

THE UNITED REPUBLIC OF TANZANIA
PRESIDENT'S OFFICE
REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT



TANZANIA STRATEGIC CITIES PROJECT – ADDITIONAL FINANCING (TSCP - AF), 2015-2017
(IDA CREDIT No. 5460-TZ)

**ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA)
FOR PROPOSED ADDITIONAL INVESTMENT SUB-PROJECTS IN MWANZA CITY**

FINAL REPORT

Proponent: **City Director,
Mwanza City Council
P. o. Box 132
MWANZA
Tel: +255 (28) 2550116. e-mail:**

Consultant:


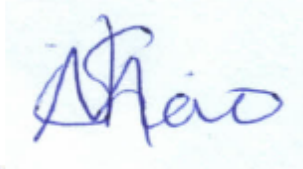
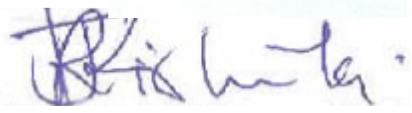
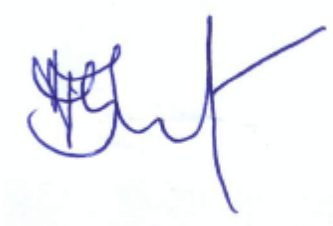


Eng. Restituta Paul
P O Box 35176, Dar-Es-Salaam.
Mobile: +255 786 581333, **Email:**restimapinduzi@gmail.com

Date: October 2016

Contract No. ME/022/2013/2014/CR/15

STUDY TEAM

Expert	Responsibility	Signature
Eng. Restituta Paul	Environmentalist and ESIA Team Leader	
Ms. Magdalena Shao	Environmental Scientist	
Mr. Robert Kishiki	Sociologist	
Eng. Flex Mtui	Civil Engineer	

EXECUTIVE SUMMARY

The Government of Tanzania (GoT) through the Prime Minister's Office, Regional Administration and Local Government (PMO-RALG) now known as the President's Office-Regional Administration and Local Government has been implementing the Tanzania Strategic Cities Project (TSCP) in selected urban Local Government Authorities for 5 years financed by a World Bank (IDA) credit and a grant from the Government of the Kingdom of Denmark. The TSCP is an investment operation that provides finance for critical infrastructure in 4 cities of Mwanza, Tanga, Mbeya and Arusha; 4 Municipalities of Ilemela, Dodoma, Kigoma-Ujiji, Mtwara-Mikindani and the Capital Development Authority (CDA).

Works have involved upgrading /rehabilitation of a number of artery urban roads and drainage and associated structures such as drainage ditches, culverts/bridges, footpaths and street lighting and local infrastructure such as bus and lorry stands aimed to improve movement of people, goods and services in the urban areas. TSCP also fund development of infrastructure to improve solid waste management including solid waste collection centres, equipment for transportation and disposal, and the development or improvement of disposal sites. To date, most of the prioritized infrastructure are complete and in use or in final stages of completion.

▪ Brief Description of the Proposed Additional Financing

Some areas of the completed infrastructure have been identified where improvements need to be made. In addition, a number of infrastructures were not financed under the Core TSCP due to limitation of available funds under the credit. Also Participating LGAs have identified new sub-projects important for functionality of existing sub-projects. Based on these identified gaps, GOT prepared a credit – Tanzania Strategic Cities Project - Additional Financing with a view of financing these additional infrastructure investments and coupled improvements of management capability of the 8urban LGAs and CDA in Dodoma currently receiving funds from TSCP. TSCP - Additional Financing will fund civil works construction costs mainly involving extension and rehabilitation of existing infrastructure with few completely new structures.

The Development Objective of the proposed AF remains the same as the current project, to improve the quality of and access to the basic urban to basic urban services in seven selected Participating Local Government Authorities (LGAs). The Project will be implemented through three components: (i) Core Urban Infrastructure and Services (ii) Institutional strengthening and (iii) Implementation Support and Preparation of Future Urban Projects. Eligible investment projects must fall in at least one of the below categories: (i) Road and drainage infrastructure (ii) Urban transport infrastructure (iii) Solid and liquid waste management.

The investments Subprojects in Mwanza City Council that will be under the proposed TSCP AF entail rehabilitation/ construction of the following:

- (a) Improvements of Pasiansi-Buzuruga, Sanga-Kiloleli road, Butimba road and Pepsi loop road
- (b) Msuka River bank protection works across Sanga-Kiloleli Road, Channelisation and lining of short section of upstream water way and outfall drain at outlet of culvert across Sanga-Kiloleli road including provision of access culverts and slabs where required
- (c) Isamilo-Mji Mwema junction road upgrading (0.35km): Complete upgrading measures of the road from its current gravel road to asphalt 2paved road
- (d) Tilapia Road Upgrading (0.60km): Complete upgrading measures of the road from its current gravel surface to asphalt paved road
- (e) Uzinza Road upgrading (0.20km): Complete upgrading measures of the road from its current potholed pavement to asphalt paved road

▪ ***Objectives of the Environmental and Social Impact Assessment (ESIA)***

This ESIA has been prepared according to an Environmental and Social Management Framework (ESMF) for TSCP Additional Financing (AF). The ESMF provides guidance for environmental and social screening process and preparation of appropriate safeguards instruments for proposed investments under AF. The objective of this ESIA is to ensure that the proposed infrastructure development interventions are implemented in an environmentally and socially sustainable manner. The ESIA aims to ensure that Mwanza City has strategies to identify, avoid or minimize and mitigate potential negative environmental and social impacts during the planning stage for the construction of the sub-projects. This ESIA is complementary to the earlier Core ESIA and it presents definitive, conclusive and clear procedures consistent with the relevant existing legislations applicable in Tanzania and the World Bank's safeguard policies.

The ESIA for the Core Urban Infrastructure and Services component of original TSCP (constituting rehabilitation/upgrading of urban roads and drainage and solid waste collection and disposal infrastructure) was conducted and approved by the National Environment Management Council (NEMC) in 2010 and the City was awarded an Environmental Certificate No. EC/EIS/251. The environmental and social assessment and management process for Mwanza City responds the World Bank Safeguard Policies and to requirements specified in the Tanzania EIA and Audit Regulations, 2005 (Part IX, Regulation 42, Sub-regulation (1); (2)(b); and (4)) dealing with approval of changes to a project with a valid EIA Certificate.

As mentioned above, the original TSCP obtained EIS certificate for proposed works with conditions attached in the certificate after verification of the carried

out ESIA study between August and November 2009. However, although the EIA regulations of 2005 GN No. 349 of 2005 allow for variation on issued certificate for any additional works where the developer is required to fill in Form No. 5 of the regulation, that will not apply to this case because the additional subprojects are part of the previously selected and designed subprojects approved by NEMC but could not be carried-out due to limitation of TSCP credit funds.

The World Bank Safeguard Policies require that relevant safeguards instruments, such as an Environmental and Social Impact Assessment (ESIA) containing an Environmental Management Plan (ESMP), or just an ESMP, will be locally disclosed and at the Bank's Info Shop before commencement of the project activities. Where the project requires a Resettlement Action Plan (RAP) it will be locally prepared and disclosed and; will also be forwarded to the Bank for disclosure at the InfoShop.

▪ ***Environmental and Social Impacts***

The proposed sub project investments in Mwanza City under TSCP/AF may have significant negative impacts on the environment from a project specific perspective. These impacts include:

- i. Change of scenery view of the project areas
- ii. Dust related air pollution
- iii. Increased generation of dust, noise and vibration
- iv. Visual intrusion during construction
- v. Pollution of water sources
- vi. Increased waste generation
- vii. Loss of definite materials and land degradation
- viii. Interruption or lack of utility services due to damage/relocation of existing utility infrastructure
- ix. Lacking or slow restoration of areas impacted by construction
- x. Risks to worker's and public safety
- xi. Overburdened local authority
- xii. Visual intrusion during construction
- xiii. Increased road accidents
- xiv. Environmental hazards resulting from waste deposition into storm water drains

Impact assessment and evaluation was done using simple methods (checklists) and procedures (existing structures at local authorities). It is envisaged that the anticipated impacts from development of the infrastructure sub-projects in Mwanza City will be short-term, site specific, confined, reversible and can be managed through the application of a set of mitigation and monitoring measures presented in the Environmental and Social Management Plan (ESMP). The ESMP clearly indicates the institutional responsibilities with regard to implementing mitigation measures, monitoring of the implementation of these mitigation measures and related cost estimates and time horizons. Further, the

ESIA has assessed the capacity of the City to implement the proposed screening process and mitigation measures.

The City has previous experience with management of environmental and social issues related to construction/ civil works. The PO-RALG has the capacity and experience to do backstopping to the City as need may arise. However the capacity of the City Authority is still in nascent stage both to support and supervise construction work of the proposed infrastructure and to implement the required environmental and social screening process described above. Prevalent weaknesses are in the integration into the design before project commences and monitoring of the mitigation measures.

The ESIA has made recommendations as appropriate, including training needs and cost estimates. It recommends building capacity at all levels through the provision of training to staff and decision makers who will be designated the role of planning, reviewing and implementing, and monitoring the construction of the different infrastructure and their auxiliary structures. The role of the NEMC in the context of TSCP has been clarified to be one of providing technical assistance, approval of project as relevant and as facilitator for the training program.

LIST OF ACRONYMS

BATNEEC	-	Best Available Technology Not Entailing Excess Cost
CBO	-	Community Based Organization
COBET	-	Complementary Basic Education in Tanzania
DoE	-	Department of Environment
EIA	-	Environmental Impact Assessment
EMA	-	Environmental Management Act
ESIA	-	Environmental and Social Impact Assessment
ESMF	-	Environmental and Social Management Framework
ESMP	-	Environmental and Social Management Plan
EIS	-	Environmental Impact Statement
EMA	-	Environmental Management Act
EWURA	-	Energy and Water Utilization Regulatory Authority
HIV/AIDS	-	Human Immune deficiency Virus /Acquired Immune Deficiency Syndrome
IDA	-	International Development Association
ICBAE	-	Integrated Community Based Adult Education Program
MWAUWASA	-	Mwanza Urban Water Supply and Sewerage Authority
LGSP	-	Local Government Support Project
NEP	-	National Environmental Plan
NEMC	-	National Environmental Management
NGO	-	Non Governmental Organization
NSGRP	-	The National Strategy for Growth and Reduction of Poverty
PMO-RALG	-	Prime Minister's Office, Regional Administration and Local Government
PO-RALG Government	-	President's Office- Regional Administration and Local Government
STD	-	Sexual Transmitted Diseases
TAC	-	Technical Advisory Committee
TANESCO	-	Tanzania Electricity Supply Company
TTCL	-	Tanzania Telecommunication Company Ltd
ToR	-	Terms of References
TSCP	-	Tanzania Strategic Cities Project
WB	-	World Bank
LVEMP	-	Lake Victoria Environmental Management Project

ACKNOWLEDGEMENT

The preparation of this report was guided by the Environmental and Social Management Framework (ESMF) for the Proposed TSCP – AF Project of 2014. The report builds on a previous document titled "Environmental and Social Impact Assessment for the Investment Sub-Projects in Mwanza City, under the Proposed Tanzania Strategic Cities Project" of January 2010. This current report is a review of the previous ESIA report.

The report is a result of cooperative efforts of a number of experts some of whom are listed in the study team. The projects proponent (PO-RALG) is indebted to all those who spared their precious time to contribute to the preparations of this report. A number of stakeholders and/or specialists were involved, a few are mentioned here.

The consultant wish to thank Eng. J. B. Bujulu and Dr. mukuki Hante of PO-RALG for a thorough technical guidance during the preparation of this report. Further, the consultant wishes to thank the Mwanza City Authority for their cordial cooperation and for providing technical information and documents without which this report would have not been completed.

The consultant is grateful to all stakeholders interviewed during the scoping exercise, including the Ward and Mtaa leaders at the specific project sites. In an earnest manner, we also thank all other individuals who assisted in one way or another during the preparation of this report.

TABLE OF CONTENTS

STUDY TEAM	i
EXECUTIVE SUMMARY	ii
LIST OF ACRONYMS	vi
TABLE OF CONTENTS	ix
LIST OF TABLES	xiv
LIST OF FIGURES	xv
1.0 INTRODUCTION.....	1
1.1 Background of Tanzania Strategic Cities Project (TSCP).....	1
1.2 Rationale of the EIA Study.....	3
1.3 Scope of Work	3
1.4 Application Arrangements (Institutional Set-Up)	4
1.5 Approach and Methodology for development of ESIA.....	4
1.5.1 The Approach.....	4
1.5.2 Methodology	4
1.6 Layout of ESIA Report.....	7
2.0 PROJECT DESCRIPTION.....	9
2.1 Project Location.....	9
2.2 Project Components.....	9
2.3 Project Activities in General	16
2.3.1 Mobilization phase	16
2.3.2 Construction phase.....	18
2.3.3 Operation phase.....	20
2.3.4 Decommissioning/Demobilization phase.....	20
2.4 Design Considerations	21
2.4.1 Design of city feeder roads.....	21
2.5 Construction Materials and Labour Force	25
2.6 Camp Site Location	25
2.7 Waste Generation	26
3.0 LEGAL REQUIREMENTS AND INSTITUTIONAL FRAMEWORK	27
3.0 LEGAL REQUIREMENTS AND INSTITUTIONAL FRAMEWORK	27
3.1 World Bank Safeguard Policies	27
3.1.2 OP 4.01 (Environmental Assessment).....	27
3.1.3 OP/BP4.11 (Physical Cultural Resources)	27

3.1.4	OP 4.12 (Involuntary Resettlement)	28
3.2	Relevant National Policies and Environmental and Social Management Requirements.....	28
	National Policies	28
3.2.1	General Environmental Management.....	29
	National Environmental Policy (NEP) of 1997	29
	Environmental Management Act No. 20 of (2004), Cap. 191	30
	Environmental Impact and Auditing Regulations (2005)	31
	Environmental (Registration of Environmental Experts) Regulations (2005)	31
3.2.2	Management of Air Emissions and Ambient Air Quality	31
3.2.3	Management of Solid Wastes.....	32
3.2.4	Management of Water quality.....	32
3.2.5	Management of Soil Quality	33
3.2.6	Management of Noise	34
3.2.7	Management of Land and Landuse.....	34
3.2.8	Management of Public / Occupation Health and Safety.....	34
3.2.9	Others Relevant to Infrastructure Development	35
3.3	Institutional Framework for Environmental and Social Management....	38
3.4	Registered EIA Expert /Firm of Experts /Environmental Auditor/Environmental Inspectors	40
3.5	Other Authorities relevant to Infrastructure Development	41
4.0	BASELINE ENVIRONMENTAL AND SOCIAL CONDITIONS	43
4.1	Spatial, Institutional and Temporal boundaries of Impacts.....	43
4.1.1	Spatial boundaries.....	43
4.1.2	Institutional boundaries	43
4.1.3	Temporal boundaries	43
4.1.4	Area and Administrative structure	44
4.2	Physical Environments.....	44
4.2.1	Climatic Conditions.....	44
4.2.2	Geology and Soil.....	44
4.2.3	Topography and Drainage	44
4.2.4	Population	44
4.3	Biological Environment.....	44
4.3.1	Natural Vegetation.....	45
4.4	Economic Activities	45

4.4.1	Fisheries	45
4.4.2	Industries	46
4.4.3	Tourism and Recreational areas	46
4.4.4	Mining and Quarrying.....	47
4.4.5	Trade and Commerce.....	47
4.4.6	Agriculture and Livestock	48
4.5	Social Services	49
4.5.1	Health.....	49
4.5.2	Education.....	50
4.5.3	Water supply.....	51
4.5.4	Transport.....	53
4.5.5	Energy	54
4.6	Mwanza City Environmental Setting	55
4.6.1	Land.....	55
4.6.2	Water	57
4.6.3	Air.....	59
4.7	Environmental Priorities	60
4.8	Environmental conditions at the project site	61
4.8.1	Pasiansi-Buzuruga Road.....	61
4.8.2	Sanga-Kiloleli road.....	61
4.8.3	The Butimba road.....	62
4.8.4	Pepsi loop road	63
4.8.5	Msuka river bank	63
4.8.6	Isamilo-Mjimwema, Tilapia road, Mtakuja and Uzinza roads	64
5.0	STAKEHOLDER IDENTIFICATION AND ANALYSIS.....	66
5.1	Stakeholders Identification	66
5.2	Stakeholder Involvement	66
5.3	Consultative Meetings with the City Council	67
5.4	Consultative Meetings with Utility Supply Authorities	67
5.5	Community Consultations	67
5.6	People’s Attitude towards the project:	68
6.0	IDENTIFICATION AND ASSESSMENT OF IMPACTS	72
6.1	Impacts Zones	72
6.1.1	Primary corridor of impact	72
6.1.2	Secondary impact area	72
6.1.3	General project area of influence	72

6.2	Impact Identification and evaluation.....	72
6.3	Pre- Construction and Construction Phase Impacts	77
	Short-Term Direct Positive Impacts	77
6.3.1	Job creation and increased income to local communities.....	77
6.3.2	Increased water and soil pollution.....	77
6.3.3	Noise, vibration and air pollution.....	78
6.3.4	Safety and health risks	78
6.3.5	Damage/relocation infrastructure/loss of access to services	79
6.3.6	Traffic disruption.....	79
6.3.7	Impacts due to operation of the asphalt plant and campsite	79
	Long-Term Impacts:.....	79
6.3.8	Loss of definite materials and land degradation.....	79
6.3.9	Scenic quality deterioration	80
6.3.10	Overburdened local authorities	80
6.4	Operation Phase Impacts.....	80
6.4.1	Improved Transport and Reduction in traffic congestion	80
6.4.2	Improved community life and services	81
6.4.3	Reduced traffic congestion.....	81
6.4.4	Increased property values.....	81
6.4.5	Interference to local hydrology	82
6.4.6	Impacts related to new road.....	82
6.4.7	Increased noise, vibration and air pollution.....	82
6.4.8	Hazards related to waste deposition into storm water drains	82
7.0	IMPACTS MITIGATION MEASURES.....	84
7.1	General considerations	84
7.2	Mitigation measures for Direct Short-term impacts	84
7.2.1	Increased water and soil pollution.....	84
7.2.2	Noise, vibration and air pollution.....	84
7.2.3	Safety and health risks	85
7.2.4	Damage and or relocation of infrastructure	85
7.2.5	Traffic disruption.....	85
7.2.6	Impacts due to operation of the asphalt plant and campsite	85
7.3	Mitigation measures for Direct Long-Term Impacts	86
7.3.1	Landscape degradation	86
7.3.2	Loss of definite materials.....	86
7.3.3	Scenic quality deterioration	87

7.3.4	Lacking or slow restoration of areas impacted by construction.....	87
7.3.5	Overburdened Local Authorities.....	87
7.4	Mitigation/Enhancement measures for Long-Term impacts.....	88
7.4.1	Improvements community life and services in general.....	88
7.4.2	Indirect impacts of new roads.....	89
7.4.3	Increased road accidents.....	89
7.4.4	Increased noise, vibration and air pollution.....	89
7.4.5	Hazards related to waste deposition into storm water drains.....	91
8.0	ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN.....	92
	Introduction.....	92
8.1	Institutional Structure for Environmental and Social Management.....	92
8.2	Implementation procedure of the ESMP.....	92
8.3	Environmental and Social Costs.....	93
8.4	Implementation of the ESMP.....	101
9.0	ENVIRONMENTAL AND SOCIAL MONITORING PLAN.....	102
9.1	Environmental and Social Monitoring.....	102
9.2	Role and Responsibilities during ESMP Implementation.....	108
9.3.	Institutional Arrangements and Reporting Procedures.....	114
9.4	Capacity Building Program.....	115
10.0	DECOMMISSIONING AND DEMOBILIZATION PLAN.....	119
10.1	Decommissioning.....	119
10.2	Demobilization of the project.....	119
10.2.1	Introduction.....	119
10.2.2	Impacts of the Demobilization of project.....	119
11.0	CONCLUSSION AND RECOMMENDATION.....	122
	REFERENCES.....	123
	ANNEXES.....	125

LIST OF TABLES

<i>Table 2.1: Project requirements and Sources during the pre-construction phase..</i>	16
<i>Table 2.3: Project requirements and Sources during the construction phase</i>	18
<i>Table 2.4: Types, amounts and treatment/disposal of wastes during the construction phase</i>	19
<i>Table 2.5: Types, amounts and treatment/disposal of wastes during the operational phase</i>	20
<i>Table 2.6: Project requirements during the demobilization phase</i>	21
<i>Table 2.7: Design Standards adopted</i>	24
<i>Table 4.1 Fish production for the year 2012</i>	45
<i>Table 4.2: Percentage and distribution of livestock</i>	49
<i>Table 4.3: Health Services in Nyamagana District</i>	50
<i>Table 4.4: Infrastructure in Government primary schools</i>	50
<i>Table 5.1: Issues of concern raised from consultative meetings</i>	69
<i>Table 6.1: Environmental Impacts Matrix for the TSC Project Mwanza City</i>	75
<i>Table 8.1: Environmental and Social Management Plan (ESMP) for the Proposed Investment Sub projects in Mwanza City</i>	94
<i>Table 9.1: Environmental and Social Monitoring Plan for the Proposed Subprojects</i>	103
<i>Table 9.2: Role and Responsibilities of Key Parties for ESMP Implementation</i>	110
Table 9.3: Training Programs for Capacity Building in Environmental Supervision and Management	116

LIST OF FIGURES

Figure 2.1: Map of Tanzania and Mwanza Region showing project area.....	12
Figure 2.2: Satellite image of showing the Mwanza City and Project roads.....	15
Table 2.2: Types, amounts and management of wastes during the mobilization phase	17
Figure 2.3: Airport Sandpit (left) and Nyanza Quarry site (right) at Mwanza..	25
Figure 4.1: Existing situation of Pasiansi-Buzuruga road	61
Figure 4.2: An existing sharp bend along the Sanga-Kiloleli road.....	62
Figure 4.3: Existing conditions along the Butimba road	62
Figure 4.4: R: silt accumulation under the culvert. L: Downstream drain	63
Figure 4.5: Existing Condition of River Msuka bank.....	64
Figure 4.6: Existing conditions along the Isamilo- Mji mwema road.....	64
Figure 4.7: Existing conditions of Isamilo road (left) and Uzinza road (right)	65
Figure 8.1: Environmental Management Organization Chart	109

1.0 INTRODUCTION

1.1 Background of Tanzania Strategic Cities Project (TSCP)

The Government of Tanzania (GoT) through the Prime Minister's Office, Regional Administration and Local Government (PMO-RALG) now known as the President's Office- Regional Administration and Local Government has received funds from the World Bank (IDA Credit) and a grant from the Government of the Kingdom of Denmark to implement the Tanzania Strategic Cities Project (TSCP). PO-RALG has been implementing the TSCP for 5 years (since 2010) with 7 participating urban Local Government Authorities (LGAs): 4 cities of Mwanza, Tanga, Mbeya and Arusha; and 3 Municipalities of Dodoma, Kigoma-Ujiji and Mtwara-Mikindani. Ilemela Municipality was later on added to the list of the participating LGAs after the carving of the Mwanza City.

Rationale for TSCP

The TSCP was prepared in a response to a request from the 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. TSCP recognize the strategic importance of Tanzania urban centres as the engines for the country's structural transformation, economic growth and nationwide improvements in welfare. The Participating seven urban LGAs have strategic importance to mainland Tanzania in terms of their physical locations, importance for regional trade, demographic weight and contribution to the national economy.

TSCP Objectives and Outcomes

The Development Objective: is to improve the quality of and access to basic urban services in seven elected Participating Local Government Authorities (LGAs).

The Purpose: rehabilitation and expansion of urban infrastructure and institutional strengthening activities aimed at improving the fiscal and management capacities of the Participating LGAs.

Project Outcomes: the TSCP will improve the welfare and capacities of the LGAs to identify their key problems, determine the appropriate solutions in the form of sub-projects, plan their implementation and assume full responsibility for their maintenance and management.

TSCP Components

Component 1- Core Urban Infrastructure and Services: supports investments in urban roads and drainage, including associated structures such as drainage ditches,

culverts/bridges, footpaths and street lighting; solid waste management including solid waste collection centres, equipment for transportation and disposal, and the development or improvement of disposal sites; and local infrastructure such as bus and lorry stands. The component also finance construction supervision of the works for the investment sub-projects and technical assistance specifically for the implementation and monitoring of ESMPs and RAPs linked to sub-projects, including the payment of compensation costs.

Component 2-Institutional strengthening: to ensure the sustainability of the investments and lay the foundation for continued improvement of services, this component supports institutional strengthening and capacity building activities with the objective of increasing the financial resources at the disposal of Participating LGAs and their technical capacity to plan and implement their own infrastructure projects. This includes provision of support for management of environmental and social safeguards. Grant from Government of the Kingdom of Denmark is financing activities under this component.

Component 3- Implementation Support and Preparation of Future Urban Projects: supports project implementation and preparation of future urban projects.

**This ESIA report is for Component 1, to be implemented in Mwanza City
Current Status: completed works**

Activities under Core Urban Infrastructure and Services component have involved improvement or development of selected infrastructure sub-projects at various locations in Mwanza City. Works has involved upgrading /rehabilitation of a number of artery roads and drainage and associated structures aimed to improve movement of people, goods and services in the urban areas. Priority is given to roads to enhance connectivity (linking principal residential areas, commercial centres and service centres) to the main road networks, enhancement of traffic flow. Most of the infrastructure on the list of the first batch of prioritized subprojects are complete and in use or in final stages (90% complete).

