

**ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR THE  
PROPOSED CONSTRUCTION OF ROADS AND DRAINAGE SYSTEM IN  
MOROGORO MUNICIPALITY-MOROGORO REGION**

**SUBMITTED TO:**

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## Report Control Form

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## **EXECUTIVE SUMMARY**

### **A. Project Title:**

Environmental Impact Assessment for The Proposed Construction of Roads and Drainage System in Morogoro Municipality-Morogoro Region

### **B. Project Proponent**

MOROGORO MUNICIPAL COUNCIL  
P.O.Box 166  
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### **C. Project Background**

The Government of the United Republic of Tanzania through The President's Office - Regional Administration and Local Development (PO-RALG) has received a credit from the World Bank towards implementing projects-financed Tanzania Cities Transforming Infrastructure and Competitiveness Project (TACTIC), which will be implemented through the President's Office - Regional Administration and Local Development (PO-RALG).

NORPLAN Tanzania Ltd was awarded the contract by PO-RALG to conduct; Feasibility Study, Urban Design, Detailed Engineering Design, Environmental and Social Due Diligence, Preparation of Cost Estimates and Bidding Documents for Urban Infrastructure Investments for Morogoro Municipal Council. Morogoro is among four (4) Municipalities under TACTIC-Zone 3.

Morogoro is a prominent intersection for both road and railway transportation systems for the entire country. The municipality is at the crossroads of two major highways that service the western, eastern, and southern parts of Tanzania, as well as the neighboring countries of Malawi and Zambia. Rapid growth and development have affected the public transportation sector in Morogoro.

The Municipality is faced with roads and drainages' infrastructural challenges that need immediate solution. Through TACTIC project, some of urban roads and drainage channels' subprojects have been selected for upgrading which include: Veta Kihonda Tungi – 11.4km, Muhimbili – 1.2km, Mjimwema 5.4km, Tubuyu II-2.4km, Mapande 0.5km roads and Anti Malaria, Kikundi and Barakuda drainage channels.

Improvement of urban roads under TACTIC goes in line with improvement of drainage channels to facilitate removal of storm water runoffs within the municipality that have the possibility of causing floods in the areas.

### **D. Subprojects' Specific Objectives**

The proposed urban roads' upgrading aims to provide improved, safer roads for all road-users and facilitate economic growth within Morogoro Municipality while drainage channels' improvement aims at alleviating communities from flood hazards.

### **E. Requirements for an ESIA**

This subproject falls under the list of projects requiring EIA pursuant to the First Schedule made under Regulation 6(1) of the Environmental Impacts Assessment and Audit Regulations, 2005 and Regulation 17 of its amendments of 2018. In terms of the EIA and Audit Regulations, 2005 read together with amendments of 2018. The proposed Upgrading of Roads and Drainage Systems falls under "Type A" projects, Section 9 "TRANSPORT AND INFRASTRUCTURE" which are mandatory to ESIA.

Also, the World Bank requires that all environmental and social risks and impacts of the subproject be addressed as part of the environmental and social assessment conducted in accordance with ESS1 – Assessment and Management of Environmental and Social Risks and Impacts.



#### **F. Estimated Project Cost**

The proposed upgrading of urban infrastructure for roads and drainage systems is estimated to cost approximately 20,443,626,794.60Tshs. This includes the cost for construction, purchasing materials, labour cost and all miscellaneous expenses subjected in the implementation of this subproject, PAPs' compensation, Environmental and Social Management and Monitoring and related activities.

#### **G. Subprojects' Location and Accessibility**

Morogoro Municipality is situated 195 Kms. to the West of Dar es Salaam, it is found on the lower slopes of Uluguru Mountains whose peak is about 1,600 feet above sea level. It lies between longitude 37° 40' East of the Greenwich and latitude 06° 49' south of the Equator. It is bordered by Morogoro Rural District Council on the East and the Uluguru Mountains on the North as well as Mvomero District Council on the West and Southern part. The proposed sites for roads and drainages fall in ten wards **Error! Reference source not found.** i.e. Mazimbu, Kihonda, Mafisa, Mbuyuni, Sultan Arae, Mji Mkuu, Tungi, Kingo, Mji Mpya and Mwembe Songo Wards.

#### **H. General Description of Drainage Systems**

The storm water drainage channels/systems are characterized with a number of features, some are common though they differ in terms of intensity of similarities from one to another. Most of the channels are unlined /earth channels exception is observed at Kikundi drainage which is mostly stone lined. Most of the channels have become disposal areas for both liquid and solid wastes.

Flowing waters during dry seasons in Anti-Malaria and Kikundi drains are mainly from sanitary uses including sewage. In addition, siltation is one of the key challenges on the performance of the channels.

#### **I. Key Components of the Proposed Roads' Subprojects**

A summary of the key components of the proposed urban roads' subprojects are described below. It should be noted at the outset that the exact specifications of the proposed project components have been described in the detailed engineering design phase.: Carriage Way, Shoulders, Pedestrian Walkways, Storm water Drains, Service Roads, Outlet Ditches, Side Ditches, Culverts, T/Y Junctions, Bus Bays, Road Signs and Crossings, Road Side Parking Lots, Road Lights

#### **J. Climate Change Adaptation Strategies**

The proposed roads under TACTIC should be resilient to climate change scenarios. Adaptation measures shall do so by:

- Protecting the road infrastructure from the impacts of climate change and,
- Ensuring that the road infrastructure does not increase the vulnerability of the surrounding area to climate change.

#### **K. Land Acquisition**

Upgrading of proposed roads and drainage systems shall be done within existing routes. The roads are within Municipal Roads' Reserves while drainage systems' way leaves/buffer zone are governed by Water Resource Management Act, 2019. Therefore, the proposed upgrading of urban infrastructure is not expected to be a cause of resettlement of people and properties.

#### **L. Required Permits**

Prior to the approval of the construction and eventual construction of the Project, it is necessary to obtain a number of authorizations and permits from local and central government authorities of

Tanzania, related to environmental issues, water abstraction, relocation of public utilities, resettlement.

## **M. Project Activities**

Planning Phase: During planning phase, different studies for the proposed subproject area were conducted including, Feasibility study, ESIA and RAP, preliminary engineering planning, final engineering planning and construction planning form the planning phase of the project.

Mobilization or Pre-Construction Phase: preparation of the proposed site shall follow by involving clearing of the site, when clearance is over, the site will be ready for receiving actual works.

Construction phase: The major construction activities include; Extraction and transportation of materials (gravel, sand, hard stones, aggregates, water and bitumen), Clearing the right of Right of Way (RoW) while leaving intact the trees which do not interfere with the construction, Formation of the approach roads embankment, establishment of sub-base and base, and road surfacing, Treating of old roads and temporary diversion

Demobilization Phase: Demobilization of temporary structures will be done for proper restoration of the site e.g. removing/spreading top-soils piled along the road, and removal of all temporary structures, Collect and disposer all wastes to the authorized dumpsite at Mafisa.

Operation and Maintenance Phase: The actual usage of the road and drainage system is expected to commence after the construction works. The Morogoro ‘TACTIC project zone 3 is under “Municipal Road” category and therefore will be directly managed by TARURA-Morogoro.

## **N. Policy, Administrative and Legal Frameworks**

The policies, laws, World Bank’s Environmental and Social Standards and International Conventions include:

### **National Policies**

National Environment Policy 1997, National Employment Policy 2008, National Land Policy, 1997, The Construction Industry Policy 2003, National Mineral Policy 2009, Human Settlement Development Policy 2000, National Water Policy 2002, National Forest Policy 1998, National Agriculture Policy 2013, Agriculture and Livestock Policy 1997, National Action Plan to end Violence against Women and Children (2017/18-2021/22), Policy on HIV/AIDS Policy 2001, National Energy Policy 2015, Women and Gender Development Policy 2000

### **Legal Framework**

Environmental Management Act No. 20 of (2004), Cap. 191, Public Health Act of 2008, Land Use Planning Act (2007), The Land Acquisition Act 196 Environmental Management Act (2004), Road Act (2007), Energy and Water Utilities Authority (EWURA) Act (2001), Water Resources Management Act No 11 of (2009), Mining Act 2010, Occupational Health and Safety Act (2003), HIV and AIDS (Prevention and Control) Act No. 28/08 (2008), Local Government Laws (Miscellaneous Amendments), No. 13 (2006), The Village Land Act (1999), (Identifying Considerations for Women), Land Act No. 2/04 (2004) e.t.c.

### **World Bank’s Environmental and Social Standards**

World Bank's Environmental and Social Framework and its components [Vision for Sustainable Development, World Bank Environmental and Social Policy for Investment Project Financing, and Environmental and Social Standards].

### **International Conventions**

The International Conventions/Treaties to be reviewed include: Convention on the Elimination of All Forms of Discrimination against Women, Equal Remuneration Convention, 1951 (No. 100), Labour Clauses (Public Contracts) Convention, 1949 (No. 94), Minimum Age Convention, 1973 (No. 138), Minimum Wage-Fixing Machinery Convention, 1928 (No. 26)

## **O. Biophysical Environment**

### **Temperature and Projection:**

Despite the variation of climatic conditions throughout the year the weather is attractive because of its high altitude. Morogoro experiences average daily temperature of 30°C degrees centigrade with a daily range of about 5°C (degrees centigrade).

Morogoro Municipality is continuing to experience hot weather extremes, currently is experiencing an average of 33.6°C with projected yearly slight increase, in 2040 hot extreme expected to attain 34°C. Highest hot extreme weather is and shall be experienced in the months of April.

Hot extreme is among the climate variable that will contribute to early aging of the bitumen and increase humidity to the atmosphere on the proposed urban roads.

### **Rainfall & Projection:**

The total average annual rainfall ranges between 821mm to 1505mm. Long rains occur between March and May and short rains occur between October and December each year. Despite the variation of climate conditions throughout the year, the climate is attractive due to its high altitude. Morogoro Municipality is experiencing two major rain seasons that include: the long rain season and short rain season.

From the analysis, the Municipality will experience an average of 1320mm rainfall in 2023 with continuous increase up to 1400mm in 2030. In comparison with the reference period of 1979-2005, the month of March, April and May will be experiencing an average rainfall increase.

### **Seismicity**

The earthquake hit Tanzania the Saturday, May 9, 2020 at 02:27 with a magnitude of 4.1. was felt in Morogoro. The epicenter is located at longitude 38.4182 and latitude -8.7248. 226.72 km from Ovalle. It occurred in Selous Game reserve, an average of 85km from Morogoro region boundary.

There is no record of recent seismic activities originating from Morogoro, the region is characterized with weak earthquakes and non-frequent.

Since the project area experiences weak and non-frequent earthquakes, no impact to the proposed infrastructure is expected.

## **P. Social Economic Environment**

### **Land use**

The upgrading of the project Roads and drainage systems in the Municipality will facilitate and attract development in the nearby areas of the subprojects. Therefore, influx of the people to the project corridor will be inevitable and thus the land use in some areas will be altered to commercial or residential purposes.

### **Population**

According to 2012 Population and Housing Census report, in the year 1988 Morogoro Municipal Council had a total population of 117,601; while in 2002 had a total of 227,921 people and in 2012 the Municipality had a total population of 315,866, of whom 151,170 were male and 164,166 females

Table 4-2. Moreover, it is further estimated that in 2020 the Municipality is estimated to have a total population of 409,565 people.

During the construction phase, the influx of people from various parts of Morogoro and nearby regions will slightly increase pressure on social services.

### **Economic Activities**

Morogoro Municipality is characterized with mixed economy that of agriculture and business. Like other urban settings the Municipality is a Central Business District (CBD) of Morogoro region characterized with agglomeration of off farm activities including business, small scale enterprises, office work, manufacturing industries of primary and secondary level and other domestic activities. Construction of urban roads will improve economic as will easily facilitate timely transportation people and goods and enhance per capital income.

### **Roads**

The level of roads' passability in the Municipality varies with road types based on standards, about 64.1 km of road are passable throughout the year, while 517.86 km are passable with some difficulties during rainy season.

Proposed upgrading of roads shall increase the length of tarmac road network in town and facilitate transportation services for people and goods.

### **Employment**

Morogoro Municipality has a total of 4,231 permanent employees supporting in providing services to community. Out of the total employees about 3,012 are female and 1,219 males. Some of these staff works at the head office while others in field offices.

The proposed urban infrastructure subproject shall employ an average of 150 people on top of current employment status, however; the employment shall be of short term i.e. construction period.

### **Child labour**

In Morogoro Municipality 5300 (3000 M and 2300 F) children were reported to have been engaged in child labor) children who were engaged in child labour (MOPSAPORG identification report 2015).

Construction activities under TACTIC project will likely attract child labour, as stipulated in Labour and Employment Act of Tanzania, a child above 14years of age can be employed with a condition not to be subjected to hazardous activities.

### **Gender-based violence (GBV)**

Recent GBV incidents with data on child abuse in Morogoro indicates that 155 cases has been reported for the year 2021 which is lower in comparison with Tanga (178) and Mbeya (162) reported respectively.

The proposed subproject shall involve equal opportunities for both male and female. Employment of women in infrastructure project is part of economic empowerment for them, however; this normally create tension to male workers and even violence and harassment e.t.c.

## **Q. Stakeholders Consultations and Public Involvement**

### **Stakeholders Identification**

The main stakeholders for upgrading of proposed urban infrastructure under TACTIC Project in Morogoro Municipality included; Regional Secretariat of Morogoro (RAS-Morogoro Region), TARURA, TANESCO-Morogoro Region, Regional Traffic Office-Morogoro Region, District Commissioner's Offices-;Morogoro District, Morogoro Municipal Council, TTCL-Morogoro

Regional Office, Wami/Ruvu Water Basin-Morogoro, MOROWASA, SOKOINE UNIVERSITY OF AGRICULTURE (SUA) and communities in 11 Wards located along the road (road users: bodaboda/bajaj drivers, traders, commuter bus drivers, cattle herders, people with disabilities, school children and teachers, women and children, religious leaders).

### **Public Meetings**

Public meetings were conducted in 10 streets/mitaa from 10 wards located along roads' sections. The number of participants was 367 for communities' consultations [See **Error! Reference source not found.**] and included local officials, community leaders, women, men, youth, children, the elderly, disabled people, different types of drainage and road users and groups representing community activities. The consultations were led by ESIA consultants with support from Municipal council staff and one member from the design team.

### **Consultative Meetings with Municipal Council, Regional Secretariat and Other Stakeholders**

Consultative meetings at Municipality and regional levels included discussions with districts' Council Management Team (CMT) which comprised of technical staff from all departments and regional officers. Stakeholders' meetings / interviews from other sectors included both managerial and technical staff.

The meeting also included members from: TARURA, TANESCO-Morogoro Region, Regional Traffic Office-Morogoro Region, District Commissioner's Offices, Morogoro Municipal Council, TTCL-Morogoro Regional Office, Wami/Ruvu Water Basin-Morogoro, MOROWASA, SOKOINE UNIVERSITY OF AGRICULTURE (SUA)

### **Summary of Key Findings from Stakeholders Consultation & Public Engagement**

From the engagement activities performed, stakeholders identified a number of issues that they anticipate from the proposed i.e (Veta-Kihonda-Tungi Road, Mjimwema Road, Tubuyu II Road, Baracuda Road) ii. (Kikundi Drainage, Anti Malaria drainage and Baracuda Drainge

These include the following:

- NGOs should provide awareness creation education about HIV/AIDS and GBV in the area
- The roads will reduce travelling costs to the societies and accelerate economic growth hence will improve social economic condition of the area;
- Realignment of road during design is needed at Veta-Kihonda road to reduce sharp corners
- Poor drainage system as results of heavy floods within the municipal
- The Municipal Council proposed to have storm water master plan
- To widen road alignment that will accommodate trucks, walking by foot and bicycles, parking areas and motorcycle
- The proposed road should have parking areas for vehicles at all business centres along the road;
- Storm water drains at street centers should be covered for safety purposes;
- Road safety signs should be in place throughout;
- Road crossings should be provided at all junctions to; residential areas, schools and other public institutions;
- High transportation costs shall be reduced after road's improvement;
- Road humps should be provided as speed calming measure at residential areas;
- Road signs which show an area designed for bodaboda parking;
- Poor roads' condition contributes to tear and wear of motor vehicles travelling this road;

- Tarmac road is durable and has longer life span to sustain movement trucks loaded with heavy cargo compared to gravel road;
- There should be road safety trainings before and after completion of the construction phase;
- Road signboards to indicate schools' locations;
- Water abstraction points for MOROWASA should not be disturbed by the contractor;
- Service ducts should be included in the design for existing water pipelines and future extensions;
- TANESCO and MORUWASA is ready to cooperate, the project should include related costs in the BoQ.

