes the project to vandalism or theft of materials (e.g. sand, fuel, etc.) and road furniture (e.g. metal sign posts) and other items of with ready-made market or for home use.

Vandalism or theft of construction materials (e.g. sand, fuel, etc.) and road furniture (e.g. metal sign posts) and other items of with ready-made market or for home use is considered as an impact of high significance as it directly effects the durability and functionality of the proposed project to the community.

### Potential Direct Impacts to Cultural Property

The upgrade of the Duga-Airport involves expansion of the width of the existing road and road side drains. This will increase the size of the way leave extending into a grave yard would necessitate removal of graves to pave way for the road expansion. Apart from the graves the remaining section of the road does not have any significance archaeological site of particular attention. This is considered as a significant impact because of the sensitivity involved in removing graves.

### Environmental and Social Impacts Matrix

*Table 8* provides impacts significance assigned to identified interactions (impacts) between the road upgrade activities and the valued receptors in the environmental and social conditions at the project site and area of influence.

*Table 8 Significance of impacts on valued environmental receptors per project activity*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| PROJECT ASPECTS | | VALUED RECEPTORS | | | | | |
| Project Phase | Project Activity/ | Physical | Chemical | Biological/ Ecological | Social | Economic | Cultural |
| Site Selection | Land take/ land Acquisition | IN | IN | IN | M | M | H |
|  | Physical presence | IN | IN | IN | H | H | IN |
| Mobilisation | Sourcing of materials and resources | IN | IN | IN | IN | IN | IN |
|  | Delivery of materials | IN | IN | IN | H | IN | IN |
|  | Labour force | IN | IN | IN | IN | L | IN |
|  | Preparation of construction camps | IN | IN | IN | IN | IN | IN |
| Construction | Vegetation clearance | IN | IN | IN | IN | IN | IN |
|  | Civil works | IN | IN | IN | L-M | IN | H |
|  | Operation of construction equipment | IN | IN | IN | L | IN | IN |
|  | Finishing works | L | IN | IN | M | IN | IN |
|  | Erection of structures/ road furniture | IN | IN | IN | M | IN | IN |
| Operation | Use of road | IN | IN | IN | H | H | IN |
|  | Repair and maintenance | IN | IN | IN | M | M | IN |
| Decommissioning | Site restoration | IN | IN | IN | IN | IN | IN |

**Legend**

|  |  |
| --- | --- |
| **Acronym** | **Classification** |
| IN | Insignificant |
| VL | Very Low |
| L | Low |
| M | Moderate |
| H | High |
| VH | Very High |

### Summary of Significant Impacts

1. **Pre- Construction**

|  |  |  |
| --- | --- | --- |
| **Project Aspect / Activity** | **Short-Term Impacts (Direct impacts)** | **Long-Term Impacts** |
| **Positive impacts** | | |
|  |  |  |
| **Negative impacts** | | |
| Land take / acquisition of land for road realignment or meet standards /specifications | Relocation or loss of shelter (homes)  Loss of assets or access to assets | Loss of income sources or means of livelihood of persons using the land or assets |
| Land take on temporary terms for diversion of traffic, piling of materials | Nuisance (circumventing the diversion or piles): taking longer route, lost time etc.; traffic accidents |  |

1. **Construction Phase**

|  |  |  |
| --- | --- | --- |
| **Project Aspect / Activity** | **Short-Term Impacts (Direct impacts)** | **Long -Term Impacts** |
| **Positive impacts** | | |
| Sourcing of construction materials from local suppliers | Increased income to locals / boost to local economy |  |
| Labour force (procured locally) | Employment opportunity and income to locals |  |
| **Negative impacts** | | |
| Dust emissions | Decreased local air quality and caking of surfaces of nearby features. |  |
| Damage to utility system built in road wayleave / reserve | Disruption services (water supply) in the immediate areas and wider area |  |
| Inadequate security / sense of ownership in neighbouring areas | Vandalism or theft of construction materials other items with ready-made market or for home use. |  |
| Drainage channels without addition of access/cuts across drains to houses/property |  | Involuntary restrictions of access to resources, business or services; property or asset |
| Expose of construction crew to risky conditions: accidents from elements and/or machinery, open pits | Injuries, discomfort and loss of productive time |  |
| Expose of public to risky conditions: accidents from elements and/or machinery, open pits | Injuries, discomfort and conflicts |  |

1. **Operation Phase (risks and impacts)**

|  |  |  |
| --- | --- | --- |
| **Project Aspect / Activity** | **Short-Term Impacts (Direct impacts)** | **Long-Term Impacts** |
| **Positive impacts** | | |
| Upgraded road |  | Improved road access (to social and economic facilities), connectivity, and reduced travel time and costs |
| **Negative impacts and risks** | | |
| Upgraded road (increasing speeding traffic) |  | Increased accidents |
| Inadequate security / sense of ownership in neighbouring areas |  | Vandalism or theft of road furniture and items with ready-made market or for home use. |
| Discharge of wastes and eroded soils into drainage systems |  | Clogged drainage system and consequent flooding and unsanitary conditions. |
| Lack of periodic maintenance of drains collecting stagnant foully waters |  | Breeding grounds for water-borne vectors of diseases (i.e. malaria mosquitoes and water-borne infections. |

# Impacts Mitigation Measures

## Mitigation measures for Direct Short-Term Impacts

### Land take / Acquisition of land

Land take for road realignment or meet standards /specifications or temporary terms for diversion of traffic, piling of materials may cause:

* Relocation or loss of shelter (homes)
* Loss of assets or access to assets
* Nuisance (circumventing the diversion or piles): taking longer route, lost time, traffic accidents etc.