Rationale for TSCP Additional Financing

Some areas of the completed infrastructure have been identified where further improvements need to be made. In addition, a number of infrastructures were prioritized during the Core TSCP design and preparation but not financed under the first round of implementation due to cost estimates being far above the available funds under the credit. Thus, the GoT through PO-RALG has decided to apply for a credit that will finance improvements of these facilities.

1.2 Rationale of the EIA Study

The ESIA for the first phase of the Core Urban Infrastructure and Services component of TSCP in Mwanza City was conducted and approved by the National Environment Management Council (NEMC) in 2010 and the Municipality was awarded an Environmental Certificate No. EC/EIS/251. The environmental and social assessment and management process for Mwanza City responds the World Bank Safeguard Policies and to requirements specified in the Tanzania ESIA and Audit Regulations, 2005 (Part IX, Regulation 42, Sub-regulation (1); (2)(b); and (4)) dealing with approval of changes to a project with a valid ESIA Certificate.

The World Bank Safeguard Policies require that, before a project is appraised, relevant safeguards instruments, such as an Environmental and Social Impact Assessment (ESIA) containing an Environmental Management Plan (ESMP), or just an ESMP, and if the project requires it, a Resettlement Action Plan (RAP), will be locally disclosed and will also be forwarded to the Bank for at the Bank's InfoShop.

As such, this ESIA has found-out that there will be **no resettlement at the additional sub-projects sites**. Works will be aligned within infrastructure Right of Way (RoW) or reserve, and zone designated for public utilities. Thus, a Resettlement Action Plan (RAP) **will not be prepared for the proposed additional works**. The design team will avoid interference with properties within and around project sites. The city authority will collaborate with the communities, supervision consultant and the contractors to resolve any unforeseen grievances on the basis of existing regulations.

1.3 Scope of Work

The indicative scope of works for the Mwanza City Council is as follows:

- i. Improvements of Pasiansi-Buzuruga, Sanga-Kiloleli road, Butimba road and Pepsi loop road
- ii. Msuka River bank protection works across Sanga-Kiloleli Road: Channelisation and lining of short section of upstream water way and outfall drain at outlet of culvert across Sanga-Kiloleli road including provision of access culverts and slabs where required.
- iii. Isamilo-Mji Mwema junction road upgrading (0.35km): Complete upgrading measures of the road from its current gravel road to asphalt paved road.

Tilapia Road Upgrading (0.60km): Complete upgrading measures of the road from its current gravel surface to asphalt paved road.

- iv. Uzinza Road upgrading (0.20km): Complete upgrading measures of the road from its current potholed pavement to asphalt paved road

1.4 Application Arrangements (Institutional Set-Up)

PO-RALG will be responsible for ensuring that the requirements of this ESIA are duly implemented. Notably, the necessary approvals required by the law, involving the responsible Authorities namely: the Vice President's Office (Division of Environment and the National Environment Management Council (NEMC).

1.5 Approach and Methodology for development of ESIA

1.5.1 The Approach

The following approach was used in the development of the ESIA.

- (f) Identification of key issues for the ESIA study,
- (g) Conduction of Scoping exercise which involved collection of data and information from literature, consultations with key informants and observations at representative LGAs to determine:
- (h) Baseline conditions of important biophysical and socio-economic receptors emphasizing prevalent trends and indicators;
- (i) Components of the TSCP sub-projects and activities in general likely to interact with this baseline;
- (j) Potential resulting environmental and social impacts;
- (k) Best alternative approaches for designing and implementing TSCP sub-projects;
- (l) Individual and institutional capacity building needs for implementation ESMP
- (m) Developing the ESIA based on content specifically specified in the ToR.

1.5.2 Methodology

Field Studies and Public Consultation

Broader consultation: The fieldwork for this study was carried out in November 2014. The fieldwork involved reconnaissance to all sub-projects making various

observations, site visits and interviews with stakeholders as well as meeting relevant Mwanza City officials.

The field visits were essential to fully realize the scope of the project, the biophysical environment specific to the location and the socio-economic conditions in the project area. The information was collected from various sources including the City council, Mwanza Urban Water Supply and Sewerage Authority (MWAUWASA), TANESCO and Lake Victoria Environmental Management Program LVEMP). Others included meeting with local community in Mwanza City Council.

Information and data collected include land use, ecosystems and human habitat, demography, hydrology, and other indicators related to environmental and socio-economic trends of the project area. Other information was appraised through key informants interviews and experts' observations.

Public participation was considered as an important element of the process. In these EIA and SIA studies, various stakeholders participated. Broad consultations that involved local communities ward and key city and municipal officials were carried out. During these consultations, the local communities had opportunities to air their concerns. The concerns of each group have been addressed in Chapter 5 of this Environmental and Social Impact Assessment Report. The following methods were used during field studies to ensure effective public involvement:

- *Focus Group Discussions:* These discussions were held with specific and targeted groups in the society including women, youths and small business entrepreneurs, village leaders and environmental committees. Guiding questions or checklists were prepared to facilitate the discussions and to focus it on issues related to a particular group. Dynamics of focus group discussions were observed to ensure fruitful discussions under the leadership of the sociologist. The names of participants in the discussions are attached in Appendix II.
- *Meetings with Government Authorities:* Brief meetings were held with heads of various departments of Mwanza City Council, ward leaders and beneficiaries of the subprojects. Meetings with authorities were held in their offices and involved few technical people.
- *Direct observations:* Some facts were observed directly by the EIA team. The information obtained from this technique assisted the study team to have the starting point during subsequent one-to-one interviews with stakeholders.
- *Secondary information:* This information was obtained from existing reports including:
 - The World Bank Operational Policy 4.01
 - Mwanza City Social economic Profile (2013)

Impact Assessment

Impacts identification was done by superimposing the project elements onto the existing social and environmental natural using checklists. An environmental

impact matrix method was used to identify impacts of major concern. A key guiding assumption in this study is that the project will be designed, constructed, operated and maintained with due care for safety and environmental matters using current and practical engineering practice and/or Best Available Technology Not Entailing Excess Cost (BATNEEC). The implementation schedule of the mitigation measures is summarized in the Environmental and Social Management Plan (ESMP).

The environmental assessment has been undertaken in close interaction with the engineering planning and design team of UWP Consulting. In this process environmental impacts have been evaluated for various alternatives. Several project alternatives were considered including that of not implementing the project. The fundamental environmental protection strategy and environmental considerations influencing engineering design were incorporated. However, reasonable regard to technological feasibility and economic capability were taken into account. Inter alia, the assessment entailed the following:

Collection of Baseline Data

The collection of baseline data was conducted subsequent to defining the scope of the EIA. These data allows the study team to determine whether more detailed information on environmental conditions at the development site and its surroundings are needed and where such information can be obtained.

The sample of the study consisted mainly of ward division executives, committee members and the members of the general public who were considered to be potential affected persons and/or interested parties. All respondents were selected through convenient sampling techniques.

Both primary and secondary data were collected. Primary data were collected by observations and using semi-structured interviews with respective and targeted parties (as explained in the previous section). Secondary data were obtained from various relevant sources of information such as municipal profiles, wards, education and health reports and many other official and non-official documents.

Review of Policies, Legal and Institutional Framework for Environmental Management

This allowed the study team to update and enhance their understanding of national policies, legislation and institutional arrangements for environmental management in Tanzania and relevant international procedures to ascertain the optimal management of impacts.

Identifying Environmental Impacts

This was undertaken by compiling a contender list of key impacts such as loss of flora and fauna, settlement patterns, social and cultural systems, water resources, land tenure systems etc;

Predicting Environmental Impacts

The environmental impacts were identified and their potential size and nature were predicted. The prediction of impacts specified the impact's causes and effects and its secondary and tertiary consequences for the environment and the local community was assessed

Determining the Significance of Impacts

The key activity was to evaluate the significance of impacts, that is, judgments were made about which impacts found in the study area were considered important and therefore need to be mitigated.

Identifying Mitigation and Management Options

The options for dealing with identified and predicted impacts were considered. This enabled the study team to analyze proposed mitigation measures. A wide range of measures have been proposed to prevent, reduce, remedy or compensate for each of the adverse impacts evaluated as being significant. Analysis of the implications of adopting different alternatives was done to assist in clear decision-making.

1.6 Layout of ESIA Report

This report is divided into Eleven (11) chapters as described hereunder:

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: Legal Requirement and Institutional Framework

It gives an overview of Environmental and Social Management Requirements describing the United Republic of Tanzania policy, legislative and institutional framework and applicable World Bank safeguard policies.

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 Analysis 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 and Demobilisation

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

Chapter 11: Conclusions and Recommendations

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.

Further, the report will also provide a list of document used in a reference list and also a list of Appendix.

2.0 PROJECT DESCRIPTION

2.1 Project Location

Mwanza city is the second largest city in Tanzania after Dar es Salaam. It is one of the fastest developing urban centres in the country. The city is strategically located on the southern shore of lake Victoria in North West Tanzania. It is situated between Latitude 20°15' - 20°45' South of the Equator and Longitude 32°45' - 45°38' East. The city comprises of two districts, which are Nyamagana and Ilemela (the latter became an independent LGA in 2012); beside these two Districts, the city is surrounded by other districts namely Misungwi and Kwimba to the South, Sengerema and Geita to the West, Ukerewe to the North and Magu to the East (Figure 2.1).

2.2 Project Components

The proposed TSCP AF in Mwanza City has five components as described in the following

(i) Improvements to Pasiansi-Buzuruga, Sanga-Kiloleli, Butimba and Pepsi Loop Roads

These are newly constructed asphalt surfaced roads requiring improvements/additions to make the sub-projects more suitable for effective use and enhance value for money. The envisaged improvements and or additions include the following activities

- **Pasiansi Buzuruga Road**
 - ✚ Install Street Lights along the entire road and Road Signs at Bus Bays
 - ✚ Provide accesses (vehicular) to properties on LHS of the road
 - ✚ Replace Fence damaged during upgrading of the road
 - ✚ Channelize and lead storm water from culverts to safe disposal points
- **Sanga –Kiloleli**
 - ✚ Improvement to sharp road bends
- **Butimba Road**
 - ✚ Channelisation of Storm Water from 3 culverts
 - ✚ Edge Protection to the shoulder of the road (at Football Pitch)
- **Pepsi Loop Road**
 - ✚ Replacement of 2 existing Access culverts
 - ✚ Improvement of drainage across a railway lines

(ii) Msuka River bank protection works across Sanga-Kiloleli Road

Channelisation and lining of short section of upstream water way and outfall drain at outlet of culvert across Sanga-Kiloleli road including provision of access culverts and slabs where required

(iii) Isamilo-Mji Mwema junction road upgrading (0.35km)

Complete upgrading measures of the road from its current gravel road to asphalt paved road with

- Paved storm water drains
- Installation of culverts where required
- Lanes for pedestrians segregated from the vehicular lanes
- New pavement layers comprising
 - ✚ 30mm AC 14 on
 - ✚ 150mm CRR on
 - ✚ 150mm C1 cement stabilised Sub-base on
 - ✚ Improved sub-grade layers
- Installation of Street Lights

(vii) Tilapia Road Upgrading (0.60km)

Complete upgrading measures of the road from its current gravel surface to asphalt paved road with

- Paved storm water drains
- Installation of culverts where required
- Lanes for pedestrians segregated from the vehicular lanes
- New pavement layers comprising
 - ✚ 30mm AC 14 on
 - ✚ 150mm CRR on
 - ✚ 200mm CM cement stabilized Sub-base on
 - ✚ Improved sub-grade layers
- Installation of Street Lights

(iv) Uzinza Road upgrading (0.20km)

Complete upgrading measures of the road from its current potholed pavement to asphalt paved road with

- Paved storm water drains
- Installation of culverts where required
- Lanes for pedestrians segregated from the vehicular lanes
- New pavement layers comprising
 - ✚ 30mm AC 14 on
 - ✚ 150mm CRR on
 - ✚ 150mm C1 cement stabilised Sub-base on
 - ✚ Improved sub-grade layers
- Installation of Street Lights

2.2.1 Sub-projects alternatives

In the course of developing the proposed sub-projects for road, storm drain, street light and landfill structures, alternatives were compared in terms of potential environmental and social impacts; capital and operating costs, land availability and; suitability under local conditions. It was imperative to also examine and review different sub-projects settings, designs, and construction alternatives where two options were considered:

- No project option and,
- Alternative sites

2.2.2 ‘No sub-project’ option

The investment sub-projects for the city of Mwanza under the proposed TSCP - AF are expected to improve sanitation and public health, promote safe and efficient mobility in the towns, improved economy and the general well-being in the city setting.

With contemporary fast increase of the population in the city, the challenge still prevails of inadequate stock and quality road, drainage, street lighting and waste disposal infrastructure. However, the sustainability of those infrastructure facilities depends on the good operation and maintenance of the facilities that will be adopted by the city authority.

If the ‘no project’ option was chosen, from the economic standpoint and social considerations, the following benefits will be foregone: i) improved transportation; ii) long life span for roads, iii) employment; iv) low incidence of accidents and v) controlled flooding inside urban centres against water stagnation. vi) good visibility and security at night and whenever natural light is dim, and vii) improved environmental sanitation in the city. Hence, for TSCP – AF sub-projects, the alternative of “no-project” would increase the risks on traffic and pedestrian accidents, flood damages to houses, vandalism of the infrastructure, untidy environment and general poor public health.

Thus, the ‘no sub-project’ option will not be a viable alternative under TSCP – AF sub-projects in Mwanza.

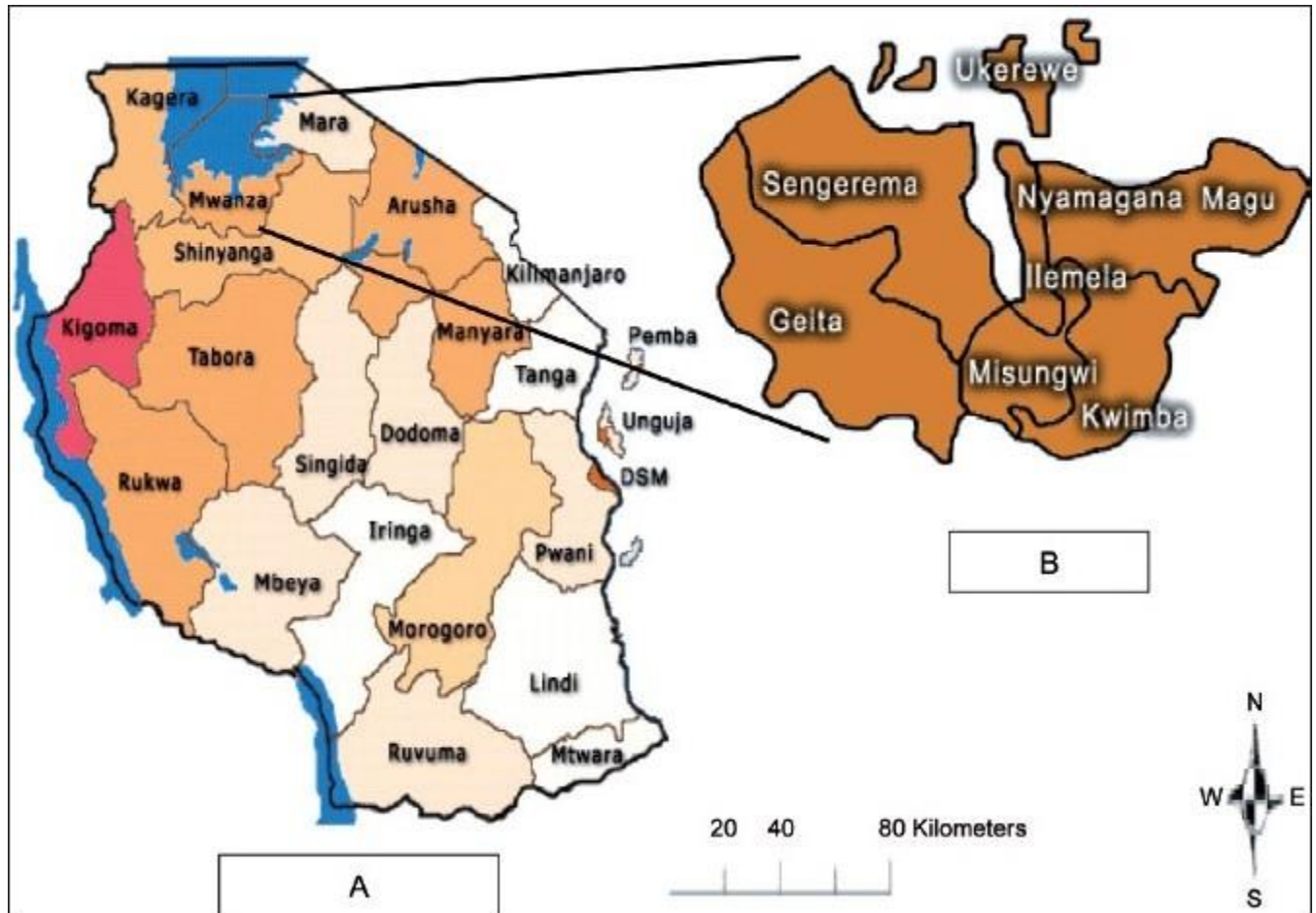


Figure 2.1: Map of Tanzania and Mwanza Region showing project area.

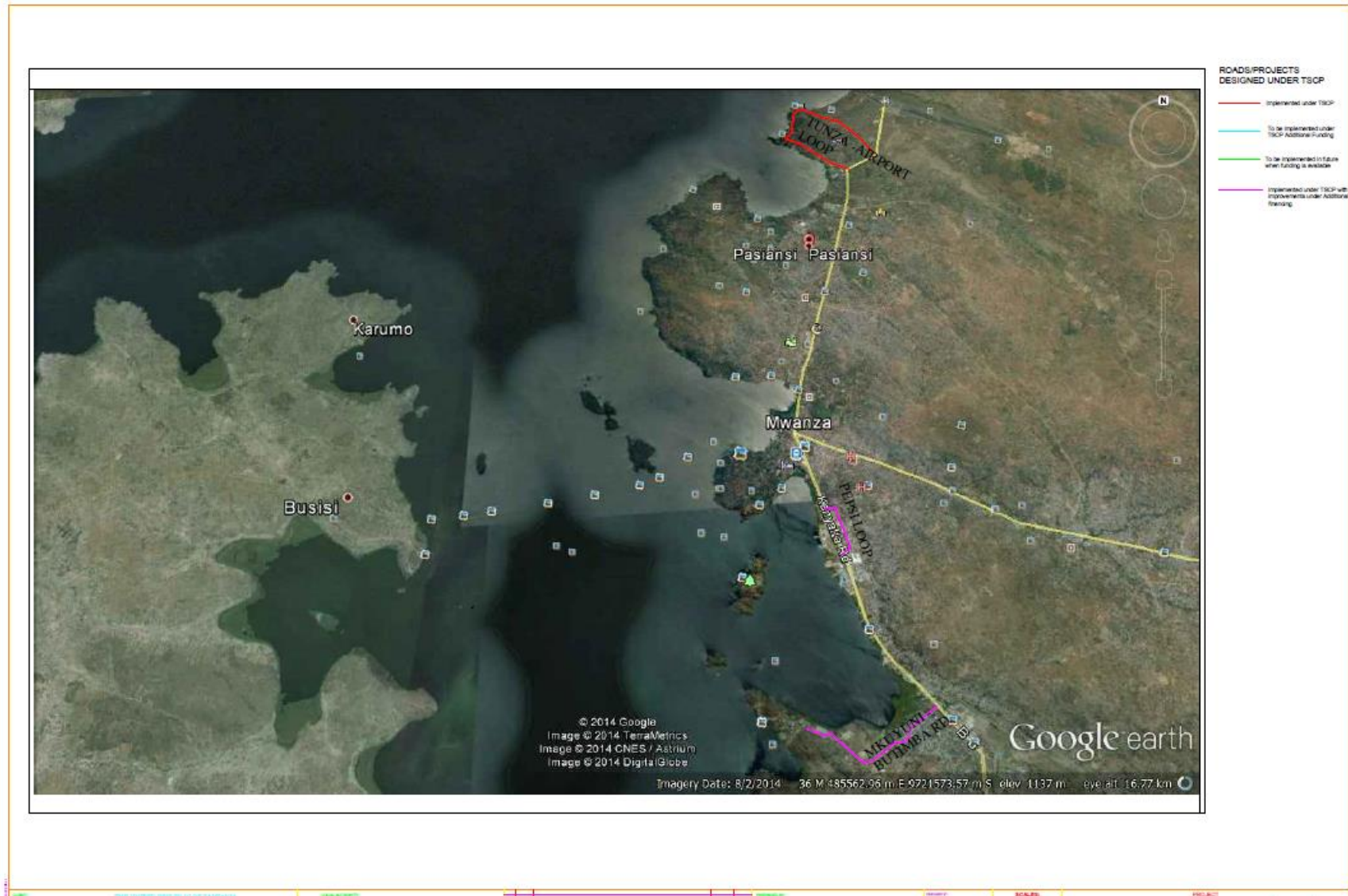






Figure 2.2: Satellite image of showing the Mwanza City and Project roads

2.3 Project Activities in General

2.3.1 Mobilization phase

Activities

This phase entails mobilization of labour force, equipment and construction of project office and camp sites as well as acquisition of various permits (including water extraction rights) as required by the law. Other activities during this phase include carrying out of topographical survey, geo-technical investigation, soils and materials investigation, land acquisition, material storage and material preparation and identification sources of construction materials including and source of water. During this period, auxiliary and preliminary works such as crushing of aggregates, locating sign posts and identifying sites for disposal of wastes will be conducted.

Duration

The duration of this phase will be four (4) months.

Types and Sources of Project requirements

Types and sources of project requirements during the pre-construction are presented in this section: Materials investigations and characterization has been done by the project design team, focusing on, among other things: investigations of existing and potential new borrow pits and quarry site areas in order to obtain suitable materials for the construction of gravel pavement layers and for the manufacture of concrete and for crushed stone and surfacing materials respectively. Further, the team has identified sources of water and sand for construction works as shown in Table 2.1

Table 2.1: Project requirements and Sources during the pre-construction phase

Requirements	Type	Source
Raw Materials	Gravel	Borrow pits at Mkolani and Nyamwilolelwa
	Hard Stone	Nyanza, Kisesa and Kwa Mansoor
	Sand	Airport and Mkolani pits
	Water	Lake Victoria
	Cement	Local Vendors in Mwanza City
	Reinforcement bars	Local Vendors in Mwanza City
	Timber	Local vendors in Mwanza City Council
Energy	Electricity	TANESCO (National Grid)/ Generators
	Fuel	Local vending stations
Manpower	Skilled	Contractor
	Unskilled	Local People along the road

Equipments	Dump Trucks, Graders, Dozers, Water Boozers, Vibratorss, Excavators	Contractor
-------------------	--	-------------------

Source: Design report for Proposed Additional Sub-Projects in Mwanza City Council under the TSCP, 2014

The waste types which are likely to be generated during the mobilization phase include;

Table 2.2: Types, amounts and management of wastes during the mobilization phase

Waste	Types	Amount	Treatment/ Disposal
Solid Waste (Degradable)	Garbage: Food remains, cardboards and papers Plants including trees and grasses	16.8 kg/day (based on generation rate of 0.21 kg/day/ person and 80 workers)	Collected in a large skip bucket at the construction sites/office and campsite. then to be composted and used as manure.
	Scrap metals and plastics	1 - 4 kg per day	Sold to Recyclers
Solid Waste (Non-Degradable)	Tins and glasses	0.5 - 4 kg per day	Disposal at designated dumpsite in Buhongwa area
	Sewage Sullage	2.56m ³ 7day (Based on 80 people, 40 l/capita/day water consumption and 80% becomes wastewater)	Disposed into Septic tank –Soakaway system at the campsites/ office
Liquid waste	Oils and greases	None	Car maintenance will be done at proper garages

Note: Estimation data used are typical waste generation rates in construction sites, based on the experience of the consultancy.

Wastes such as top soils will be used to fill the diversions, while biomass such as felled trees will be used as a source of energy at the camp sites. Scrap metals will be sold for recycling purposes. Scrap metals, used oil and greases will be sold for recycling purposes. Car maintenance and repair should be done in proper garages.

2.3.2 Construction phase

The project is essentially civil works in nature mainly consisting of upgrading of city feeder roads (Pasiansi-Buzuruga, Sanga-Kiloleli, Butimba, Pepsi Loop, Isamilo-Mjimwema, Tilapia, Mtakuja and Uzinza), and rehabilitation/construction of road furniture.