#### **R. Assessment of Environmental and Social Impacts**

Among the identified potential negative impacts include: Vibration and Noise Pollution , Poor Air Quality due to Emissions and Dust ,Solid and Liquid Waste Generation , Oil, Grease, Fuel spillage , Risk to increased incidences of diseases transmission including HIV/AIDS , Risk to Health and Safety , Soil and Water Pollution , Destruction of River Banks, Resettlement , Construction related Risk and Accidents and Traffic Impacts:, while positive impacts comprise of Employment during Construction ,Change of Land Use, Improved Local Socio-economy ,Improved Government Revenue through collected Taxes and revenues.

Based on the findings, it is evident that development of the proposed subproject shall be impacted by climate change scenarios i.e from extreme temperatures and rainfalls.

#### **S. Mitigation Measures**

The study has proposed various mitigation measures as outlined in chapter seven which includes provision of roads' visibility, safety markings and signs in the design as well as proper road design to withstand climate change scenarios, provision of water drainage structures with capacities to allow free flow of runoff from either side of the roads, safety and health trainings to the workers and communities and fair compensations among others.

#### **T. Summary and Conclusion**

The ESIA team has scrutinized the environmental and social implications of the proposed construction and/or upgrading of urban infrastructure (Roads at Kihonda,Mazimbu,Tungi and Mji Mwema ward and Drainage systems i.e Kikundi I&II and Anti Malaria )in Morogoro municipality, Tanzania.

The ESIA study was conducted to comply with the Environmental Management Act (2004) and was done in accordance with the ESA and Audit Regulations (2005). Stakeholder consultations were conducted during the study to encompass local government authorities, communities in the project neighbourhoods and interested parties. Standard methodologies for impact identification were used including checklist, matrix and professional judgment.

Among the potential negative impacts included Vibration and Noise Pollution , Poor Air Quality due to Emissions and Dust ,Solid and Liquid Waste Generation , Oil, Grease, Fuel spillage , Risk to increased incidences of diseases transmission including HIV/AIDS , Risk to Health and Safety ,Land Scarring at Borrow Sites , Soil and Water Pollution , Destruction of River Banks Vegetation and Aquatic Flora and Fauna , Destruction of Adjacent Land Use and Properties ,Loss of Properties close to the Project Sites , Destruction of Terrestrial Vegetation , Construction related Risk and Accidents and Increased risk of traffic related road accidents:, while positive impacts comprised of Employment during Construction ,Change in the Original Land Use, Scenic and Visual Quality ,Improved Local Socio-economy ,Improved Government Revenue through collected Taxes.

Based on the findings, it is evident that development of the proposed subproject shall be impacted by climate change scenarios i.e from extreme temperatures and rainfalls as described in chapter 2 of this ESIA. The study has proposed various mitigation measures as outlined in chapter seven which includes provision of road's visibility, safety markings and signs in the design as well as proper road design to withstand climate change scenarios, provision of water drainage structures with capacities to allow free flow of runoff from either sides of the roads, safety and health trainings to the workers and communities and fair valuation among others.

However, in order to ensure climate resilience for the proposed urban infrastructure, climate adaptation measures as described in chapter 2 have been incorporated into the designs of both roads and drainage channels.

The study concludes that a number of environmental impacts have been identified and assessed; none of these are considered to be that severe after mitigation as to prevent the further planning, design and construction of the proposed subproject. Thus, the subproject development in the area can be considered suitable subject to the implementation of the mitigation measures as indicated in the Environmental and Social Management Plan.

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## LIST OF ABBREVIATIONS AND ACRONYMS

AI	Area of Influence
AIDS	Acquired Immune Deficiency Syndrome
DC	District Council
DED	District Executive Director
DIZ	Direct Impact Zone
ESIA	Environmental & Social Impact Assessment
EMA	Environmental Management Act
ERB	Engineering Registration Board
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
GOT	Government of Tanzania
HIV	Human Immunodeficiency Virus
MOW	Ministry of Works
NACP	National HIV/AIDS Control Programme
NEMC	National Environmental Management council
PLHAS	People Living with HIV/AIDS
RAP	Resettlement Action Plan
RAS	Regional Administrative Secretary
ROW	Right of Way
TACAIDS	Tanzania Commission for AIDS
TANESCO	Tanzania Electric Supply Company
TC	Town Council
URT	United Republic of Tanzania
MORUWASA	Morogoro Urban Water Supply and Sanitation Authority





## **ACKNOWLEDGMENTS**

All the efforts entailed in the preparation of this report were inputs from subproject's communities, government institutions and experts from different professions.

Thanks to all TATIC Project's stakeholders from Morogoro Municipal Council Morogoro Region Secretariat, other government institutions [MORUWASA, Wami/Ruvu Basin, TTCL, TANESCO, TARURA e.t.c] and communities' associations who participated in various institutional and public consultation undertakings during the gathering of information for this ESIA study.

Special thanks should go to communities around the proposed subproject who took time off their busy schedules to participate in various communities; engagement meetings.  
Lastly, thanks to all who wittingly or unwittingly contributed to the smooth completion of ESIA study.

### STUDY TEAM

Name	Position	Signature
Eng. Nanai K Nanai	Environmental and ESIA Team Leader NEMC/EIA/0086	
Eng. Makoye Kapera	Environmental	

# **1 INTRODUCTION**

## **1.1 Project Background**

The Government of the United Republic of Tanzania through The President's Office - Regional Administration and Local Development (PO-RALG) has received a credit from the World Bank towards implementing projects-financed Tanzania Cities Transforming Infrastructure and Competitiveness Project (TACTIC), which will be implemented through the President's Office - Regional Administration and Local Development (PO-RALG).

NORPLAN Tanzania Ltd was awarded the contract by PO-RALG to conduct; Feasibility Study, Urban Design, Detailed Engineering Design, Environmental and Social Due Diligence, Preparation of Cost Estimates and Bidding Documents for Urban Infrastructure Investments for Morogoro Municipal Council. Morogoro is among four (4) Municipalities under TACTIC-Zone 3.

Morogoro is a prominent intersection for both road and railway transportation systems for the entire country. The municipality is at the crossroads of two major highways that service the western, eastern, and southern parts of Tanzania, as well as the neighboring countries of Malawi and Zambia. Rapid growth and development have affected the public transportation sector in Morogoro.

The Municipality is faced with roads and drainages' infrastructural challenges that need immediate solution. Through TACTIC project, some of urban roads and drainage channels' subprojects have been selected for upgrading which include: Veta Kihonda Tungi – 11.4km, Muhimbili – 1.2km, Mjimwema 5.4km, Tubuyu II-2.4km, Mapande 0.5km roads and Anti Malaria, Kikundi and Barakuda drainage channels.

Improvement of urban roads under TACTIC goes in line with improvement of drainage channels to facilitate removal of storm water runoffs within the municipality that have the possibility of causing floods in the areas.

## **1.2 TACTIC Project's Objectives**

The objective of the proposed TACTIC project is to strengthen urban management performance and deliver improved basic infrastructure and services in participating urban local government authorities. At its core, the project aims to promote economic development of Tanzania's cities and towns and its enabling infrastructure. Investments and technical assistance under the project are intended to promote urban development that is productive, inclusive and resilient. The project will support 45 urban Local Government Associations (LGAs) spread geographically across all regions of Tanzania, ranging in population from 26,402 to 416,442 (2012), divided into three tiers based on population and growth rate



Figure 1-1: Location Map for Morogoro Municipality  
Source: Sara J. Marks, Feb-2016

### 1.2.1 Subprojects' Specific Objectives

The proposed urban roads' upgrading aims to provide improved, safer roads for all road-users and facilitate economic growth within Morogoro Municipality while drainage channels' improvement aims at alleviating communities from flood hazards.

### 1.2.2 Details of Proponent

**Table 1-1: Presents the Details of the Proponent**

Name of the Proponent	PO-RALG
Contact Person(s)	Eng. Mboka Macknon Nkwera
Official Address	mmacknon@gmail.com
Physical Address	P.O.Box 6549 Morogoro

### 1.2.3 Details of the Environmental Assessment Practitioner

In order to facilitate the assignments, PO-RALG has commissioned NORPLAN Tanzania Ltd to carrying out Feasibility Study, Urban Design, Detailed Engineering Design, Environmental and Social Due Diligence, Preparation of Cost Estimates and Bidding Documents for Urban Infrastructure Investments for Morogoro Municipality. NORPLAN Tanzania Ltd a Registered Environmental Expert Firm through registered experts has carried out the ESIA studies team comprised of multidisciplinary experts as shown in the Table 1-2.

**Table 1-2: Members of the team**

<b>Name of Consultant</b>	<b>Position</b>
Nanai K Nanai	Registered Environmental Impact Assessment Expert
Eng. Kapera Makoye	Environmental Engineer
Mr. Joseph Mpongo	Sociologist

### **1.3 Requirements for an ESIA**

This subproject falls under the list of projects requiring EIA pursuant to the First Schedule made under Regulation 6(1) of the Environmental Impacts Assessment and Audit Regulations, 2005 and Regulation 17 of its amendments of 2018. In terms of the EIA and Audit Regulations, 2005 read together with amendments of 2018. The proposed Upgrading of Roads and Drainage Systems falls under “Type A” projects, Section 9 “TRANSPORT AND INFRASTRUCTURE” which are mandatory to ESIA.

Also, the World Bank requires that all environmental and social risks and impacts of the subproject be addressed as part of the environmental and social assessment conducted in accordance with ESS1 – Assessment and Management of Environmental and Social Risks and Impacts.

### **1.4 ESIA Study Objectives**

- Establish before a decision is taken by any person, authority, corporate body or unincorporated body including the Government and local government authorities intending to undertake or authorize the undertaking of any activity impacts that may likely or to a significant extent affect the environment or have environmental effects on those activities;
- Promote the implementation of the Act and all laws and decision-making process through which the goal and objective in paragraph (a) may be realized;
- Encourage the development of procedure for information exchange, notification and consultation between organs and persons when a proposed activity is likely to have significant environmental effects on transboundary or an environment bordering regions, districts, municipalities, towns and villages;
- To ensure that environmental considerations are explicitly addressed and incorporated into the development decision making process;
- To anticipate and avoid, minimize or offset the adverse significant biophysical, social and other relevant effects of development proposal;
- To protect the productivity and capacity of natural systems and the ecological processes which maintain their functions; and
- To promote development that is sustainable and optimizes resources use and management opportunities.

### **1.5 Scope of the Study**

The scope of the study includes carrying out of environmental investigations in line with current provisions on environmental legislations. This has been done in line with the requirements of Environmental Management Act (EMA) 2004 and Environmental (Impact Assessment) and Audit

regulations 2005 and its subsequent regulation of 2018. In addition, ESIA study shall also use World Bank's Environmental and Social Standards and relevant international conventions ratified by Tanzania. The report is aimed at analyzing the physical extent of the subproject site and its immediate environment, implementation works of the proposed development and installation of key utilities and other facilities required for the subproject to function optimally. To mention few the study aim at

- To identify, predict, evaluate and mitigate the significant environmental impacts (positive and negative)
- To identify key social issues relevant to the subproject objectives, and specify the project's social development outcomes
- To predict and assess in quantitative terms as far as possible, the impacts from changes brought about by the subproject on the baseline environmental conditions.
- To establish the mitigation measures that are necessary to avoid, minimize or offset predicted adverse impacts and, where appropriate incorporate these into Environmental and Social Management Plan (ESMP)
- To identify stakeholders who are directly affected and carry out stakeholder analysis to determine their role in achieving social development outcomes.
- To inform, consult and carry out dialogues with stakeholders on matters regarding project design alternatives, implementation of environmental and social mitigation measures and to provide recommendations on project design that may require adjustments in project design
- To develop monitoring and evaluation mechanism to assess effectiveness of mitigation measures including, resettlement outcomes during and after project completion.

## **1.6 Approach Methodology**

The methods applied in conducting an ESIA for proposed upgrading of road and drainage system in Morogoro Municipal council are: -

### **1.6.1 Stakeholders' Consultations**

The stakeholders were identified to obtain the boundary for ESIA consultation process which among others included communities near the proposed subproject, Mtaa and Ward leaders Municipal Council Technical Staff/Council's Managements Team (CMT), Regional Secretariat and other government's institutions as described in chapter 5 of this report.

The transparency, equate and participatory public consultation was the basic root of the ESIA process in obtaining their views and finding out issues of concern.

### **1.6.2 Information Acquisition**

Various previous reports and studies, legislatives, plans, policies, World Bank's Environmental and Social Standards [ESS1-ESS10] and guidelines were reviewed to acquire relevant information regarding social, cultural, economic, biological and physical and used as secondary information/data.

### **1.6.3 Site's Studies**

During site visit on December 2021, different studies on the proposed subproject area were conducted in the following aspect of the environment:

### **1.6.3.1 Air Environment**

Ambient air quality monitoring/measurement for 24-hourly average background concentrations of PM, RPM (size <10 µm), SO<sub>2</sub>, O<sub>3</sub>, NO<sub>2</sub> and CO.

### **1.6.3.2 Noise Environment**

Establishing existing status of noise levels in residential, commercial areas and silence zones within the block area of proposed subproject.

### **1.6.3.3 Vibration**

Vibration level were recorded by using digital vibration meter. On taking measurements the device was set to velocity mode and the probe placed on the ground.

## **1.7 Project Boundaries**

Identification of boundaries, within which the study is undertaken, is an important component of the study. There are three types of boundaries that are considered in this ESIA study: institutional, temporal and spatial boundaries.

### **1.7.1 Institutional Boundaries**

Institutional boundaries refer to those institutions and sectoral boundaries in which the project lies or interacts. These can be determined from political boundaries, Acts, regulations and institutional mandates and administrative structures. The proposed development is about Road and Storm channels construction. This proposed development touches the interest of many people and administrative units in relation to several policies, laws and plans, and the overall President's Office, Regional Administration and Local Government, particularly Morogoro Municipal Council. All these institutions were consulted in this EIA study.

### **1.7.2 Temporal Boundaries**

Temporal boundaries refer to the lifespan and reversibility of impacts. For example, the impact of construction work for the project may be short-lived, but the presence of the constructed facilities may have implications that stretch far into the future. Therefore, some of the impacts that may occur during construction, e.g. noise caused by construction works at site will disappear as soon as the construction phase is completed. The construction period will last for at least 3 years while the operational phase is designed for 50 years unless unforeseen events occur.

### **1.7.3 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. Two zones of impacts namely Core Impact Zone and Influence Impact Zone are considered.

**The Core Impact Zone** – It is also known as the Direct Impact Zone (DIZ) and is defined as the project area where the project impacts are likely to directly affect the existing biophysical and socio-economic components. The core impact zone includes the area immediately bordering the project sites i.e Tungi Kihonda and Mazimbu Ward for roads and Mafisa ,Mwembesongwo ,Mtawala, Mjimpya, Mbuyuni, Sultan Area,Mji and Mkuu,Kingo,Mazimbu for drainage systems.

**The Influence Impact Zone** - It is also known as, the Area of Influence (AI) and is defined as the area beyond the DIZ where the project impacts are likely to indirectly affect the biophysical and socio-economic components. This includes the area beyond 500m from the proposed sites (The bordering streets and Morogoro Municipality as a whole).

## **1.8 Estimated Project Cost**

The proposed upgrading of urban infrastructure for roads and drainage systems is estimated to cost approximately 20,443,626,794.60Tshs.This include the cost for construction, purchasing materials, labour cost and all miscellaneous expenses subjected in the implementation of this subproject, PAPs' compensation, Environmental and Social Management and Monitoring and related activities.

## **1.9 Assumptions of the Study**

- The study assumes that the respondents provided information that are reliable on the implementation of the subproject;
- The study assumes that the Design Team shall incorporate ESIA mitigations into the design of Roads and Drainage System; and
- The study also assumes that the subproject contractor will fully adhere to ESMP
- The design, construction and operation will satisfy minimum environmental and social standards, consistent with current World Bank's ESF, legislation, best practice and knowledge at the time of development.