Mitigation actions adopted in the ESMP base on the implementation of land acquisition and compensation procedures prescribed in the Resettlement Action Plan – RAP prepared specifically to guide resettlement and compensation.

As a first step in preparation, the Tanga City Council team will screen all proposed activities planned for upgrading the Duga-Aiport road in order to identify and confirm the land/areas that potentially will cause resettlement. RAP implementation shall kick off by undertaking comprehensive census of people whose land will be taken (even temporarily) and inventory of their assets and properties. Valuation and prompt compensation shall follow procedures laid down in land laws and regulations.

### Discharge of construction wastes and soils

**Loss of visual amenity of the area**

Mitigation measures in the ESMP for managing landscape and visual amenity include avoidance and minimizing strategies for haphazardly disposed wastes. Tanga City Council ensure road structures and furniture erected on the road adhere to set standards in terms of quality, shapes, height, color etc.

*Managing specific waste types*

Contractor shall develop and implement a Waste Management Procedure / Plan specific for the road upgrading project that (i) identify what type of solid or liquid wastes and categories of wastes the rehabilitation works will generate or handle (biodegradable / organic wastes; packaging materials; non-biodegradable (metallic, plastic), construction wastes, and hazardous wastes i.e. fuels, oils, lubricants, vehicle / machinery fluids etc);(ii) identify ways to reduce the volume of waste by reusing or recycling initiatives; (iii) use best available mechanisms, practices and technologies for waste collection and transportation to solid waste disposal sites.

Contractor shall use nets and mats to trap debris and the trapped debris will then be disposed of at the authorized dump site.

### Exhaust emissions / dust emissions

**Decreased local air quality and caking of surfaces of nearby features.**

Mitigation measures in the ESMP for managing air and noise pollution hinge on avoidance strategies; equipment operations and maintenance measures that minimize emissions of substances into the atmosphere. Contractors required and instructed to institute procedures for preventive maintenance of equipment.

### Damage to utility system built in road wayleave / reserve

**Disruption services (water supply) in the immediate areas and wider area**

Mitigation measures in the ESMP hinge on prior information /notices to and consent by other operators and users of affected infrastructure. Tanga City Council establish: procedure for early notification and coordination among relevant utility and infrastructure authorities responsible for e.g. water supply, electricity supply, roads, communication installation etc.

### Inadequate security / sense of ownership in neighbouring areas

**Vandalism or theft of construction materials other items with ready-made market or for home use.**

Mitigation measures in the ESMP advocates for dissemination and education of project to stakeholders and local community and engaging the community throughout the project cycle (planning to implementation) in a Stakeholders Information, Education and Communication (IEC) Plan.

### Occupation health and safety risks

**Injuries, discomfort and loss of productive time from accidents from elements and/or machinery, open pits**

Mitigation actions in the ESMP include measures for managing air and noise pollution; and safety measures and procedures are adequate and correctly implemented, particularly with regards to work procedures, equipment, and materials.

### Public Exposure to risky conditions

**Injury, discomfort and conflicts as a result of accidents from elements and/or machinery, open pits**

The design and implementation process is to take into consideration health risks that are prevalent in the project area (e.g. water borne infections, malaria, etc.).

Mitigation measures in the ESMP hinge on preventing accidents (e.g. traffic accidents) and/or nuisance (e.g. dust) to the general public.

### Construction civil works

**Damage to cultural property**

For the Duga-Airport road all graves which were found in the project area will have to be compensated for and moved to a new location. For other cultural properties not yet encountered, Construction contract procedures for dealing with “chance finds” include cessation of work until the significance of a “find” has been determined by the appropriate authorities and local inhabitants, and until fitting treatment of the site has been determined and carried out.

## Mitigation measures for Direct Long-Term Impacts

The main long term impacts of significance include:

1. Land take / acquisition of land for road realignment or to meet standards /specification resulting in loss of income sources or means of livelihood of persons using the land or assets
2. Drainage channels without addition of access/cuts across drains to houses/property resulting in involuntary restrictions of access to resources, business or services; property or asset
3. The upgraded road improving road access (to social and economic facilities), connectivity, and reduced travel time and costs
4. Increased traffic accidents from increasing speeding traffic
5. Inadequate security / sense of ownership in neighboring areas resulting in vandalism or theft of road furniture and items with ready-made market or for home use.
6. Discharge of wastes and eroded soils into drainage systems resulting in clogged drainage system and consequent flooding and unsanitary conditions.
7. Drains collecting stagnant foully waters leaving breeding grounds for water-borne vectors of diseases (i.e. malaria mosquitoes and water-borne infections.