- Filling and reshaping the road section to sub-grade level
- Cutting of the earth sections to facilitate widening of the roads
- Upgrading or construction of longitudinal and cross drainage structures
- Provision of sub-base, base course and double surface dressing ending with finishing course of bitumen surface standard.
- Demolition and removal of culverts and temporary bridges;
- Provision of temporary crossings and traffic diversions;
- Excavation of the existing roads and the construction of fill embankments;
- Shaping of gravel from borrow pits for sub-base and base;
- Supply of bitumen and stone chippings;
- Laying a bitumen prime coat and bituminous surface treatment;
- Excavation for the construction of the concrete bridges and incidental works;
- Construction of concrete bridges and incidental works

Types and Sources of Project requirements

Types and sources of project requirements during the construction phase are shown in Table 2.3:

Table 2.3: Project requirements and Sources during the construction phase

Requirements	Type	Source
Raw Materials	Gravel	Mkolani and Nyamwilolelwa
	Hard Stone	Nyanza, Kisesa and Kwa Mansoor
	Sand	Airport and Mkolani
	Water	Lake Victoria
	Bitumen	South Africa/Saudi Arabia

	Cement Reinforcement bars	Local Vendors
		Local Vendors in Mwanza City Council
Manpower	Skilled	• Contractor
	Unskilled	• Local People
Equipment	All construction machines and equipment	• Contractor
	All type Vehicles and Trucks	• Contractor

Source: Design report for Proposed Additional Sub-Projects in Mwanza City Council under the TSCP, 2014)

Again, the waste types which are likely to be generated during the construction phase include;

Table 2.4: Types, amounts and treatment/disposal of wastes during the construction phase

Waste	Types	Amount	Treatment/ Disposal
Solid Waste (Degradable)	Garbage: Food remains, cardboards and papers Plants including trees and grasses	20 kg/day (based on generation rate of 0.2 kg/day/ person and 100 workers)	Collected in a large skip bucket at the construction sites/office and campsite. then to be composted and used as manure.
Solid Waste (Non-Degradable)	Scrap metals	4 - 8 kg per day	Sold to Recyclers
	Tins, glasses and plastics	2 - 4 kg per day	Disposal at designated dumpsite in Buhongwa area
Liquid waste	Sewage Sullage	3.2 m ³ (Based on 100 people, 40 l/capita/day water consumption and 80% becomes wastewater)	Disposed into Septic tank –Soakaway system at the campsites/ office
	Oils and greases	Non	Car maintenance will be done at proper garages

Note: Estimation data used are typical waste generation rates in construction sites, based on the experience of the consultancy.

Solid waste such as top soils shall be used to fill the diversions or any other affected land. Scrap metals, used oil and greases shall be sold for recycling purposes. Car maintenance and repair should be done in proper garages to avoid soil pollution. Contaminated soils if any shall be removed and transported to a designated waste dump in Mwanza City.

2.3.3 Operation phase

The actual usage of the proposed roads is expected to commence after completion of the construction works. The roads and roads furniture shall be directly managed by Mwanza City Council, respectively. During operational phase, Mwanza City Council shall carry out routine maintenance of the facilities including resurfacing of the roads, clearance of vegetation along the road, etc. The City Council shall also be responsible for ensuring that the constructed roads are maintained and used in a sound manner.

Types, Amounts and treatment/disposal of Wastes

The major type of waste is debris and silt falling into roads storm water drains. Estimated amounts and treatment/disposal of wastes expected to be generated during the operational phase are mainly debris disludged from storm drains during regular O&M of the drains. These are shown in Table 2.5.

Table 2.5: Types, amounts and treatment/disposal of wastes during the operational phase

Waste	Types	Amount	Treatment/ Disposal
Assorted wastes (debris) deposited into storm water drains	Plastics (bags and bottles) , Papers, Silt, Grass	N/A	Collection and disposal in authorized disposal facility

2.3.4 Decommissioning/Demobilization phase

Demobilization

Demobilization of temporary structures will be done for proper restoration of the site (e.g. removing/spreading top-soils piled along the road, restoration of borrow pits to required grades and removing all temporary structures). Depending on their design and status, campsites may be left to the local governments depending on agreements that will be reached during the mobilization phase.

Decommissioning

Decommissioning of roads, storm water drains, and bus stands is not anticipated in a foreseeable future as Tanzania still needs these facilities and cannot afford to abandon them.

Duration: Demobilization stage is approximated to last for a period of three (3) months

Types and Sources of Project requirements

Types and sources of project requirements during the demobilization phase are shown in Table 2.6.

Table 2.6: Project requirements during the demobilization phase

Requirements	Type	Source
Manpower	Skilled	Contractor
	Unskilled	Local People in the project sites
Equipment	Bull dozer, Motor grader, Roller Compactor, Plate compactor, Tippers	Contractor

2.4 Design Considerations

This section presents design concepts for the proposed roads and road furnichers in Mwanza City Council. Engineering drawings for the facilities are presented in Appendix III.

2.4.1 Design of city feeder roads

The proposed road are Pasiansi-Buzuruga, Sanga-Kiloleli, Butimba, Pepsi Loop, Isamilo-Mjimwema, Tilapia, Mtakuja and Uzinza.

Design Speed: Due to the nature of the environment in which the roads are located being predominantly existing built-up central business and suburban areas with clearly defined right of way (RoW.) servitudes, the choice of design speed is based on a “safe practical” approach that best fits within the RoW rather than an “ideal” approach. Design speeds vary between urban streets (commercial and industrial streets) at 30 km/h, to suburban roads (collector and arterial roads) at 50 km/h. Design speeds adopted for the individual roads including the limiting geometric design parameters used are given in the Geometric Design Parameters.

Cross-Sections: Each roadway generally comprises a carriageway consisting of two lanes, side drains, sidewalks, and verges all located within the RoW with the

exception of some roads that also include shoulders. Each road comprises of two surfaced lanes, one for each direction, with the traffic lanes measuring minimum 3m to 3.5m depending on available space. The lanes are generally separated by a single line road marking system. Transverse road slopes for both single cross-slope and cambered carriageways are minimum 2.5%.

Some higher order roads have an additional 1 m wide surfaced shoulder on either side where space permits which has the same transverse slope as the carriageway. Where shoulders are not provided, provision for emergency stopping is made by means of a clear verge with a slope of 1:4. Where space is limited, open side drains and/or channels are located on one side only. Generally a single road cross-slope will direct storm-water run-off to such a drain. Where space permits, side drains are located on both sides of the road and generally a road camber will direct storm-water run-off from the road centreline to both drains. The types of drains used are covered under subsequent sections.

Where applicable and in most cases, surfaced pedestrian sidewalks have been provided for adjacent to the roadway. These are either at grade with the roadway separated by an intermittent barrier kerb, or raised above the road edge separated by a continuous barrier kerb or side drain. Sidewalks range from minimum 1 m wide where located on both sides of the road to minimum 1.5 m wide where located on one side only. In some cases the sidewalks have been extended around the bell mouths of road intersections for some distance to direct pedestrian movement away from potentially hazardous intersections. Transverse sidewalk slopes are minimum 3%.

Right Of Way servitude widths vary from road to road but are generally defined by the cadastral boundaries where available or by information passed on by the LGA's during the site visits.

Horizontal Alignment: Generally the proposed new horizontal alignments and curvature conform to the specified geometric design parameters summarised in the Geometric Design Parameters Reference Table 2.7. Where this has not been achieved is generally as a result of the restrictions posed from existing R.O.W. servitudes or in an attempt to minimise the impact of new construction on the existing environment such as existing buildings, structures, monuments, trees etc

Super-elevation is generally provided for on the higher order roads particularly in the suburban areas where slightly higher operational speeds are expected. Only curves with tight radii and large deflective angles were considered for super-elevation. Super-elevated slopes do not exceed 2.5% or reverse camber due to the low speeds and impact on adjacent properties in terms of extended embankments. Roads restricted by the existing built-up environment particularly within the CBD

area where low operational speeds are expected have either a single cross-slope or camber depending on the side drain situation.

Vertical Alignment: As with the horizontal alignment, the proposed new vertical alignments and curvature will conform to the specified geometric design parameters are summarised in Appendix E. Where this has not been achieved is generally as a result of attempting to minimise the impact of the new road earthworks on the existing R.O.W. servitudes and existing environment such as existing buildings, structures, monuments, trees etc.

Longitudinal grades in most cases exceed 0.5% (1:200) the absolute minimum allowable slope for storm water drainage purposes. Where this has not been achieved due to the natural flatness of the terrain the roadway has been lifted to prevent the accumulation of storm water run-off on the roadway and to prevent penetration of adjacent run-off into the road pavement. Maximum grades range between 8% for urban streets to 9% for collector roads.

Pedestrian/ cyclist facilities: As detailed, sidewalks have been provided where space allowed. No cycle lane has been provided on the proposed additional sub-project roads due to limited space. The sidewalks will be asphalt surfaced.

Taxi / bus bays will also be provided. The positions and plying frequencies will be agreed upon through consultation with the City authority and other stakeholders during the detailed design stage. Taxi / bus bays will be constructed using the same pavement and surfacing as the adjacent roadway.

Pedestrian and cyclist crossings will be provided at safe crossing zones comprising of painted road markings with adequate advance warning signage and traffic calming devices. The positions will also be established through consultation with the City Council personnel and the local communities.

Intersecting side streets and accesses generally tie into the new roads at the current horizontal and vertical alignments and terminate at the road reserve boundary. In some cases the alignments have been adjusted to improve intersection angles and visibility, and to ensure smooth transitions between roads. Access to adjacent homes and businesses separated from the roads by deep open drains will be provided for in the form of concrete access slabs spanning the drains. The position and frequency of the slabs have to be established on site.

Storm water drains: In most cases, the conveyance and accommodation of road prism storm-water run-off generated from the upgraded road system has been provided for in the form of new side drains collecting and transporting run-off to new and/or existing inlet and outlet structures discharging into the existing storm-water system. Side drains mainly comprise of open trapezoidal drains, concrete channels, and concrete box drains. Trapezoidal drains are predominantly lined with the exception of those not subject to erosion in suburban areas. These may be unlined or grassed lined. Inlet and outlet structures vary from open chutes to inlet chambers to headwalls. The accommodation of the additional storm-water capacity by the existing system will be checked from hydrological data provided. In some cases, storm-water run-off will be conveyed to low lying areas, gullies, streams and rivers where cross drainage structures will be provided to take surface water from one side of the road to the other. Cross drainage structures comprising mainly of concrete pipe or box culverts will again be checked for capacity using hydrological data provided.

Subsoil drains will be installed in areas where high water tables are expected and/or at the toes of deep cuttings to prevent subsurface water from penetrating into the road pavement. Subsoil drains will discharge into new and/or existing inlet/outlet structures or out of road fills and into gullies, streams etc.

The following approved standards (Table 2.7) by the Ministry of Infrastructure Development (formerly the Ministry of Works –MoW) shall be adopted and adhered to:

Table 2.7: Design Standards adopted

1.	Geometric design	MoM Draft Design Manual of 1989, Code of practice for Geometric Design (Draft) published by SATTC –TU, 1998
2.	Pavement and Materials	MoW Pavement and Materials Design Manual, 1999
3.	Specifications	MoW Standard Specifications for Road Works
4.	Testing Procedure	MoW Central Materials Laboratory testing Manual
5.	Structures	British Standards BS 5400
6.	Hydrology and Hydraulics	TRRL East African Flood Model
7.	Surveying	Land Survey and Mapping Standards of Tanzania (Land Surveying Regulations CAP 390)

2.5 Construction Materials and Labour Force

Essential construction materials include gravel, stone aggregates, sand, iron bars, water and bitumen. All materials are available in the project area except bitumen, which will be imported by the contractor. Gravels will be obtained from the existing borrow pits (Figure 2.3) though more may have to be opened up during the construction stage if the need will arise.



Figure 2.3: Airport Sandpit (left) and Nyanza Quarry site (right) at Mwanza

Construction works is generally a labour intensive undertaking. Apart from technical and skilled manpower, recruitment of unskilled labour will be done locally. It is estimated that a minimum of 500 people will be employed during the operation phase.

2.6 Camp Site Location

Due to the nature and scattered location of the proposed sub-projects, it is possible that only the team of expert from outside Mwanza will be accommodated in a camp. The local staff will report at their respective working sites and back to their homes after work. The developer shall discuss with the contractor on proper location of the camp site, in agreement with the local community. The developer will make sure that all legal issues are considered in order to have mutual benefits. The developer can also hire houses in one or several locations to accommodate his staff.

Types of wastes from the camp sites will include liquid wastes (domestic), general refuse and petroleum hydrocarbons. About 3 tonnes per month of domestic refuse will be generated at the campsites. A local collection site shall be designated by the Contractor near the camp site in collaboration with the communities' leadership for collection of solid wastes to be generated from project activities before disposal to

the City dumpsite. Sanitation facilities to be used in the camps will include ventilated improved pit latrines (VIP latrines) and septic tank/soak away. About 12m³ per day of liquid will be generated from the campsites. Other contingent plans to handle the accidental oil spillages and general waste management shall be worked out during the preparation of the Environmental and Social Management Plan (ESMP) for this project.

2.7 Waste Generation

Waste generated during all the project phases shall be handled in an environmentally friendly manner. Spoil soil shall be stock piled along the road alignment or at the borrow pits. The soils shall be used to reinstatement of sites at the end of the project implementation phase. Domestic wastes generated at the campsites and offices shall be disposed in VIP latrines connected to septic tank/soak away systems. Solid wastes shall be stored in waste bins at the sites/campsite, and later transported to designated disposal sites. Other contingent plans to handle the accidental oil spillages and general waste management shall be worked out during the preparation of the Environmental and Social Management Plan (ESMP) for this project

3.0 LEGAL REQUIREMENTS AND INSTITUTIONAL FRAMEWORK

3.1 World Bank Safeguard Policies

The World Bank Safeguard Policies are Operational Policies (OP) and Bank Procedures (BP) approved by the Board for addressing environmental and social issues within the Banks supported development projects. TSCP has been assigned Environmental Risk Assessment Category B and triggers the following World Bank Safeguard Polices: (i) Environmental Assessment (OP/BP 4.01); (ii) Involuntary Resettlement Policy (OP/BP 4.12); (iii) Physical Cultural Resources (OP/BP 4.11). The same policies will apply to the Sub-Project activities under the proposed Additional Financing.

The safeguard policies considered applicable to the TSCP in general and Additional Financing specifically are:

3.1.2 OP 4.01 (Environmental Assessment)

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.

In Mwanza City the project intends to finance a variety of types of infrastructure (e.g. artery urban roads.), and this can have adverse environmental impacts. In this ESIA these potential impacts are well described. The ESIA contains directions for the City Council project teams and local leaders and management committees on practical ways of avoiding or mitigating adverse impacts. An ESMP is also included in this ESIA report.

3.1.3 OP/BP4.11 (Physical Cultural Resources)

Culturally, Tanzania is an extremely rich and diverse country and is home to ancient civilizations: 300-year-old Arab settlements; 100–year-old European buildings; graveyards; sacred areas; mosques; churches; etc. To mitigate potential for adverse impacts on cultural property, training of LGA project teams and local leaders and management committees and the subproject planning checklist as well as other tools, will ensure that cultural property resources are identified during subproject planning, and appropriate measures are taken to avoid damaging them. Chance find procedures have been included into civil works contracts; Designs and buffer zones will be created to avoid damage to cultural resources, such as “sacred” forests and graveyards. According to approved designs, the proposed infrastructures

are such that they do not affect cultural resources, but procedures in case of “chance finds” will be observed.

3.1.4 OP 4.12 (Involuntary Resettlement)

WB Involuntary Resettlement Policy OP 4.12 requires that all projects with land acquisition implications are guided by a Resettlement Policy Framework (RPF), which outlines processes and procedures to be followed for preparation of site specific RAPs during project implementation. However, in Tanzania, there are no explicit requirements for a RPF or RAP. 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 either be compensated for use of the land or assisted to move. TSCP project will apply both WB requirements and Tanzania government’s guidelines regarding compensation and resettlement of Project Affected People (PAP, and where there are gaps between these two the World Bank’s safeguard policy will prevail.

Selected subprojects in Mwanza City involve rehabilitation/improvements of existing infrastructure at/along their original location. There will be no land take or resettlement of people at any of the four project sites and thus no involuntary resettlement has been considered.

3.2 Relevant National Policies and Environmental and Social Management Requirements

A clean and safe environment is the constitutional right of every Tanzanian citizen. Regulation on environmental management in the country is mainly vested on two public institutions, the National Environment Management Council (NEMC) and the Division of Environment (DoE) in the office of the Vice President. NEMC undertakes enforcement, compliance, and review of environmental impact statements whereas the DoE provides the policy formulations and technical back-up and executes the overall mandate for environmental management in the country. The EIA certificate is issued by the Minister responsible for Environment. There are many policies and pieces of legislation on environmental management in Tanzania, the relevant ones to this project area briefly discussed below.

National Policies

Environmental awareness in the country has significantly increased in recent years. The government has been developing and reviewing national policies to address environmental management in various sectors. Among others, the objective of these policies is to regulate the development undertaken within respective sectors so that they are not undertaken at the expense of the environment. The National Policies that address environmental management as far as the proposed projects are concerned and which form the cornerstone of the present study include *inter alia*.

3.2.1 General Environmental Management

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.

Critically, the National Environmental Policy emphasize the following aspects of natural resources management taking into account that the project proposal has impacts on natural resources:

- ◆ Wildlife resources should be protected and utilized in a sustainable manner; and on the basis of careful assessment of natural heritage in flora and fauna, fragile ecosystem, site under pressure and endangered species, with participation of, and benefits to, the local communities. Environmentally adverse impacts of development project in wildlife conservation area e.g. (tourist hotels, road construction) will be minimized by Environmental Impact Assessment studies.
- It encourages the development of sustainable regimes for soil conservation and forest protection, taking into consideration the links between desertification, deforestation, freshwater availability, climatic change and biological diversity.

On addressing the issues of poverty alleviation, the policy recognizes its impact to the environment. The policy focuses on the satisfaction of basic needs of citizens with due cognizance to protecting the environment. This project will ensure that the above policy objectives are met.

The NEP advocates the adoption of Environmental Impact Assessment (EIA) as a tool for screening development projects which are likely to cause adverse environmental impacts.

Environmental Management Act No. 20 of (2004), Cap. 191

The Environmental Management Act (EMA) is a piece of legislation that forms an umbrella law on environmental management in Tanzania. Its enactment has repealed the National Environment Management Council Act. 19 of (1983) while providing for the continued existence of the National Environment Management Council (NEMC).

Among the major purposes of the EMA are to provide the legal and institutional framework for sustainable management of the environment in Tanzania; to outline principles for management, impact and risk assessment, the prevention and control of pollution, waste management, environmental quality standards, public participation, compliance and enforcement; to provide the basis for implementation of international instruments on the environment; to provide for implementation of the National Environmental Policy; to provide for establishment of the National Environmental Fund and to provide for other related matters.

Part III, Section 15(a) states that in matters pertaining to the environment, the Director of Environment shall coordinate various environment management activities being undertaken by other agencies to promote the integration of

environment considerations into development policies, plans, programmes, strategies projects and undertake strategic environmental assessments with a view to ensuring the proper management and rational utilization of environmental resources on a sustainable basis for the improvement of the quality of human life in Tanzania.

Environmental Impact and Auditing Regulations (2005)

These regulations set procedures for conducting ESIA and environmental audit in the country. The regulations are made from Section 82 and 230 of the EMA (2004) and prescribe that the Minister responsible for environment shall formulate regulations and guidelines on how ESIA shall be conducted. The ESIA regulations are applicable to all project contained in Third Schedule of the EMA (2004) and First Schedule of the ESIA and Audit Regulations. These Regulations prescribes the stages and/or the ESIA process, which are in principle managed by the NEMC.

Environmental (Registration of Environmental Experts) Regulations (2005)

The law requires EIAs be conducted by person or firm of experts registered and certified by the Registrar at NEMC. PO-RALG has consulted fully registered ESIA experts undertake this ESIA. Mwanza City though PO-RALG has strived to assign qualified external experts to work with trained PO- RALG staff to work on the ESIA to a point where the subprojects will be granted an ESIA certificate issued by Minister responsible for environment.

3.2.2 Management of Air Emissions and Ambient Air Quality

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

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

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

This regulation prohibits emissions/release of hazardous substance into the environment. The sub-project ESMP for managing wastes 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, Mwanza City shall seek air pollutant emission permit from NEMC.

Public Health Act, Cap 336 (2009)

The Act sets requirements for management of gaseous wastes from various sources including vehicles. The sub-project ESMP will ensure that habitable buildings under TSCP - AF are designed to have adequate openings or ventilation, means of smoke escape, and maintenance of equipment and devices.

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

The sub-project ESMP for Mwanza City have incorporate requirements and standards for personnel working in areas where dangerous fumes are likely to be present; and precautions in respect to explosive or inflammable dust, gas, vapour or substance.

3.2.3 Management of Solid Wastes

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

By developing the landfill and the solid waste management system as a whole, Mwanza City has fulfilled its responsibility required by EMA which empower it 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 centres. The subproject ESMP will ensure proper functioning of the infrastructure and facilities.

Public Health Act, Cap 336 (2009)

By developing waste management infrastructure, the City also has 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 subproject ESMP and specific Waste Management Plans will ensure that the infrastructure and facilities in the City operate as per these requirements.

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

The sub-project ESMP and specific Waste Management Plans will ensure that the proposed landfill and its facilities have 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. The monitoring procedures set in this ESIA will ensure periodic records and annual reports of the performance of the licensed waste management landfills.

3.2.4 Management of Water quality

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

By developing storm water management infrastructure, the Mwanza City also has fulfilled EMA requirement that vest duty to LGA to prepare for placement of storm water drains. The sub-project ESMP will adhere to provisions on discharge of sewage and management of liquid wastes and storm water.

Environmental Management (Water Quality Standards) Regulations (2007)

The sub-project ESMP will ensure safe distances of water supply systems from pollution sources for any infrastructure activity near water sources. The inclusion of Environmental Management Officers in project teams and approval of subproject ESMP will ensure no discharge of water polluting substances will go uncontrolled.

The Water Resources Management Act No. 11 of 2009

The Act provides for institutional and legal framework for sustainable management and development of water resources. Its main objective is to ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled in ways that among others meets the basic human needs of present and future generations, prevents and controls pollution of water resources and protects biological diversity especially the aquatic ecosystems.

Section 9 of this the law requires carrying out an Environmental Impact Assessment for any development in water resource areas or watershed. This ESIA is in line with this legal requirement, and the ESMP has provided measure to protect water resources in the subproject areas.

The Water Supply and Sanitation Act No. 12 of 2009

This is also a new legislation that provides for sustainable management and adequate operation and transparent regulation of water supply and sanitation services; provides for establishment of water supply and sanitation authorities as well as community owned water supply organizations; and provides for appointment for service providers.

The main aim of this law is to ensure the right of every Tanzanian to have access to efficient, effective and sustainable water supply and sanitation services for all purposes by taking into account among others protection and conservation of water resources and development and promotion of public health and sanitation; and protection of the interest of customers. This law is in line with this project because the project will improve the sanitation of the Mwanza City by provision of proper solid waste collection and disposal facilities.

3.2.5 Management of Soil Quality

Environmental Management (Soil Quality Standards) Regulations (2007)

The sub-project ESMP will ensure main polluting activity and discharge effluent are prevented from contaminating soils or subsoil.

3.2.6 Management of Noise

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

The screening procedure used during scoping delineated all sorts of activities with potential to emitting noise and vibrations in order to control noise and vibration pollution into the environment.

3.2.7 Management of Land and Land-use

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. Implementation of sub-projects in Mwanza City does not entail land take and thus no compensation issues have arisen.

3.2.8 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)

These Acts make provisions for safety, health and welfare of persons at work places and general public. Sub-project ESMP has incorporated measures that ensure employment opportunities to all while protecting right of children and people with disabilities and control of STDs and HIV infections. The occupation health and safety Act requires employers to provide a good working environment to workers in order to safeguard their health.

The employers need to perform medical examinations to determine fitness before engaging employees. Thus, as stated in the ESMP, the Mwanza City Council shall ensure that the equipment used by employees are safe and shall also provide proper

working gear as appropriate. The contractors shall abide to the provisions of this Act.

3.2.9 Others Relevant to Infrastructure Development

National Transport Policy (2003)

The main objective of the policy is to improve infrastructure whilst minimizing wasteful exploitation of natural resources and enhancing environmental protection. Improving infrastructure assists in poverty reduction and eradication which is a major goal in Tanzania. Most activities in the project area depend in one way or another on the environment and therefore protection of the environment is vital. In order to promote environmental protection whilst reducing poverty in rural areas, the policy direction is to:

- Influence use of alternative energy sources such as biogas and solar available at the residential localities instead of travelling long distances in search of firewood as a source of power; and
- Raise environmental awareness.

Sections 5.9 and 6.13 on Road Transport and Environment respectively give policy directions towards enhancing environmental protection through environmentally friendly and sustainable transport infrastructure both in the rural and urban areas.

The Road Act, 2007

For purposes of the Investment Subproject roads road upgrading project, the Act 2007 serves as a guide to the use of the road reserve. Contrary to previous informal understanding the reserve is exclusive to road related activities that do not include other utilities. However clause 29 (2) does give provision for the request and terms of approval for use of the road reserve by utilities such as power lines and water pipes.

On land acquisition the Act clearly states in part III, Section 16 that *'where it becomes necessary for the road authority to acquire a land owned by any person, the owner of such land shall be entitled to compensation for any development on such land in accordance with the Land Act and any other written law'*.

National Mineral Policy (1998)

The National Mineral Policy requires that mining activities are undertaken in a sustainable manner. Reclamation of land after mining activities is recommended. As far as this project is concerned, mining activities refer to quarrying and gravel extraction (borrow pits) activities.

Construction Industry Policy (2002)

Among the major objectives of the policy, include the promotion and application of cost effective and innovative technologies and practices 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 either the environment or human health.