## **1.10 Report Structure**

This report is divided into Eleven (11) chapters:

- **Chapter One:** contains the introduction on the background information of the proposed subproject, its development objectives, rationale and the proposed subproject implementation arrangements.
- **Chapter Two:** contains the subproject description, in which there is a description of the location and relevant components of the subproject and their activities.
- **Chapter Three:** illustrates policy, legal and administrative framework, which are the relevant Tanzanian environmental policies and legislation applicable to construction projects.
- **Chapter Four:** has the baseline information relevant to environmental characteristics, which gives details concerning the Bio-physical environment and socio-economic environment at the project area.



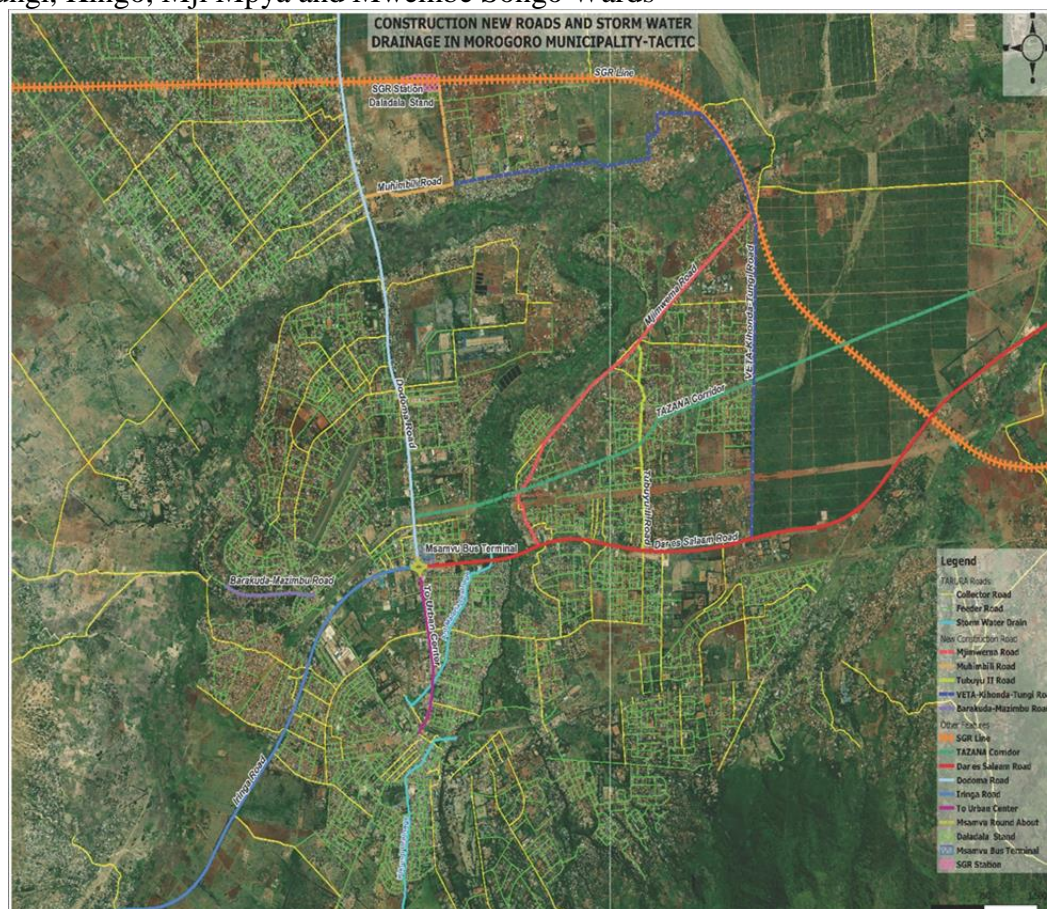
- **Chapter Five:** express the consultation exercise at the project area detailing the list of stakeholders consulted and the issues raised.
- **Chapter Six:** describes the positive and negative environmental impacts of the project that are likely to be generated from the different phases (the planning and designing, construction, operation and maintenance and the demobilization phases).
- **Chapter Seven:** presents the Environmental and Social Management Plan (ESMP).
- **Chapter Eight:** presents the Environmental Monitoring Plan that contains the proposed institutions to carry out the monitoring activities, the monitoring indicators, time frame and the proposed budget for monitoring.
- **Chapter Nine:** gives the cost benefit analysis of the subproject.
- **Chapter Ten:** provides the decommissioning plan for the proposed subproject however the decommissioning is not anticipated in the foreseeable future.
- **Chapter Eleven:** gives the summary and conclusions of the study

Report structure conforms to that specified on sections 18(2) and 19(1)&(2) of the Environmental Impact Assessment and Audit Regulations, 2005. . Appendices containing some key primary information collected during the study are attached at the end of this report

## 2 PROJECT DESCRIPTION

### 2.1 Subprojects' Location and Accessibility

Morogoro Municipality is situated 195 Kms. to the West of Dar es Salaam, it is found on the lower slopes of Uluguru Mountains whose peak is about 1,600 feet above sea level. It lies the between longitude 37° 40' East of the Greenwich and latitude 06° 49' south of the Equator. It is bordered by Morogoro Rural District Council on the East and the Uluguru Mountains on the North as well as Mvomero District Council on the West and Southern part. The proposed sites for roads and drainages fall in ten wards see Picture 2-1 **Error! Reference source not found.** i.e. Mazimbu, Kihonda, Mafisa, Mbuyuni, Sultan Arae, Mji Mkuu, Tungi, Kingo, Mji Mpya and Mwembe Songo Wards



Picture 2-1: Subproject Locations in Morogoro Municipal Council

Source: Norplan, 2022

### 2.2 Nature of Subproject and Its Components

The proposed subprojects involve the improvement of drainage systems and urban and Roads in Morogoro Municipality. The ESIA study was conducted based on the subproject components identified in the inception report by consultant and subsequent reviews PO-RALG. All these components were assessed

and sites' visits were conducted. The components of this subproject include five (5) Roads see Picture 2-9 and two (2) Drainage Systems as described in subsequent sections.

## 2.3 Condition of Existing Roads

The visits conducted to the subproject's sites revealed that the subproject roads are not connected thus fall under separate Wards within Morogoro Municipality. Selected Roads carries different characteristics that shall need to be considered during design period. Considering scope of the assignment, studies were done on the selected Roads as indicated in the Table 2-1

**Table 2-1: Proposed Road to be Constructed In Morogoro Municipality**

Sn	Road	Kilometer	Wards
1	Veta Kihonda Tungi	11.4	Tungi
			Kihonda
2	Muhimbili	1.2	Kihonda
3	Mjimwema	5.4	Tungi
4	Tubuyu II	2.4	Tungi
5	Mapande	0.5	Mazimbu
Total		21.5	

Source: Field Data, December 2021

### 2.3.1 Veta – Kihonda - Tungi Road

The proposed road section has a total length of 11.4 km with an average carriage way width of 7m. The road start at T Junction of Morogoro – Dodoma Road and ends to Kihonda area. Generally, the existing riding surface is an engineered gravel and the existing profile is friendly with no abrupt change in longitudinal elevations. The observations made, spotted sections of the road with poor geometry i.e. with sharp corners and low lying grounds which tend to flood during rainy seasons. Observations along the stretch of the Roads noted that the Road passes through number natural and manmade features such as SGR line, Ngerengere River, Houses, Farms, MORUWASA and TANESCO utilities as well as other facilities as indicated on

Picture 2-2





Ngerengere River on the Left and SGR Right



TANESCO power line

**Picture 2-2: Existing Veta – Kihonda - Tungi Road Condition**

Source: Site Pictures, December 2021

### **2.3.2 Muhimbili Road**

The proposed road section has a total length of 1.2 kilometers with an average carriage way width of 6m and connects to Veta Kihonda Tungi Road. Existing road surface is an engineered gravel/earth surfaced and in moderate condition with changing longitudinal elevations. It starts from T-Junction of Veta – Kihonda - Tungi Road and End up at SGR station. Muhimbili Road passes through Kihonda Ward, residential buildings, Shops, school, TANESCO power line and water pipeline on the left hand side towards SGR station. The road is adjacent to an open space owned by Magereza on the right-hand side which has also been proposed for construction of Commuter Bus Stand. See Picture 2-3



**Picture 2-3: Condition of Existing Muhimbili Road**

Source: Site Pictures, December 2021

### **2.3.3 Mji Mwema Road**

Mji Mwema Road is 5.00 kilometers long and start from SGR (Point M2) connects to Morogoro - Dar es salaam Road (Point M1) as shown on Picture 2-4. Existing Road surface is an engineered gravel/earth in fair. Mji Mwema Road passes through Tungi Ward. It crosses residential buildings, Shops and TANESCO electrical Transmission line on both sides towards Dar es salaam-Morogoro Road See Picture 2-4 and Picture 2-5



**Picture 2-4: Mji Mwema Road from SGR to Dar es salaam Road**

Source: Norplan- December 2021



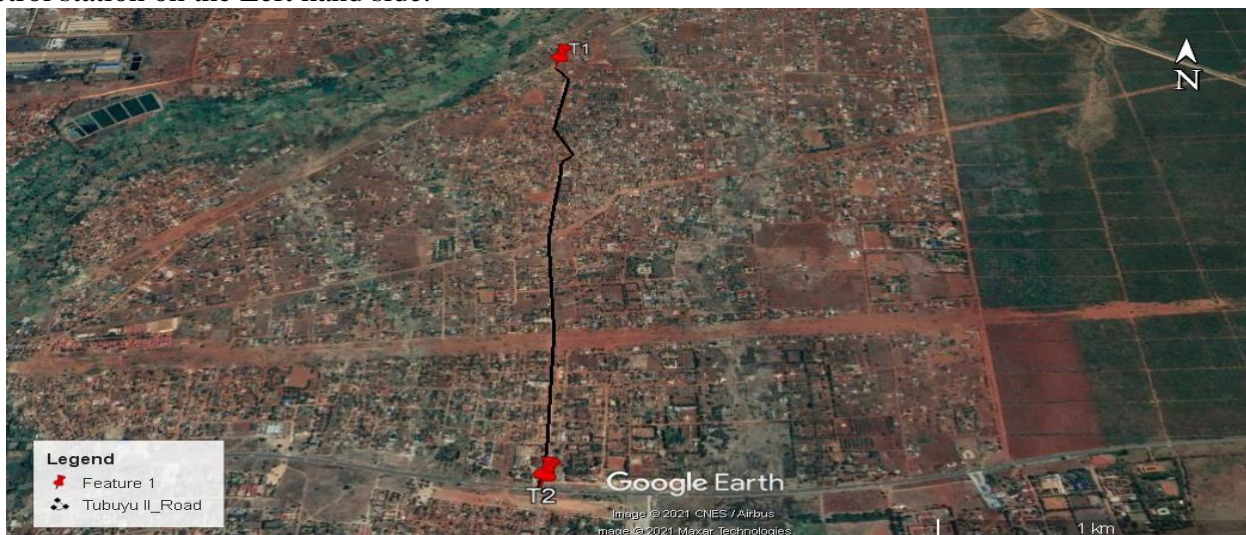
**Picture 2-5: Condition of Existing Mjimwema Road**

Source: Site Pictures- December 2021



### **2.3.4 Tubuyu II Road**

Tubuyu II Road is 2.4 kilometers long and start from Mji Mwema T Junction (Point T1) connects to Dar es salaam-Morogoro Road (Point T2) as shown in Figure 2-6and Picture 2-7. Existing road surface is an engineered gravel/earth with moderate condition. Tubuyu II Road passes through Tungi Ward, along the Tubuyu II Road there are residential building, Shops, TANESCO High voltage Power Line, Market and petrol station on the Left hand side.



**Figure 2-6: Tubuyu II Road from Mji Mwema T Junction to Dar Es Salaam Road**

Source: Norplan – December



**Picture 2-7: Condition of Existing Tubuyu II Road**

Source: Site Pictures- December 2021

### **2.3.5 Mapande Road**

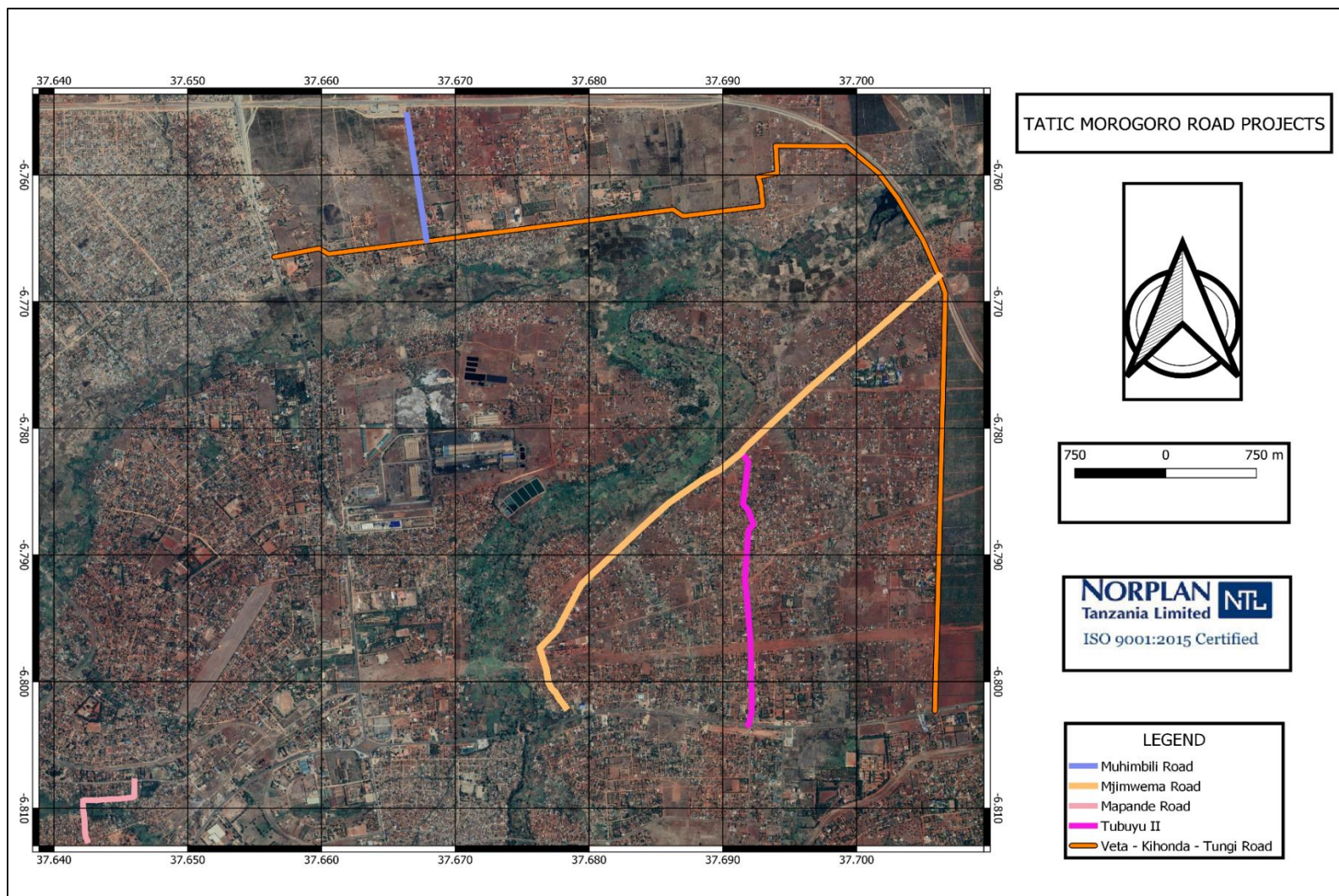
The proposed road section has a total length of 0.500kilometers with an average carriage way width of 7meter, start from stream (that drain its water to Ngerengere River) and connects to Chamwino gravel road to Iringa Road. It is a gravel/earth surfaced road with moderate condition. Mapande Road passes through Mzimbu and Chamwino Wards, along the Mapande Road there are residential buildings, water pipe line and Shops on both sides, Mosque on the Right Hand Side as it leads to the Iringa Road.see Picture 2-8



**Picture 2-8: Condition of Existing Mapande Road**

Source: Site Pictures - December 2021





**Picture 2-9: Morogoro TATIC Project Roads**  
Source: Norplan - December



## 2.4 General Description of Drainage Systems

The storm water drainage channels/systems are characterized with a number of features, some are common though they differ in terms of intensity of similarities from one to another. Most of the channels are unlined /earth channels exception is observed at Kikundi drainage which is mostly stone lined. Most of the channels have become disposal areas for both liquid and solid wastes.