## The above mentioned long term direct impacts are all addressed in the ESMP. Impacts directly related to the long-term operation of the road are mitigated by instituting a periodic preventive maintenance works such as cleaning of side drains, repair works on road surface and reducing overgrown secondary vegetation along the carriage way.

## Cultural Property: Removal of Graves

Action with respect to removal of graves includes taking inventory of affected graves and census of owners, valuation and compensation of relocation of the graves including labour, ceremonial activities and re-burial costs.

# ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

The above mitigation measures are presented in the following ESMP (Table 9) that is to be implemented once all relevant project approvals including resources (human and financial) for proposed mitigations are complete and before initiating subproject implementation.

**Institutional Structure for Environmental and Social Management**

The LGA Project Team for the upgrading of the Duga-Airport Road is responsible for project implementation including environmental and social management requirements. PMO-RALG is to provide overall coordination and technical support to the LGA Project Team including necessary link with national authorities (i.e. NEMC, Ministry of Lands). The approved ESIA report and RAP report for this project is fed back toTanga City Council to guide implementation and monitoring by Council Teams, EMOs, Construction supervision Consultants and Contractors.

**Implementation procedure of the ESMP**

During implementation the LGA Project Team will be responsible for:

* Ensuring that compensations for lost land rights and properties (if applicable to the sub-project) are implemented and completed before the commencement of any construction works.
* Ensuring that the implementation of the sub-project ESMP is part of the Contractor's contractual obligations. The LGA procurement section will supervise the tendering process for all service providers.
* Ensuring that the ESMP is implemented and approval conditions are observed during the mobilization, construction and operation of the sub-project.

If the project reaches a stage of decommissioning, the LGA Project Team shall prepare a decommissioning plan which will include environmental and social issues highlighted in the ESMP.

**Environmental and social management cost**

The estimated cost for environmental and social management of the proposed upgrading of the Duga-Airport Road is to be included in the Contractor's Bill of Quantities (BOQ). Additional costs for implementing environmental and social management measures have been estimated at USD 1,200.00 annually (United States Dollar One Thousand Two Hundred) presented in table Table 9 below.