Energy Policy (2003)

The continuing decline in industrial and agricultural production during the period between 1980 and 1985 led to increased inflation and a decline in the standard of living. In order to arrest this decline, the Government gave priority to the rehabilitation of the basic economic infrastructure, especially communication, so that they can fully support the production sector. The energy policy considers the condition of roads as a determinant factor in vehicle energy use. Rough and pothole filled roads necessitate frequent braking and acceleration, leading to wasteful use of fuel; smooth, well-surfaced and well maintained roads lead to energy savings.

National Human Settlements Development Policy (2000)

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, bus stands, drainage channels, and proper collection and disposal of solid waste are essential for sustainable human settlement development undertakings.

National Gender Policy (1999)

The key objective of this policy is to provide guidelines that will ensure that gender sensitive plans and strategies are developed in all sectors and institutions. While the policy aims at establishing strategies to eradicate poverty, it puts emphasis on gender quality and equal opportunity of both men and women to participate in development undertakings and to value the role-played by each member of society. This project will also ensure that women, who are the main users of the infrastructure, will be adequately involved at all levels of project planning to implementation.

Tanzania 2025 Development Vision

The Tanzania Vision 2025 aims at achieving a high quality livelihood for its people attain good governance through the rule of law and develop a strong and competitive economy. Developing core urban infrastructure is one of the most

important agents to enable Tanzania achieve its Development Vision objectives (both social and economic), such as eradicating poverty, attaining water and food security, sustaining biodiversity and sensitive ecosystems. Providing good urban infrastructure through this project will contribute to the attainment of the 2025 Vision.

Land Use Planning Act (2007)

The Act provides for the procedures for the preparation, administration and enforcement of land use plans; to repeal the National Land Use Planning Commissioning Act and to provide for related matters. Among the objectives of the Act as given in Section 4 are to facilitate the orderly management of land use and to promote sustainable land use practices. Development of Urban Infrastructure that affects land use and livelihood shall comply with the provisions of this Act. Any infringement on existing land use shall need consultation with land use planning authorities.

Explosives Act, 538

The Act requires all persons intending to use explosives in their activities to apply for an explosive license. In construction projects, explosives may be needed in material extraction from quarries and borrow pits. The developer shall apply for explosive license in case blasting becomes necessary at the working sites and/or materials extraction sites.

Environmental Assessment and Management Guidelines for the Road Sector

The Environmental Assessment and Management Guidelines for the Road Sector (EAMGRS) were developed in December 2004, just after EMA (2004) was enacted. The guidelines give procedures for the EIA process as briefly explained in Table 3.1.

Table 3.1: Developed EIA Procedures in the Road Sector

EIA PROCEDURES IN THE ROAD SECTOR (as per EAMGRS 2004)

Administrative Procedures:

EIA administrative procedures vary based on the significance of the environmental impacts. The Minister for Environment is responsible for projects with potential major environmental impacts. The ESIA of projects with potential non-major environmental impacts are carried out under the Ministry responsible for the road sector and the Road Sector-Environmental Section (RS-ES).

Environment Application and Screening Process:

EA procedures in the road sector are initiated when the Road Implementing Agency (RIA) submits an Environment Application Form to the RS-ES during the Project Identification or Project Planning/Feasibility Study Phase. An environmental screening of the proposed project will determine whether the project will require: An Initial Environmental Examination (IEE); a Limited Environmental Analysis (LEA); or a detailed Environmental Impact Assessment (EIA).

Environmental Screening is done based on the information presented in the Environmental Application Form. The RS-ES is responsible for screening projects and this may acquire a reconnaissance study by an environmental specialist, especially if the project traverses sensitive areas or when there is potential for complex environmental issues.

All road projects with non-major environmental impacts shall be subject to an Initial Environmental Examination (IEE) or a Limited Environmental Analysis (LEA). Projects with major environmental impacts are subject to ESIA. The RS-ES will register non-major-impact-projects. For major-impact-projects, the registration is done by NEMC.

Mining Act (1998)

This Act states that “building material” includes all forms of rock, stones, gravel, sand, clay, volcanic ash or cinder, or other minerals being used for the construction of buildings, roads, dams, aerodromes, or similar works but does not include gypsum, limestone being burned for the production of lime, or material used for the manufacture of cement.

This act make sure minerals are well controlled and Section 6(1) states that no person shall, on or in any land to which this act refers, prospect for minerals or carry on mining operations except under the authority of Mineral Right granted, or deemed to have been granted under this Act.

3.3 Institutional Framework for Environmental and Social Management

Environmental and Social Management Authorities

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

National Environmental Advisory Committee

It advises the Minister Responsible for Environment on environmental issues requiring decision-making.

Minister Responsible for Environment

Issue guidelines and designate duties to various entities; approval by issuing of decision letter / ESIA Certificate for development projects; delegate responsibility for ESIA authorization to Director of Environment, LGAs and Sector Ministries.

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 ESIA Certificate.

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 ESIA/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.

- Registrar of EIA Expert /Firm of Experts /Environmental Auditor/Environmental Inspectors: Register and keep registry of qualified firms/individuals authorized to offer services in undertaking ESIA, Initial and Control Environmental Audit Environmental Inspection, ESIA 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; ESIA; Research and Planning etc. Mwanza City Council- is serviced by the Lake Zone office.

Sector (Ministries) Environmental Sections

Responsible for all sector-specific environmental matters within the Ministry including participation in Cross-Sectorial Advisory Committee for review of ESIA

Reports; review and verification of Environmental Audit Reports, monitoring on-going projects, and submit Monitoring reports to NEMC.

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.

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): Enforce, advise the Environment Management Committee, gather/ manage information, and report on state of local environment. EMO 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 cover additional functions for the environment committees include overseeing proper management of environment within an urban area.
- Standing Committees of Economic Affairs, Works and Environment of a 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.

3.4 Registered EIA Expert /Firm of Experts /Environmental Auditor/Environmental Inspectors

Qualified firms/individuals authorized to offer services in undertaking ESIA, Initial and Control Environmental Audit Environmental Inspection, ESIA training and other technical supports.

Other Actors as per EIA and Audit Regulations, 2005

- Investor/ Developer / Project Proponent: oversee and meet costs of Environmental assessment and implementation of ESMP/ESMoP; undertake Initial Environmental Audits and Environmental Control Audit, Self-auditing

during implementation of ESMP; undertake Baseline Survey before project implementation as basis for undertaking effective monitoring

General Public empowered by EMA and ESIA Regulations to participate in all environmental management matters concerning them and at all stages of the ESIA process specifically to raise issues and concerns and to appeal when dissatisfied.

3.5 Other Authorities relevant to Infrastructure Development

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. At so many location TANESCO use road reserves for transmission infrastructure. Mwanza City Authority collaborated with TANESCO Mwanza Regional office during the planning of subproject activities.

Water Basin Authority

Lake Victoria Basin in Mwanza is one of 9 basins in Tanzania, established to manage water resources. All storm water drains in Mwanza City ultimately discharges its water into Lake Victoria. The basin Management Authority was considered as one of main stakeholders for subproject implementations in Mwanza City Council.

Water and Sewerage Authorities

Mwanza City Council, Mwanza Urban Water and Sewerage Authority (MWAUWASA) were established to offer water supply and sanitation services in the City. The authorities issue permits for discharging liquid wastes. The ESMP specifically states that the contractor shall apply for water extraction and waste water discharge permits as necessary.

Tanzania National Roads Agency (TANROADS)

Issue approvals or permit for undertaking physical works on roads or road reserves, issue permit for extraction of construction minerals, issue permit for using roads above set limits (tonnage, width etc.).

Occupational Health and Safety 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, offer advice on ergonomics and scrutinize workplace drawings. It is provided in the ESMP that the City shall engage OSHA expertise for inspections of works places during the operation phase.

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

4.0 BASELINE ENVIRONMENTAL AND SOCIAL CONDITIONS

4.1 Spatial, Institutional and Temporal boundaries of Impacts

4.1.1 Spatial boundaries

The spatial dimension encompasses the geographical spread of the impacts regardless of whether they are short term or long term. The spatial scale considers the receptor environmental component and can be local or broader. Following this, two zones of impacts are considered;

The core impact zone: This includes the area immediately bordering the project (local). In the case of this project local impacts will include the site of the construction (borrow areas, quarries and the actual sub projects) and the immediate surrounding areas.

The zone of influence: This includes the wider geographical areas that are influenced by this project (e.g. Mwanza City).

For roads, the spatial boundaries extend from the carriage way, way leave and the adjoining areas. The spatial boundary of the roads extends along the roads length while its influence may extend to about 500m on either side of the road.

4.1.2 Institutional boundaries

Institutionally, the City Authority has the mandate to develop and maintain the urban infrastructure in the City of Mwanza. Its primary function includes the maintenance and development of the infrastructures to support the economic and social development of the City. The council is also responsible for addressing the environmental issues posed by the subprojects. The proposed roads will be under the City engineer. From the central government line of administration, by virtue of their location, the road infrastructures to be developed by this project in Mwanza region is under the jurisdiction of the Regional Commissioner.

4.1.3 Temporal boundaries

The temporal boundary of the proposed investment subprojects in Mwanza City refers to specific project cycles from mobilization, construction, operation and maintenance and decommissioning. Each project phase is likely to have its own impacts, although some may be similar. The duration of impact resulting from a specific phase are likely to last to the end of the phase. Pre-constructional and constructional phases tend to be short term impacts. Operational impacts are long term, according to the design period of the phase.

4.1.4 Area and Administrative structure

The Mwanza City comprises of two Districts, namely, Nyamagana and Ilemela; Nyamagana has 12 Wards with a total land area of 184.9 km², while Ilemela has 9 Wards with a total land area of 252.10 km².

4.2 Physical Environments

4.2.1 Climatic Conditions

Mwanza City lies at an altitude of 1,140 m above sea level. Maximum temperatures range between 25.7°C and 30.2°C in the dry season and between 15.4°C and 18.6°C in the rainy months. The City experiences between 700 mm and 1,000 mm of rainfall per year, falling in two fairly distinct seasons i.e. between the months of October and December and between February and May.

4.2.2 Geology and Soil

Gently undulating granites characterize the Mwanza City and Granodiorite physiography with isolated hill masses and rock Inselbergs. The city is characterized by well-drained sandy loamy soil generated from coarse-grained cretaceous deposits. The vegetation cover is typical savannah with scattered tall trees and tall grass.

4.2.3 Topography and Drainage

Mwanza City lies at an altitude of 1,140 m above sea level. Due to the presence of the so-called stacked or Bismarck rocks, Mwanza City has a hilly topography with most of the drainage taking place towards Lake Victoria in the north.

4.2.4 Population

According to the 2012 National Census, Mwanza City has 363,452, where 177,812 are Male and 185,640 are Female (specific for Nyamagana District). The annual natural growth rate is 3.0% (National Population Census 2012). The average household size is 4.7 which is closer below the national average of 4.8

4.3 Biological Environment

As for Many urban areas, Mwanza City is deprived of vegetation mainly due to human activities and settlements. Apart from domestic animals kept by inhabitants of the two towns there are no wildlife at all.

4.3.1 Natural Vegetation

The natural vegetation of the **Mwanza City** consists of isolated tall trees scattered on grassy hills. This vegetation is mainly composed of Miombo woodland.

4.4 Economic Activities

Mwanza city has different economic structure and activities. The main economic activities practiced in Mwanza city are many, to mention a few are like agriculture, livestock keeping, industries, fishing, tourism, mining and quarrying.

4.4.1 Fisheries

Fishing on the fresh waters of Lake Victoria is one of the most important undertaking by the people of Mwanza especially those living along or close to the lakeshore and those living in the numerous islands of Lake Victoria of which the end selling point is in Mwanza City. According to March 2012 data, the region had a total of 56,321 fishermen with 16,911 fishing boats/canoes. There were 208,079 fishnets, 3,455 special finest for “dagaa” (*restrineobola argentius*) and 2,264,792 fish hooks.

Table 4.1 Fish production for the year 2012

Type of Fish	Estimated production (Tons)
Nile perch (Sangara)	72,500
Plagic cyprinids (Dagaa)	40,000
Synodonti (furu)	15,000
Tilapia (Sato)	10,000
(Hongwe)	3,500
Momyrus catfish (mumi)	2,215
(kamongo)	5,043
TOTAL	148,258

Source: Mwanza city council socio-economic profile (2013)

The current observation is in line trend from the baseline survey of 2001 economic development report issued by the Regional Commissioner, Mwanza City Council received about Tshs 1.3 billion (\$1.3 million) in fish levy from the sale of fresh Nile perch processed by the fish plants between April and December 2001. Earnings for the central government in taxes and royalty from exportation of Nile perch fillets were estimated at Tshs 10 billion (\$ 10 million) annually.

4.4.2 Industries

Industrial development has greatest potential in Mwanza City. The major industries include a whole range of agro-processing for crops, fisheries, livestock products and the associated manufacturing operations.

There are about 60 different types of industries in Mwanza City; these are fish processing industries; cotton seed oil industries; breweries, soft drinks bakeries & biscuits; medium & small milling machines; timber industries; garages; fabricating workshops; ginneries; foam & plastic industries; soap factories; quarry sites & animal foods; and textile mill; and steel mills industries. This number is expected to increase due to the Government's efforts to build good roads and the rapid growth of the city and information technology sector.

4.4.3 Tourism and Recreational areas

Mwanza is one of the unique destinations in Tanzania that has yet to be discovered by many. It is a land of many wonders hubbing an unparalleled diversity of fauna, flora and many natural features. The wonders of rockies, the scenery, topography and very friendly people harbour the growth of excellent Cultural tourism beach holidays, game hunting, infrastructural ventures, historical and archaeological ventures – and certainly the best wildlife photographic safaris on the continent.

Tourist Attractions in Mwanza:

- The lake itself and naturally arranged rocks set on top of each other
- Ukerewe Island and Rubondo, which has a National Park, with diverse natural attractions, rich in birds and a wonderful beach
- It is near several game reserves such as Biharamulo, Bugiri, Rumanyika Game Reserve, Maswa and the Serengeti National Park
- It is an historical place where the earliest 18th century explorers visited in the research to find the source of River Nile
- The historical museums in the Region such as Halwego Handebezyo (in Ukerewe) and Bujora (in Mwanza)

The Bujora Cultural Centre and Sukuma Museum in Kisesais historical institutions founded for the education and support of Sukuma culture. The arts of the Sukuma culture are among the richest in East Africa. As the Sukuma people are the largest cultural group in Tanzania, the Sukuma culture is dispersed throughout the country. The heart of Usukuma is in the Lake Zone of Mwanza,

Shinyanga and the Mara regions where the legacy of a rich art tradition is now maintained.

Saa Nane Island, meaning “Two o’clock Island”, has a large variety of reptiles. Hippo, zebra and wildebeest and some caged animals are found within the wildlife sanctuary. This reserve is literally a 95-acre (380,000 m²) outdoor zoo. Birdwatchers will enjoy the scenery on Saa Nane while nature lovers can venture onto the rock formations that appear out of the grassy landscape.

Rubondo Island National Park boasts a unique diversity of flora and fauna. Only here can the visitor be sure of seeing Sitatunga, also small gangs of chimpanzees can sometimes be seen. Other animals seen include hippo, otters, bushbuck and velvet monkeys. Rarer sightings are colobus, genet, marsh mongoose, suni antelope and elephant. Rubondo is a paradise for bird lovers, with nearly 400 species documented on the island. The wide varieties of invertebrates and diversity of plant species makes Rubondo a fascinating place for naturalists.

4.4.4 Mining and Quarrying

Mwanza City is blessed with rocks, with rich mineral depositions, including granites and sands. All these are termed as building minerals. Currently extraction is made by private individuals, building and road contractors who extracting building materials. About 120,000 tons of sands and 500,000 tons of granites (stones) are produced per month. The extraction is done at Buhongwa, Mkolani, Igoma, Mahina and Butimba in Mwanza City.

4.4.5 Trade and Commerce

Mwanza city is second largest city in Tanzania, where different activities concerning trade and commerce are carried out in large scale. Different trade and commerce are observed through amount of buying and selling different categories of commodities ranging from big commodities such as cars, machines and others, and small range from shops and kiosk, which are scattered all the urban area.

Trade is the art of buying and selling goods and services and it is one of the major activities for the people of Mwanza city. The activity involves poor and rich, young and old, individuals, organizations and institutions such as the religious communities. The trade and commerce play crucial role in employment creation and income generation in the city. Trade and commerce are commenced in 21 wards of the Mwanza city, people conducts different types of goods and services especially in Central Business Districts (CBD), whereby many of traders are found. Also, wards

that are at the peripheral of the city trade and commerce are practice in less number.

There are different types of trade business carried out in Mwanza city, these includes, Retail shops of assorted goods/commodities 4862, Fishmongers 434, Butcheries 182, Saloons/Barber shops 236, Guest-houses 312, Restaurants and cafes 252, Used goods/second hand commodities (Mitumba) 461, Fruits in the market 436, and Hotels 42, milling machines 220, timber and furniture dealers 243 and garages and workshops 92.

Normally trade demands new and varied goods; it necessitates the existence of an industrial production that provides the goods. Up to 2006 many industries of fish processing, iron bars, vegetables and oil processing factories are operating. Hence different categories of variety of shops from big to small, supermarket and stores are operating. From industrial activities, the number of people involved in trade and commerce has increased in recent years.

4.4.6 Agriculture and Livestock

Agriculture: Agriculture remains the most important productive sector to the larger population in Mwanza. Even those who are not fully involved in this sector but they are somehow linked to it through forward and backward linkage. Mwanza city is the central market for other districts therefore it absorbs agricultural output of variety.

The City is however in line with National Agriculture policy which put emphasis on:-

- Irrigation Agriculture
- Community based extension work which is conducted in a participatory manner with farmers.
- Improvement of Agricultural extension services,
- Sustainable food agricultural sector
- Improvement of farmers Infrastructures
- Improvement of the Capacity of farmers

The main food crops grown in the area are crops such as fruits, vegetables, cereals and cassava. The main cash crops are cotton, sun flower and horticultural crops (including Fruits and Vegetables).

Food security and productivity: With respect to total population of 363,061, the total food demand in Mwanza City is 84,183.4 tons for cereals. In 2011/2012, food production stood at 4,524.7tons which led to food shortage of about 79,658.7.

Therefore, food shortage is covered importing food from other regions and exempted food from the National Strategic Grain Reserve (NSGR). The major issues needing attention are:-

- Insufficient farming facilities
- Insufficient agricultural implements.
- High costs of Agro-chemicals

Livestock: Livestock available in Mwanza City includes; Goats, sheep, cows, pigs, hens’ indigenous bread, Broilers, and layers. Most of the urban-based wards are practicing poultry farming and zero grazing livestock keeping. The city is enjoying livestock products such as milk, eggs, cattle meat and skins.

There are about 12,420-milked cows at Nyamagana District. These leads to production of 540,800 litres of milk produced in Nyamagana District of which 472,640 litres are sold. Eggs production at Nyamagana District estimated at 525,000 Trays. The production has ever been increasing due to the high demand within the City. Percentage and distribution of livestock in the city is shown in Table 4.2.

Table 4.2: Percentage and distribution of livestock

No	TYPES	TOTAL
1	Number of Cows	31,092
2	Number of Goats	5,815
3	Number of Pigs	50,803
4	Number of Donkeys	49
5	Number of Chicken	94,615
6	Number of Ducks	282
7	Number of Dips	4
8	Number of veterinary shops	28
9	Number of Dams	3
10	Areas demarcated for livestock keeping (Ha)	5280Ha
11	Number of livestock officers	22

4.5 Social Services

4.5.1 Health

The presence of health services that is accessible to majority of people in the City. Existence of health facility and services improves health quality and reduction of illness and deaths to the people. This subsequently improves the productivity of the urban force and the working population. Moreover, the economy of the city depends

much on the well-being of the city workforce which is well served by improved health facilities and services. Statistics of health facilities in the city is summarised in Table 4.3. The construction force shall obtain health services from these existing facilities as required.

Table 4.3: Health Services in Nyamagana District

Type	Government	Institution	Private	Total
Referral	-	1	-	1
Hospital	1	-	3	4
Health centre	1	-	4	5
External service	1	-	-	1
Dispensary	10	10	25	45
Clinics	2	-	-	2
Learning institution	2	-	-	2

Source; Mwanza City socio-economic profile (2013)

Common Diseases in Mwanza City

According to Mwanza City Council Health Department, common diseases affecting majority of the City residents are: Malaria, ARI (Respiratory Infection Diseases), Diarrhoea diseases, Intestinal worms, Pneumonia, Eye and skin infections, UTI, Non Skin Fungal Infections and Minor Surgical conditions.

Malaria is the leading disease that affects majority of the people in Mwanza City. It affects 41.6% of the population of children under 5 years, 33.2% of the children population with five or more years and 36.2% to all ages. Non-skin fungal infection is the least, affecting only 1.7% of the population less than 5 years, above 5 years and all age population.

4.5.2 Education

Primary Schools

Mwanza City has a total of 97 Primary Schools, out of which 81 are Government owned and 16 are private owned. It has 1838 primary teachers of whom 1613 are teaching Primary Government schools and 225 teachers in private schools. There are 38647 pupils studying in government schools. A summary of School infrastructure available in government schools is presented in Table 4.4.

Table 4.4: Infrastructure in Government primary schools

No	Type of infrastructure	Needs	Existing	Deficit	% of existing
1	Classrooms	1,740	675	1,065	61
2	Teachers' houses	1,613	64	1,549	96
3	Pit latrines	3,265	769	2,496	76
4	Offices	81	66	15	19
5	Store	81	23	58	72
6	Desks	26,854	11,695	15,159	56
7	Tables	2,208	850	1,358	62
8	Chairs	2,598	1,422	1,176	45
9	Cap board	1,192	336	856	71

Secondary Schools

Mwanza City has a total of 38 Secondary Schools, out of which 30 are Government owned and 8 are private owned. It has 901 Teachers teaching in Government schools. There are 22,661 students studying in Government schools and 3,873 are studying at Private schools.

Vocational Training Centres

There are about 4 Vocation Training Centres (VTCs) in Mwanza City. Out of these, 2 have got full registration 2 preliminary registration. The VTCs are providing training in different courses including computer skills, hotel management and tourism, carpentry & joinery, masonry & bricklaying, tailoring, motor vehicle mechanics, driving, electrical installation, machinery fitter, plumbing/pipe fitting, painting & sign, gingery fitting, shoe making, welding & fabrication, secretarial courses, communication and information technology, refrigeration and air condition, hospitality, and business studies.

Higher Learning Institutions and Colleges

Mwanza City has 4 high learning institutions. These include St. Augustine University, Bugando Medical College, the Open University of Tanzania, Nyegezi Freshwater College and the Butimba Teachers Training College

4.5.3 Water supply

Water Sources and Production

Water sources for Mwanza City include; Lake Victoria, Rivers, springs and wells (ground water). Rain water also is becoming useful source despite it is given little priority. Among the mentioned sources, Lake Victoria is the main source of water

supplied in the city. Then followed by ground water, rivers, springs and finally rain water. Water used in most construction site is either sourced from these natural sources (after obtaining a water extraction certificate) or from the City water supply authority.

➤ ***Lake Victoria Water***

According to the Lake Victoria Environmental Management Project (LVEMP), the Lake is the world's second largest fresh water body, covering an area of 68,800 km². The basin has a population of 30 million people estimated to be increasing at an annual growth rate of 3.5 %. The lake is shared by three east African countries of Kenya (6%), Uganda (43%) and Tanzania (51%).

Lake Victoria produces water for Mwanza city at three points namely Capri Point, Chakula Barafu and Luchelele (located at Sweya) pumping stations. Production and supply of water is the responsibility of Mwanza Urban Water and Sewerage Authority (MWAUWASA). The Authority serves the city by providing water supply through formal water supply systems. About 90% of the City population is distributed with clean and safe water, while 15% of population is connected to sewage system. Therefore Lake Victoria sources produce a total of 4909 m³ per hour. This implies that the daily water production capacity of the Lake sources is 108,000 m³ per day.

➤ ***River Water***

There are several rivers within the city Mirongo, Nyansinsi and Nyarubungo are among the water sources for Mwanza city residents' various activity uses. Due to the fact that river water is in most cases highly polluted many people do not use it for consumption (drinking or cooking); but instead use it for washing clothes, brick making and irrigation. However, in periphery areas river water is also used for domestic purposes.

➤ ***Underground Water***

Underground water is another important source of water for many areas in Mwanza city. It is the most viable alternative supplement to many people in the urban and peri urban areas in the city. The city rural areas are served by 99 shallow wells of which 23 are not working and 33 deep wells out of which 12 wells are not operating. The non-working operation is due to either the wells have dried up due to drought or respective pumps have been stolen.

The level of service of ground water sources is estimated to be 23.8%. Use of ground water sources is dominant in Buhongwa ward, particularly in primary schools, where there are a number of medium and shallows wells which were financed by Plan International.

➤ ***Rain Water***

This is the least common source for getting water, especially for domestic purposes. Although it is a cheaper option for getting water, most residents are not harvesting rain water. Rain water harvesting reduces the amount of water runoff during the rain seasons and this is also a viable alternative for containing floods in areas.

The situation in the city is contrary to what is happening in other areas in the region. Rain water harvesting is commonly done in other parts of the region especially in institutional areas.

➤ ***Other Sources***

Mwanza city physical configuration is comprised of undulating terrain with numerous rocky hills. Due to such terrain, several areas in the city are unable to get water from both piped and ground water supply systems. People in those terrain difficult areas get water from private individuals through booster pumps and buying from individual water vendors whose water prices are regularized by MWAUWASA for helping the residents who are unable to afford normal water vending prices.