Flowing waters during dry seasons in Anti-Malaria and Kikundi drains are mainly from sanitary uses including sewage. In addition, siltation is one of the key challenges on the performance of the channels. The drainage channels cross different wards as shown in Table 2-2

**Table 2-2: List of Proposed Drainage Channels for Upgrading**

Sn	Drainage	Length (km)	Wards
1	Ant-Malaria	1.0	Mafisa
			Mwembesongwo
			Mtawala
			Mjimpya
2	Kikundi	1.45	Mbuyuni
			Sultan Area
			Mji Mkuu
			Kingo
3	Barakuda	1.5	Mazimbu

Source: Field data December, 2021

Bare riparian zones for the channels contribute to siltation during rain seasons, exception is observed at Kikundi drainage which is less inhabited and has some riparian vegetation which act as a buffer between channel and human activities. On the lower areas where the channels drain there are gardens for vegetables which are irrigated using the storm water especially along Anti malaria drain.

Mostly, these channels also are found in slums /unplanned settlements and thus no standard way leave since some structures have been built close to the channel.

Nevertheless, the subproject will not involve acquisition of new land and hence construction/rehabilitation will be undertaken within the existing and defined area of the drainage channels. Specific description of each channel is covered hereunder; -

### 2.4.1 Baracuda Drainage

Baracuda drainage is located in Mazimbu ward in Morogoro Municipality and it drains towards sub catchment of Ngerengere River which flows towards the Ruvu River. It starts from Iringa Road and Mazimbu area, unlined channel's length of 650 meters passes through Baracuda residential area. The project will involve construction of the 650 meter to ensure the entire drainage is concrete lined.

Along the road sections, various drainage structures were observed including pipe culverts and box culverts of varying sizes. Baracuda drainage receives water from three trapezoidal channel along Modeco Road as shown in Picture 2-10



**Picture 2-10: Existing Drainage System at Baracuda alone Modeco Road**

Source: Site Pictures - December 2021

### **2.4.2 Kikundi Drainage**

Kikundi Drainage collects storm water runoffs from the Mzingwi and drains into the Ngerengere River. 1.00-kilometer section of the Kikundi drainage channel had been upgraded, another 1.45-kilometer section ending at kikundi road is proposed for upgrading. The drainage passes through residential. The drain has temporary bridge used for crossing, water and sewerage pipes cross the drainage. During field study, the team of experts witnessed various solid wastes dumped into the drain that obstruct water flows as shown in Picture 2-11



**Picture 2-11: Solid Wastes and Vegetation along the Drainage Section**

Source: Site Pictures - December 2021

### **2.4.3 Anti-Malaria Drainage Channel**

Anti-Malaria drainage channel collects storm water runoff from Uwanja wa taifa, Kiwanja cha Ndege and Sabasaba Street and drains it into the Morogoro River. The drainage crosses human settlements, Rail, gardens, Garage, Shops and Industrial Area. Ant Malaria ends at area where there farming activity, during rainfall will result to the swamping of the area hence thus section where ant malaria ends should be constructed and connected direct to the Morogoro river

Temporary bridge has been installed from daily crossing between sides. Sewerage pipe was observed along the drainage system/channel as shown Picture 2-12. In addition, people use water from the drainage channel for watering gardens and car washing.

Disposed solid wastes into the drain were observed which obstruct flowing water and reduce efficiency of the channel.





**Picture 2-12: Sewer network along Ant Malaria Drainage System**

Source: Field Data December 2021

## **2.5 Interventions on Proposed Drainage Channels**

Proposed drainage systems shall require completely new constructions. That's includes construction of new lined drains with varying width and depths along the channels. From the study taking into account upstream lined drains' designs and catchment assessment, it is expected that; -

- i. Proposed construction shall increase depth and width of the drains;
- ii. Drains shall be built with natural stones i.e. gabions/riprap and side embankments protection for the adjacent roads and settlements;
- iii. Proposed construction shall design drain that direct storm water to the channel away from houses
- iv. Some of the drainage section where there are excessive encroachments will require special designed flood control dykes /bounds for embankments protection (Erosion Prevention) and adjacent settlements.

## **2.6 Key Components of the Proposed Roads' Subprojects**

A summary of the key components of the proposed urban roads' subprojects are described below. It should be noted at the outset that the exact specifications of the proposed project components have been described in the detailed engineering design phase.

- Carriage Way
- Shoulders
- Pedestrian Walkways
- Storm water Drains
- Service Roads
- Outlet Ditches
- Side Ditches
- Culverts
- T/Y Junctions
- Bus Bays
- Road Signs and Crossings
- Road Side Parking Lots
- Road Lights

## **2.7 Proposed Road Design Standards**

The roads to be rehabilitated under this project are all urban roads and have been designed to a maximum speed limit of 50kph or less in accordance with current legislation. The normal highway criteria for horizontal and vertical curves, sight distances and super elevation etc. based on design speed have somehow been compromised under this situation.

However, the geometric design criteria adopted for the road is based on the guidelines contained in the Road Design Manual of the Ministry of Works, (2011 edition). The design has also been aided by our in-house computer facilities using AutoCAD Civil 3D software.

Pavement design has been carried out according to the Ministry of Works' Pavement and Materials Design Manual (1999).

### **2.7.1 Geometric Design**

#### **2.7.1.1 General**

Geometric design is the process whereby the layout of the road in terrain is designed to meet the needs of the road users. The principal geometric features are the road cross section, horizontal alignment and vertical alignment. The use of geometric design standards fulfils three inter-related objectives. Firstly, standards are intended to provide minimum levels of safety and comfort for drivers and pedestrian by the provision of adequate sight distance, road space for vehicle maneuvers; Secondly, they provide the frame work for economic design; and thirdly they ensure consistency of alignment. The design standards adopted taking into account the environmental road conditions, traffic characteristics and driver behavior.

#### **2.7.1.2 Horizontal Alignment**

After careful study and review of the project proposed roads, the Consultant came to conclusion that:

The alignment of the existing road is generally acceptable all along the roads and thus has been followed in principle. The positioning of the road centerline and intersection point was guided by the existing road alignment since most of the roads are existing and traverses the surveyed areas/ plots. The intention was to try to centralize the road within the Right of Way (RoW) in case the existing road centerline is mainly on one side of the RoW and existing beacons are also available.

Most of the roads are within the built-up areas and most sections of the project roads satisfy the requirements of satisfactory horizontal alignment with minor improvement, safety and aesthetics for the selected design speeds. Minor modifications have also been required to suit drainage, intersections, to save utilities and properties but these do not affect the geometric standards of the road. Obviously being urban roads, many intersections have been designed to serve the link streets/roads.

Normally, selection of the horizontal alignments for design of roads takes into consideration the following:

- Horizontal alignments follow the existing road corridor (available space) and minimize properties to be affected;
- Horizontal alignments match existing alignments including the intersections;
- Minimization of earthworks;
- Maximization of re-use of the existing road formation; and
- Compliance to the minimum requirements of design standards.

### 2.7.1.3 Vertical Alignment

Design speed is one of the crucial factors while designing the vertical alignment of any road. The vertical alignment is further a function of the sight distance, the material and drainage requirement of the project areas. For township or municipal roads, however, the roads are short and usually on a constant grade terrain, thus rendering sight distance secondary in the design. Urban and township roads are intended to provide access to plots and properties and this therefore is the major consideration when designing the vertical geometry of the roads. Vertical alignment is also influenced by the thickness of pavement layers and the height of the drainage structures. Thickness of pavement layers is a function of the conditions of in situ soils and traffic loading. However, in our specific case we followed, the following in designing the vertical alignment:

The vertical alignments have been designed to approximately follow the existing ground on each road. Minor changes were made to suit drainage, existing features, intersections or other requirements. All roads are essentially flat or gently sloping. Consideration was given to existing buildings on both sides of the road

Selection of vertical alignments for designs of urban roads takes into consideration the following parameters:

- Wherever practicable compliance with the minimum design standards requirements in terms of minimum and maximum gradients, critical length of gradients, vertical sight distance, etc.
- Minimization of earthworks by putting new pavement on top of the existing earth/gravel road surface.
- Minimization of level difference between finished road levels and entrance gate levels of existing properties with enough clearances for cross drainage structures.
- to direct the longitudinal slope (grade) towards the cross drainage structures so as to drain the storm water from the side ditches.

### 2.7.1.4 Typical Cross Sections

Typical cross sections proposed for each road are included in the Book of Drawings that are submitted together with this report.

**Table 2-3 The Typical Proposed Cross Section Details for All Roads Shall Include:**

S/N	Parameter	Dimension
1	Carriageway width	6.5m and 6.0m (Two Way Two lanes)
2	Shoulder width:	Minimum 1.5m
3	Cross fall/camber:	2.5% for paved carriageway and shoulders.
4	Drainage:	open drains. Pedestrians access slabs provided over open drains in some plac

Details of the cross sections adopted for each road are given in relevant drawings.

### 2.7.1.5 Footpaths/Cycle paths

Separate Footpaths (Walkways) of 1.5m width have been provided for Pedestrians in all project roads at Morogoro Municipal Council. No separate cycle paths are provided in these roads due to space limitations. Instead, wider carriageways were selected to accommodate the cyclists. For the roads in the outskirts, wider shoulders will serve both pedestrians and cyclists. Minimum widths of shoulder have been set at 1.5m both sides of carriageway.

#### **2.7.1.6 Pedestrian Crossings**

Pedestrian crossings are provided on roads at areas where there is a potential of heavy non-motorized traffic. In Morogoro Municipal, these areas include markets/shopping centers colleges/universities, schools, hospitals/healthy centers and religion institutions (mosques, churches).

#### **2.7.1.7 Road Safety Measures for Non-Motorised Traffic (NMT)**

The following are proposed safety measures for NMT:

- The pedestrian crossings are raised and protected by a pair of rumble strips (strip humps) at either side of the crossing and relevant road signs and markings;
- Concrete bollards are installed on entries and exits of the footpaths/cyclepaths to separate motorized traffic from using the NMT facilities;
- Cyclist ramps are provided at cross over kerbs or raised areas;
- Any service/utility pits that are located with the paths are specified to have their surface leveled flush with the surfaces of the paths to minimize trip hazards for NMT.

#### **2.7.1.8 Ancillary Works**

##### **2.7.1.8.1 Road Signs**

Signs have been proposed for the following purposes:

- Regulatory Signs—used to control the actions of road users in the interest of safety and efficient use of road space. Failure to obey regulatory signs is an offence.
- Warning Signs—used to alert drivers to danger or potential danger ahead. They indicate a need for extra caution by road users and may require a reduction in speed or other maneuvers.
- Guidance Signs—give Road users information on how to find their way to their destination
- Information Signs—provides additional information to that given on the primary sign

##### **2.7.1.8.2 Road Markings**

Road Markings are used to control, warn, or guide road users. These consists of:

- Regulatory Markings
- Warning Markings
- Guidance Markings

The proposed types of pavement markings include the following:

- Centerline Markings
- Edge Line Markings
- Lane or Parking Lines
- Zebra crossings on the raised pedestrian crossings;
- Stop/give way lines.

##### **2.7.1.8.3 Speed Humps, Raised Pedestrian Crossings and Rumble Strips**

Speed humps, Raised Pedestrian Crossings and Rumble strips are provided at sections of roads where limited speeds are required to ensure safety of all traffic (i.e. non and motorized) for instance, markets and other public institutions (schools, hospitals).

## **2.8 Preliminary Drainage Design**

On completion of the conditional assessment, the preliminary design was done for the major structures to be adopted. The extent of design carried out at this stage however is only to enable establishing the quantities required for the economic assessment.



## **2.8.1 Design Standards**

The Code of Practice used for the design of drainage structures is British Standard 5400, with design load for the new major drainage structures being taken in accordance with the specifications for loads in Part 2 of BS 5400. All live loadings including HA live load and 37.5 units of HB as defined in the terms of reference have been used.

## **2.8.2 Box culverts**

Concrete box culverts will be cast in situ and will be founded on an improved soil base (possibly with the incorporation of geotextile material) in the event that samples from trial pits at the proposed location confirm the visual assessment of the existence of black cotton soils.

For protection on the riverbanks, gabion boxes will also be adopted based on the hydraulic considerations and river flow conditions. All these will be included in the detailed design stage.

## **2.8.3 Pipe culverts**

New pipe culverts will be made of concrete and will have a minimum diameter of 900mm.

## **2.8.4 Materials**

Concrete Class for bridges has adopted various classes. For the bridge deck including beams Class 35 will be used, abutment, piers, and foundation Class 30 will be used. For box culverts, concrete Class used is Class 30. Class 15 concrete will be used in channel linings and erosion protection works and in blinding layers.

## **2.8.5 Reinforcement Quantities**

For the purpose of quantification of reinforcement, appropriate unit weights were used based on the experience of consultant in the completed projects.

## **2.9 Assessment of existing structures**

The existing road is gravel which is planned to be improved to bitumen standard as required by the terms of reference.

### **2.9.1 Dimensions**

The existing structures ranges from 600mm pipe culverts, box culverts of various sizes. Most of the pipes are wide enough covering the entire road width that reaches the dimensions of dual carriage way.

### **2.9.2 Type of structures**

The existing pipe culverts are of concrete and steel (Armco). All box culverts are reinforced concrete whereas for bridges there is a combination of concrete bridge deck and stone pitching abutments.

### **2.9.3 Condition of superstructure**

Assessment made on the superstructure indicated that most of the structures appear to be old and with workmanship that is not very good but without a notable crack. Structurally all the concrete culverts appear to be intact.

### **2.9.4 Climate Change Adaptation Strategies**

The proposed roads under TACTIC should be resilient to climate change scenarios. Adaptation measures shall do so by:

- Protecting the road infrastructure from the impacts of climate change and,

- Ensuring that the road infrastructure does not increase the vulnerability of the surrounding area to climate change.

In that case; the design has considered two climatic factors: 1) Temperature and 2) Rainfall

With regard to Temperature: Possible adaptation measures for managing pavements for extreme temperatures include:

- Assessment of pavement material compositions during planning and before construction phases;
- building on good-working practices from areas with warmer temperatures;
- using more rut-resistant and/or stripping-resistant resurfacings;
- surface dressing with chippings with higher reflectivity;
- pervious wearing courses; and
- improving surface and sub-surface drainage systems;

With regard to Rainfall Adaptation measures that have been considered are:

- Reviewing storm water drainage requirements;
- Frequent clearing of ditches and culverts;
- Resizing drainage systems to meet threat;
- Paving ditches to reduce erosion;
- Reviewing design storm return periods in the light of new weather information; and
- In extreme case, rerouting

## **2.10 Land Acquisition**

Upgrading of proposed roads and drainage systems shall be done within existing routes. The roads are within Municipal Roads' Reserves while drainage systems' way leaves/buffer zone are governed by Water Resource Management Act, 2019. Therefore, the proposed upgrading of urban infrastructure is not expected to be a cause of resettlement of people and properties.

## **2.11 Required Permits**

Prior to the approval of the construction and eventual construction of the Project, it is necessary to obtain a number of authorizations and permits from local and central government authorities of Tanzania, related to environmental issues, water abstraction, relocation of public utilities, resettlement. These permits and authorizations are summarized in Table 3-1, including a description of the permit/authorization and the government authority responsible for issuance.



**Table 2-4: Required Permits from Regulatory Authorities**

Permit/Authorization	Issuing Authority	Description
ESIA Certificate	NEMC/VPO	Approval of project implementation
Resettlement Valuation Report	Government Chief Valuer	To guide compensation resettlement procedures
TTCL Infrastructure Relocation Approval	TTCL-Regional Office	To waive construction of the proposed road
TANESCO Infrastructure Relocation Approval	TANESCO-Regional Office	To waive construction of the proposed road
MORUWASA Infrastructure Relocation Approval	MORUWASA-Regional Office	To waive construction of the proposed road
Water Use & Discharge Permit	Rufiji Water Basin/MoW	To allow abstraction of water from Ngerengere River for project construction

## **2.12 Project activities**

### **2.12.1 Planning Phase**

During planning phase, different studies for the proposed subproject area were conducted including, Feasibility study, ESIA and RAP, preliminary engineering planning, final engineering planning and construction planning form the planning phase of the project. The project RAP will be implemented (with a RAP completion note) prior to commencement of construction phase.