**Table 9. Environmental and Social Management and Monitoring Plan: Upgrade of Duga-Airport Road Project**

| Activity / aspect | Anticipated Effect | | Mitigation Measure(s) | Monitoring Parameter | Responsibility | Schedule | Cost and Source of Funds |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1. WATER RESOURCES AND MANAGEMENT | | | | | | | |
| 1.1 Improved drainage system | Reduce risk of flooding and stagnant pools of water | | Enhancement measures: monitoring and preventive maintenance | Inspect channels construction and routine check of condition | Contractor,  LGA Works Engineer,  LGA EMO | Construction & Operation Period | Part of BOQ |
| 1.2 Soil disturbance (excavation, trenching etc) | Soil erosion | | Soil erosion control measures (See section 3 below | Check terrain for formation of gullies | LGA Works Engineer,  Contractor,  Design / Consultant Engineers,  LGA EMO | Construction Period | Part of BOQ |
| 1. LAND, SOIL AND MINERAL RESOURCES | | | | | | | |
| 2.1 Site preparation (clearing of vegetation) and civil works (trenching, digging, excavation). | Soils erosion at road construction site and points of source of materials | | Use Contractors with requisite experience of land management and soil erosion control |  | LGA Contractors Procurement Board | Project Planning | NIL |
| *Avoidance / minimization of soil erosion:*  Minimize surface area to be cleared during works  Avoid and minimize the removal of stumps, trees and natural vegetation  Minimize the extent and exposure time of bare/cleared areas  *Machinery operations:*  Avoid use of heavy machinery during rainy season to avoid ground compaction, creation of ruts.  *Soil erosion control using vegetation:*  Use of permanent vegetation such as trees  Leaving buffer zones of natural vegetation cover between a cleared area  *Soil erosion control mechanical measures:*  Use of mechanical process e.g. on roads: stone ripraps, spreading gravel or crushed stone, use nets and matting etc.  Design slopes and ditches to prevent erosion  Topsoil from stripped areas put aside for later use in areas to be re-vegetated  Divert surface runoff from exposed surfaces. | Inspect cleared site and routine check of condition | LGA Works Engineer,  Contractor,  Design / Consultant Engineers,  LGA EMO | Construction Period | Part of BOQ |
| 2.2 Grading of materials: piling and levelling of top-soils, fill and excavated materials | Materials deposition or transportation onto land in near vicinity | | *Mechanical measures:*   * Materials deposited on the surface of inclined ground must adhere well to the existing ground to avoid sliding * Preserve topsoil stockpiled to a maximum height of 1.5 m to be used to landscape the road slopes and other disturbed surfaces * Excavated material - immediately piled/temporarily stored either inside the road reserve or an area which is already cleared * Excavated material not re-used - deposited, levelled and landscaped to give it a natural and stable form either within the right of way, 35m from the road reserve | Check if natural terrain maintained within the road reserve and near vicinity of road | LGA Works Engineer,  Contractor,  Design / Consultant Engineers,  LGA EMO | Construction Period | Part of BOQ |
| 2.3 Uncontrolled excavation / extraction of construction materials  (stones/aggregates, sand, gravel, cobblestones, fill materials) | Depletion of construction materials at points of source | | Contractor procurement / obtain construction materials only from authorized sites or suppliers. | Decrease / no change of rate of exploitation of construction materials | Contractor,  Design / Consultant Engineers,  LGA Works Engineer,  Borrow pit owners (e.g.TANROADS)  LGA EMO | Construction Period | Part of BOQ |
| 1. MATERIAL EFFICIENCY AND WASTES | | | | | | | |
| 3.1 Uncontrolled water use (for construction, drinking purposes) | Reduced volume of water available for various uses | | Institute measures for reduction of water consumption, waste water, and pollution by:  Reducing water consumption  Avoiding spillage and leakage  Education awareness of workers on measures to minimize water loss | Water consumption rate and quality | LGA Water Department  Local Management Committees  LGA EMO | On-going | $100 a year |
| 3.2 Uncontrolled use of construction materials | Reduced volume of material available for various uses | | Avoiding losses due to spillage and leakage  Establishing preventive maintenance programmes  Substituting and/or reducing the use of materials harmful to the environment (e.g. (leaded fuel)  Use materials formulated with internationally acceptable benign (non toxic) / low toxicity / ingredients | Material consumption – (regular loss assessments through all use steps) |  |  |  |
| 3.3 Discharge of biodegradable / organic wastes: food, waste water, cleared vegetation | -Increase nutrients in soils  -Proliferation of disease germs and vectors | | All solid wastes collected and disposed at authorized disposal site.  Filling pits with vegetation, excavated soils etc. | Waste management procedure | Contractor  LGA Works Engineer  LGA EMO,  Local recyclers (metal works, wood works, packaging) | Planning period | Part of BOQ |
| Check soil / water quality at points of entry into receptor | LGA Works Engineer  LGA EMO, | On-going | $100 a year |
| 3.4 Disposal of paper, cardboards, wood & packaging materials metallic, plastic | -Loss of visual quality  -Soil degradation | | Decrease volume of waste / increase rate of removal of waste |
| 3.5 Fuels, oils, lubricants, vehicle & machinery fluids leaks or accidental spills or discharge into water body or on land | Possible contamination of soil Loss of visual quality | | Construct drainage channels to divert runoff water from adjacent land  Oily waste water/storm water collected in oil traps  *Secure storage area:* (outside easily flooded zones with an impervious surface that can contain fuel, oil, and other fluid spills.  *Machinery maintenance site:* dedicated disposal point approved by the Engineer for disposal of used fuels, oils, vehicle fluids, and old tires and tubes, and other solid wastes; burning cleaned spills and contaminated soils.  *Containment/retention:* fuel tanks and filling equipment surrounded by a retention dike / equipped with a reserve basin.  *Spills clean- up:* residue deposited on the ground cleaned up to the satisfaction of the Engineer  *Materials to control discharges:* e.g. absorbent material, sand bags, shovels, pumps, machinery, containers, and gloves stored near construction areas | Inspect channel, oil traps construction,  Incidences of accidental spillages / discharges | Contractor,  Consultant Engineer  LGA Works Engineer,  LGA EMO | Construction period | Part of BOQ |