4.5.4 Transport

The transport sector has an effective role in contributing to social and economic development of Mwanza City. The sector has continued to grow due to both government efforts and private sector investments in road operation and maintenance, i.e. rehabilitation, expansion of services, modernization of port services and improvement in marine, railway and air transport services. The City is served by four modes of transport systems namely roads network, railway, marine, and air transport, which link the City with other neighbouring districts, regions and countries.

Road Network

The geographical location of Mwanza, its size and diversity give roads a special position in integration of the City's economy and communication in general. In particular, roads play an important role in serving more effectively than other mode

of transport. Roads in Mwanza City are classified into two categories, those, which are under Tanzania National Roads Agency (TANROADS) and those under Mwanza City Council. The city has 35.5 km of trunk roads, 132 km of regional roads and 695.5 km of collector roads which makes a total of 861km of road network.

Roads under the City Council

This includes arterial roads and collector/local roads. There are a total of 122 collector/local roads, which constitute the entire road network (*Mwanza Master Plan, 1994*). The City authority is responsible for the arterial and collector roads within the city. The TSCP – AF road sub-projects fall under this category of roads.

Condition of Roads in Mwanza City

Some of the City roads are characterized by worn out kerbs and numerous scattered potholes. However, the City Council since 2004 has started maintenance program for roads within the CBD where more than Tsh 2 billion have been set aside for that work.

4.5.5 Energy

Mwanza City residents depend on a number of sources for their energy supply, for cooking, lighting and other activities. These include electricity, firewood, charcoal and fossil fuels. (Kerosene, Petrol, Diesel).

Electricity

Mwanza City is supplied with electricity used in business, domestic and industrial purposes. The electricity supply is done by utility agent (TANESCO). All the electric power for the City comes from Hydropower stations through the national grid to Nyakato Power station where there is a diesel power generator. The other source of electric power is thermal power station, which at present is out of service due to high prices of diesel. However, the distribution is done through 11kV high-tension cables and 0.4 kV low-tension cables.

According to the information from TANESCO chief engineer, the present supply of electricity in Mwanza City is 28.8 MW distributed through grid sub stations, which are located at Pasiansi and Igogo. There are 33,000 customers who are served with electricity supplied by TANESCO in Mwanza City. It is expected that electricity supplied by TANESCO will be used for projects located within the service area. Otherwise, standby generators shall be used.

Charcoal and Firewood

Charcoal and firewood are the major energy sources used by residents for cooking. These are brought into the City by wholesale suppliers who sell them to the street vendors. The cost of these energy sources has been rising depending on the distance which the suppliers have to travel to their collection or production points. For the moment, charcoal is imported to Mwanza City from Sengerema, Geita, Kahama, Tabora and some parts of Kagera region.

Kerosene

Kerosene is supplied in Mwanza City through private oil tankers and Tanzania Railway Corporation wagons. Thus its availability is the function of efficiency of these agencies. It is mostly used for lighting and very little people use it for cooking due to its high cost caused by the change of prices in the World market.

4.6 Mwanza City Environmental Setting

The environmental condition of the City in the past three decades is said to be better than what is observed now. In the past the city had a vast of natural trees and green vegetation cover, unpolluted water sources and the scenery of vegetation cover on the hilly areas was good that made the city to look aesthetic. But now the landscape has changed tremendously as well as environmental characteristic has been changing. The changes has been caused by various factors such as; Rapid growth of the city, Mushrooming of squatters in unplanned settlement especially in hilly areas, cutting down of trees and burning of forests, Rapid increase of informal activities, increase of environmental hazards such as soil erosion and flooding as well as Spread of solid wastes (plastic materials).

4.6.1 Land

Characteristic of land resources

The type of land in Mwanza city is of soil, which is only moderate, naturally fertility and which steadily deteriorate under conditions of continuous cultivation. Due to the increase of urbanization, which is characterized by population increase more and more land has been turned into physical development for residential, industrial, commercial and infrastructure construction. Much of the development is occurring in unplanned areas especially on the hills masses close to the central business district.

The impact of the activity sectors on the land resource

Unplanned settlement

The potential for aesthetic and the enhancement of the general environmental presented by many hill masses and *inselbergs* has been lost due to illegal use of these areas for the development of houses. Moreover, this sort of development has established rock formation and is potentially dangerous, as rocks are known to tumble down the hillsides. According to Urban planning department in Mwanza City, the total houses developed in unplanned settlement is about 69,000.

The unplanned settlements cause considerable environmental degradation and expose their inhabitants to restricted and unhealthy living conditions. The settlements are located mostly on the slopes of rocky hill sites and sensitive land, which stripped of their vegetative cover and aggravated by the mining of stones and sands for use in construction.

Sanitation in the sloping hilly settlements is generally poor as the residents are mostly dependant on shallow pit latrines due to rock characteristics hence large number of residents has no access to city tracks which empties liquid wastes. Solid waste is disposed haphazardly such that in the final analysis most waste materials end up untreated into the Lake Victoria, especially during rain season, when they discharge faecal wastes from toilets.

Mining and Quarrying Activities

The mining sector has led to various environmental problems on land resources, these include cutting down of tree during quarrying site clearance and unrehabilitated pits which are left after mining activities. Currently, the Urban Planning, Environment and Tourism Department have recognized and plan specific areas for quarrying, for example Sahwa, Bulale and Nyamwilolelwa (Buhongwa ward), Kishiri (Igoma ward). These areas will reduce randomly quarrying in unauthorized areas which cause environmental degradation.

Quarrying has got a noticeable impact on the land resource. The dereliction that results from quarrying not only scars the townscape but also means that, the quarrying sites are no longer amenable in expensive conversion to other urban land uses. When as in Mwanza, quarrying occurs on fragile land like steep slopes hence destabilization follows and makes the land unusable for any other purposes.

Urban agriculture

There has been an increasing application of pesticides in agriculture that pollute land; this is dangerous as it increases the intensity of degradation of land. There is accumulation of chemicals from land, which then percolates to the land and pollutes sources of water.

Industrial sector

This sector has adverse effects on land resource due to solid waste generated although there is dump site in Buhongwa. The waste from all activities is crudely

dumped on land for a long time and hence exposing the hazardous waste on the surface.

Housing

The demand for building land on and around central business is highly increasing as the result of first a clear trend of displacement of the population as high-rise in commercial construction is displacing affordable single storey units. However no land has been set aside to accommodate anticipated increase demand for parking and vehicular movement.

Secondly, there is mushrooming of unplanned residential houses on all the hills surrounding the city centre except the hill where Regional commissioner lives. This means that the recreational and amenity alternative for this land to the city has been lost. Normally there is not enough land left over for other important uses such as transport, utilities, social services and open spaces in the CBD.

4.6.2 Water

Characteristics of water resource

Water is one of the most essential natural resource which supports human life as well as various species of living organisms. It is also a habitat for various aquatic organisms. Water is used for domestic, commercial, industrial as well as means of transport. It can be termed as multi-sectoral resources as it is used by almost every sector for both production and other purposes. However, these activities to a large extent distort the quality of water and hence make it a threat to human and other living organisms. The major sources of water in Mwanza city are Lake Victoria, rivers and springs.

Lake Victoria water

According to findings by Lake Victoria Environmental Management Project (LVEMP), Lake Victoria is the world's second largest fresh water body, which covers an area of 68,800 km², with a 3,450 km long shore and a basin area stretching for 192,580km². The basin has a population of 30 million with an annual growth rate of 3.5 % and the lake is resource shared by three east African countries of Kenya (6%), Uganda (43%) and Tanzania (51%). In July 1997, the three countries started implementing simultaneously the Lake Victoria Environmental Management Project (LVEMP) with funding from the World Bank and GEF fund, putting much emphasis on research into quality of water.

Quality of Water in Lake Victoria

Statistics compiled over the past 50 years (1950-2000), show that a huge amount of water, which enters Lake Victoria through rains, is 80% while it loses 76% of its water through evaporation. About 24% of Lake Nyanza water finds its way out through the Nile compared with 18% of water, which enters the lake from its vast

basin. A quick mathematical computation suggest, therefore that the lake in fact receives water at a rate of 33 cubic meters more in every second than it loses, resulting in an increase in water level by one meter high between January 1950 and December 2000. Knowing the level of water in the lake will help to coordinate and manage properly the use of this important water resource.

It is estimated that some 4,000 tonnes of phosphorus alone are discharged into Lake Victoria annually, besides an additional huge amounts of nitrogen. These nutrients come from the Lake Victoria basin itself, industrial effluents, urban wastewater and algae. They are drained away in liquid form out of the lake in many ways including through the Nile River. According to the research findings there is a steady increase in the amount of nutrients, resulting in the algae problem particularly in the lake gulfs, capes and other places close to the lakeshores.

Due to its massiveness but shallow, Lake Victoria's area is quite different from its depth and for this reason, mingling of the top and bottom waters become uneven. There is an evident shortage of oxygen particularly in deepest spots of the lake, during a short period of the year and the situation becomes even worse in some places close to the lakeshores such as around the gulfs and capes, where there is a huge amount of nutrients on which algae feeds and due to the fact that in these areas it is not easy for water to mingle evenly due to lack of strong winds.

The research findings indicate that siltation is an additional threat-taking place along lakeshores and around river mouths. It is estimated that, as of now, siltation affects approximately one square millimetre of the water body per year. Rescuing the lake from the impending dangers of the environmental degradation at least in the next foreseeable 100 years, measures should be done so as to control erosion.

The impact of the activity sectors on the water resource

Sewage and Sanitation

Most people with onsite sewage disposal and pit latrines discharge their wastes into the lake either through the storm water drainage or rivers feeding into the lake. This behaviour is mostly practiced with people living in squatter areas especially those living in hilly areas. Moreover, the type of pit latrines on hill areas is not so deep as a result they can be full easily, thus discharging liquid wastes (human excretory) to the surroundings as well as to the water sources and therefore distorting the quality of water. Most of the houses with septic tanks don't dispose waste water from kitchen and bathrooms to the septic tanks as a result they discharge to the surrounding storm water drainages, this has been observed in Kilimahewa, Mabatini, Kirumba and Nyamanoro.

Inadequate and sometimes lack of sewerage facilities for the large majority in the city, inadequate drainage, the non-functioning of the sewerage treatment works and the daily dispose of untreated sewage into the lake, severe pollute the lake with

among other things, faecal*coliform* and create a high BOD load at the lakeshore where the water is discharged.

The situation in the unplanned settlements near Capri point intake is especially serious as the area provides drinking water for almost all the people in Mwanza city. Most of the families in Capri point area have medium depth pit latrines due to the rocky nature of the area. During heavy rains the pit latrines with very low depth over flow leading the faecal wastes direct into the lake or the residents deliberately pull out the plugs of their toilets and empty them into the lake.

The squatter in the unplanned settlements, are not the only potential polluter around Capri point intake. Other polluters include hotels and restaurants bordering the lake, which discharge directly into the lake.

Agricultural Pollution

The agricultural activities that take place along Lake Victoria as well as rivers tend to pollute the water. This is due to the fact that chemicals and fertilizers that are used for the production of crops are washed away especially during rainy season and they are flown to the water sources and cause water pollution. Also the type of agriculture taking place in hill areas normally results into siltation of rivers and hence pollutes the water sources.

Solid Waste

It has been observed that the resident of Mwanza city have a tendency of disposing solid wastes in rivers and other water sources. Mlango mmoja in Mabatini ward area is a good example as the residents dispose the solid wastes into Mirongo River that passes across the areas. This implies that there is a need to change people's behaviour so as to save water sources as well as to retain the water quality. When it rains large amount of dumped waste especially from hills areas are washed down into the lake and there is a strong possibility of causing communicable diseases such as cholera and other water borne diseases. Onsite management at the dumpsite is virtually absent and therefore hazardous wastes are disposed off with other wastes, which is likely to contaminate the ground water.

4.6.3 Air

The air quality in Mwanza city has been decreasing due to the emission of Nitrogen dioxide and carbon dioxide from industries such gold smelting works, which exhaust pipes installed in a residential houses along Maendeleo Street, other industries include Mwanza Textile mill (MWATEX), Igoma fish mills and Nyakato Steel Mill.

Impact of industrial activities on air resources

Fish leftovers resulting from fishing industry production are dumped at Buhongwa and Igoma, hence polluting the surrounding air. This affects mostly the people

living at Buswelu and Igoma. As water from the catchments areas flow toward the direction of these areas hence leaving bad odour. The wastes collected from commercial areas are left for a long time at collection points and therefore decays leaving bad odour at the surrounding areas.

However, the smoke from Mwatex and Nyakato Steel Mill pollute the air at large quantity especially in the mornings and evenings, which is a threat to the lives of the surrounding residents. One of the resident said that “*for instance whenever clothes are left outside the houses for the night to dry off, they are seen in the following day blackened with soot, which has to be removed by soaking the clothes in water*”. This shows that air pollution to the residents of this area is a core problem; hence mitigation measures should be undertaken.

A random survey done by Mwanza Environmental News letter of June 2006, reported that most of the Nyakato residents are being affected by industrial air pollution except those of National Housing Corporation and workshop estate areas who are partially spared at times until when the wind blows toward the west or North West. Therefore, Mwatex is the leading dangerous polluter followed by Nyakato Steel Mill and foam mattress manufacturing industries which are all located to the same areas, thus measure should be taken so as to prevent such hazardous situation.

4.7 Environmental Priorities

In the view of section 4.8 (Environmental setting of Mwanza city), stakeholders consultations and physical observations it can be concluded that environmental priorities of Mwanza City include pollution of Lake Victoria, existence of unplanned settlements, poor infrastructure and lack of proper sanitation facilities.

1. Lake Victoria Pollution from solid and liquid wastes

The lake continues to be polluted through enhanced effluent and solid waste discharge into the lake system resulting in microbial pollution, *eutrophication* and chemical pollution. All these forms of pollution are generally a consequence of ill-actions of industrial and commercial actors (breweries, tanning, fish processing, agro processing, abattoirs and garages). Other causes include runoff, and storm water, animal waste, and maritime transport waste, often a consequence of failed municipal infrastructure and services. Also Poor planning, maintenance and inadequate investment in Municipal waste treatment systems have contributed to the increased streams of untreated effluent discharge into the lake.

2. Unplanned settlements and Poor sanitation practices.

Most of the residents in Mwanza city especially those living in unplanned settlements specifically in hilly areas (Igogo, Mabatini, Kirumba, Isamilo etc)

use pit latrines. This is due to the poor economic status, and inaccessibility/nature of terrain. The situation is similar in the peri-urban areas such as Buhongwa, Mkolani, Igombe, and Igoma where most of the people use pit latrines. In the city center, people use septic tanks as well as sewerage system. It is estimated that 1440 people are connected to the sewer, which is located along airport road, Mwanza-Musoma road and Mwanza-Shinyanga road. The sewerage system has a capacity of 5,000 m³/day, but currently it is working at 2,300 m³/day, this is due to the few number of people connected to the sewer.

4.8 Environmental conditions at the project site

4.8.1 Pasiansi-Buzuruga Road

The Pasiansi-Buzuruga road is a new concrete road, constructed during phase I of TSCP projects in Mwanza City. The road is well built and as for most of the city roads it is characterized by commercial and residential buildings as well as power lines and telephone lines. There are few things to be taken care in order to improve its status as follows; replacement of wooden crossing slabs and provision of the concrete slabs, which are more sustainable, hazard free and user friendly. The road is also missing other furniture such as culvert to direct water to a safe route, leaving the road and its user safe. Existing situations along the Pasiansi-Buzuruga road as observed during site visits is shown in Figure 4.1.



Figure 4.1: Existing situation of Pasiansi-Buzuruga road

4.8.2 Sanga-Kiloleli road

The Sanga-Kiloleli is also a new concrete road. The road is in good condition except for four sharp bends that need to be improved in order to avoid unnecessary road accidents. Also the road has no concrete slabs for crossing through the storm water drains that makes it difficult for the road users. The project intends to improve the sharp bends in a manner that will reduce its sharpness and provide concrete slabs

as necessary. Figure 4.2 shows one of the existing sharp bends along the Sanga-Kiloleli road.



Figure 4.2: An existing sharp bend along the Sanga-Kiloleli road

4.8.3 The Butimba road

The Butimba road is another new road ending at the famous Butimba College. The road is in good condition. However it lacks important furniture at one of its end point where storm water over floods an adjacent playground/ football pitch instead of following natural channels to the discharge point. The edge of the road is also eroded and so lead to siltation. The situation of the road is as shown in Figure 4.3. The proposed improvements are meant to correct the shortcomings by providing culverts at proper locations.



Figure 4.3: Existing conditions along the Butimba road

4.8.4 Pepsi loop road

This road was constructed during phase I of the project. The road itself is in good condition except at the Igogo VTC junction where rain water has destroyed the side drainage and culvert. The existing drainage and culvert at this point seem to be under designed and suffers poor craftsmanship during construction. Due to these shortcomings the culvert carrying storm water across the main road is highly eroded and heavily silted. This has in turn reduced the drains carrying capacity, which causes flood and destruction of the road itself.

Further, the storm receiving drainage downstream the culvert is not lined and is also heavily silted. Due to this, the collected storm fails to follow its natural way to the discharge point into the lake. The area near this natural drain was found to be flooded, a situation threatening properties in adjacent sites operated by the railway authority.



Figure 4.4: R: Silt accumulation under the Igogo VTC culvert. L: Downstream side of the Igogo VTC drain

The proposed project intends to redesign this junction and pave the existing natural drain downstream to enable safe disposal of storm water and protect the newly constructed road.

4.8.5 Msuka river bank

The Msuka River banks needs rehabilitation in order to protect the new road from water related erosion. The capacity of the culvert directing the river has been reduced by silt accumulation and vegetation both upstream and downstream as shown in Figure 4.5. Solid waste deposition is also another factor reducing the capacity of the downstream drainage causing floods over the road during rainy season.



Figure 4.5: Existing Condition of River Msuka bank

4.8.6 Isamilo-Mjimwema, Tilapia road, Mtakuja and Uzinza roads

This group consists of gravel roads, characterised by potholes and lack of regular storm water drains. The roads become an important source of dust during the dry season and they accumulate stagnant water during the rainy season. However since the study was carried out during the rainy season, not dust measurement were taken, and the thus dust levels can are not provided in this report. The project intends to construct concrete paved roads, installed with the following; street lights, lanes for pedestrians as well as for vehicular.

High level of storm water caused soil erosion was observed along the Isamilo- Mji mwema road, which is goes uphill away from the city centre. The Isamilo - Mji mwema Road is the only road that its construction has potential to affect vegetation; where by a number of trees might be removed from RoW. The existing situation along this road is shown in Figure 4.6.



Figure 4.6: Existing conditions along the Isamilo- Mji mwema road.

Most roads shall maintain existing RoW as much as possible. Facilities observed inside the ROW include telephone and electricity poles along the Isamilo- Mji mwema, Uzinza and Mtakuja roads. Water supply pipes were also observed along highly eroded the storm water drains of Isamilo- Mji mwema road.



Figure 4.7: Existing conditions of Isamilo road (left) and Uzinza road (right)

5.0 STAKEHOLDER IDENTIFICATION AND ANALYSIS

5.1 Stakeholders Identification

Simple methods such as networks, literature review and interviews were used in the process of stakeholder identification. From one stakeholder, the team was connected to another and another stakeholder, in a chain like manner. The main stakeholders Mwanza City Council, Mwanza Urban Water Supply and Sewerage Authority (MWAUWASA), the Lake Victoria Environmental Management Program (LVEMP), Tanzania Telecommunication Co. Limited (TTCL) and Tanzania Railway Station (TRS) Others included meetings with different ward leaders such as Igogo, Kirumba and Kitangiri.

5.2 Stakeholders Involvement

Public Participation is a process through which different stakeholders influence and share their views regarding development initiatives and the decisions and resources that affect them. Comprehensive planning is required to ensure that local government, NGOs, Project staff and affected men and women interact regularly and purposefully during all stages of the Project. The overall goal of the consultation process was to disseminate project information and to incorporate the views of stakeholders in the design of the Environmental and Social mitigation measures, management plan and Monitoring Plan. The specific aims of the consultation process are to:

- Improve project design and, thereby, minimize conflicts and delays in implementation;
- Facilitate the development of appropriate and acceptable entitlement options;
- To collect inputs that would increase long term project sustainability and create a sense of ownership in the community;
- Reduce problems of institutional coordination and
- Increase the effectiveness and sustainability of income restoration strategies, and improve coping mechanisms.

An important element in the process of impact assessment is consulting with stakeholders to gather the information needed to complete the assessment. In the public consultation process three types of consultation were considered. These were:

- Consultations with City Council.
- Consultations with the City utility supply companies/ authorities and
- Consultation with the communities living near proposed subprojects

Fundamentally these consultations were intended to disseminate project information and to collect feedback regarding the project. It was intended to collect information regarding urban roads in the city, environmental issues and views and perceptions regarding the project. The minutes of the consultative meetings are attached among the Annexes of this report.

5.3 Consultative Meetings with the City Council

Consultative meetings at the City and local levels included discussions with City heads of departments (including the City Director, the Works engineer, the City planning officer, Water Engineer, Economist, Land Officers, and Surveyors etc. Typically, the agenda for these consultations included:

- Presenting the Project;
- Discuss the Status of the roads in the City;
- Obtaining from the authorities their environmental and socio-economic concerns and perceptions regarding the proposed Investment sub-projects.

5.4 Consultative Meetings with Utility Supply Authorities

These include the consultative meetings and discussions with MWAUWASA officer, TANESCO, Lake Victoria Environmental Management Project (LVEMP) and the railway authority. These consultations were conducted through direct personal interviews with selected informants, or

Typically, the Agenda for these consultations included:

- Presenting the Project;
- Discuss the water supply status in the City in terms of coverage, infrastructure, quantity and quality;
- Discuss the sanitation status in the City in terms of sanitation systems, coverage of sewerage system, Wastewater treatment etc.
- Discuss the role of the authorities in Management of water resources and environment as a whole.
- Obtaining from the authorities their environmental and socio-economic concerns and perceptions regarding the proposed Investment Subprojects.

5.5 Community Consultations

Dissemination of project information among communities living near the proposed investment subprojects is an important aspect of the public participation process and they should be appropriately informed about what is planned. In addition, they, including women and youth, should be involved in a two-way dialogue regarding the Project.

The main objectives of community consultations are to:

- Provide clear and accurate information about the Project to the communities along the road;
- Inform communities about the Project schedule;
- Obtain the main concerns and perceptions of the population and their representatives regarding the project;

- Obtain opinions and suggestions directly from the affected communities on their preferred mitigation measures; and
- Identify local leaders with whom further dialogue can be continued in subsequent stages of the Project.

The entire consultation process of the project was seeking the present, opinions and concerns of the community regarding the proposed investment subprojects and involves them in the overall planning of mitigation measures.

The Agenda for the Community consultations included:

- Presenting the Project
- Defining the local institutional framework and stakeholders; and
- Obtaining from the local population their environmental and socio-economic concerns and perceptions regarding the proposed project.

The main concerns of the stakeholders included the positive anticipated impacts as well as negative impacts.

5.6 People's Attitude towards the project:

The overall people's attitude towards TSCP -AFsub-projects in Mwanza City was very positive, mainly because they have witnessed to implementation of Phase I subprojects, and thus they are optimistic that the current projects too shall be implemented successfully. The community is eager to realize the benefits of the project in terms of economic and social growth. They appreciate the World Bank (IDA) and Tanzania government effort to give its priority in improvement of the Municipality Infrastructure.

Some stakeholder urged the Government/municipality to make sure that they hire a competent contractor for each subproject, and make close supervision of the works. This was raised with reference to shortcomings observed in phase I projects, where some of the new roads are missing side slabs to act as access/crossings over storm water drains, and/or have been provided with under-designed culverts. A summary of issues and concerns raised by various stakeholders is presented in Table 5.1. A column showing where relevant issues are addressed in the report is also provided. A list of people consulted is appended as Appendix II.