During the planning process, a subproject is given its form and details which becomes more and more detailed in phases, adjusted to correspond to land use planning.

Compensation is paid for any damage caused to external property during final engineering or construction planning and construction. Environmental certification by the National Environment Management Council (NEMC) is also done/finalized at this stage.

During project planning phase only, paper works are involved as summarized below:

- Evaluation of project concepts and alternatives selection;
- Design of all project components;
- Topographic survey;
- Geo-technical Investigations;
- Soils and Materials Investigations;
- Carrying out RAP for the affected people (with completion note);
- Carrying out ESIA of the project;
- Carrying out the ESMP for the office;
- Compensations and Land Tenure;
- Tendering for construction works;
- Approval of Engineering designs and Environmental Certification

## 2.12.2 Mobilization or Pre-Construction Phase

Upon hiring the contractor and finalization of contract formalities and site handing over to the contractor, preparation of the proposed site shall follow by involving clearing of the site, when clearance is over, the site will be ready for receiving actual works. Surplus material generated from the site preparation works like demolitions and trees clearance is over, the wastes generated will be moved to the appropriate disposal sites. Site preparation will also involve relocation of infrastructures/utilities found in the subproject areas; these include water supply pipes, wastewater collection system (pipes and associated chambers or manholes).

All project activities are supposed to be carried out within the boundaries of the identified subproject's sites without disturbing the neighbouring facilities. Warning tapes shall be provided to demarcate construction areas for the safety of the communities around.

Also, as necessary, the Contractor will hire labour and erect necessary temporary facilities to cater for offices and storage yards near the construction sites or outside the sites as it may be agreed and permitted by the Morogoro Municipal Council. Mobilization phase will also involve purchase and stockpiling of the materials such as aggregates, sand, cement, timber and reinforcing steel including delivery of plant and equipment at site/s.

### 2.12.2.1 Types, Amounts and Sources of Project requirements

Types, amounts and sources of project requirements during the pre-construction phase are shown in Table 2-5

**Table 2-5: Types, Amounts and Sources of Project Requirements During the Pre-Construction Phase**

Requirements	Type	Source	Quantity required (estimated)
Raw Materials	Aggregates	Existing Approved/Licensed Quarries	4-7 Tons
	Sand	Existing Licensed Sand Mines	3-6Tons
	Water	Ngerengere River,	250m <sup>3</sup>
	Cement	Tanga/ Dar es Salaam	2-4Tons
	Reinforcement bars	Dar es Salaam	1-2 Tons
	Timber	Iringa/Morogoro local vendors	1-2 Tons
Energy	Electricity	Generators	300-500KVA
	Fuel	Morogoro	6000Lts
Manpower	Skilled	Contractor	5
	Unskilled	Local People along the road	20
Equipment	Dump Truck	• Contractor	3
	Graders	• Contractor	2
	Dozer	• Contractor	3
	Water Boozers	• Contractor	2

Requirements	Type	Source	Quantity required (estimated)
	Vibrators	• Contractor	2
	Excavator	• Contractor	2

The construction materials sources are as briefed hereafter: -

- **Gravel Source:** Generally, a thorough study of materials available within economic haulage distances will be conducted to supplement initial potential sources of materials observed during the reconnaissance site visit. (Kihonda Viwandani area) was mentioned as one of the existing borrow pit located on the left-hand-side of the Morogoro-Dar es Salaam Road at about 2km from Morogoro centre. The material at the pit is composed of brown lateritic GRAVEL of G25 quality.

The existing gravel source and other potential sources shall be investigated for its suitability and quantity estimation of the available material within economic haulage distance through excavation of trial pits to ascertain the quality and extent of the gravel seam. Representative samples would subsequently be taken for laboratory testing.

- **Hard Stone Sources:** Hard stone material will be required for production of aggregate for concrete works, production of base course layer, and production of bituminous surfacing layer. At the time of the site reconnaissance, one quarry was identified at Lugoba within a radius of about 106km from Morogoro.

The rocks from the quarry source and other sources identified during the detailed investigations will be investigated for characteristics of stone and representative samples shall subsequently be taken for laboratory testing. The following tests will be carried out at a designated material testing laboratory.

- **Water Sources:** At the time of the site reconnaissance, the only reliable water source identified was from MORUWASA network and some perennial rivers around the town. An evaluation of water quality from the selected sources towards its applicability in construction works would be carried out.

Based on test results obtained and in accordance to limits set by DIN 4030 for various attack, any water source's suitability for construction works shall be assessed.

- **Sand Sources:** The main potential sand source identified during the initial site visit was at Mindu area located 15 km from Morogoro town. During the investigations phase, quantities of sands from the above source and any other identified sources shall be estimated through excavation of test pits. Representative samples shall be taken, and sieve analysis performed to ascertain their suitability by making comparison with grading envelope specified in BS 822 (1983) Standards.

### 2.12.2.2 Transportation

Materials (fine and coarse aggregates) from quarries will be transported by trucks to the construction site/s. Other materials like cement, timber and reinforcement bars will be transported by Lorries to the construction site.

### 2.12.2.3 Storage

Some of the materials from borrow pits will be used directly after delivery and as such no piling up is expected. Other materials like aggregates and sand will be stored at the backyard of the Office site ready for use. Cement and reinforcement bars will be stored in special storage room. Timber will directly be used at the required areas and consequently there will be no stockpiling of timber at the sites. Fuel will be stored in drums at bonded areas.

### 2.12.2.4 Types, Amounts and treatment/disposal of Wastes

Types, amounts and treatment/disposal of wastes during the pre-construction phase are shown in Table 2-6

**Table 2-6: Types, Amounts and Treatment/Disposal of Wastes During the Pre-Construction Phase**

Waste	Types	Amount	Treatment/ Disposal
Solid Waste (Degradable)	Vegetation (Trees, Shrubs and Grasses) and remnants of timber.	20m <sup>3</sup> (Clearance for office)	Source of energy for cooking at the site or villages nearby.
	Food remains, cardboards and papers	0.5kg/day (based on generation rate of 20g/day/ person and 25 workers)	Collected in a large skip bucket at the office site then to be composted and used as manure for the gardens at the Office site
Solid Waste (Non-Degradable)	Top soils	1,000m <sup>3</sup> (Based on removal of 10 cm topsoil from the (100x100) m <sup>2</sup> area for Contractor's and Engineer's office erection)	Backfilling material in the borrow pits, fill the diversions.
	Scrap metals and plastics	1- 2kg per day	Sold to Recyclers
	Tins, glasses	1- 2 kg per day	Taken to the Authorised dumpsite at Mafisa Morogoro
Liquid waste	Sewage	0.6 m <sup>3</sup> (Based on 25 people, 40l/capita/day water consumption and 80% becomes wastewater)	Septic tank – Soakaway system at the office
	Oils and greases	Non	Car maintenance will be done at proper garages

### 2.12.3 Construction phase

The major construction activities include;

- Extraction and transportation of materials (gravel, sand, hard stones, aggregates, water and bitumen)
- Clearing the right of Right of Way (RoW) while leaving intact the trees which do not interfere with the construction.

- Formation of the approach roads embankment, establishment of sub-base and base, and road surfacing
- Treating of old roads and temporary diversion

### **Duration**

The duration of this phase will be One (1) year.

### **2.12.3.1 Types, Amounts and Sources of Project requirements**

Types, amounts and sources of project requirements during the construction phase are shown in Table 2-7

**Table 2-7: Types, Amounts and Sources of Project Requirements During the Construction Phase**

Requirements	Type	Source	Quantity required
Raw Materials	Aggregates	Existing Approved/Licensed Qu Mines	600 Tons
	Gravel for approach roads	Existing Licensed Borrow pit/s	450Tons
	Sand	Existing Approved/Licensed S Mines	320Tons
	Water	Ngerengere River	215000m <sup>3</sup>
	Cement	Mbeya/ Dar es Salaam	200 Tons
	Reinforcement bars	Dar es Salaam	90 Tons
	Timber	Morogoro and Iringa	25m <sup>3</sup>
Manpower	Skilled	Contractor	15
	Unskilled	Local People along the road	150
Equipment	Dozer	Contractor	1
	Grader	Contractor	2
	Pay Loader	Contractor	1
	Excavator	Contractor	2
	Vibro Roller	Contractor	1
	Tandem Roller	Contractor	1
	Macadam Roller	Contractor	1
	Tire Roller	Contractor	1
	Dump Truck	Contractor	1
	Mixer Truck	Contractor	1
	Water Truck	Contractor	1
	Tractor w/Trailer	Contractor	1
	Cargo Truck	Contractor	1
	Concrete Batch Plant	Contractor	1
	Air Compressor	Contractor	1
	Generator	Contractor	2
	Fuel Truck	Contractor	1
	Light Vehicle	Contractor	6

### 2.12.3.2 Transportation

Materials (fine and coarse aggregates) from quarries will be transported by trucks to the construction site. Other materials like cement, timber and reinforcement bars will be transported by trucks to the construction site.

### 2.12.3.3 Storage

Materials from borrow pits will be used directly after delivery and as such no piling up is expected. Other materials like aggregates and sand will be stored at the crushing area (usually near the quarry site) site ready for use. Cement and reinforcement bars will be stored in special storage rooms (Bunds which do not allow moisture). Timber will directly be used at the required areas and consequently there will be no stockpiling of timber at the office sites.

### 2.12.3.4 Types, Amounts and Treatment/Disposal of Wastes

Types, amounts and treatment/disposal of wastes during the construction phase are shown in Table 2-8

**Table 2-8: Types, Amounts and Treatment/Disposal of Wastes During the Construction Phase**

Waste	Types	Amount	Treatment/ Disposal
Solid Waste (Degradable)	Vegetation (Trees, Grasses) and remnants of timber.	Approximately about 30m <sup>3</sup> of biomass	Source of energy for cooking by nearby community
	Food remains, cardboards and papers	10kg/day (based on generation rate of 0.2/day/ person for 50 people)	Collected in a large skip bucket at the office site then to be composted and used as manure for the gardens at the office site
Solid Waste (Non-Degradable)	Scrap metals, drums and plastics	1-2kg per day	Sold to Recyclers
	Tins, glasses	2-3 kg per day	Taken to the authorised dumpsite at Mafisa Morogoro
Liquid waste	Sewage	1.6m <sup>3</sup> /day (Based on 50 people, 40l/capita/day water consumption and 80% becomes wastewater)	Septic tank –Soak away system at the office site
Hazardous Wastes	Waste Oils Oil Filters Used Batteries Grease	160lts 72Nos 18Nos	Cars/vehicles maintenance will be done at proper garages, Wastes shall be collected by licensed hazardous waste collector

### 2.12.4 Demobilization Phase

- Demobilization of temporary structures will be done for proper restoration of the site e.g. removing/spreading top-soils piled along the road, and removal of all temporary structures
- Collect and disposer all wastes to the authorised dumpsite at Mafisa.

#### 2.12.4.1 Types, Amounts and Sources of Project requirements

Types, amounts and sources of project requirements during the demobilization phase are shown in Table 2-9

**Table 2-9: Types, Amounts and Sources of Project Requirements During the Demobilization Phase**

Requirements	Type	Source	Quantity required
Manpower	Skilled	Contractor	15
	Unskilled	Local People along the road	50
Equipment	Bull dozer	Contractor	1
	Motor grader	Contractor	1
	Roller Compactor	Contractor	1
	Plate compactor	Contractor	1
	Tippers	Contractor	2

#### 2.12.4.2 Types, Treatment/Disposal of Wastes

The demobilization of the temporary structures will result mainly into solid wastes mainly rubbles from demolitions. Rubbles will be used in backfilling the borrow pits/earth roads.

#### 2.12.5 Operation and Maintenance Phase

The actual usage of the road and drainage system is expected to commence after the construction works. The Morogoro 'TACTIC project zone 3 is under "Municipal Road" category and therefore will be directly managed by TARURA-Morogoro.

The design period of the roads is 20 years. During this phase, TARURA will carry out routine maintenance by attending to pot holes, clearance of vegetation within the ROW (road reserve area) and monitoring.

Other activities shall include Installation of road signs, reinforcement and replacement of road furniture, control of litter accumulation on road sides, awareness rising on proper use of roads management to the communities, monitoring and evaluation, management to reduce pollutant concentrations in runoff, disposal of wastes from road maintenance activities, storage and management of maintenance materials and equipment.

Drainage channels after complete construction as per design shall be handed over to Municipal Council for overall management throughout operation phase. This shall also include all necessary drainage channels' regular maintenance and cleaning.

#### 2.12.5.1 Types, Amounts and Sources of Project requirements

Types, amounts and sources of project requirements during the operational phase are shown in Table 2-10

**Table 2-10: Types, Amounts and Sources of Project Requirements During The Operational and Maintenance Phase**

Requirements	Type	Source	Quantity required (annually)
Raw Materials	Aggregates	Existing Approved/Licensed Quarry Mines	0.5-1Tons
	Gravel	Existing Licensed Borrow pit/s	2-4 Tons
	Sand	Existing Approved/Licensed Sand Mines	0.2-0.4 tons



	Water	Morogoro and Ngerengere River	100-200m3
	Cement	Mbeya/ Dar es Salaam	0.2-0.4Tons
Manpower	Skilled	Contractor/ TARURA	5
	Unskilled	Local People along the road	10
Equipment	Excavator	TARURA/Contractor	1
	Wheel loader	TARURA/Contractor	1
	Water Booser	TARURA/Contractor	1
	Bull dozer	TARURA/Contractor	1
	Motor grader	TARURA/Contractor	1
	Roller Compactor	TARURA/Contractor	1
	Plate compactor	TARURA/Contractor	1
	Tippers	TARURA/Contractor	1

## 2.12.6 Transportation

Materials (fine and coarse aggregates) from quarries will be transported by trucks to the construction site. Other materials like cement, timber and reinforcement bars will be transported by Lorries to the maintenance site.

### 2.12.6.1 Storage

Most of Materials like Aggregates, Sand, and Water will be used directly after delivery and as such no piling up is expected. Cement and reinforcement bars will be stored in special storage rooms.

### 2.12.6.2 Types, Amounts and treatment/disposal of Wastes

Types, amounts and treatment/disposal of wastes during the construction phase are shown in Table 2-11

**Table 2-11: Types, Amounts and Treatment/Disposal of Wastes During the Operational Phase**

Waste	Types	Amount	Treatment/ Disposal
Solid Waste (Degradable)	Vegetation (Trees and Grasses)	1-2m3/ month	Source of energy for cooking for villages nearby.
Solid Waste (Non-Degradable)	Scrap metals, drums	1-2kg per Month	Sold to Recyclers
	Tins, glasses and plastics	1-2 kg per Month	Disposed to the Authorised dumpsite at Mafisa
Liquid waste	Oils and greases	Non	Vehicle/Plant and Equipment maintenance will be done at proper garages



### **3 POLICY, LEGAL & ADMINISTRATIVE FRAMEWORK**

#### **3.1 Overview**

This section is aimed at reviewing relevant environmental resource and planning legislations and regulations and World Bank's Environmental and Social Framework (ESF) to ensure that proposed upgrading of urban roads and drainage channels meets policy and legislative criteria, and that relevant requirements are built into project design and implementation. The policy review also outlines specific procedures and measures to be carried out before, during and after project development.

Below are identified policies, legislations, World Bank's Environmental and Social Standards (ESSs) and International Conventions reviewed and included in the Draft ESIA describing their relevance to the proposed subproject.

#### **3.2 World Bank's Environmental and Social Framework**

The World Bank Environmental and Social Framework sets out the World Bank's commitment to sustainable development, through a Bank Policy and a set of Environmental and Social Standards that are designed to support GoT' projects, with the aim of ending extreme poverty and promoting shared prosperity.

This Framework comprises:

- A Vision for Sustainable Development, which sets out the Bank's aspirations regarding environmental and social sustainability;
- The World Bank Environmental and Social Policy for Investment Project Financing, which sets out the mandatory requirements that apply to the Bank; and
- The Environmental and Social Standards, together with their Annexes, which set out the mandatory requirements that apply to the GoT and projects.