| Routine inspection of site / drainage channel condition  Check efficiency of oil traps  Check soil / water quality at points of entry into receptor | LGA Works Engineer,  LGA EMO | On-going | $ 100 a year |
| 1. CONSTRUCTION WASTES | | | | | | | |
| 4.1 Waste water from concrete works, washing of aggregates, maintenance workshop  4.2 Rubble, chunks of pavement, pieces of concrete and masonry,  4.3 Non-reusable excavated material | Soil degradation,  Degradation of water quality of receiving water bodies | | Waste water contained not to enter into environment: construct drainage channels to divert runoff water from sensitive habitat or adjacent land  Avoid / minimize discharging onto land and in water  Fill material in open pits |  | Contractor,  Consultant Engineer  LGA Works Engineer,  LGA EMO | Construction period | Part of BOQ |
| Check soil / water quality at points of entry into receptor |  | On-going | $ 100 a year |
| 1. AIR QUALITY AND CLIMATE CHANGE | | | | | | | |
| 5.1 Exhaust fumes (containing GHGs) from construction equipments | Reduced air quality  GHG effects that affect climate change | | Repair and maintain machinery (regular preventive maintenance for all equipments) | Check air quality at point of sources | Contractor,  Consultant Engineer,  LGA Works Engineer,  LGA EMO | Construction period  On-going | Part of BOQ |
| Engines should not be left running unnecessarily to reduce exhaust fumes (also reduce noise, smoke, dust etc.) |
| 5.2 Dust from bare land or loose surfaces; fine sand, cement and other materials from construction, excavation activities. | Caking of surfaces (near vegetation, buildings, streams, | | Avoid dust formation; contain fine sand, cement and other materials with a firmly fixed cover  Installation of dust filters on equipment  Dust-control agents : water spray  Speed restrictions etc. | Check conditions of receptors | Contractor,  Consultant Engineer,  LGA Works Engineer,  LGA EMO | Construction Period | Part of BOQ |
| 5.3 Odours (from wastes in drainage channels) | Reduced air quality,  Nuisance to receptors | | Prevention at source (proper waste management) | Check air quality at point of sources  Number of complaints. | Contractor,  Consultant Engineer,  LGA Health,  LGA EMO | On-going | $ 100 a year |
| 1. BUILT ENVIRONMENT | | | | | | | |
| 6.1 Existing Duga-Airport road upgraded | Access and services improved during operation | | Enhancement measures:  Regular Preventive Maintenance Plan |  | LGA Works Engineer,  LGA EMO | On-going | $ 100 a year |
| 6.2 Physical presence or construction works | Existing infrastructure damaged or access restricted causing disturbance, travel longer distances etc. | | Machinery operations: Avoid use of heavy machinery near properties to prevent damage or cracks | Check condition of infrastructure  Incidences of complaints. | LGA Works Engineer, Contractor,  Consultant Engineer,  LGA EMO | During construction | Part of BOQ |
|  |
| 1. LAND RIGHTS AND LANDUSES | | | | | | | |
| 7.1 Taking of land due to road realignment, meeting standards | Loss of land rights and  improvements on the land | | Avoid or minimise land and property acquisition:  Road construction works to maintain the same road alignment  Avoid removal and/or damage to existing structures and infrastructure during construction  Valuation and prompt compensation  Census of people whose land will be taken (even temporarily) and inventory of their assets and properties and compensation and resettlement assistance | Number of complaints over compensation | LGA Land Sector,  LGA Works Engineer,  / Sub-ward Governments,  Local Resettlement / Grievance Committees, | Siting Phase | RAP Budget |
| Locating drainage structures and outlets that will pose problems to land users e.g. a steep ditch that cannot be easily crossed preventing access to services/land across the road. | | Managing existing land use by avoiding or minimizing:  Removal of trees or plants with economic or food-source functions (e.g., fruit and shade trees)  Access roads that will result in individuals or communities to lose any assets e.g. land |
| Loss of access to land or land user rights | | Maximize benefits to communities  Informing and involving land users in the design and siting of roads and drainage structures | Check condition of landuses at project site |
|  | On-going | $ 100 a year |
|  | Removal of graves | | Inventory of affected graves and census of owners. Compensation of relocation of the graves including labour, ceremonial activities and re-burial costs. | Number of complaints over compensation and removal assistance | LGA Land Sector,  LGA Works Engineer,  / Sub-ward Governments,  Local Resettlement / Grievance Committees,  LGA Culture Department. | Siting Phase | RAP budget |
| 1. COMMUNITY LIVELIHOODS | | | | | | | |
| 8.1 Improved road | Local government increased incomes; reduced construction and maintenance costs | | Enhancement measures:  Regular Preventive Maintenance Plan | Check condition of the road and side drains | LGA Works Sector,  Sub-ward Governments,  Local Management Committees, | Operation Period | $ 100 a year |
| Increased land values | | Enhancement measures |
| Employment opportunities at the local, district and regional levels (Laborers to Contractors) | | Enhancement measures:  Optimize local employment  Allocate jobs fairly /equally among community members using set criteria for allocation: (consider gender, marginalized groups)  Involve community leaders/ committees to identify suitable/able people for the jobs: review to avoid bias or favouritism  Observe national / and international labour standards.  Establish a system to manage local expectations. | Number and character of employed | LGA Works Engineer  Contractor,  Consultant Engineers,  LGA EMO,  LGA CDO | Construction Period  Operation Period | Part of BOQ, |
| Unplanned illegal developments along the road | | See measures sections 1& 2 above. | Check condition of landuses at project site | LGA Works Engineer  LGA EMO,  LGA CDO | Ongoing | $ 100 a year |