Table 5.1: Issues of concern raised from consultative meetings

Consultation	Key issues discussed
Eng Mahenge T.N- Acting City Engineer	<ul style="list-style-type: none"> • The design of the roads should base on the corridor of the road to avoid compensation • The phase I design of the roads didn't include the drains, so this TSCP - AF should include drains so as to avoid floods • Different facilities along the road should also be considered • Some of the drains built in phase I were very small and so phase II should consider that and built reasonable drains
Ward Executive Officer (Igogo)	<ul style="list-style-type: none"> • The Pepsi loop road is very important as it will help people to get to the bus stand easily • It will also help the business people as the buses will be able to pass to the Igogo market • Phase I of the project built the drains which avoid flooding in people's residential areas. This phase II should help improve the shortcomings of the phase I • The presence of the street lights has helped to avoid robbery
Lake Victoria Environmental Management Program (LVEMP)	<ul style="list-style-type: none"> • They appreciated the information from the city council • Once the drains are built, they are supposed to be covered in order to avoid solid wastes to enter and pollute water in the Lake Victoria • They will discuss with the city council so that they can know how to reallocate their infrastructures (Uzinza and Sukuma Road)
Tanzania Telecommunication Co. Limited (TTCL)	<ul style="list-style-type: none"> • The design of the roads should provide ducts for the TTCL pipes. This will allow laying of the lines without destroying the road
Tanzania Railway Station (TRS)	<ul style="list-style-type: none"> • Excessive siltation has reduced the capacity of the downstream storm drains at the Igogo VTC junction culvert (Pepsi loop road) floods the adjacent godown area owned by TRS. • TRS advises the design team inspect the situation at the Pepsi loop junction, the downstream drain and the discharge point in order to design sustainable structures.
TANESCO	<ul style="list-style-type: none"> • The city should formerly discuss with utility suppliers and set a plan for site inspection. • For the new roads, City should provide a network maps

Consultation	Key issues discussed
	<p>where affected properties (if any) can be demarcated and thus its costs for relocation is easily estimated.</p> <ul style="list-style-type: none"> • The BOQ should set aside funds for relocation and reinstallation of affected properties.
Mwanza Urban Water Supply and Sewerage Authority (MWAUWASA)	<ul style="list-style-type: none"> • Advised the City council to provide the water Authority with plans and design of the new roads so that they can make cost estimates for relocation of water pipes. • The Authority expects good cooperation as it was during the implementation of Core TSCP

July 2016 Consultation

SN	Name/stakeholders	Views/Concerns
1	Eng Mbaga- City Road Engineer and TSCP-AF team member	<ul style="list-style-type: none"> • The project is a continuation of the TSCP that improved various infrastructures within the CityCouncil • For Mwanza among others the project will improve storm water drainage to reduce floods, road furniture's to enhance safety and security as well as upgrade roads. • We urge locals to accept the project as the purpose is to improve the infrastructures within the Municipal.
2	Community Development Officer	<ul style="list-style-type: none"> • The purpose of these meetings is to inform people about the project and that the implementation will take place soon. • In terms of business the project will create clean environment especially reduce dust around their business • Create temporary employment during the construction period • The project will increase the quality of settlement • We argue locals to establish a GRC that will collaborate with the existing GRC at City Council level
3	Chairperson, Public transporters	<ul style="list-style-type: none"> • Transporters acknowledged that they have been consulted regarding the proposed project • He advised the alternative road to be used during construction and urge the City road engineer to

		ensure that the alternative road is rehabilitated first.
4	Local Community	<ul style="list-style-type: none">• Who will be responsible with relocation of utilities such as water and electricity• What if the contactor during construction damages someone's property will this be compensated and how• This is a very good project as currently the road is a challenge due to dust and mud during rainy season

6.0 IDENTIFICATION AND ASSESSMENT OF IMPACTS

6.1 Impacts 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.

6.1.1 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 Pasiansi-Buzuruga road, Sanga-Kiloleli road, Butimba road, Pepsi loop road, Isamilo rad (0.35km), Tilapia road (0.60km), Mtakuja road and Uzinza road (0.20km).

6.1.2 Secondary impact area

These are off-site locations linked to the project activities 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 where sources are located (refer Chapter 2).

6.1.3 General project area of influence

This includes the wider geographical area that is influenced by this project (in Mwanza City and beyond) including areas in the near vicinity within a 5km radius and transportation routes from sources of material to the project location. For the bus stands and landfill area, the area of influence extends to around 500m around the lease area.

6.2 Impact Identification and evaluation

The development of roads in Mwanza City can cause a wide range of environmental and social impacts on a number of receptors. The ESIA identify these impacts for the purposes of mitigating the adverse ones or enhancing the benefits. Impact *identification* is a process designed to ensure that all potentially significant impacts are identified and taken into account in the EIA process. A number of 'tools' are available to assist in impact

identification. The simplest, and most frequently used, are *checklists* of impacts, although *matrices*, *network diagrams* and *map overlays* are also commonly used. In this ESIA *simple checklists and expert's knowledge were used*. These checklists are the simplest types that provide lists of potential impacts. These are designed to help practitioners to avoid overlooking some of the potential impacts.

The impacts are categorized into direct (short-term or long-term) or indirect impacts. The direct short-term impacts are considered to be those, which will be apparent only during the construction period and such will include mainly construction related impacts. Direct long-term impacts are considered to be those, which will be apparent after construction has been completed (but includes also impacts which may become apparent during the construction phase). The direct long-term impacts, therefore, include those that are construction related and those resulting from the use of the roads. Indirect impacts are considered to be those, which may be encouraged or enabled due to the presence of these roads. As such they will include social and economic impacts and tend to be long-term.

The main receptors of impacts associated with the anticipated Investment sub-projects in Mwanza City include physical resources (hydrology, surface water quality, soils, air quality and noise); ecological resources; material assets, public health and safety, aesthetics and landscape.

The following impacts were identified to be likely to occur during pre-construction phase of the proposed additional investment subprojects;

- i. Job creation and increased income
- ii. Change of scenery view of the project areas
- iii. Dust related air pollution

The following impacts were identified to be likely to occur during construction phase of the proposed additional investment subprojects;

- i. Job creation and increased income
- ii. Increased dust and air pollution
- iii. Increased noise and vibrations
- iv. Visual intrusion during construction
- v. Pollution of water sources
- vi. Increased waste generation
- vii. Loss of definite materials and land degradation
- viii. Interruption or lack of utility services due to damage/relocation of existing utility infrastructure
- ix. Lacking or slow restoration of areas impacted by construction
- x. Risks to worker's and public safety
- xi. Overburdened local authority
- xii. Child labour

- xiii. Increased HIV/AIDS
- xiv. Population Influx

The following impacts were identified to be likely to occur during operational phase of the proposed road projects;

- i. Reduction of soil erosion
- ii. Improved storm water collection
- iii. Improved accessibility
- iv. Increased property and land values around the project areas
- v. Increased road accidents
- vi. Environmental hazards resulting from waste deposition into storm water drains

The interaction between the intended project activities and the different environmental receptors are summarized in a simplified matrix presented in Table 6.1. A simple matrix with the following ratings was used to determine significant impacts:

+3 Very high positive impacts	+1 Minor positive impact	-1 Minor negative impact	-3 Very high negative impacts
+2 High positive impacts	0 No impacts	-2 High negative impacts	

The consultant focused on significant positive and negative impacts that were rated +2, +3, -2, -3 and developed mitigation and enhancement measures. In the next sections, significant impacts (positive and negative) associated with each phase of the project are discussed. Mitigation, enhancement measures and project alternatives are discussed in the next section.

Table 6.1: Environmental Impacts Matrix for the TSC Project Mwanza City

S/N	Environmental parameters/Impacts	Impact Rating Criteria					Impact Significance Rating			
		Spatial Scale	Temporal Scale	Reversibility	Cumulative Effects	Residual Impact	Mobilization Phase	Construction Phase	Demobilization Phase	Operation and Maintenance
Negative Impacts										
1.	Change of scenery view	L	ST	R	√		-1	-2	-2	+2
2.	Increased dust and air pollution	L	ST	R	√		-1	-3	-2	-1
3.	Increased noise and vibrations	L	ST	R	√		-1	-2	-2	-1
4.	Pollution of water sources	L	MT	R	√	√	-1	-2	0	0
5.	Increased waste generation during construction	L	ST	R	√		-2	-3	-2	-1
6.	Traffic disruption and congestion	R	ST	R	√		-1	-3	-1	0
7.	Damage to existing infrastructure and public services	L	ST	R			0	-2	0	0
8.	Lacking or slow restoration of areas impacted by construction	R	MT	R		√	0	0	-2	-1
9.	Risks to worker's and public safety	L	ST	R	√		-1	-3	-1	0
10.	Overburdened local authority	R	MT	R	√		-1	-2	-1	-2
11.	Child labour	L	ST	R			-1	-1	-1	-1
12.	Increased road accidents	L	MT	R		√	-1	-1	-1	-3
13.	Environmental hazards resulting from debris deposition into storm water drains	L	LT	R	√		0	0	0	-3
14.	Impacts due to operation of the asphalt plant and campsite	L	ST	R			-1	-3	0	-1

Positive Impacts										
1.	Job creation and increased income	R	ST	R	√		+2	+3	+2	+3
2.	Improved community Life	R	LT	R	√	√	0	0	0	+3
3.	Improved accessibility and reduction in Traffic congestion	L	LT	R	√	√	0	0	0	+3
4.	Improved storm water collection (reduced soil erosion)	R	LT	R	√		0	0	0	+3
5.	Reduction of dust dispersion	L	LT	R	√	√	0	0	0	+3
6.	Increased property and land values	R	LT	R	√	√	0	0	0	+3

Key: Spatial Scale: Local (L), Regional (R), National (N)

Temporal Scale: Short Term (ST), Medium Term (MT), Long Term (LT)

Reversibility: Reversible (R), Irreversible (IR)

Significance: Highly Adverse (-3); Adverse (-2); Mild Adverse (-1); No impact (0); Mild Beneficial (+1); Beneficial (+2); highly Beneficial (+3)

6.3 Pre- Construction and Construction Phase Impacts

Short-Term Direct Positive Impacts

6.3.1 Job creation and increased income to local communities

During the mobilisation and construction phase, a number of people will get a chance to be employed by the project. It is expected that the unskilled /inexpert labour and some skilled labour will be sourced from the residents in Mwanza City Council. Those who will secure employment though within a short term will get a modest payment which will help support their families for that time. Employment opportunities in the country are very scarce, especially for the unskilled people.

The presence of the construction force at site will bring a good business opportunity to local food and refreshment vendors at or near the project areas. The vendors are expected to benefit by selling food and other merchandise to the construction workforce and hence raise their economic status. Apart from the payment, it is hoped that the utilization of local labour will somehow cause a diffusion of knowledge from the skilled workers and hence open the door to the possibility of acquiring employment in similar construction works elsewhere.

Short-Term Direct Negative impacts

6.3.2 Increased water and soil pollution

Whichever construction method used, small-scale and short-term water pollution may result especially during construction of off-road drainage structures. Impacts can also result from accidental spillage of fuels and construction materials, which may pollute both water and soil. Culvert construction may stir riverbed deposits into suspension. Though the large particles may settle quickly, the finer ones will increase the turbidity of surface water sources. The turbidity impacts may be short-term since the stream construction takes place within a few weeks.

Road entails the construction of drainage channels in order to drain concentrated run-off. Water or soil pollution by accidental spillage of fuel or other materials and chemicals associated with construction is an undesirable possibility. Obviously, it is not possible to predict the location or type of spillage, but it is considered that any spillage to soil will be local in nature and remediation should not be difficult. This impact will not be significant because there is no water course near/in any of the subprojects, only Lake

Victoriawater pollution is expected due to construction of drainage channels at the sites.

6.3.3 Noise, vibration and air pollution

Dust will arise from construction site due to excavation work, movement of vehicles, stock piling of materials, operation of crusher and asphalt plants, and general earth works at the site. Exhaust fumes will mainly come from construction plant, machinery and vehicles in operation. Fumes will also come from the processing of asphalt. Dust and fumes will have major direct but short-term impacts during the project construction phase. Along the project sites, the adjacent areas are relatively open, without impediment to air movement hence enhance dilution of air pollutants. For areas away from the construction sites, leafy vegetation should be able to filter out a considerable content of low level air borne pollutants. Thus, ventilation and vegetation are anticipated to lessen the air pollution problem. Moreover, sprinkling of the road with water during construction work will further lessen generation of dust, and consequently alleviate the air pollution problem.

Noise and vibration will be produced by construction vehicles, plant and machinery during delivery of materials, processing of materials, and actual construction work. Due to an increase in activities and number of operational vehicles, the impacts of noise and vibration will cause disturbance to humans and animals as well as birds. Vibration may even cause physical damage to properties near the construction site. The vegetation and loose soil along the roads in the project area have the potential for damping noise and vibration. As such, noise and vibration impacts will have short range – near the construction site. Dust will be a temporary nuisance to the people within the core impact area especially during construction in the dry season.

6.3.4 Safety and health risks

Construction of these roads will expose the labourers and the general public to bronchial and other respiratory tract diseases. Also poor use (or not using at all) of the safety gears during construction phase will result into loss of lives or injuries during construction. The incidence rate of water borne diseases such as cholera and diarrhoea will increase if there will be no proper sanitation practices at the camps.

6.3.5 Damage/relocation infrastructure/loss of access to services

Mobilisation and construction activities might result into temporal loss of access to services such as water supply, electricity and road passage. Further it has effects in terms of cost implications to the authorities managing the infrastructures, and temporal lack of service to the community provided by these infrastructures. Currently, the extent of relocation to utility infrastructure is not known as the design team is yet to finalise works. The Mwanza City Engineer has approached the utility providers (TANESCO, TTCL and MWAUWASA) to participate in surveying the project areas in order to give an evaluation of the extent of relocation and costs involved.

6.3.6 Traffic disruption

Diversions created (or complete temporary road closure) during construction may temporary cause delay in transportation of goods and passengers or traffic congestions or accidents (especially for heavily laden trucks and trailers) along detour roads that may not have been constructed properly.

6.3.7 Impacts due to operation of the asphalt plant and campsite

Littering due to poor housekeeping at the asphalt plant or improper disposal of unused bitumen and aggregates or bitumen spills would have the localised impact of contaminating environmental resource (soil and water). Poor house keeping at the campsite also have potential to contaminate the environment by solid and liquid waste generated during the daily human activities at the camp.

Long-Term Impacts:

6.3.8 Loss of definite materials and land degradation

Quarries and Borrow Areas: The excavation of quarries and borrow pits used for obtaining soil and aggregate materials for road construction can cause direct, and indirect long-term major adverse impacts on the environment. While loss of productive soil is the most direct negative impact, other significant indirect negative impacts can also occur. Since most of the construction materials would be available from existing quarries nearby, relatively few new borrow areas will be required. Approximate requirement of geo-technical materials to the project corridors are already presented in the project design report.

One of the long-term residual adverse impacts of borrow pits not reclaimed is the spread of malaria. Mosquitoes breeding and multiplying in stagnant

water that collects in these pits can affect humans in villages and towns close to the features.

6.3.9 Scenic quality deterioration

Scenic quality deterioration will occur due to stock piling of construction materials and discoloration of plant leaves and houses in the vicinity of the roads due to wind-blown dust. Excavation work as well as presence of construction vehicles, plant and equipment will also add to scenic quality deterioration. Scenic quality deterioration will also occur off-site, at the sources of construction materials, the quarries and sand mines. If these are not made good they may become an eyesore. Scenic quality deterioration can destroy the economic and aesthetic value of public and/or private property including land. Scenic quality degradation effects will be significant, short term and direct. They will, in spite of everything, be manageable given proper site operation and prior warning as well as issuance of site operation guidelines.

6.3.10 Overburdened local authorities

The implementation of the proposed Investment subprojects (from planning stage, construction stage, and supervision) will involve the local authority. The local authorities in this context include Ward and Mtaa Leaders. If these local authorities are not involved in all phases of the project then it shall be very difficult to cope with the project implementation pace, and as a result they shall be overburdened by the project which may result in poor performance of the proposed investment subprojects. This impact can be short term or long term, depending on the nature of overburden felt the local authority.

6.4 Operation Phase Impacts

Positive Long-Term -Impacts

6.4.1 Improved Transport and Reduction in traffic congestion

It was shown in chapter 4 that the newly constructed roads are in good state, except for few missing or poorly designed appurtenances. However, the Isamilo-Mjimwema, Tilapia road, Mtakuja and Uzinza roads are unpaved and in bad condition. These roads are feeder roads to a number of main roads in the city, which are highly congested. The new roads shall reduce pressure from the main road. Reduced traffic congestion has impacts on serving fuel costs and time. Construction of these roads shall improve transport in the City and thus boost the City's economy.

6.4.2 Improved community life and services

There are several social related advantages that will accrue from the construction of the roads. Improved transportation will enable easy delivery of health care services. The roads will facilitate easy access to health centres, and thus lives of some patients will be saved. Living standard of local communities along the project area will be enhanced, as they will be able to easily get access to social facilities such as schools, health centres, religious centres etc.

The improved roads have potential to boost up the existing informal sector trade, which is a source of self-employment for mainly women and youth; the roads will ensure increased commuting speed and thereby facilitating the goods exchange in the informal sector. The improved roads are expected to expand and improve the informal sector in which the unemployed women and youth will engage themselves to perform various income generating activities.

6.4.3 Reduced traffic congestion

The improvement of the roads will definitely reduce problem in the city of Traffic congestion. Now most cars use the tarmac roads which are few and this cause congestion especially in the city centre. After the completion of these subprojects the pressure will be distributed to all the roads since a number of tarmac roads will be more. Reduced traffic congestion has impacts on serving fuel costs and time.

6.4.4 Increased property values

Experts in transport and economic studies report that virtually every major land use study came to the conclusion that transportation improvements positively affect the value of nearby land. Huang (1994) estimated that effects ranged from almost non-existent to over a ten percent (>10%) increase in property values over the region-wide sale prices. Improvements to transportation networks tend to impact both users and local land markets. This will be an advantage to the property owners since the resell value and rent will increase. Also the city and national income will increase through the property tax. However, the rise of property value will be disadvantage to tenants.

Negative Long-Term Impacts

6.4.5 Interference to local hydrology

The proposed roads will not entail any new and undue interference with the hydrologic and drainage aspects of the project area. The change from gravel surfacing to bituminous surfacing will improve drainage of the area, especially with improvement of roadside drainage and cross drainage. This will result into a minor positive impact. On the other hand sources of construction materials will create pits in which water will accumulate. These can be breeding sites for mosquitoes and can serve as a means of harvesting rainwater as well. The latter possibility can help to alleviate water shortages in the area especially during dry seasons. Other negative hydrologic and drainage impacts are not foreseen. The main impact associated with the provision of road drainage channels is the blocking of access paths to residences for houses located along the road.

6.4.6 Impacts related to new road

There is always an issue of “New road effect” and associated accident. Drivers on a newly improved road may excitedly drive faster than is safe: a phenomenon referred to as “new road effect”. Increased traffic and over speeding have potential to increase the rate of road accidents in the City.

6.4.7 Increased noise, vibration and air pollution

Motor vehicles have emerged as one of the major sources of air pollution especially in urban areas. Due to the proposed road improvements aimed at enhancing the efficiency of road transport system the number of vehicles on these roads will be increased over time, so impacts on ambient air environment may be significant. Pollution will be evident during the operation life of the roads due to emissions from the fuels and other chemicals associated with vehicular traffic and maintenance works. Chemical emission will be washed by rain to water sources and adjacent soils. However, the magnitude of the pollution is expected to be low.

Noise is one of the most obvious negative impacts of daily road use. The discomfort caused by noise includes auditory fatigue and temporary lessening of hearing ability. However, perceived noise is related to background noise level, so that new roads in quiet areas or noisy trucks at night are often perceived as worse than higher levels of noise in a busy area during the work day.

6.4.8 Hazards related to waste deposition into storm water drains

Deposition of waste into storm water drains is common in a City like Mwanza. Typical waste types include plastics water/juice bottles, plastic bags, paper, and debris. Silt from road surface falls into the drain as the road is operated. Effects of waste deposition and siltation include reduced capacity of storm water drains which caused floods during the rainy season. Debris deposited into the drains blocks water movement and creates conducive environment for disease vector to breed. A good example is the breeding of mosquitoes, a malaria spreading vector. Disposal of debris creates unsightly environment and sometimes strong odours generated by decomposition of waste in the drain.

7.0 IMPACTS MITIGATION MEASURES

7.1 General considerations

This section is devoted to describing measures or actions that shall be implemented so as to minimize any of the potential impacts identified in the preceding section. Many of the mitigation measures put forward are nothing more than good engineering practice that shall be adhered to during the design and construction phases.

There are many ways to avoid significant impacts on biodiversity, and mitigate adverse effects. If these are considered at the earliest stages in the planning and design processes, outcomes are likely to be less harmful and the road development sector in Mwanza will not be a threat to ecosystem and will support sustainable development. The developer is committed to implement the mitigation measures contained in this report.

7.2 Mitigation measures for Direct Short-term impacts

7.2.1 Increased water and soil pollution

- In case of accidental spillage, the contractor shall exercise every effort in order to minimize the associated risks. For instance refuelling of plant or transfer of materials should not be carried out near watercourses, and any local spillage to soil should immediately be remedied.
- Good housekeeping shall be practiced within material storage compounds or vehicle maintenance yards where the possibility of spillage is great.
- The use of silt fences and hay bales to remove suspended solids from surface water runoff.
- Silt curtains should be used to minimize sediment suspension and transport while working near water crossings.

7.2.2 Noise, vibration and air pollution

- The nuisance of noise, vibration and dust shall be transient and good work practice can minimize them.
- The impacts of noise and dust emissions shall be minimized by proper choice of plant and machinery (i.e. fitted with noise and dust silencers

or reducers) and locating quarry areas away from human habitations (at least 500 m away).

- Dust at work places within or close to human habitation should be critically minimized by periodic water sprinkling on working sections.
- Watering should be practiced regularly at all active work sections especially along the road and at all quarries and borrow sites for the protection of workers. In addition, sections of construction site heavily traversed by construction vehicles should also be regularly watered.

7.2.3 Safety and health risks

The following recommendations are provided to mitigate construction related safety and health risks

- The contractor should comply with all Tanzanian regulations regarding workers' and public safety.
- Prepare and implement action plan to cope with risks and emergencies
- Have emergency first aid equipment available at all construction and material processing sites.
- Train workers in occupational health and safety regulations.
- Ensure that workers wear / use appropriate personal protective equipment (PPE), such as safety glasses, ear pieces (noise protection ear muffs), face shields, hard hats, safety shoes, etc.

7.2.4 Damage and or relocation of infrastructure

- The developer is working with the utilities supplier in the city to plan together for relocation of infrastructure to be affected.
- Costs for relocation and or repair of damaged infrastructure have been included in the BOQ.
- Timely notice of the project activities and schedules shall be provided to the community so that they can prepare for loss of access to services.

7.2.5 Traffic disruption

- The developer shall prepare a traffic management plan and display signs to direct drivers.
- Detour or alternative routes shall be provided as necessary.
- Deposition of construction materials will be planned such that affect on adjacent areas is minimised as much as possible.

7.2.6 Impacts due to operation of the asphalt plant and campsite

- Leftover bitumen and aggregates should be collected and properly kept for use on other sections of the road and bitumen drums should be stored in designated locations and not littered along the road.
- There shall be regular watering to reduce dispersion of dust deposited from the asphalt plant.
- Solid waste generated at campsites should be stored in separate covered containers according to types (degradable and non degradable, recyclable and non recyclable. Recyclables can be sold to local collectors. Non recyclables should be transported and disposed into the designated dump in the city.
- All liquid water shall be disposed into well designed septic tank-soak away systems on site.

7.3 Mitigation measures for Direct Long-Term Impacts

7.3.1 Landscape degradation

- The design of road shall as much as possible follow the existing road alignment in order to reduce extent of land degradation and loss of vegetation (including trees)
- Any cleared plant material and topsoil shall be stockpiled so as to assist in replanting scheme.
- The harvested timber shall be given to local communities (through local government) for use.
- Cut and fills sections shall be designed so as to minimize net materials import. Appropriate work method employed will minimize material import.
- Contract documents shall specify the disposal of spoil material not used for embankment.

7.3.2 Loss of definite materials

- Construction materials should be fetched from the existing sites/sources
- Where construction materials such as gravel and stones are to be obtained from people's lands, the material shall be purchased and this will be officially negotiated with people and/or Local government in order to avoid conflicts. The contractor may be compelled to pay a small fee to the people and/or Local government.
- Topsoil shall be stockpiled for later use in reinstating the pit. Shallow slopes will encourage rapid re-vegetation thus preventing erosion as well as providing safety to animals.
- The significance to the region of the depletion of the material assets is not considered to be high as deposits throughout the remainder of the

region will not be significantly affected by this project and they remain available for other projects.

- Obtaining sand from valleys and riversides must be well investigated to avoid accelerated land degradation and pollution of water sources and/or interfere with agricultural activities in farmland.

7.3.3 Scenic quality deterioration

- A plan for placement of materials on construction site shall be prepared.
- Rehabilitation of sites impacted by the project shall be done earliest possible.
- Borrow pits and quarries will be reinstated and blended to fit the surrounding landscape environment.
- Borrow pits and quarries used as source of construction material shall be rehabilitated and proper landscaping done after completion of the construction. Pits shall not be left with steep or vertical sides

7.3.4 Lacking or slow restoration of areas impacted by construction

- Restore cleared areas such as borrow pits which are no longer in use, disposal areas, site facilities, workers' camps, stockpiles areas, working platforms and any areas temporarily occupied during construction of the project works; use landscaping, adequate drainage and re-vegetation.
- Start re-vegetation at the earliest opportunity, and select appropriate local native plant species for the re-planting and restoration of the natural landscape.
- Spoil heaps and excavated slopes shall be re-profiled to stable batters, and grassed to prevent erosion.
- Landscape all areas affected by construction and undertake any necessary remedial works without delay.
- Plant trees on exposed land and on slopes to prevent or reduce land slippage or collapse and keep slopes stable.
- Remove any soil contaminated with chemicals or hazardous substances and transport it to waste disposal areas for burial.