This ESIA has reviewed the above framework's components' relevance to the Project as shown in the below sub sections;

##### **3.2.1 Vision for Sustainable Development**

World Bank Group is globally committed to environmental sustainability, including stronger collective action to support climate change mitigation and adaptation, recognizing this as essential in a world of finite natural resources. It recognizes that climate change is affecting the nature and location of projects, and that World Bank-financed projects should reduce their impact on the climate by choosing alternatives with lower carbon emissions.

Equally, social development and inclusion are critical for all of the World Bank's development interventions and for achieving sustainable development.

At the project level, these global aspirations translate into enhancing development opportunities for all, particularly the poor and vulnerable, and promoting the sustainable management of natural and living resources. Therefore, within the parameters of a project, the Bank seeks to:

- Address project-level impacts on climate change and consider the impacts of climate change on the selection, siting, planning, design and implementation and decommissioning of projects;
- Maximize stakeholder engagement through enhanced consultation, participation and accountability.

The designs of urban roads and drainage channels for Morogoro Municipality have observed the vision of sustainable development by ensuring climate change adaptation strategies have been taken into considerations.

### **3.2.2 World Bank Environmental and Social Policy for Investment Project Financing**

This Environmental and Social Policy for Investment Project Financing sets out the mandatory requirements of the Bank in relation to the projects it supports through Investment Project Financing. The Bank is committed to supporting GoT in the development and implementation of projects that are environmentally and socially sustain-able, and to enhancing the capacity of GoT ‘environmental and social frameworks to assess and manage the environmental and social risks and impacts of projects. The Bank will assist GoT in their application of the ESSs to projects supported through Investment Project Financing in accordance with this Environmental and Social Policy for Investment Project Financing (Policy).

To carry out this Policy, the Bank will:

- Undertake its own due diligence of proposed projects, proportionate to the nature and potential significance of the environmental and social risks and impacts related to the project;
- As and where required, support the GoT to carry out early and continuing engagement and meaningful consultation with stakeholders, in particular affected communities, and in providing project-based grievance mechanisms;

The Banks shall evaluate the environmental and social risks management plan including the extent of stakeholders’ engagement on the project throughout.

TACTIC project engaged various stakeholders during preparation of Environmental and Social Management Framework (ESMF) and other supporting Environmental and Social Safeguard Instruments i.e. Labour Management Procedures (LMP), Resettlement Policy Framework (RPF), Stakeholders Engagement Plan (SEP) and Gender-Based Violence Action Plan (GBV Plan). However; at subprojects level, the proposed urban roads and drainage channels have been conducted with ESIA study to comply with Environmental and Social Policy for Investment Project Financing. During the study, various stakeholders from Mtaa level to National Level were engaged, their views captured and used for influencing the design of proposed subprojects as indicated in chapter 5 of this ESIA.

In addition, specific SEP, RAP and LMP have been prepared for subprojects to guide the implementation and operation of the proposed subprojects.

### **3.2.3 Environmental and Social Standards**

#### **3.2.3.1 Environmental and Social Standard 1: Assessment and Management of Environmental and Social Risks and Impacts;**

ESS1 sets out the GoT responsibilities for assessing, managing and monitoring environmental and social risks and impacts associated with each stage of a project supported by the Bank through Investment Project Financing, in order to achieve environmental and social out-comes consistent with the Environmental and Social Standards (ESSs).

GoT will conduct environmental and social assessment of projects proposed for Bank financing to help ensure that projects are environmentally and socially sound and sustainable. The environmental and social assessment will be proportionate to the risks and impacts of the project. It will inform the design of the project, and be used to identify mitigation measures and actions and to improve decision making. GoT will manage environmental and social risks and impacts of the project throughout the project life cycle in a systematic manner, proportionate to the nature and scale of the project and the potential risks and impacts.

ESS1 includes the following annexes, which form part of ESS1, and set out certain requirements in more detail:

- ✓ Annex 1: Environmental and Social Assessment;
- ✓ Annex 2: Environmental and Social Commitment Plan; and
- ✓ Annex 3: Management of Contractors

Among the requirements under ESS1 relevant to the Upgrading of Morogoro TACTIC project include:

15. The GoT will:

- Conduct an environmental and social assessment of the proposed project, including stakeholder engagement;
- Undertake stakeholder engagement and disclose appropriate information in accordance with ESS10;
- Develop an ESCP, and implement all measures and actions set out in the legal agreement including the ESCP; and
- Conduct monitoring and reporting on the environmental and social performance of the project against the ESSs

18. The project will apply the relevant requirements of the Environmental Health and Safety Guidelines (EHSGs) when host country requirements differ from the levels and measures presented in the EHSGs, the GoT will be required to achieve or implement whichever is more stringent.

When a project is proposed for Bank support, the GoT and the Bank will consider whether to use all, or part, of the GoT E&S Framework in the assessment, development and implementation of a project. Such use may be proposed provided this is likely to address the risks and impacts of the project, and enable the project to achieve objectives materially consistent with the ESSs.

The proposed Morogoro TACTIC project has been conducted with ESIA study and has adequately undertaken stakeholders' engagement as required, aiming at creating a sense of project's ownership by the community and hence sustainability.

### **3.2.3.2 Environmental and Social Standard 2: Labor and Working Conditions;**

ESS2 recognizes the importance of employment creation and income generation in the pursuit of poverty reduction and inclusive economic growth. GoT can promote sound worker-management relationships and enhance the development benefits of a project by treating workers in the project fairly and providing safe and healthy working conditions.

Among ESS2 objectives include:

- To promote safety and health at work
- To promote the fair treatment, nondiscrimination and equal opportunity of project workers
- To protect project workers, including vulnerable workers such as women, persons with disabilities, children (of working age, in accordance with this ESS) and migrant workers, contracted workers, community workers and primary supply workers, as appropriate.
- To prevent the use of all forms of forced labor

The project contractor shall adhere to the objectives under regular audits to be conducted by PO-RALG, OSHA and the project Supervising Engineer. However, specific subproject's Labour Management Procedures (LMP) have been prepared to guide labour issues during construction and operation of the proposed roads and drainage channels.

### **3.2.3.3 Environmental and Social Standard 3: Resource Efficiency and Pollution Prevention and Management;**

ESS3 recognizes that economic activity and urbanization often generate pollution to air, water, and land, and consume finite resources that may threaten people, eco- system services and the environment at the

local, regional, and global levels. The current and projected atmospheric concentration of greenhouse gases (GHG) threatens the welfare of current and future generations. At the same time, more efficient and effective resource use, pollution prevention and GHG emission avoidance, and mitigation technologies and practices have become more accessible and achievable.

Among ESS3 objectives include:

- To promote the sustainable use of resources, including energy, water and raw materials
- To avoid or minimize adverse impacts on human health and the environment by avoiding or minimizing pollution from project activities
- To avoid or minimize project-related emissions of short and long-lived climate pollutants
- To avoid or minimize generation of hazardous and non-hazardous waste
- To minimize and manage the risks and impacts associated with pesticide use

On pollution prevention and management, the GoT will avoid the release of pollutants or, when avoidance is not feasible, minimize and control the concentration and mass flow of their release using the performance levels and measures specified in national law or the EHSGs, whichever is most stringent.

Upgrading of Morogoro TACTIC project to bitumen standard will significantly reduce emissions from vehicles that are currently likely generated as a result of low vehicles' speeds along the road. During construction, the contractor shall adhere to all recommended actions to reduce GHG emissions from operating vehicles and plant.

#### **3.2.3.4 Environmental and Social Standard 4: Community Health and Safety;**

ESS4 recognizes that project activities, equipment, and infrastructure can increase community exposure to risks and impacts. In addition, communities that are already subjected to impacts from climate change may also experience an acceleration or intensification of impacts due to project activities.

ESS4 addresses the health, safety, and security risks and impacts on project-affected communities and the corresponding responsibility of GoT to avoid or minimize such risks and impacts, with particular attention to people who, because of their particular circumstances, may be vulnerable.

Objectives of the ESS4 include:

- To anticipate and avoid adverse impacts on the health and safety of project-affected communities during the project life cycle from both routine and non-routine circumstances.
  - To promote quality and safety, and consider actions relating to climate change, in the design and construction of infrastructure, including dams.
  - To avoid or minimize community exposure to project-related traffic and road safety risks, diseases and hazardous materials
  - To ensure that the safeguarding of personnel and property is carried out in a manner that avoids or minimizes risks to the project-affected communities
- ESS4 requires:

The GoT will design, construct, operate, and decommission the structural elements of the project in accordance with national legal requirements, the EHSGs and other GIIP, taking into consideration safety risks to third parties and affected communities.

Where the project involves provision of services to communities, the GoT will establish and implement appropriate quality management systems to anticipate and minimize risks and impacts that such services may have on community health and safety. In such circumstances, the GoT will also apply the concept of universal access, where technically and financially feasible

The GoT will identify, evaluate and monitor the potential traffic and road safety risks to workers, affected communities and road users throughout the project life cycle and, where appropriate, will develop measures and plans to address them. The GoT will incorporate technically and financially feasible road safety measures into the project design to prevent and mitigate potential road safety risks to road users and affected communities.

### **3.2.3.5 Environmental and Social Standard 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement;**

ESS5 recognizes that project-related land acquisition and restrictions on land use can have adverse impacts on communities and persons. Project-related land acquisition or restrictions on land use may cause physical displacement (relocation, loss of residential land or loss of shelter), economic displacement (loss of land, assets or access to assets, leading to loss of income sources or other means of livelihood), or both. The term “involuntary resettlement” refers to these impacts. Resettlement is considered involuntary when affected persons or communities do not have the right to refuse land acquisition or restrictions on land use that result in displacement.

Objectives of ESS5 include:

- To avoid involuntary resettlement or, when unavoidable, minimize involuntary resettlement by exploring project design alternatives
- To avoid forced eviction
- To mitigate unavoidable adverse social and economic impacts from land acquisition or restrictions on land use by: (a) providing timely compensation for loss of assets at replacement cost and (b) assisting displaced persons in their efforts to improve, or at least restore, their livelihoods and living standards, in real terms, to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher
- To improve living conditions of poor or vulnerable persons who are physically displaced, through provision of adequate housing, access to services and facilities, and security of tenure
- To conceive and execute resettlement activities as sustainable development programs, providing sufficient investment resources to enable displaced persons to benefit directly from the project, as the nature of the project may warrant
- To ensure that resettlement activities are planned and implemented with appropriate disclosure of information, meaningful consultation, and the informed participation of those affected

Among the requirements of ESS5 include the following:

11. The GoT will demonstrate that involuntary land acquisition or restrictions on land use are limited to direct project requirements for clearly specified project purposes within a clearly specified period of time. The GoT will consider feasible alternative project designs to avoid or minimize land acquisition or restrictions on land use, especially where this would result in physical or economic displacement, while balancing environmental, social, and financial costs and benefits, and paying particular attention to gender impacts and impacts on the poor and vulnerable.

12. When land acquisition or restrictions on land use (whether permanent or temporary) cannot be avoided, the GoT will offer affected persons compensation at replacement cost, and other assistance as may be necessary to help them improve or at least restore their standards of living or livelihoods, subject to the provisions of paragraph 26 through 36 of this ESS.

13. Compensation standards for categories of land and fixed assets will be disclosed and applied consistently. Compensation rates may be subject to upward adjustment where negotiation strategies are



employed. In all cases, a clear basis for calculation of compensation will be documented, and compensation distributed in accordance with transparent procedures.

14. Where livelihoods of displaced persons are land-based, or where land is collectively owned, the GoT will offer the displaced persons an option for replacement land in accordance with paragraph 35(a), unless it can be demonstrated to the Bank's satisfaction that equivalent replacement land is unavailable.

15. The GoT will take possession of acquired land and related assets only after compensation in accordance with this ESS has been made available and, where applicable. In addition, livelihood restoration and improvement programs will commence in a timely fashion in order to ensure that affected persons are sufficiently prepared to take advantage of alternative livelihood opportunities as the need to do so arises.

19. The GoT will ensure that a grievance mechanism for the project is in place, in accordance with ESS10 as early as possible in project development to address specific concerns about compensation, relocation or livelihood restoration measures raised by displaced persons (or others) in a timely fashion. Morogoro TACTIC project has prepared a Resettlement Action Plan (RAP) in line with RPF to guide land acquisition and/or resettlement.

### **3.2.3.6 Environmental and Social Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources;**

ESS6 recognizes the importance of maintaining core ecological functions of habitats, including forests, and the biodiversity they support.

This ESS also addresses sustainable management of primary production and harvesting of living natural resources.

ESS6 recognizes the need to consider the livelihood of project-affected parties, including Indigenous Peoples, whose access to, or use of, biodiversity or living natural resources may be affected by a project. The potential, positive role of project affected parties, including Indigenous Peoples, in biodiversity conservation and sustainable management of living natural resources is also considered.

Objective of ESS6 include but not limited to:

- To protect and conserve biodiversity and habitats
- To apply the mitigation hierarchy and the precautionary approach in the design and implementation of projects that could have an impact on biodiversity
- To promote the sustainable management of living natural resources
- To support livelihoods of local communities, including Indigenous Peoples, and inclusive economic development, through the adoption of practices that integrate conservation needs and development priorities

ESS6 requirements include among others:

8. The environmental and social assessment as set out in ESS1 will consider direct, indirect and cumulative project-related impacts on habitats and the biodiversity they support. This assessment will consider threats to biodiversity, for example habitat loss, degradation and fragmentation, invasive alien species, overexploitation, hydrological changes, nutrient loading, pollution and incidental take, as well as projected climate change impacts.

10. Through the environmental and social assessment, the GoT will identify the potential project related risks to and impacts on habitats and the biodiversity that they support.

11. The GoT assessment will include characterization of baseline conditions to a degree that is proportional and specific to the anticipated risk and significance of impacts.

The ESIA for proposed of Morogoro TACTIC project considers Ngerengere River as ecologically sensitive. Specific measures have been provided to protect the river from any kind of pollution as a result of the project's construction and operation activities.

### **3.2.3.7 Environmental and Social Standard 7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities;**

ESS7 contributes to poverty reduction and sustainable development by ensuring that projects supported by the Bank enhance opportunities for Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities to participate in, and benefit from, the development process in ways that do not threaten their unique cultural identities and well-being.

Among the ESS7 objectives include:

- To ensure that the development process fosters full respect for the human rights, dignity, aspirations, identity, culture, and natural resource-based livelihoods of Indigenous Peoples/ Sub-Saharan African Historically Underserved Traditional Local Communities.
- To improve project design and promote local support by establishing and maintaining an ongoing relationship based on meaningful consultation with the Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities affected by a project throughout the project's life cycle.

Among the general requirements of ESS7 include:

12. A key purpose of this ESS is to ensure that Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities present in, or with collective attachment to, the project area are fully consulted about, and have opportunities to actively participate in, project design and the determination of project implementation arrangements. The scope and scale of consultation, as well as subsequent project planning and documentation processes, will be proportionate to the scope and scale of potential project risks and impacts as they may affect Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities.

Within the project subproject areas, there is no existence of Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities.

### **3.2.3.8 Environmental and Social Standard 8: Cultural Heritage;**

This ESS sets out general provisions on risks and impacts to cultural heritage from project activities. ESS7 sets out additional requirements for cultural heritage in the context of Indigenous Peoples. ESS6 recognizes the social and cultural values of biodiversity. Provisions on Stakeholder Engagement and Information Disclosure are set out in ESS10.

Objectives of the ESS8 include:

- To protect cultural heritage from the adverse impacts of project activities and support its preservation.
- To address cultural heritage as an integral aspect of sustainable development
- To promote meaningful consultation with stakeholders regarding cultural heritage
- To promote the equitable sharing of benefits from the use of cultural heritage

ESS8 requires:

8. The environmental and social assessment, as set out in ESS1, will consider direct, indirect and cumulative project-specific risks and impacts on cultural heritage. Through the environmental and social assessment, the GoT will determine the potential risks and impacts of the proposed activities of the project on cultural heritage.

9. The GoT will avoid impacts on cultural heritage. When avoidance of impacts is not possible, the GoT will identify and implement measures to address impacts on cultural heritage in accordance with the mitigation hierarchy.

During impacts' assessment study and through communities and stakeholders' consultations, no heritage site was identified to be within or near the proposed sites for implementation of urban roads and drainage channels.