| 8.2 New / rehabilitated rural roads | Improve trade and supply of commodities to neighbouring communities | | Enhancement measures:  Regular Preventive Maintenance Plan |  | LGA Works Engineer,  Sub-ward Governments,  Local Management Committees, | Operation Period | $ 100 a year |
| Improved access and effects on the travel duration and distances | |
| 1. PUBLIC HEALTH AND SAFETY | | | | | | | |
| 9.1 Noise emissions from operations generating high-intensity noise | Modifications to the ambient noise level in the project area  Disturbances / nuisance to nearby receptors | | *Noisy equipments:*  Inspection and maintained of equipments and machinery in good running conditions.  Notification to nearby residences / institutions on project activities and schedules  *Transportation noise*  Minimal low speed; no passing close to noise-sensitive areas.  Shortest route taken over land.  Properly maintained silencers and mufflers. | Check noise levels at source  Number of complaints | LGA Works Engineer,  Contractor,  Consultant Engineers,  LGA EMO, | Construction Period  Operation Period | Part of BOQ,  $ 100 a year |
| *Noise from construction works:*  Carry out operations generating high-intensity noise during day light hours  Using the noise-suppressing devices available on certain equipment (e.g. mufflers, etc). |  |
| 9.2 Modifications to air quality (increase of air pollution from emissions, dust, odours from wastes) | Health effects especially on vulnerable groups (e.g., hospital patients, children, and elderly people); | | Health and safety procedure incorporate measures under section 5 above |  | LGA Works Engineer,  Contractor,  Consultant Engineer,  Managers of facilities,  LGA EMO | Construction period  On-going | Part of BOQ |
| 9.3 Construction site hazards (sharp or falling objects,  open pits for foundations, waste water etc) | Injuries / fatalities | | Health and safety procedure consider:-  Warning signs  Backfilling of open pits and restating to original condition | Check conditions at site  Number of complaints | Contractor,  Consultant Engineer,  LGA EMO,  LGA Health Sector,  LGA CDO | During construction | Part of BOQ |
| 9. 4 Pits filled with water at project site and quarry sites | Creation of new breeding habitats for agents / vectors of diseases (i.e. proliferation of mosquitoes) | |
| 9.5 Construction traffic hazards (e.g., road deviations) | Effects on traffic safety, inconvenience related to vehicles causing accidents, congested traffic, material spillage, increased travel duration and distance | | Selection of appropriate transportation route with consultations with stakeholders, avoiding large agglomerations.  Good Site Practices:  Informing locals  Signage and signal personnel where appropriate; vehicle lighting (front and back).  Training and testing (i.e. vision tests) of heavy equipment operators and drivers  Requirements that all drivers have licenses and insurance.  Transportation restrictions: vehicle movement restricted to pre-determined routes; maximum load restrictions; restrictions on movement of vehicles and speed limits; day time movements if desired; and parking and on-site traffic movement.  Noise and dust control measures (see above)  Compliance with all Tanzanian transportation laws/standards | Number of complaints | LGA Works Engineer,  Contractor,  Design / Consultant Engineers,  LGA EMO,  Sub-ward Governments, | During construction | Part of BOQ |
| 1. OCCUPATIONAL HEALTH AND SAFETY | | | | | | | |
| 10.1 Exposure to dust, noise;  Exposure to sun/heat;  10.2 Exposure to water-borne infections from food, drinking water | Disturbances / nuisance and discomfort | | *PPEs: p*rovide all workers with required PPE (i.e., supply safety equipment based on a worker’s responsibilities, e.g., provide dust masks to workers working in dusty conditions); enforce the correct use of PPE by workers and apply sanctions to workers who are not compliant  *Working environment: p*rovide adequate sanitation, potable water, and rest areas and periods to workers; signing during construction | Number of incidences of sickness | LGA Works Engineer,  Contractor,  Consultant Engineers,  LGA EMO,  LGA Health Sector, | During construction | Part of BOQ |
| Serious injuries Sickness and ill-health (reduced manpower) | |
| 1. RISKS TO PROJECT FROM NATURAL FACTORS | | | | | | | |
| 11.1 Extremes of climatic elements: rains / storm | Damage of road | | Choice of materials and designs resilient to extremes of natural events i.e. able to with stand pressures/forces  Physical placement of infrastructure and facilities observe setback lines and other siting standards | Number of incidences of damages | Contractor,  Design / Consultant Engineers,  LGA EMO,  LGA Sub-Project Proponent Sector, | Siting | Part of BOQ |
| 11.2 Storm water drainage causing flooding and overflows. | Damage of road | |
| 1. RISKS TO PROJECT FROM NEIGHBOURING ACTIVITIES AND DEVELOPMENTS | | | | | | | |
| 12.1 Land disturbances activities: cultivation livestock grazing, | Destruction of upgraded road | Stakeholders Information, Education and Communication (IEC) Plan  Continuous engagement with project affected individuals and groups prior to project. IEC plan includes early formal notification to relevant stakeholders of the scope and schedules of the intended project activities.  .  *Project Area Layout/Plan*  Reviewing layouts of land use at project site and immediate vicinity enables:  Restriction of project activities to the project primary areas of impact;  Choice of access/transportation routes that cause minimum impact (i.e. use existing routes);  Marking of exclusion zone around project site / activities.  *Initiating and Maintaining Good Neighbourliness*  Incorporate in the IEC plan information dissemination, public awareness on potential dangers of project activities to humans and properties.  Engage communities in the running of project: employment opportunities, project benefits sharing etc.  Engage individuals or private company or Government agencies offering security services | | Incidences of theft, vandalism of road furniture  Number of complaints | Contractor,  Consultant Engineer,  LGA EMO,  LGA CDO,  LGA Works Engineer  Sub-ward Governments, | Siting  On-going | Part of BOQ  $ 100 a year |
| 12.2 Occupation, economic and social status of nearby residences | Vandalism of road structures / equipments  Theft of road furniture and portable items with ready-made market or for home use. |
| 12.3 Security condition in neighbourhood to the project site |