7.3.5 Overburdened Local Authorities

- Maintain open communications with the local government and concerned communities; the developer shall coordinate with local authorities (leaders of local wards or communes, leaders of villages)

- the agreed schedules of construction activities at areas nearby sensitive places or at sensitive times (e.g., religious festival days).
- Copies of the ESMPs and of other relevant environmental safeguard documents in Tanzanian shall be made available to local communities and to workers at the site.
 - The loss of amenities during the construction process is often an unavoidable source of inconvenience to users in sensitive areas. However, early consultation with those affected, provides an opportunity to investigate and implement alternatives.
 - Disseminate project information to affected parties (for example local authority, enterprises and affected households, etc.) through community meetings before construction starts;
 - Provide a community relations contact from whom interested parties can receive information on site activities, project status and project implementation results;
 - Provide all information, especially technical findings, in a language that is understandable to the general public and in a form that is useful to interested citizens and elected officials through the preparation of fact sheets and news releases, when major findings become available during project phase;
 - Inform local residents about construction and work schedules, interruption of services, traffic detour routes and provisional bus routes, blasting and demolition, as appropriate;
 - Provide technical documents and drawings to affected communities, especially a sketch of the construction area and a copy of the ESMP for the construction site;
 - Notification boards shall be erected at all construction sites providing information about the project, as well as the contact information of the site managers, environmental staff, and health and safety staff. Telephone numbers and other contact information must be provided so that any affected people have the channel to voice their concerns and suggestions.

7.4 Mitigation/Enhancement measures for Long-Term impacts

Enhancement of positive Impacts

All the identified positive impacts depend on proper management of the proposed facilities. If the facilities are not well operated, the community will not be able to benefit from collected revenue, employment opportunities, area accessibility and so forth. The developer shall create awareness on the operation and functions of these facilities before the operation phase.

7.4.1 Improvements community life and services in general

- The developer shall ensure periodic maintenance of all facilities in order to have sustainable projects.
- The local community shall be involved in Operation and maintenance of the proposed investment subprojects. This will ensure a sense ownership throughout the life of the project.

7.4.2 Indirect impacts of new roads

These include improved transportation system, reduction in dust dispersion from unpaved roads, reduction in road floods.

- The developer shall ensure that the roads and drainage system receive regular maintenance and cleaning.
- Soils and solid waste removed from drainage systems should be immediately removed. No waste shall be left over the drains sides, as these tend to fall back into the drains eventually.
- The road shall be cleaned regularly to discourage dust accumulation and dispersion

Mitigation of Negative Impacts

7.4.3 Increased road accidents

- The designs shall take account of safety concerns especially at human habitation crossings e.g. provision of bus stops at settlement centres, pedestrian crossings, speed humps and pedestrian lanes along the roads.
- Awareness seminars shall be conducted during the construction and operation phases
- Traffic management plan shall be incorporated in the designs to include for example details of signs, markings, intersection layouts, access restrictions, bus stops, crossings, footpaths etc.
- The traffic management plans shall be presented both in English and Swahili.

7.4.4 Increased noise, vibration and air pollution

- Steep grades at critical locations shall be avoided so as to reduce noise from acceleration, braking and gear changes.
- Cut sections shall be used (where appropriate) to decrease noise in nearby residences.
- Speed limit and exhaust controls shall be enforced, especially in towns.
- Under good maintenance schedule, traffic exhaust emissions, will be intermittent and atmospheric dispersal of exhaust emissions will

maintain the air quality. However, concerted effort to check engine performance is needed so as to deter vehicles not road-worthy from using the roads.

7.4.5 Hazards related to waste deposition into storm water drains

- The City council is responsible for regular operation and maintenance of the roads and road drainage system.
- Existing or new bylaws should be created to guide management of the drainage systems and waste deposition in general.
- The city through the health/environment department shall ensure that waste deposited into drains is regularly removed.

8.0 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

Introduction

The Environmental and Social Management Plan (ESMP) presents the implementation schedule for the proposed mitigation measures to both environmental and social impacts as well as planning for long-term monitoring activities. The ESMP also includes the associated environmental costs needed to implement the recommended mitigation measures. The engineering designs have already included some of the mitigation measures recommended in this report. Additional recommendations are provided in the ESMP to enable the proposed facilities become more environmental friendly. The implementation steps will involve the PO-RALG, Contractor, the Resident Engineer, MCC, some utilities provides such as MWAUWASA and TANESCO, and the local communities at large. Table 8.1 provides the ESMP for the proposed road construction project.

8.1 Institutional Structure for Environmental and Social Management

The LGA Project Team in Mwanza City is responsible for project implementation including environmental and social management requirements. PO - 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 is fed back to Mwanza City to guide implementation and monitoring by the Council Teams, EMOs, Construction supervision Consultants and Contractors.

8.2 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.

8.3 Environmental and Social Costs

The principal environmental and social cost includes the cost for implementing the mitigation measures proposed and that for carrying out monitoring of specific environmental and social parameters. The estimated costs are to be included in the Contractor's BOQ. Additional costs for implementing environmental and social management measures have been estimated at USD 44,100.00 annually as described in Table 8.1.

Table 8.1: Environmental and Social Management Plan (ESMP) for the Proposed Investment Sub projects in Mwanza City

ENVIRONMENTAL AND SOCIAL IMPACTS	MITIGATION MEASURE	RESPONSIBLE INSTITUTION	TIME FRAME	ESTIMATED COST(USD)
Pre -Construction and Construction Phase				
1. Risk of water and soil pollution	<ul style="list-style-type: none"> ▪ In case of accidental spillage, the contractor shall exercise every effort in order to minimize the associated risks. For instance refuelling of plant or transfer of materials should not be carried out near watercourses, and any local spillage to soil should immediately be remedied. ▪ Good housekeeping shall be practiced within material storage compounds or vehicle maintenance yards where the possibility of spillage is great. ▪ The use of silt fences and hay bales to remove suspended solids from surface water runoff. ▪ Silt curtains should be used to minimize sediment suspension and transport while working near water crossings. 	PO-RALG, Mwanza City Council and Contractor	Construction Phase	2,000.00
2. Noise, vibration and air pollution	<ul style="list-style-type: none"> ▪ The nuisance of noise, vibration and dust shall be transient and good work practice can minimize them. ▪ The impacts of noise and dust emissions shall be minimized by proper choice of plant and machinery (i.e. fitted with noise and dust silencers or reducers) and locating quarry areas away from human habitations (at least 500 m away). ▪ Dust at work places within or close to human habitation should be critically minimized by periodic 	PO-RALG, Mwanza City Council and Contractor	Construction Phase	2,000.00

ENVIRONMENTAL AND SOCIAL IMPACTS	MITIGATION MEASURE	RESPONSIBLE INSTITUTION	TIME FRAME	ESTIMATED COST(USD)
	<p>water sprinkling on working sections.</p> <ul style="list-style-type: none"> ▪ Watering should be practiced regularly at all active work sections especially along the road and at all quarries and borrow sites for the protection of workers. In addition, sections of construction site heavily traversed by construction vehicles should also be regularly watered 			
3. Safety and Health risks	<ul style="list-style-type: none"> ▪ The contractor should comply with all Tanzanian regulations regarding workers' and public safety. ▪ Prepare and implement action plan to cope with risks and emergencies ▪ Have emergency first aid equipment available at all construction and material processing sites. ▪ Train workers in occupational health and safety regulations. ▪ Ensure that workers wear / use appropriate personal protective equipment (PPE), such as safety glasses, ear pieces (noise protection ear muffs), face shields, hard hats, safety shoes, etc. ▪ 	PO-RALG, Mwanza City Council and Contractor	Pre Construction and construction Phase	3,300.00
4. Damage and or relocation of infrastructure	<ul style="list-style-type: none"> ▪ The developer is working with the utilities supplier in the city to plan together for relocation of infrastructure to be affected. ▪ Costs for relocation and or repair of damaged infrastructure have been included in the BOQ. ▪ Timely notice of the project activities and schedules shall be provided to the community so that they can prepare for loss of access to services. 	PO-RALG, Mwanza City Council and Contractor	Pre-construction phase	10,000.00

ENVIRONMENTAL AND SOCIAL IMPACTS	MITIGATION MEASURE	RESPONSIBLE INSTITUTION	TIME FRAME	ESTIMATED COST(USD)
5. Traffic disruption	<ul style="list-style-type: none"> ▪ The developer shall prepare a traffic management plan and display signs to direct drivers. ▪ Detour or alternative routes shall be provided as necessary. ▪ Deposition of construction materials will be planned such that effect on adjacent areas is minimised as much as possible. 	PO-RALG, Mwanza City Council and Contractor	Construction phase	2,000.00
6. Impacts due to operation of the asphalt plant and campsite	<ul style="list-style-type: none"> ▪ Leftover bitumen and aggregates should be collected and properly kept for use on other sections of the road and bitumen drums should be stored in designated locations and not littered along the road. ▪ There shall be regular watering to reduce dispersion of dust deposited from the asphalt plant. ▪ Solid waste generated at campsites should be stored in separate covered containers according to types (degradable and non degradable, recyclable and non recyclable). ▪ All liquid water shall be disposed into well designed septic tank-soak away systems on site. 	PO-RALG, Mwanza City Council and Contractor	Construction phase	2,000.00
7. Landscape degradation	<ul style="list-style-type: none"> ▪ The design of road shall as much as possible follow the existing road alignment in order to reduce extent of land degradation and loss of vegetation (including trees) ▪ Any cleared plant material and topsoil shall be stockpiled so as to assist in replanting scheme. ▪ The harvested timber shall be given to local communities (through local government) for use. ▪ Cut and fill sections shall be designed so as to 	PO-RALG, Mwanza City Council and Contractor	Construction phase	1,500.00

ENVIRONMENTAL AND SOCIAL IMPACTS	MITIGATION MEASURE	RESPONSIBLE INSTITUTION	TIME FRAME	ESTIMATED COST(USD)
	minimize net materials import. Appropriate work method employed will minimize material import. <ul style="list-style-type: none"> ▪ Contract documents shall specify the disposal of spoil material not used for embankment. 			
8. Loss of definite materials	<ul style="list-style-type: none"> ▪ Construction materials should be fetched from the existing sites/sources ▪ Where construction materials such as gravel and stones are to be obtained from people's lands, the material shall be purchased and this will be officially negotiated with people and/or Local government in order to avoid conflicts. ▪ Topsoil shall be stock piled for later use in reinstating the pit. Shallow slopes will encourage rapid re-vegetation thus preventing erosion as well as providing safety to animals. ▪ Obtaining sand from valleys and riversides must be well investigated to avoid accelerated land degradation and pollution of water sources and/or interfere with agricultural activities in farmland. 	PO-RALG, Mwanza City Council and Contractor	Constru ction phase	2,500.00
9. Scenic quality deterioration	<ul style="list-style-type: none"> ▪ A plan for placement of materials on construction site shall be prepared. ▪ Rehabilitation of sites impacted by the project shall be done earliest possible. ▪ Borrow pits and quarries will be reinstated and blended to fit the surrounding landscape environment. ▪ Borrow pits and quarries used as source of construction material shall be rehabilitated and proper landscaping done after completion of the 	PO-RALG, Mwanza City Council and Contractor	Constru ction phase	1,800.00

ENVIRONMENTAL AND SOCIAL IMPACTS	MITIGATION MEASURE	RESPONSIBLE INSTITUTION	TIME FRAME	ESTIMATED COST(USD)
	construction. Pits shall not be left with steep or vertical sides			
10. Lacking or slow restoration of areas impacted by construction	<ul style="list-style-type: none"> ▪ Restore cleared areas such as borrow pits which are no longer in use, disposal areas, site facilities, workers' camps, stockpiles areas, working platforms and any areas temporarily occupied during construction of the project works; use landscaping, adequate drainage and re-vegetation. ▪ Start re-vegetation at the earliest opportunity, and select appropriate local native plant species for the re-planting and restoration of the natural landscape. ▪ Landscape all areas affected by construction and undertake any necessary remedial works without delay. ▪ Remove any soil contaminated with chemicals or hazardous substances and transport it to waste disposal areas for burial. 	PO-RALG, Mwanza City Council and Contractor	Operati on phase	2,100.00
11. Overburdened local authorities	<ul style="list-style-type: none"> ▪ Maintain open communications with the local government and concerned communities. ▪ Copies of the ESMPs and of other relevant environmental and social safeguard documents in Tanzanian shall be made available to local communities and to workers at the site. ▪ Disseminate project information to affected parties (for example local authority, enterprises and affected households, etc.) through community meetings before construction starts; ▪ Monitor community concerns and information 	PO-RALG and Mwanza City Council	Constru ction Phase and possibly operatio nal phase	3,000.00

ENVIRONMENTAL AND SOCIAL IMPACTS	MITIGATION MEASURE	RESPONSIBLE INSTITUTION	TIME FRAME	ESTIMATED COST(USD)
	requirements as the project progresses; <ul style="list-style-type: none"> ▪ Provide technical documents and drawings to affected communities, especially a sketch of the construction area and a copy of the ESMP for the construction site; 			
12. Improvements community life and services in general	<ul style="list-style-type: none"> ▪ The developer shall ensure periodic maintenance of all facilitates in order to have sustainable projects. ▪ The local community shall be involved in operation and maintenance of the proposed investment subprojects. 	PO-RALG and Mwanza City Council	Operati on phase	
Impacts related to new roads	<ul style="list-style-type: none"> ▪ The developer shall ensure that the roads and drainage system receive regular maintenance and cleaning. ▪ Soils and solid waste removed from drainage systems should be immediately removed. No waste shall be left over the drains sides, as these tend to fall back into the drains eventually. ▪ The road shall cleaned regularly to discourage dust accumulation and dispersion 	PO-RALG and Mwanza City Council	Operati on phase	1,000.00
13. Increased road accidents	<ul style="list-style-type: none"> ▪ The designs shall take account of safety concerns especially at human habitation crossings e.g. provision of bus stops at settlement centres, pedestrian crossings, speed humps and pedestrian lanes along the roads. ▪ Awareness seminars shall be conducted during the construction and operation phases ▪ Traffic management plan shall be incorporated in the designs to include for example details of signs, markings, intersection layouts, access restrictions, bus 	PO-RALG and Mwanza City Council	Operati on phase	3,000.00

ENVIRONMENTAL AND SOCIAL IMPACTS	MITIGATION MEASURE	RESPONSIBLE INSTITUTION	TIME FRAME	ESTIMATED COST(USD)
	stops, crossings, footpaths etc. <ul style="list-style-type: none"> ▪ The traffic management plans shall be presented both in English and Swahili. 			
14. Increased noise, vibration and air pollution	<ul style="list-style-type: none"> ▪ Steep grades at critical locations shall be avoided so as to reduce noise from acceleration, braking and gear changes. ▪ Speed limit and exhaust controls shall be enforced, especially in towns. ▪ Under good maintenance schedule, traffic exhaust emissions, will be intermittent and atmospheric dispersal of exhaust emissions will maintain the air quality. However, concerted effort to check engine performance is needed so as to deter vehicles not road-worth from using the roads. 	PO-RALG and Mwanza City Council	Operati on phase	2,500.00
15. Hazards related to waste deposition into storm water drains	<ul style="list-style-type: none"> ▪ Existing or new bylaws should be created to guide management of the drainage systems and waste deposition in general. ▪ The city through the health/environment department shall ensure that waste deposited into drains is regularly removed. 	PO-RALG and Mwanza City Council	Operati on phase	5.400.00
Total Costs				44,100.00

8.4 Implementation of the ESMP

To facilitate effective implementation of the ESMPs, the MCC Technical Support Team will:

- (a) Establish an Environmental and Social Unit (EST) responsible for ensuring the timely implementation of the ESMP, including monitoring, reporting, and capacity building related to safeguards;
- (b) Assign the Construction Supervision Consultant (CSC) to be responsible for supervision of the contractor's safeguard performance as part of the construction contract and this requirement will be included in the CSC terms of reference (ToR); and
- (c) Hire qualified national consultants as the Independent Environmental Management Consultant (IEMC) to assist the EST in performing these tasks.

MCC will be responsible for implementing the mitigation measures during the operation stage of the project; MCC will ensure that the mitigation measures are implemented and adequate budgets are provided. The Mwanza City Council will provide the overall policy guidance and oversight for project implementation, including the ESMP. More details on organization, roles and responsibilities for the ESMP implementation and the monitoring program are described further below;

9.0 ENVIRONMENTAL AND SOCIAL MONITORING PLAN

9.1 Environmental and Social Monitoring

Monitoring of the anticipated environmental and social impacts in the receiving environments is important. It helps in determining the effects of the project activities on the environments, enhancing understanding of cause effect relationships between human activities and environmental changes and verifies the accuracy of prediction about the environmental impacts. It ensures compliance with regulatory measures and understanding the degree of implementation of ESMP and its effectiveness. The monitoring results are also used extensively during the environmental auditing.

The Tanzanian ESIA regulations require the developer to prepare and undertake monitoring plan and regular auditing. Monitoring is needed to check if and to what extent the impacts are mitigated, benefits enhanced and new problems addressed. Recommendations for monitoring have been included in the ESMP (Table 9.1). The ESMP also assigns responsibilities for monitoring activities. However, the divisional/ward/village environmental committees and city environmental committee will participate in the long-term daily monitoring of the project road especially during operation.

Monitoring Parameters

The selection of the parameters to be monitored is based on the high likelihood of occurrences of the selected parameters. Monitoring of these parameters will be done in various stages of the project as follows;

- *Pre construction stage* – Monitoring of the parameters at this stage is meant to establish the baseline information of the target parameters in the project area.
- *Construction stage* - Monitoring at this stage is meant to establish the pollution levels that arise from the construction activities.
- *Operation stage* - Monitoring at this stage is meant to check on the impacts that might arise as the result of normal use of the infrastructure.
- *Decommissioning* - Decommissioning is not anticipated in the foreseeable future. However, if this will happen, may entail change of use (functional changes) or demolition triggered by change of land use.

Table 9.1: Environmental and Social Monitoring Plan for the Proposed Subprojects

	Parameters	Monitoring frequency	Sampling Area	Measurement Units	Method	Target level/ Standard	Responsible for monitoring	Annual costs estimates (USD)
Pre construction stage								
Air quality	SO ₂	Once before the construction starts	Project sites	mg/kg (hourly)	Detector tubes	0.1	Mwanza City Council and Contractor	500
	HC		Project sites	mg/l	HPLC			500
	NO _x		Project sites	µg/nm ³ (24 hrs)	Detector tubes	150		500
	TSP and PM ₁₀		Project sites	µg/nm ³ hourly)	Mini-Vol Sampler	0.15		500
	CO ₂		Project sites	ppm (1hr)	Detector tubes	35		500
Noise Baseline	Noise level		Project site	dba	Measurements			500
Water pollution	E-coli	Once before the construction work starts	Shallow wells and seasonal streams near the project sites	Counts/100mls	Lab Analysis (culture)	0	Mwanza City Council and Contractor	500
	BOD			Mg/l	Lab Analysis (DOD kit)	300		400
	Nitrate			mg/l	Analysis (Spectrophotometer)	30		400
	Trace metals			mg/l	Analysis in AAS	0.05		400
	Sulphate			mg/l	Lab Analysis (Spectrophotometer)	600*		400
	Turbidity			NTU		35		100

	Parameters	Monitoring frequency	Sampling Area	Measurement Units	Method	Target level/ Standard	Responsible for monitoring	Annual costs estimates (USD)
	Hydrocarbons			Mg/l	Lab Analysis (HPLC)			600
	pH			-	pH meter	6.5-9.2		100
Construction stage								
Air Quality	SO ₂	Once before the construction starts	Project sites	mg/kg (hourly)	Detector tubes	0.1	Mwanza City Council and Contractor	500
	HC		Project sites	mg/l	HPLC			500
	NO _x		Project sites	µg/nm ³ (24 hrs)	Detector tubes	150		500
	TSP and PM ₁₀		Project sites	µg/nm ³ hourly)	Mini-Vol Sampler	0.15		500
	CO ₂		Project site	ppm (1hr)	Detector tubes	35		500
Noise pollution	Noise level	Once in a year	Project site	dBa	Measurements			1500
Water pollution	E-coli	Three times during construction	Shallow wells and seasonal streams near the project sites	Counts/100mls	Lab Analysis (culture)	0	Mwanza City Council and	500
	BOD			Mg/l	Lab Analysis (DOD kit)	300		400
	Nitrate			mg/l	Analysis (Spectrophotometer)	30		400
	Trace metals			mg/l	Analysis in AAS	0.05		400
	Sulphate			mg/l	Lab Analysis	600*		400

	Parameters	Monitoring frequency	Sampling Area	Measurement Units	Method	Target level/ Standard	Responsible for monitoring	Annual costs estimates (USD)
	Turbidity			NTU	(Spectrophotometer)	35	Contractor	100
	Hydrocarbons			Mg/l	Lab Analysis (HPLC)			600
	pH			-	pH meter	6.5-9.2		100
Soil erosion		Three times (monthly)	project area	Level of erosions	Site inspection	-	Mwanza City Council and Contractor	5000
Interference to local hydrology	Hydrometric	Once a month (during rainy season)	Seasonal streams and wells near the project sites	Flooding levels	Volumetric measurements	-	Mwanza City Council	1,700
Vibration	Vibration levels	Three times a year	Project sites and all borrow pits	Number	Vibration meter	-	Mwanza City Council and Contractor	1500
Employment opportunity	Percentage of local construction labourers	Three times a year	Project site	Number of local people employed in the project	Records, inquiries and observation	-	Mwanza City Council and Contractor	N/A
Worker's and Public Safety	Number and type of safety gears.	Monthly	Project site	Number of safety measures provided	Records, injuries and inspection	-	Mwanza City Council and Contractor	1,200

	Parameters	Monitoring frequency	Sampling Area	Measurement Units	Method	Target level/ Standard	Responsible for monitoring	Annual costs estimates (USD)
risk								
Relocation of Utilities and loss of access Services	Availability of access and services	Three times during construction	Project site	Service availability	-	Contractor	Mwanza City Council, Utility suppliers and Contractor	1000
Dust	Water sprinkling	Twice a week	Project site	Frequency of water sprinkling	Inquiries and observation	Minimum dust emission	Mwanza City Council and Contractor	1000
Operation stage								
Air Quality	SO ₂	Twice in the first year of operation	Project sites	mg/kg (hourly)	Detector tubes	0.1	Mwanza City Council	500
	NO _x		Project sites	µg/nm ³ (24 hrs)	Detector tubes	150		500
	TSP and PM ₁₀		Project sites	µg/nm ³ hourly)	Mini-Vol Sampler	0.15		500
Water pollution	E-coli	Twice in the first year of operation	Shallow wells and seasonal streams near the project sites	Counts/100mls	Lab Analysis (culture)	0		500
	BOD			Mg/l	Lab Analysis (DOD kit)	300		400
	Nitrate			mg/l	Analysis (Spectroph	30		400

	Parameters	Monitoring frequency	Sampling Area	Measurement Units	Method	Target level/ Standard	Responsible for monitoring	Annual costs estimates (USD)
					otometer)		Mwanza City Council	
	Trace metals			mg/l	Analysis in AAS	0.05		400
	Sulphate			mg/l	Lab Analysis (Spectrophotometer)	600*		400
	Turbidity			NTU		35		100
	Hydrocarbons			Mg/l	Lab Analysis (HPLC)			600
	pH			-	pH meter	6.5-9.2		100
Road Safety	Road accidents and availability of road signs	Three times in the first year of operation	Project site	Road signs and number of accidents	Records, inquiries and inspection	Zero accident and sufficient no of road signs	Mwanza City Council	9,00
Total Monitoring Costs								29,500

9.2 Role and Responsibilities during ESMP Implementation

The Project Coordinator in the President's Office-Regional Administration and Local Government (PO RALG) will be responsible for the overall monitoring and quality assurance of the Project. While Mwanza City Council through Technical Support Team (TST) shall be responsible for ESMP implementation, the Project (PC-PO RALG) will have a quality assurance and monitoring role including all safeguards aspects. Further, the Mwanza City Council will submit all safeguards progress and monitoring reports to the PO RALG.

The PO RALG will also be responsible for contracting and managing the Independent Environmental Monitoring Consultant (IEMC) who will monitor the environmental performance in all subprojects in Mwanza City Council. The IEMC's costs are therefore part of the PO RALG budget, and do not form part of the ESMP implementation costs.

A summary of the roles and responsibilities of the key parties and their relationships with regard to the implementation of the ESMP:

The Developer has full responsibilities to ensure that the contractor abides to regulation and specifications. Contractors have the main responsibility for implementing mitigation measures. Those measures will be included in the bidding documents and the costs are to be included in their bids and the construction contracts.

CSC is responsible for supervising and monitoring the day-to-day implementation of mitigation measures. The associated costs are included in CSC service contracts. IEMC will be responsible for environmental monitoring which includes (i) support to the EST/TST for implementing supervision and monitoring, and (ii) reporting on the implementation through periodic monitoring reports. The relationship, roles and responsibilities of the EST, TST, CSC, and IEMC are outlined in Figure 9.1 and Table 9.2.