### **3.2.3.9 Environmental and Social Standard 10:**

**Stakeholder Engagement and Information Disclosure** This ESS recognizes the importance of open and transparent engagement between the GoT and project stakeholders as an essential element of good international practice. Effective stakeholder engagement can improve the environmental and social sustainability of projects, enhance project acceptance, and make a significant contribution to successful project design and implementation.

Objectives of ESS10 are:

- To establish a systematic approach to stakeholder engagement that will help GoT identify stakeholders and build and maintain a constructive relationship with them, in particular project-affected parties
- To assess the level of stakeholder interest and support for the project and to enable stakeholders' views to be taken into account in project design and environmental and social performance.
- To promote and provide means for effective and inclusive engagement with project affected parties throughout the project life cycle on issues that could potentially affect them
- To ensure that appropriate project information on environmental and social risks and impacts is disclosed to stakeholders in a timely, understandable, accessible and appropriate manner and format
- To provide project-affected parties with accessible and inclusive means to raise issues and grievances, and allow GoT to respond to and manage such grievances

ESS10 requirements among others include:

6. GoT will engage with stakeholders through- out the project life cycle, commencing such engagement as early as possible in the project development process and in a timeframe that enables meaningful consultations with stakeholders on project design. The nature, scope and frequency of stakeholder engagement will be proportionate to the nature and scale of the project and its potential risks and impacts.

7. GoT will engage in meaningful consultations with all stakeholders. GoT will provide stakeholders with timely, relevant, understandable and accessible information, and consult with them in a culturally appropriate manner, which is free of manipulation, interference, coercion, discrimination and intimidation.

8 The process of stakeholder engagement will involve the following, as set out in further detail in this ESS: (i) stakeholder identification and analysis; (ii) planning how the engagement with stakeholders will take place; (iii) disclosure of information; (iv) consultation with stakeholders; (v) addressing and responding to grievances; and (vi) reporting to stakeholders.

The TACTIC project has prepared a specific Stakeholder Engagement Plan (SEP) for the proposed urban roads and drainage channels' Subprojects which guided consultations during the EIA scoping stage as a 1<sup>st</sup> round stakeholders' engagement and shall also guide during feedback stage/2<sup>nd</sup> round community/ies engagement. 1<sup>st</sup> round was purposely for stakeholders to air their views, comments and concerns on the type of urban roads and drainage channels' Subprojects under TACTIC program as indicated in chapter



5 of this ESIA report. 2<sup>nd</sup> round consultations shall be conducted as part of SEP to review how the draft designs has incorporated their aired views, comments and concerns.

### **3.3 The World Bank ESH Guidelines**

Once a member of the World Bank Group is involved in a project, adherence to the EHS Guidelines is mandatory as a matter of policy. The General EHS Guidelines are a set of technical reference documents which addresses "Good International Industry Practices" in four focus areas: 1) Environmental 2) Occupational Health and Safety 3) Community Health and Safety and 4) Construction and Decommissioning

The EHS Guidelines contain the performance levels and measures that are generally considered to be achievable in new facilities by existing technology at reasonable costs. Application of the EHS Guidelines to existing facilities may involve the establishment of site-specific targets, with an appropriate timetable for achieving them. The applicability of the EHS Guidelines should be tailored to the hazards and risks established for each project on the basis of the results of an environmental assessment in which site-specific variables, such as host country context, assimilative capacity of the environment, and other project factors, are taken into account. Under TACTIZ project, these guidelines shall be implemented during construction and operation of the urban roads and drainage channels' subprojects

### **3.4 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 Morogoro TACTIC project is concerned and which form the corner stone of the present study include the following:

#### **3.4.1 National Environment Policy 2021**

The National Environmental Policy seeks to provide the framework for making fundamental changes that are needed to bring environmental considerations into the mainstream of decision making in Tanzania.

Some of the key objectives of the National Environmental Policy are to prevent and control degradation of land, water, vegetation, and air which constitute our life support systems; to raise public awareness and understanding of the essential linkages between environment and development and to promote individual and community participation in environmental action;

Chapter 3; section 51, paragraph (a), (b) and (c) of this policy states that transport sector shall focus on improvement in mass transport systems to reduce fuel consumption and traffic congestion. It shall also control pollution and minimize transport emission of gases, noise, dust and particulates; in addition, preventing disaster/spill and formulating response plans and standard for transportation of hazardous and dangerous material. Subject to this, is section 63 which dictates to use Environmental Impact Assessment tool to tackle immediate environmental problems, precautionary, anticipatory and preventive approaches that are the most effective social economic measure for achieving environmental sound development.

The proposed Morogoro TACTIC project has observed the policy objectives at various stages where there will be environmental impacts including transport emission gases, noise, dust, particulates and spills, road accidents e.t.c. Prior to the execution of the proposed roads and drainage channels'

subproject, Environmental and social impact assessment (ESIA) has been conducted including preparation of Environmental Management Plan that will be implemented by the contractor for the purpose of preventing and minimize environmental and social impacts resulted from the project activities.

### **3.4.2 National Employment Policy 2008**

Due to the growing number of unemployed labor force, the specific objective of the National Employment Policy was to provide strategies for employment creation and sustainability. Among its specific objectives is section 3.5 improvement and transformation of the informal sector for creating decent jobs, section 3.7 facilitate Tanzania job seekers to acquire appropriate skills and section 3.9 employment of individual through enhancing accessibility to business support services including capital, market access for private sector entrepreneurs including self-employers for increased productivity and income.

The proposed subproject will contribute to the achievement of the objectives of this Policy by providing more than 150 direct employment opportunities to Morogoro people for both skilled and unskilled labour.

During the operation phase, the proposed infrastructure will bring business development, open up markets, and facilitate the economic growth as well as improvement of social services, all of which will bring more employment opportunities.

### **3.4.3 National Land Policy, 1997**

The policy requires that, in accordance with sub-section 7.1.1, before any development activity is taken on the land, the government will ensure that permits, licenses, claims and rights for exploitation of natural resources are issued in line with land use policies, and environment conservation policies and programs.

Some of the key Objectives of the policy are presented in section 2.4 to ensure that land is put to its most productive use to promote rapid social and economic development of the country and section 2.8 to protect land resources from degradation for sustainable development.

On land tenure, the policy dictates in subsection 4.1.1 (I) c) that the rights and interests of citizens in land shall not be taken without due process of the law and paragraph (d) that full, fair and prompt compensation shall be paid when land is acquired.

On compensation for acquiring land, The Policy dictates In subsection 4.2.20 that in order to reduce problems, compensation for land acquired for public interest will be based on the concept of opportunity cost including (I) market value of the real property (ii) disturbance allowance (iii) transport allowance (iv) loss of profit or accommodation (v) cost of acquiring or getting the subject land (vi) any other cost or capital expenditure incurred to the development of the subject land.

The proposed subproject will ensure that soil erosion measures are taken into consideration during construction and afforestation plan is put forth along the road so as to protect land resource from degradation for sustainable development.

Although the subproject will use existing routes for roads and drainage channels, construction activities within the proposed RoW might impact people's houses, shops, farms, market, electrical distribution line, telecommunication line, TAZAMA pipeline, bodaboda and bajaji stand etc. However, all affected parties will be identified and their properties valued and fairly compensated.

### **3.4.4 The Construction Industry Policy 2003**

The National Construction Industry Policy aims to create an enabling environment for the development of a vibrant, efficient and sustainable local industry that meets the demand for its services to support sustainable economic and social development objectives.

One of the key objectives of the Policy in section 7.2 (b) is to emphasize the development of an efficient and self-sustaining roads network that is capable of meeting the diverse needs for construction, rehabilitation and maintenance of civil works for trunk, regional, districts and feeder roads network. Also subject to paragraph (c) to improve capacity of public sector and private sector client so as to ensure efficient transparent and effective implementation and management of construction project. The policy directs that the government shall ensure both local and donor procurement policies provide a comprehensive framework for fostering the local construction industry in Tanzania. And paragraph (g) to mobilize adequate resource from public sector and private sector for construction and maintenance of public infrastructure.

The proposed Morogoro urban roads and drainage channels will lead to the achievement of the policy's objectives by employing local consultants and contractors as part of capacity building strategy.

### **3.4.5 National Mineral Policy 2009**

The Mineral Policy seeks to address the challenges of the mineral sector and increase the mineral sector's contribution to the GDP and alleviate poverty by integrating the mining industry with the rest of the economy.

One of the key policy objectives of the Policy in section 4.0 (a) is to improve the economic environment in order to attract and sustain local and international private investment in the mineral sector; Efficient and reliable infrastructure facilities such as roads accelerate commissioning of new mining projects and increase profits to be taxed by the Government. The policy emphasizes in section 5.1(ii) that the Government in its own or in collaboration with the private sector will provide reliable infrastructure to service the mining industry where feasible.

The proposed Morogoro TACTIC project will lead to the achievement of the objectives of the mining policy by upgrading to bitumen standard and lining of drainage channels to provide efficient infrastructure services which are all weather accessible and promotes good economic environment for the country's development. In addition, the subproject shall use locally available sources for sand, gravel, aggregates e.t.c as part of implementation of policy's objectives.

### **3.4.6 Human Settlement Development Policy 2000**

The policy defines Human settlement as not simply housing, merely the physical structure of the city town or village but an integrated combination of all human activity processes including residence, education, health, work, culture, leisure and the physical structure that support them.

One of the key objectives of the policy in section 3.2(ii) is to promote level of provision of infrastructure and social services for sustainable human settlement development and (iii) to facilitate level of employment opportunities and eradication of poverty. The policy states that Infrastructure and services constitute the backbone of urban economies and economic activities. Therefore, all-weather roads for efficient transport are essential for increased productivity and the establishment of manufacturing

industries. Lacking of roads and other services in many settlement results to poor environmental condition.

The proposed upgrading of urban roads to bitumen standard road will provide efficient year-round transportation services and easy accessibility to various socioeconomic areas. Employments shall be generated during construction of both roads and drainage channels.

### **3.4.7 National Water Policy 2002**

One of the key objective of water policy in subsection 4.1.1 is to have in place fair and equal procedures in access to and allocation of water resources so that all social and economic activities are able to maximize their capacities; subsection 4.1.2 to have criteria for prioritization of water allocations so as to ensure that socio-economic activities and the environment receive their adequate share of the water resources on the basis of its availability, and to enable the sectors increase productivity and to mitigate conflicts.

Section 2 of this Policy explains that water is a basic natural resource for sustenance of life and for socioeconomic development. Many social and economic activities rely heavily on availability of adequate supply of fresh water. As a sink, water sources are used as receptors for wastewater discharges from industrial, municipal and agricultural sources. Deliberate efforts are, therefore, needed towards protection and sustaining the resource and to ensure that it is used efficiently and effectively for the benefit of the present and future generation.

Chapter 4 of this policy dictates that all water abstractions and effluent discharges into water bodies shall be subject to a "water use permit" or "discharge permit" to be issued for a specific duration. Water use permits shall be issued only for a determined beneficial water use. Procedures, criteria and guidelines for issuing of the permits will be prepared and operationalized.

The construction activities of proposed roads and drainage channels will use water from different surface water sources within Morogoro Municipality and thus, water use/abstraction permit from the Wami Ruvu Water Basin under the Ministry of Water shall be applied for.

### **3.4.8 National Action Plan to end Violence against Women and Children (2017/18-2021/22)**

Addressing violence against women and children is a central development goal in its own right, and key to achieving other development outcomes for women, children, their families, communities, and nation. Tanzania has committed itself to working towards Agenda 2030, and is party to numerous regional and international instruments and declarations on child rights, gender equality, and women's empowerment. The National Action Plan is preceded through eight (8) foundational plans relevant to the protection of women and children that work on creating systems for violence response. The Plan has the mission in section 2.2 to Prevent and respond to all forms of violence against women and children through comprehensive.

The action plan calls upon Multi-sectoral collaboration at all levels to address multiple forms of discrimination that contribute to increased vulnerability to violence on the basis of class, age, disability, gender identity and others factors. The national response to addressing violence against women and children needs to be comprehensive, coordinated and multi-sectoral. It also requires coordination and partnerships between the public and private sector, as well as civil society, professional associations and other relevant stakeholders.

During construction of the proposed Morogoro TACTIC Project, women will be given priority on employment and will have an opportunity for establishing business such as small groceries, food vending e.t.c. This will help women to improve their quality of life and being able to take care of their family and children since economic insecurity is a powerful trigger that can lead to increased intimate partner violence and other abuse and exploitation.

The subproject contractor will ensure that gender-based violence along with HIV/AIDS awareness is fairly provided to the communities around as recommended in environmental and social management plan.

### **3.4.9 Policy on HIV/AIDS Policy 2001**

HIV/AIDS is a major National crisis that affects all sectors at all levels. Therefore, one of the main objective of the policy is to prevent transmission of HIV/AIDS through various strategies such as section 3.2 (a) i) to create and sustain an increased awareness of HIV/AIDS through targeted advocacy, information, education, and communication for behavior change at all levels by all sectors. This hinges on effective community involvement and empowerment to develop appropriate approaches in prevention of HIV Infection, care and support to those infected and affected by the epidemic including widows and orphans.

The policy emphasizes on coordinated and effective multispectral approach towards curbing this epidemic and to mobilize adequate financial resources for HIV/AIDS activities, and calls forth for every sector to budget, raise funds and mobilize material and human resources for its own HIV/AIDS prevention and control activities.

HIV/AIDS awareness and education will be provided by the contractor to the workers and communities. The contractor shall be responsible for provision of free condoms to construction workers and voluntary HIV testing to both communities and workers.

### **3.4.10 Women and Gender Development Policy 2000**

The main objective of the Policy in section 12 is to create an enabling environment for women and men to fulfill their roles in society based on gender needs. Also, this policy aims at balancing the gaps in women's participation in development activities. The policy enables Tanzanian women to participate effectively and efficiently in identifying their potential and identifying problems and resolving them by using available resources to supplement their income and alleviate poverty as a whole and bring a better life. This includes the ability to make decisions in various areas of implementation. The policy has taken into account that in achieving that goal men must fulfill their roles in our communities and thus engage with women in various social and economic roles.

The policy dictates in section 34 that in order for both women and men to be involved, to ensure that the contribution of women and men to the development of the nation is recognized and appreciated and to ensure both men and women actively participate in development project.

The Morogoro TACTIC Project complements the objectives of this policy and thus ensures that both men and women are involved in the success of the proposed subproject, they were involved in the Environmental and Social Impact study and will continue to be involved in the process through employment opportunities.



### **3.4.11 National Transport Policy 2011**

The vision of the policy is to have efficient and cost-effective domestic and international transport services to all segments of the population and sectors of the national economy with maximum safety and minimum environmental degradation.

And the mission is to develop safe, reliable, effective, efficient and fully integrated transport Infrastructure and Operations which will best meet the needs of travel and transport at improving levels of Service at lower costs in a manner, which supports government strategies for, socio-economic Development whilst being economically and environmentally sustainable.

The proposed Morogoro TACTIC project Zone 3 is in line with the policy's vision and mission since it will provide service to the urban population of Morogoro Municipality, the roads shall facilitate economic boost through provision of reliable and timely transportation needs.

### **3.4.12 National Population Policy 2006**

Among the Policy Objectives is: To harmonies population and economic growth and among the Policy Direction is to Enhance awareness to the leaders and communities about the linkages between population, resources, the environment, poverty eradication and sustainable development.

The proposed urban roads and drainage channels are in line with the policy's objectives and direction. The population along the road will benefit economically from the upgrading of the roads and improvement of drainage channels that will provide conducive environment for economic growth even during rain seasons.

### **3.4.13 Tanzania Development Vision (2025)**

The National Vision 2025 foresees the alleviation of widespread poverty through improved socio-economic opportunities, good governance, transparency and improved public sector performance. These objectives not only deal with economic issues, but also include social challenges such as education, health, the environment and increasing involvement of the people in working for their own development. The thrust of these objectives is to attain a sustainable development of the people.

Through implementation of the proposed upgrading of roads and drainage channels under TACTIC, the GoT through PO-RALG will contribute towards realization of the Vision's objectives by making conducive environment for all passengers on achieving their goals.