# ENVIRONMENTAL AND SOCIAL MONITORING PLAN

The objectives for monitoring is to evaluate whether the mitigation measures designed into the proposed infrastructure project have been successful in such a way that the pre-infrastructure project environmental and social condition has been restored, improved upon or whether they are worse than before.

Environmental monitoring needs to be carried out during the mobilisation, construction as well as operation and maintenance phases of the infrastructure sub-project in order to measure the success of the mitigation measures implemented earlier.

## Monitoring responsibilities

The responsibilities for monitoring and evaluation of the mitigation measures adopted are assigned as follows:

1. **The ULGA sector specialists (Municipal/City Engineer)** is responsible for the day-to-day monitoring of the sub-project ESMP including supervising aspects implemented by the Contractors and resolving grievances specifically the monitoring of (a) the environmental and social assessment work to be carried out by service providers; (b) overseeing the implementation of the Resettlement Action Plans; (c) monitoring of environmental issues and the supervision of the civil works contractor during the construction process (d) monitoring of environmental issues during operations and during maintenance of the infrastructure facility (e) submission of monitoring reports to ULGA Environmental Officer. The monitoring and reporting will be done by the Municipal/City sector specialists who will be trained. He/She shall bear the overall responsibility of supervision of the infrastructure projects and shall report to the Project Team at PMO-RALG.
2. **The City Environmental Management Officer (CEMO):** have a supervisory monitoring role to ensure that the mitigation measures indicated in the ESMP are actually being implemented and reporting on all environmental and social management issues within the LGA and to NEMC throughout the project life-cycle as required. Specifically the CEMO will undertake compliance monitoring to check whether prescribed actions have been carried out. In close collaboration with the infrastructure project implementers (City sector specialists/City Engineer) the CEMO will ensure that the monitoring plan as contained in the individual infrastructure project proposals is implemented as stated therein.
3. **Members of the Community:** will undertake - after awareness raising - effects monitoring (which records the consequences of activities on the biophysical and social environment). This will be done throughout the infrastructure project cycle: (a) During planning phase - participate in the identification of indicators for monitoring the mitigating measures; (b) During implementation (construction) phase, monitoring the execution of works with respect to environmental aspects, e.g. verify the compliances of the Contractors with their obligations; (c) During operation and maintenance phase, the overall environmental monitoring and alerting on any emerging environmental hazards in conjunction with the ongoing infrastructure project activities. The communities will be enabled to pass on their observations and concerns through the existing administrative structure of the local governments i.e. mtaa”/Ward councils and environment committees to Municipal/City Environmental Management Officers who will have direct link with NEMC/PMO-RALG.
4. **The National Environment Management Council (NEMC):** will perform an enforcement monitoring role supported by PMO-RALG based on submissions and recommendations from the EIS/ CEMO. The NEMC will ensure that the monitoring requirements in the approved ESMP is implemented with particular focus on monitoring cumulative impacts of the infrastructure projects on a City level and to ensure that individual infrastructure project mitigation measures are effective at the cumulative and municipal level. NEMC would primarily achieve this objective through periodic field visits, coordinating and implementing the Training Program and through technical assistance and backup services to the PMO-RALG.
5. **PMO-RALG:** will perform monitoring functions for the entire TSCP – AF. Monitoring and Evaluation guidelines developed to monitor the entire project will include parameters for compliance to proposed measures to safeguard the environmental and social impacts. Monitoring activities by the Implementers, Environmental Officers/NEMC will be performed periodically through performance surveys/audits.

## Environmental Audits

Annual Reviews of the TSCP sub-projects will be carried out as commissioned by LGA / PMO-RALG. These are to be Third Party audits (by independent Local Consultant, NGO or Service provider) which will review the implementation of environmental and social management in the LGAs.

## Reporting procedures

Monitoring reports by the ULGA sector specialist (municipal/city engineer) will be submitted to ULGA Environmental Officer/NEMC, in this case the CEMO. CEMO will consolidate the project-specific monitoring report into one common report and submit the report to PMO-RALG and NEMC.

## Capacity building and training

It is recommended to Tanga City Council to develop and implement a budgeted Institutional Development Plan designed to facilitate the implementation of the ESMP as well as the following:

* Local ownership of environmental and social assessment process leading to LGA specific environmental and social management system being propagated under the Urban Local Government Strengthening Programme (ULGSP);
* Coordination and linkages – between and across sectors, with other infrastructure development initiatives; and up and down management levels;
* Undertake revisions for compliance with requirements of policies, regulations, administrative procedures and inculcate in local By-laws;

### Technical training of designated staff in environmental management/EIA

Sector specialists who will be responsible for preparation of subprojects proposals, staff designated as EMO, and Community Development Officers and Land Officers who coordinate resettlement planning should receive environmental and social training in the form of Training of Trainers (TOT) that will enable them appraise and approve this and similar projects and advice on issues related to environmental management, including supervision and monitoring. Later on, these staff could train other staff within the implementing LGAs as necessary. Other EIA training topics would include an overview of environmental and social issues within the urban LGAs / sectors; introduction to ESIA processes, methods for impact identification, analysis and mitigation (management and action plans: ESMP and RAP) ; ESIA review and the role of the public and stakeholders; practical EIA experience in Tanzania; and case studies.