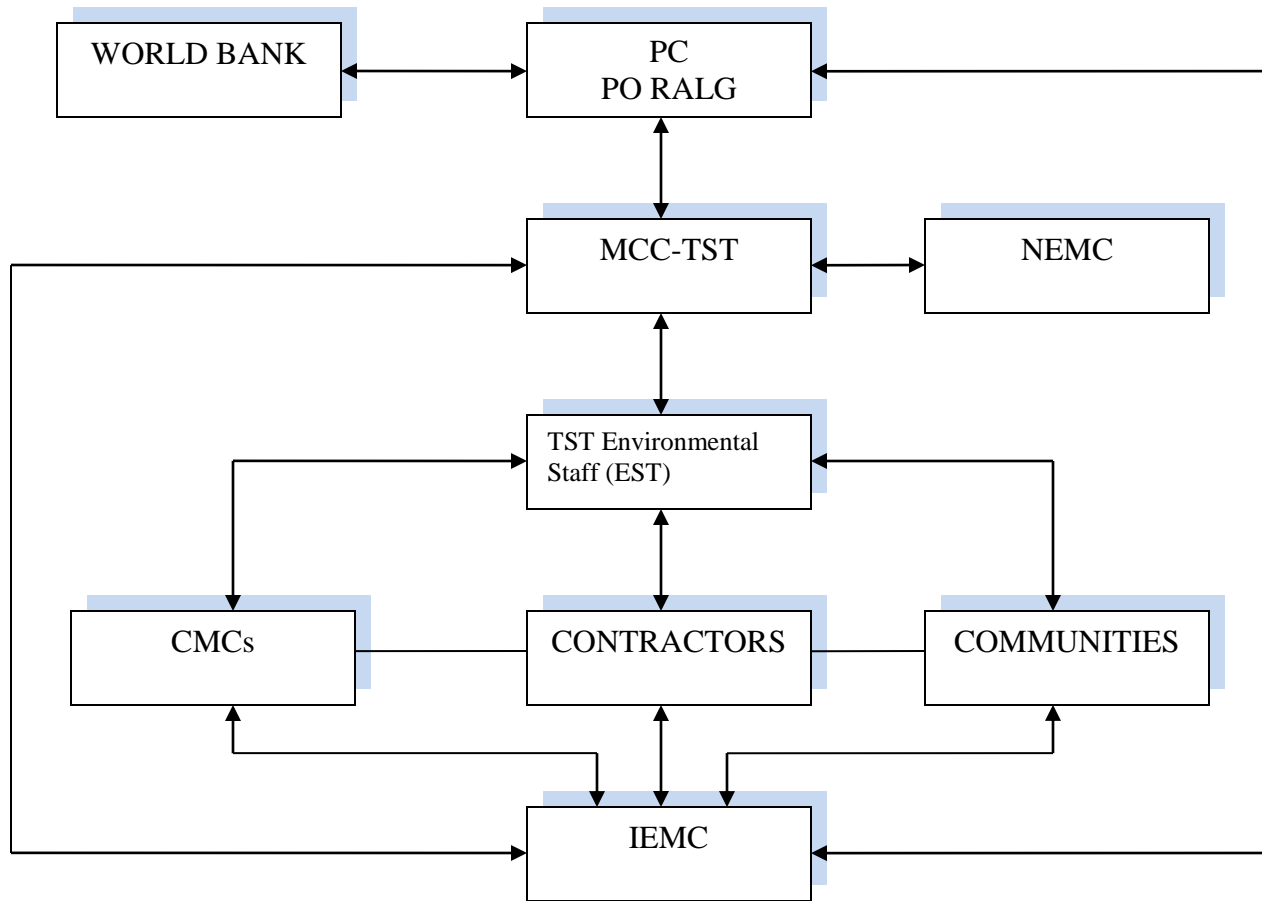


Figure 9.1: Environmental Management Organization Chart

Table 9.2: Role and Responsibilities of Key Parties for ESMP Implementation

Organ	Roles and Responsibilities
MCC-TST/ ESUs	--Responsible for implementing the ESMP during the detailed design and construction stages. ESMP implementation during operation stage is the responsibility of the MCC. MCC-TST will set up an Environmental and Social Team (EST) to ensure timely and effective implementation of the ESMP, including preparation of reports on safeguard compliance as required by Government and WB.
	– Responsible for ensuring that the relevant sections in the bidding and contract documents for all construction works are in compliance with the ESMP; this means they contain the requirements of the ECOPs and site-specific ESMPs.
	– Responsible for communicating with relevant local, regional and national departments; and with the agencies responsible for implementing and supervising ESMP, especially with the National Environmental Management Council (NEMC), and with the concerned wards/Sub-wards during planning, monitoring, management and operation.
	– Will coordinate with community organizations to encourage them to actively participate in the planning, management, and implementation of the project, including monitoring of the contractor’s performance.
	– To ensure effective monitoring and timely implementation of the ESMP, MCC-TST/ESTs will hire national environmental consultants to assist them with carrying out and monitoring the ESMP implementation.
	– In the course of supervising and monitoring the contractors’ performance, MCC-TST will be responsible for: (a) Checking project implementation indicators relating to the environment; (b) Conducting unscheduled, surprise inspections to ensure that mitigation measures are being implemented as required in construction contract by contractor; (c) Reviewing the periodic reports of the Construction Supervision Consultant (CSC) to ensure compliance with mitigation measures and ESMPs; and (d) Based on the periodic reports by CSC and IEMC, preparation of reports on environmental compliance of subprojects, to be submitted to WB and NEMC (this will be part of the submission of progress report to WB every six months).
	– Coordinate closely with relevant bodies for water supply (MWAUWASA), environmental sanitation, and solid waste collection, to monitor their operation and maintenance activities during project

Organ	Roles and Responsibilities
	implementation.
Construction Supervision Consultant (CSC)	<p>-Responsible for monitoring the safeguard performance of the contractors during site clearance and construction, including oversight of the self-monitoring to be conducted by contractor. With regard to environmental safeguards, the CSC’s main responsibility will include, but not be limited to, the following:</p> <ul style="list-style-type: none"> – Assist IEMC to establish, collect and provide information on essential environmental indicators, on-site and for the construction works. – Ensure that all work comply with the approved ESMPs, as set out in documents for environmental impact mitigation and monitoring. – Monitor the implementation of mitigation measures by the contractors, propose and deploy any necessary supplementary measures in time to improve mitigation measures to fully meet the environmental management and safety requirements of project. – Prepare action plans and/or propose urgent solutions to cope with environmental problems, emergency situations and damage that occurred during construction – Recommend to MCC-TSTs to suspend partially or completely construction work if labour safety and environmental protection requirements of the contract are not being complied with. – Organize regular discussions with relevant parties, agencies and other stakeholders to provide information about implementation plans to increase people’s awareness of the need for environmental protection and management during construction process.
Construction Contractor	<p>Responsibilities with respect to all aspects of the works, including the environmental aspects, are set out in the contract documents, signed with the MCC-TST.</p> <ul style="list-style-type: none"> – Construction contractors are responsible for carrying out environmental impact mitigation measures and for complying with the approved ESMP when implementing construction contracts. When preparing the “Contractors ESMP”, the contractor will study the project’s approved EIA report and propose a construction method that includes environmental mitigation and monitoring measures that

Organ	Roles and Responsibilities
	<p>are in line with the approved ESMP.</p> <ul style="list-style-type: none"> – Contractor’s ESMP will be submitted to MCC-TST and CSC for review, as well as to IEMC, as deemed necessary. Changes, if any, will be evaluated for their feasibility and for legal issues (laws, decrees, circulars and other regulations) before suitable adjustments are approved for specific cases on-site. – During the construction work, the construction contractors will be closely supervised by MCC-TST, CSC, IEMC, environmental authorities and the local community for their compliance with the ESMP.
<p>Independent Environmental Monitoring Consultant (IEMC)</p>	<p>The IEMC will be responsible for assisting the MCC-TST with the ESMP implementation. This also includes advising the CSC, contractors and communities on environmental compliance, and on carrying out the monitoring program in accordance with regulations, procedures and policies of the Government and the WB, respectively. After the detailed implementation of the environmental monitoring programs was discussed by the MCC-TST and World Bank supervision staff, the IEMC will be responsible for quarterly checking, and for supporting the MCC-TST staff to supervise overall project activities to ensure that uniform environmental policies of the Government and World Bank are applied and supervised during project implementation. The IEMC will be responsible for: (1) Providing training and capacity building for construction management MCC-TST/ESTstaff, including field engineers and/or consultants (CSC), in supervising the ESMP implementation by the contractors; (2) Ensuring active participation of the local communities and schools in the project areas, (3) Monitoring of environmental parameters to assess the overall impacts of the project, and (4) Establish the environmental training program</p> <ul style="list-style-type: none"> – Ensuring that the approved ESMP and all other relevant project legal agreements related to environmental safeguards are fully applied and complied with during project implementation. – Assessing the effectiveness of mitigation measures which are applied by contractors and CSC during project implementation; providing proposals and recommendations to the MCC-TSTs on improvements needed to meet the safeguard requirements. – Reporting periodically (every 3 months) to the MCC-TSTs on actual ESMP performance during project implementation.

Organ	Roles and Responsibilities
	<ul style="list-style-type: none"> – Establishing standard procedures, methods and forms to assist the MCC-TSTs and CSC to assess contractors' progress in implementing the required impact mitigation and monitoring measures.
	<ul style="list-style-type: none"> – Assisting the MCC-TSTs' environmental staff to review and check that relevant environmental sections (based on the ESMP) have been included in the bid packages and construction contract documents to ensure compliance with environmental policies and impact mitigation and monitoring requirements.
	<ul style="list-style-type: none"> – Measuring, taking samples and monitoring periodically the key environmental parameters, i.e. once every 3 months.
	<ul style="list-style-type: none"> – Assistance with the preparation of documents and implementation of training programs in environmental monitoring and supervision for contractors, CSC and relevant staff of the MCC-TST (environmental staff and coordinators of contract packages).
	<ul style="list-style-type: none"> – Via MCC-TST, discussing with relevant enterprises, as necessary, to find suitable solutions for unexpected risks relating to environmental sanitation.

9.3. Institutional Arrangements and Reporting Procedures

MCC-TST, assisted by environment specialists, will be responsible for reviewing civil works contracts in accordance with the ESIA report; coordinating the implementation of the ESMP among the contractors, local environmental authorities (e.g., Ward Development Committees; monitoring the implementation of the ESMP and the civil works contracts in collaboration with NEMC and PO-RALG; and, preparing annual environmental progress reports.

The purpose of environmental and social monitoring is to quantitatively measure the environmental effects of the road project. The environmental monitoring program will operate through the pre-construction, construction, and operation phases. It will consist of a number of activities, each with a specific purpose, key indicators, and significance criteria.

The monitoring of mitigation measures during design and construction will be carried out by a Contractor's Environmental manager and Engineer's Environmental and Social Specialist. They will conduct mitigation monitoring as part of the regular works inspections. The weekly inspection will be undertaken by the Contractor's Environmental Manager. When available and appropriate the inspection will also be attended by Engineer's Environmental and Social Specialist, the main Contractors site management staff and their specialist advisors (WB Specialists etc). A weekly Environmental Compliance Report will be produced following each inspection and will incorporate any actions identified during any PO-RALG/World Bank inspections. The inspection report will summarize the status of the site's compliance, and include photographic records if appropriate. The reports will cover, among other matters as appropriate, the following:

- Contractor's compliance with mitigation measures
- Wastewater and environmental sanitation issues
- Traffic congestion or disruption
- Performance of the water supply systems
- Potential project-related risks and risk management issues
- Quality of water in streams crossing the project roads
- Consultation with local communities in key project areas

The responsibility for mitigation and monitoring during the operation phase will lie with the Environmental Section in Mwanza City Council. MCC-TST will provide PO-RALG and NEMC with reports on environmental compliance during implementation as part of their annual progress reports and annual environmental monitoring reports. Depending on the implementation status of environmentally sensitive areas of the project, NEMC will perform annual environmental reviews in

which environmental concerns raised by the project will be reviewed alongside project implementation.

9.4 Capacity Building Program

Proposed Training Programs

Table 9.3 provides examples of the basic training programs for safeguards during project implementation. The training programs will be developed and delivered by the Technical Assistance team for the implementation of safeguards for the MCC training. The MCC trained staff with the support of the Technical Assistance team for the implementation of safeguards will provide the training to contractors and other entities concerned.

Other more specific and tailored training will be developed and agreed upon between MCC and the Technical Assistance team for the implementation of safeguards during project implementation based upon a reassessment of needs and the status of safeguards implementation.

- *Target groups for the training:* MCC-TST, PO-RALG staff, Contractors and community representatives in the project area.
- *Training schedule:* at least 1 month before the construction of the first contract. The training can be adjusted in line with the implementation schedule of the subproject/contracts.

Training frequency: The basic training programs proposed in Table 8.3 will take place every six months on a yearly basis and its content updated and adapted to implementation issues. Training frequency and content will be reassessed during implementation depending on needs. It is foreseen that the training program for MCC staff will continue until year end of construction period. Three days of training for contractors are also planned to take place twice a year on an annual basis for at least two years.

Table 9.3: Training Programs for Capacity Building in Environmental Supervision and Management

Target Group	PO-LARG Staff and MCC Staff
Course Title	Environmental supervision, monitoring and reporting
Participants	Environmental staff and technical staff (Project Coordinator from PO-RALG, 20 MCC staff, 2 NEMC Staff, 2 Division of Environment Staff)
Training Frequency	Soon after project effectiveness but at least 1 month before start of construction of the first contract. Follow-up training will be scheduled as needed.
Time	Four days of training, to be held twice a year, and then to be repeated on a yearly basis until year three of implementation.
Content	General environmental management relating to the project, and covering the requirements of NEMC and WB; General aspects of environmental supervision; Implementation and supervision of mitigation measures; Community participation in environmental supervision monitoring; Guidance and supervision of contractors, Subcontractors and community representatives in the implementation of environmental supervision; Use of forms for environmental supervision; Risk response and control; Receipt and submission of reporting forms; and Other areas of training needs, as determined
Responsibilities	PO-RALG, MCC with support of the Technical Assistance team for the implementation of safeguards.
Target Groups	CONTRACTORS, SUB-CONTRACTORS, WARDS AUTHORITIES, COMMUNITY REPRESENTATIVES
Course Title	Implementation of mitigation measures
Participators	On-site construction management staff; environmental staff of contractors; ward/group authorities.

Training frequency	After bidding, and determine based on needs
Time	3 days of training for contractors and 2 days of training for others, to be repeated twice a year on an annual basis depending on needs
Content	<ul style="list-style-type: none"> • Overview of environmental monitoring; • Requirements of environmental monitoring; • Role and responsibilities of contractors • Scope and methods of environmental monitoring; • Response and risk control; • Propagate monitoring forms and guide how to fill in the forms and risk report; • Preparation and submission of reports • Other areas to be determined.
Responsibilities	PO-RALG, MCC with support of the Technical Assistance team for the implementation of safeguards
Target Groups	COMMUNITIES AND WORKERS
Course Title	Environmental sanitation and safety
Participators	Representatives of community and/or worker leaders (as appropriate)
Training frequency	As appropriate
Time	One-day presentation and one-day on-the job training twice a year, to be repeated on as needed basis
Content	Preliminary presentation on environmental protection and environmental overview Key issues that require communities' and workers' attention to minimize safety risks (roads, waterways, equipment, machines, open excavations, etc.) as well as reduce

	<p>pollution (dust, fumes, gases, oil/grease spills, waste management, etc.) Management of environmental safety and sanitation on work sites; Mitigation measures at construction sites; Safety measures on electricity, mechanical, transportation, air pollution; Procedures to deal with emergency situations; and Other areas to be determined.</p>
Responsibilities	Contractor and MCC

10.0 DECOMMISSIONING AND DEMOBILIZATION PLAN

10.1 Decommissioning

Decommissioning is not anticipated in the foreseeable future. However, if this will happen, may entail change of use (functional changes) or demolition triggered by change of land use.

10.2 Demobilization of the project

10.2.1 Introduction

Upon completion of the contracted work, the contractor shall remove all of its tools, materials and other articles from the construction area. Should the Contractor fail to take prompt action to this end, the City council at its option and without waiver of such other rights as it may have, upon sixty (60) calendar days' notice, may treat such items as abandoned property. The contractor shall also clean areas where he worked, remove foreign materials and debris resulting from the contracted work and shall maintain the site in a clean, orderly and safe condition.

Materials and equipment shall be removed from the site as soon as they are no longer necessary to minimize the demobilization work after completion of the project. Before the final inspection, the site shall be cleared of equipment, unused materials and rubbish so as to present a satisfactory clean and neat appearance. All the camp sites will be built as temporary structures and these will also include the use of movable structures such as movable containers. All the temporary structures will be demolished after accomplishing the contracted jobs.

10.2.2 Impacts of the Demobilization of project

- Loss of jobs
 - Air water and soil pollution
 - Noise pollution
 - Closing down of borrow pits
- **Loss of jobs**

The local population that will be employed in the project during construction of the road will lose jobs immediate after the closure of the project. The loss of jobs will have far reaching impacts.

Mitigation

Establish some small group business and SACCOS to assist people access loans to enable them run small businesses.

Monitoring

- The social response to the problem of unemployment
- Settlement pattern of people resuming their previous life after termination of work.

○ **Air, water and soil pollution**

During the demobilization movement of heavy duty equipment shall contribute to air pollution as the result of operation of the vehicles and equipment. This may also be accompanied by the soil and water pollution that might result from spillage of oil and fuel.

Mitigation

- Care shall be taken to prevent spillage on haul routes. Any such spillage shall be removed immediately and the area cleaned.
- The effects of the emission will be minimal due to intensified vegetative cover that will be provided in the area.

Monitoring

- Monitoring various parameters in air, water and soil such as CO₂, SO₂, Nitrate, Sulphates, Lead, oils and petroleum, hydrocarbons etc.

○ **Noise pollution**

The problem of the noise pollution caused by the demobilization will have little impact since this will be done once.

Mitigation

- Use machines with silencer or with low levels of noise.

Monitoring

- Monitor the levels of noise (dBA)

○ **Closing down of borrow pits and quarry site**

All the borrow pits and quarry site need to be reinstated to minimise the erosion problems, anaesthetically environments and creation of mosquito breeding stations.

Mitigation

- Back fill the borrow pits with top soils stockpiled along the project road
- Modify the borrow pits which doesn't present a threat of turning out to be breeding station of mosquitoes to a dam for collection of rainwater to be used as reliable water sources in the project areas.
- Replanting of vegetations on the banks of the borrow pits to minimise the erosion

Monitoring

- Soil erosion

- Conditions of the abandoned borrow pits
- Growth of the vegetation replanted on the borrow pits

It can be concluded that the primary objective of the demobilization exercise is to clean up the project site to a condition suitable for use by the community. All potentially harmful contaminants at the site will be thoroughly removed, treated and disposed of in an environmentally acceptable manner. With the implementation of the precautionary and mitigation measures recommended in the ESIA report, the demobilization of the project will comply with all environmental standards and legislation.

11.0 CONCLUSION AND RECOMMENDATION

The proposed additional investment subprojects in Mwanza City consist of road upgrading and road rehabilitation projects. The ESIA revealed that the upgrading/rehabilitation of the proposed roads are environmentally feasible and consistent with the socio-economic development plans of the City and the nation at large. It is anticipated that the project shall meet the expected needs for socio-economic development in the municipality, supports sustainable development.

Broad stakeholder's consultations have been done during scoping. The consulted community seemed very positive about the projects implementation and urged the municipality to contract competent contractors, and also involve the local community to enhance their sustainability.

A number of positive and negative impacts have been identified, and for each mitigations or enhancement measures have been provided. Positive impacts of the project include improved road accessibility, reduction of effects of floods and road related dust dispersion. Negative impacts include the normal construction related impacts such as air quality deterioration, water sources pollution, road accidents during the operation phase etc.

Impacts mitigation and enhancement measures have been estimated to cost UDS 44,100.00. Most of these impacts can be mitigated by the use of proposed strategies in the ESMP. Provisions in the ESMP will form part of the project contractors' contracts and the TST and their CSC will ensure that the contractors comply with the provisions of the contract, including those relating to environmental issues. In accordance with their contracts, in case of site-specific impacts, contractors will be required to prepare site-specific detailed designs and ESMPs. The site-specific ESMPs will be approved by the CSCs prior to the work commencing. Periodic monitoring reports will be prepared by independent environmental monitoring consultants and the results will be submitted to the World Bank and the Government.

To facilitate effective mitigation of impacts during operation, the project will also provide substantive support for capacitybuilding, including training courses, at the city level to ensure that the ESMPs will be implemented and their performance monitored.

Environmental monitoring will be carried out to ensure that the project activities will not create adverse impacts. The monitoring results will be periodically reported to the World Bank and the Government. The costs for monitoring of environmental parameters have been estimated at USD 29,500.000.

REFERENCES

- 1) Mwanza City Socio economic Profile 2008
- 2) Mwanza City Environmental Profile 2008
- 3) United Republic of Tanzania (2005), EIA and Audit Regulations
- 4) United Republic of Tanzania (2007), EIA Guidelines (Draft)
- 5) World Bank Operational Policy 4.01
- 6) United Republic of Tanzania (2010), Environmental and Social Impact Assessment for proposed Investment Sub-projects in Mwanza City under the proposed Tanzania Strategic Cities Project.
- 7) United Republic of Tanzania (2003), National Transport Policy, Dar es Salaam, Tanzania.
- 8) United Republic of Tanzania (2001), National Policy on HIV/AIDS, Dar es Salaam, Tanzania.
- 9) United Republic of Tanzania (2007), The Road Act, Dar es Salaam, Tanzania.
- 10) United Republic of Tanzania (2009), The Standards Act No. 2, Dar es Salaam, Tanzania.
- 11) United Republic of Tanzania (2008), The HIV and AIDS (Prevention and Control) Act, Dar es Salaam, Tanzania.
- 12) United Republic of Tanzania (1997). National Environmental Policy (1997), Dar es Salaam, Tanzania.
- 13) United Republic of Tanzania (2003). Construction Industry Policy (2003), Dar es Salaam, Tanzania.
- 14) United Republic of Tanzania (1995). Land Policy (1995) , Dar es Salaam, Tanzania.
- 15) United Republic of Tanzania (2002). National Gender Policy (2002), Dar es Salaam, Tanzania.
- 16) United Republic of Tanzania (1992). Energy Policy (1992), Dar es Salaam, Tanzania.
- 17) United Republic of Tanzania (2004). Environmental Management Act No. 20 (2004), Cap. 191, Dar es Salaam, Tanzania.

- 18) United Republic of Tanzania (2009). Water Supply and Sanitation Act No. 12 (2009), Dar es Salaam, Tanzania.
- 19) United Republic of Tanzania (2007). The Land Act, 1999. The Urban Planning Act (2007), Dar es Salaam, Tanzania.
- 20) United Republic of Tanzania (2003). Occupational Health and Safety (2003), Dar es Salaam, Tanzania
- 21) United Republic of Tanzania (2004). Employment and Labour Relations Act No. 6 (2004), Dar es Salaam, Tanzania.
- 22) United Republic of Tanzania (2007). Engineers Registration Act and its Amendments 1997, Dar es Salaam, Tanzania.
- 23) United Republic of Tanzania (1997). The Contractors Registration Act (1997), Dar es Salaam, Tanzania.
- 24) United Republic of Tanzania (1997). The Architects and Quantity Surveyors Act (1997), Dar es Salaam, Tanzania.
- 25) United Republic of Tanzania (2009). Public Health Act (2009), Dar es Salaam, Tanzania
- 26) United Republic of Tanzania (2000). The Tanzania Development Vision (2000), Dar es Salaam, Tanzania.
- 27) United Republic of Tanzania (2005). Impact Assessment and Auditing Regulations (2005), Dar es Salaam, Tanzania.
- 28) World Bank Operational Policy 4.01
- 29) PMO-RALG (2014) Tanzania Strategic Cities Project (TSCP) Environmental and Social Management Framework (ESMF) for the Proposed TSCP Additional Financing Project

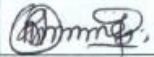



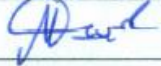
ANNEXES

ANNEX I: LIST OF STAKEHOLDERS CONSULTED

ESIA FOR PROPOSED ADDITIONAL SUB-PROJECTS IN MWANZA CITY UNDER THE TANZANIA STRATEGIC CITIES PROJECT (TSCP) STAKEHOLDERS CONSULTATION FORM

DATE	NAME	ORGANISATION	POSITION	CONTACT	SIGNATURE
20/11/2014	ENG. MATHENGE, T.N	MWANZA CC	Ag. CE	0754773882	
-u-	ENG. TUNGARAZA M.M	-11-	ROADS ENGINEER	0755 447913	
-11-	Eng. Hendry T. Mmbaga	-11-	RE-CompI (and)	0759508287	
-11-	Sospeter David Mtala	-11-	Community Develop	0754629642	
	Gastory Simon	Buhangwa Dump	Security Guard	0764973979	N. Saimon
-11-	Benedict B. Kabadi	WEO-Buhongwa	W.F. O.B.A.S	0752820266	
20.11.2014	SILVESTER .E. MABEYO	WEO-IGOGO	WEO-IGOGO	0765-545277	

ESIA FOR PROPOSED ADDITIONAL SUB-PROJECTS IN MWANZA CITY UNDER THE TANZANIA STRATEGIC CITIES PROJECT (TSCP)
STAKEHOLDERS CONSULTATION FORM

DATE	NAME	ORGANISATION	POSITION	CONTACT	SIGNATURE
21/11/2014	RENATUS J. SHINATI	LAKE VICTORIA BASIN WATER OFFICE	Ag. BASIN WATER OFFICER	BOX 1342 - MWANZA 0752 220142	
21/11/2014	S. M. HIZA	TANESCO	REGIONAL MANAGER	Box 8 Mwanza	
21/11/2014	J. K. Bwimbo	TICL	Assit. Manager	0732103440	
21/11/2014	f. Mugauala	Railway Stn Mz	Station Master	0754 382601	
do	MIRAJI MMBUKA	do	SUB PERMANENT WAY MASTER	0754 907005	
- 11 -	Eng MRAMBA, R. M	MWAUWASA	Assistant Manager Infrastructure Development	0754 907989	