### Awareness /Sensitization for entities relevant/responsible for review/approve of sub-projects

Training/awareness creation workshops should be conducted for participants vested with the responsibility of endorsing/approving infrastructure development projects. The workshops disaggregated for:

* Higher level participants: Regional Coordinators / Influentials (RC/RAS/MPs), Council Executive Directors, Council Coordinators / Influentials (DC / Councilors of respective wards), Council Committees (on environment, health, resettlement) and affected public roads and utility authorities;
* Lower level participants (Ward and Sub-Ward Executive Officers, WDC, and Local Management Committees. Objective is participants appreciate significance or relevance of environmental and social issues.
* Contractors responsible for implementation of the ESMP

Subjects covered could include but not limited to the following:

* Main environmental and social problems /challenges and issues within the sectors (infrastructure construction and operation)
* Environmental and social assessment and management context : relevant policies, regulations and procedures
* Review of environmental and social screening and assessment process
* How to screening projects; appraise and approve ESIAs, ESMP and overall project proposals; and supervise the implementation of subprojects.
* How to incorporate mitigation measures into the BOQ,
* Monitoring and reporting of environmental and social issues during project implementation

# DECOMMISSIONING PLAN

Decommissioning at the end of its life or rehabilitation or up-grading an infrastructure or its component may involve demolition of structures and site restoration. Depending on the design, standard decommissioning for this asphalt road is after 15years where the road is abandoned, or rehabilitated and resurfaced. Activities during decommissioning that could cause environmental and social impacts include:

* Re-design of road alignment to meet current transport demands in the area. This may require some re-alignments and land acquisition
* Demolition works of the road side drains and road furniture
* Removal of existing road surface
* Compaction, grading and resurfacing

Potential impacts during decommissioning are similar to those during the site selection, mobilisation and construction phases of the upgrade works presented in chapter 6 above. The Tanga City Council is to prepare a Decommissioning Plan incorporating the relevant mitigation measures for potential impacts arising from these works outlined in the ESMP (Table 9)

# CONCLUSION AND RECOMMENDATIONS

The proposed upgrading of the Duga-Airport Road does not pose any adverse effects on the natural habitats and biodiversity because the project road is located in a peri-urban area mainly with secondary vegetation. Other moderate environmental impacts are related to management of waste.

The proposed upgrading of the Duga-Airport Road at Magomeni Street will necessitate realignment in order to straighten the road and to avoid demolition of residential structures. In other cases expansion of the width of the existing road and road side drains will increase the size of the way leave extending into other land uses such as grave yards and Tanga airport land. This is a potentially significant impact to the community along the project road. It is recommended that a Resettlement Action Plan be developed and implemented for the upgrade of the Duga-Airport Road, to guide the compensation process to PAPs.

# References

Tanga City Council Socio-economic Profile

Environmental and Social Management Framework (ESMF) for the Proposed TSCP Additional Financing Project

National Bureau of Statistics, 2012 National Census.

**Policies**

National Transport Policy, 2003

National Environmental Policy (NEP), 1997

National Land Policy, 1995

National Water Policy, 2002

National Human Settlement Policy, 2000

National Policy on HIV/AIDS, 2001

National Gender Policy, 1999

National Strategy for Growth and Reduction of Poverty, 2005

Construction Industry Policy, 2002

**Legislation and Regulations**

The Constitution of the United Republic of Tanzania Cap 2 (1977)

Environmental Management Act (EMA), Cap 191 (2004)

Environmental Impact Assessment and Audit Regulations (2005)

Environmental (Registration of Environmental Experts) Regulations (2005)

Environmental Management (Air Quality Standards) Regulations, (2007)

Environmental Management (Hazardous Waste Control and Management) Regulations (2009)

Environmental Management (Water Quality Standards) Regulations (2007)

Environmental Management (Soil Quality Standards) Regulations (2007)

Environmental Management (Quality Standards for Control of Noise and Vibration Pollution) Regulations (2011)

Public Health Act, Cap 336 (2009)

Occupational Health and Safety Act, No.5 (2003)

Land Act, Cap 113 (R.E 2002)

Land Acquisition Act, Cap. 118 (R.E 2002)

Urban Planning Act No.8 (2007)

Land Use Planning Act No. 6 (2007)

Land (Assessment of the Value of Land for Compensation) Regulations (2001)

Land (Compensation Claims) regulations (2001)

Courts (Land Disputes Settlements) Act, Cap. 216 (2002)

Employment and Labour Relation Act Cap. 366 (2004)

The HIV and Aids (Prevention and Control) No. 28 (2008)

Law of the Child Act No. 21 (2009)

Disabilities Act No. 9 (2010)

Road Act No. 13 (2007)

Water Resource Management Act No. 11 (2009)

Water Supply and Sanitation Act No. 12 (2009)

**World Bank Operational Policies**

Environmental Assessment (OP. 4.01)

Involuntary resettlement (OP 4.12)

Physical Cultural Resources (OP 4.11)

# ANNEXES

Annex 1: Duga – Airport Road ESMF - ESIA ToR

Annex 2: List of Stakeholders of Duga – Airport in ESIA consultation meeting in Tanga

Annex 3: List of PAPs of Duga – Airport in ESIA Community Consultation meeting in Tanga

Annex 4: Minutes of Consultation meetings