### **3.4.14 The National Strategy for Growth and Reduction of Poverty (NSGRP) II (2015)**

The NSGRP-II paper recognizes that reliable infrastructure such as urban city roads and drains system Subprojects is critical for the attainment of the NSGRP II which was launched in 2010 and Sustainable Development Goals which were laid down by the United Nations in 2015. These SDGs are such as Goal No.1 to end poverty, Goal No. 2 on zero hunger, Goal No. 3. to ensure Health life and promote wellbeing for all at all ages, Goal No. 5 on Gender equality and Goal No. 9 on Industry, Innovation and Infrastructure which fosters the importance to build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.

The TACTIC project will focus in the reduction of poverty for both men and women and address issues of gender discrimination and GBV. Once the urban roads and drainage channels have been constructed, various activities such as transportation of agricultural products and urban irrigation will be enhanced thereby increasing employment and revenues and eventually improving livelihoods. The NSGRP also

recognizes the role of other sectors in poverty eradication and the need for mainstreaming environment as one of the crosscutting issues in the sector.

### **3.4.15 The National Climate Change Strategy (NCCS) - 2012**

The goal of this Strategy is to enable Tanzania to effectively adapt to and participate in global efforts to mitigate to climate change with a view to achieving sustainable economic growth in the context of the Tanzania's national development blueprint, Vision 2025; Five Years National Development plan; and national cross sectoral policies.

To achieve the stated goal, the following specific objectives have been set.

- To build the capacity of Tanzania to adapt to climate change impacts.
- To enhance resilience of ecosystems to the challenges posed by climate change.
- To enable accessibility and utilization of the available climate change opportunities.
- To enhance participation in climate change mitigation activities that lead to sustainable development.
- To enhance public awareness on climate change.
- To strengthen information management on climate change.
- To enhance institutional arrangements to adequately address climate change and
- To enhance mobilization of resources in particular finance to address climate change.

Design and implementation of urban roads and drainage channels subprojects shall include climate change adaptation measures for infrastructural resilience to climate change

## **3.5 Legal Framework**

### **3.5.1 Environmental Management Act (2004)**

The provisions of Part V section 60(1) requires that an applicant for water use permit issued under relevant laws governing management of water resources, abstraction and use of water shall be required to make a statement on the likely impact on the environment due to the use of water requested.

The proposed Morogoro TACTIC Project will use water from Ngerengere River which requires the contractor to apply for water use permit issued by Wami Ruvu Water Basin under relevant governing laws and as required by this Act.

The provisions Part VI section 83(1) require that Environmental Impact Assessment shall be carried out by experts or firms of experts whose names are registered as such by the council. The subproject complies with the provisions of this section by ensuring that the ESIA for proposed infrastructure has been conducted by registered experts under registered firm of expert -Norplan Limited.

Subject to the provisions of section 110(2) which requires that a person who discharges any hazardous substances, chemical oil or mixture containing oil in any water or any other segment of the environment commits an offense. And (4) it will be duty of every organization producing, transporting, trading, storing and disposing of such wastes.

The proposed Morogoro TACTIC Project will comply with the provisions of this section by ensuring proper management of hazardous substances, chemical and oils as recommended in the Environmental Management Plan.



### **3.5.2 Road Act (2007)**

The provisions of Part III, section 16 of this Act directs that where it becomes necessary for the road authority to acquire a land owned by any person for the purposes of this Act, the owner of such land shall be entitled to compensation for any development on such land in accordance with the Land Acquisition Act, Land Act, Village Land Act and any other written law. The proposed project will ensure to comply with this Act as directed in the provision of this section by conducting Resettlement Action Plan whereby all affected parties will be fairly evaluated for their properties and compensated.

The provisions of part IV, section 18(1) requires that the road authority or an authorized officer or surveyor will do consultation with relevant authorities and ensure that public interest are considered and settle matters pertaining land use for road construction purpose. Subject to subsection (2) that during execution of the road, the Road authority, authorized officer or surveyor shall give at least fourteen days' notice in writing of his intention to do so. The proposed road project will ensure to comply with the provisions of this Act.

The provisions of Part V, section 33 (1) requires that the road authority shall ensure safety of road users during the design, construction, maintenance and operation of public road by providing sidewalks, overhead bridges, zebra crossings and other matters related thereto. The proposed Morogoro TACTIC Project shall comply with the provisions of this section by ensuring safety of road users by providing enough carriage way, pedestrian walk ways, road markings and safety signs and sight visibility.

The provision of Part VII, section 42 (1) requires that notwithstanding anything contained in any other written law regulating the maximum weight, speed and dimensions to be carried on any public road.

During the operation phase, the proposed Morogoro TACTIC Project under the road authority (TARURA) shall ensure to comply with the provision of this Act for the purpose of safeguarding the safety of the public or of preserving the condition of a road by fixing a limit to the maximum weight, speed or dimensions of vehicles which may lawfully be driven or hauled over any part of a road. However; in any case individual lands should be required for construction activities, the affected parties shall be entitled to compensations.

### **3.5.3 Energy and Water Utilities Authority (EWURA) Act (2001)**

This Act provides guidance in EWURA administrative system by specifying roles and responsibilities of every actor and related stakeholders, power and proceedings of authority, complains and dispute resolutions, enforcement and compliance.

The provision Part II section 6(f) dictates that it shall be the duty of authority (Energy and Water Utilities Regulatory Authority) that in carrying out its functions it shall strive to enhance the welfare of Tanzanians society by taking into account the need to protect and preserve the environment.

The proposed Morogoro TACTIC Project through the contractor shall take into account the need to preserve and protect environment by ensuring good storage and transportation of fuel, control oil seepage and ensure proper re-use or disposal of waste oil.

### **3.5.4 Water Resources Management Act No 11 of (2009)**

The Act provides a description of water resource management framework in Tanzania including roles and responsibilities of every actor and related stakeholders. One of the Key objective of this Act in Part II section 4(1) is to ensure that the nation's water resources are protected, used, developed, conserved,

managed and controlled in ways which take into account the fundamental principles of sustainability including subsection (h) preventing and controlling pollution and degradation of water resources. The proposed Morogoro TACTIC Project will adhere to the objective of this Act by ensuring that water sources are protected from pollution during construction.

The provision of Part VI, section 39(1) requires that the owner or occupier of land on which any activity or process is performed which is likely to cause pollution of a water source, shall take all reasonable measures to prevent any such pollution from occurring, continuing or recurring.

The proposed Morogoro TACTIC Project will comply with this Act by adhering to proper waste management practices during road construction activities.

The provision of Part VIIA, section 43(1) requires that any person who diverts, dams, stores, abstracts or uses water from surface or underground water source, or for any such purpose constructs or maintains any works, shall apply for a Water Use Permit in accordance with this Act. And subject to section 45(2) The Basin Water Board may grant the applicant a temporary Water Use Permit for any purpose under such conditions as may be deemed fit. In addition to section 48 (b) as the user of water use permit granted under this Act you are required to prevent any damage to the source from which water is taken, or to which water is discharged after use.

The proposed Morogoro TACTIC Project will comply with this Act, the water will be obtained from Ngerengere River which shall require water use permit to be granted under requirement of this Act and ensures conservation of its water sources within or near the project site during construction phase.

### **3.5.5 Mining Act 2010**

This Act provides guidance on general principles, administrative system of mineral in Tanzania and responsibilities of each actor and related stakeholders, categorizations of mineral rights, types of mineral licenses, charges, right of entry, registration and dispute settlement.

One of the key general principles of this Act in Part II, section 6(1) states that no person shall, on or in any land to which this Act applies, prospect for minerals or carry on mining operations except under the authority of a mineral right granted or deemed to have been granted, under this Act. However section 7(3) states that nothing in this Act shall prevent any person engaged in the construction of tunnels, road, dams, aerodromes and similar public works of an engineering nature from utilizing as building materials any minerals derived from a source approved by the Minister in writing.

The proposed Morogoro TACTIC Project will comply with the provisions of this Act by ensuring that all suppliers/sources for aggregates and sand are licensed by the Ministry of Minerals.

### **3.5.6 Occupational Health and Safety Act (2003)**

This act provides guidance on health and safety administrative system and responsibilities of every actor, requirements and procedures for registration of workplaces, safety provision, health and welfare provisions, safety special provision, hazardous material and processes, chemical handling provisions, offences penalties and regal proceedings.

The provisions of Part III, section 15 requires that there shall be a register of work place in which inspector shall enter such particulars in relation to every work place as he may consider necessary for the purpose of this Act and subject to section 16(1) that any person being an occupier of the work place shall before operating being required to register under this Act.

The proposed Morogoro TACTIC Project will comply with the provisions of this Act by ensuring that the contractor registers the work place by following all required procedures under this Act.

The provisions of Part IV section 24, requires that all employees will be provided periodic occupation medical examination carried out by qualified occupational health physician for fitness for employment and all the expenses and prescribed fee will be paid by the employer.

Subject to the provisions of Section 26 which requires that the employees should be protected from every danger of machinery use through fencing and by providing operator with protective safety devices from machinery parties. Section 27 that efficiency of machine should be provided and maintained; section 28 and 30 that an examination or lubrication, adjustment or cleaning of the machinery should not be carried out while the machine is in motion. And section 32 that corrosive or poisonous liquids should be covered or fenced to reasonable height according to the nature of the work and a warning sign should be posted to the plant or nearby.

Also subject to the provisions of Part IV, section 50(1)a), the employer shall ensure that the workplace is equipped with fire extinguishers which shall be adequate and suitable having regard to fire risks; and paragraph (b) stocks of inflammable materials should be kept in a safe place

The proposed Morogoro TACTIC Project will comply with the provisions of part IV of this Act by ensuring that all protection needed for safety of employees are provided as required.

The provisions of Part V, section 54(1), requires that the employer shall ensure supply of safe and clean drinking water that is readily accessible to all employees; section 55(1) sufficient and suitable sanitary conveniences shall be provided in a work place and shall be maintained and kept clean and shall be provided with lighting. Section 65(1) there should be washing facilities which should be kept clean and orderly condition. And section 58 there should be provision of first aid box, a person trained and qualify for first aid and there should be reliable means of transport if a person required further medical attention. The proposed Morogoro TACTIC Project will comply with the provisions of Part V of this Act by ensuring that all requirements are met include providing clean drinking water and hygiene services.

The provisions of Part VI, section 60(a) requires that in work environment where activities involve hazardous chemical substances, equipment and processes which are likely to result in adverse health effects to people or environment, the employer shall ensure that risks assessment is done either annually or when deems necessary by approved inspector. Subject to section 61(1) that all practical measures should be taken to protect employees against inhalation of dust or fume or any impurity and against the working environment.

The proposed Morogoro TACTIC Project will comply with the provisions of part VI of this Act by ensuring that all protective devices are provided as stipulated in Environmental Management Plan and required by this Act.

The provisions of Part VII, section 67(1) and (2) requires that toxic materials or substances shall only be used where the use of non-toxic materials is not reasonably practicable. During this situation the number of employees exposed should be minimum and recognized antidote should be kept ready. Subject to section 68 that where there is dangerous or corrosive liquids in case of emergence there should be ready and accessible means of drenching with water for any person who has been splashed with such liquid. And Section 71 that no employer shall make an employee carry out work that is not adapted to their physical and cognitive capabilities and limitation.

The proposed Morogoro TACTIC Project will comply with the provisions of part VII of this Act by ensuring that all precaution measures are taken against hazardous substances as recommended in Environmental Management Plan and by this Act.

The provisions of Part VIII, section 73(1) the employer shall ensure that preventive, administrative and technical measures are taken to prevent or reduce contamination to workers and the environment and subsection (7) that shall ensure proper disposal of all chemical containers and residues. The proposed Morogoro TACTIC Project will comply with the provisions of part VIII of this Act by ensuring that all preventive measures are taken against contamination to ensure health and safety as recommended in Environmental Management Plan and this Act.

The provisions of Part X, section 89(1) requires that there should be posted prescribed abstract of this Act at work place and any other notice and document required by this Act in both Kiswahili and English. Subject to section 103 requires that no employer shall dismiss an employee, reduce rate of his remuneration, alter terms or his employment or position to his advantages by the reason of the fact or because he suspects or believes whether or not the suspicion is justified or not, however in subsection (2) the employer may terminate the employment of employee if is unable to work for reasons of health condition.

The proposed Morogoro TACTIC Project will comply with the provisions of part X of this Act by ensuring that all safety rules are posted, safety policy are developed and employment rights are observed related to Health and Safety as recommended in Environmental Management Plan and by this Act.

### **3.5.7 HIV and AIDS (Prevention and Control) Act No. 28/08 (2008)**

The HIV and AIDS Act gives provision of general duties by specifying general responsibilities of every actor, emphasize on provision of public education and programs on HIV and AIDS, testing and counselling, confidentiality, health and support services, stigma and discrimination, rights and obligations of persons living with HIV and offences and penalties.

The provisions of Part II, section 4(1) a) requires that Every person, institution and organization living, registered or operating in Tanzania shall, be under the general duty to promote public awareness on causes, modes of transmission, consequences, prevention and control of HIV and AIDS; also subsection (2) a) and b) integrate or priorities on HIV and AIDS in their proceedings and public appearances; and advocate against stigma and discrimination of people living with HIV and AIDS. The proposed Morogoro TACTIC Project will comply with the provisions of this Act by ensuring that HIV and AIDS awareness and education is provided to workers and all people living along the road where the project is taking place.

Subject to the provisions of section 6 (1) that every ministry, department, agency, local government authority, parastatal organization, institution whether public or private, shall design and implement gender and disability responsive HIV and AIDS plans in its respective area and such plans shall be main streamed and implemented within the activities of such sector. Subject to subsection (4) every sector preparing a plan or programme under this section shall before implementation of such plan or programme, submit them to TACAIDS for coordination and advise.

HIV/AIDS awareness and education will be provided by the contractor to the workers and communities. The contractor shall be responsible for provision of free condoms to construction workers and voluntary HIV testing to both communities and workers.

### **3.5.8 Local Government (Urban Authorities) Act, 1982 and The Local Government (District Authorities) Act, 1982**

The local government Laws (Miscellaneous Amendments) provides amendments of local government (district authorities) Act, amendment of local government Act (urban authorities), amendment of local government (elections Act), amendment of the regional administration Act. The law has specifies roles and responsibilities of every authority and related stakeholders.

The provisions of Part II, section 2, of this Act gives instructions that this part shall read as one with the Local Government (District Authorities) Act, in this Part referred to as the "principal Act".

The principal Act is amended in section 54A (a) in Part III, section 20 (h) of this Act requires to provide and secure enabling environment for successful performance of the duties of the urban authority; paragraph (i) ensure compliance by all persons and urban authorities with appropriate government decisions, guidelines in relation to the promotion of the local government system; and paragraph (j) do such acts and things as shall facilitate or secure the effective, efficient and lawful execution by the urban authorities of the statutory or incidental duties."

The proposed Morogoro TACTIC Project will comply with the provisions of this Act by ensuring consultation with all levels of local government, including Morogoro Municipal council, ward executive officers and Mitaa executive officers to ensure compliance by all levels of authority in relation to the promotion of the local government system.

### **3.5.9 The Village Land Act (1999), (Identifying Considerations for Women)**

The village Act provides directions on management and administration of village land by specifying roles and responsibilities of every actor, gives guidance on provision of village land tenure systems and right of occupancy as well as responsible authorities and procedures.

The provisions of Part IV, section 7(1)a defines village land as land within the boundaries of a village registered in accordance with the provisions of section 22 of the Local government (District Authorities) Acts 1982.

The objectives of Village Land Act are based on application of the fundamental principles of land use policy as directed in part II, section 3. Such principles include subsection (1) g) to pay full, fair and prompt compensation to any person whose right of occupancy or recognized long-standing customary occupation or use of land is revoked or otherwise interfered with to their detriment by the State under this Act or is acquired under the Land. The proposed Morogoro TACTIC Project will comply with this Act by ensuring that full and fair compensation are done in case of a land owned by any person whose right of occupancy is interfered with activities of road construction.

The provisions of Part II, Section 3(2) requires that the right of every woman to acquire, hold, use and deal with land shall to the same extent and subject to the same restriction be treated as the right of any man, is hereby declared to be law. The proposed Morogoro TACTIC Project will comply with this Act by making sure that every woman whose land will be used for any activities of road construction her right of occupancy will be recognized equally as men and be compensated equally. The provisions of Part IV, section 17 (5) requires that, On and after the coming into operation of this Act, a non-village organization which wishes to obtain a portion of village land for the better carrying on of its operations may apply to the village council for that land, and the village council shall recommend to the Commissioner for the grant or refusal of such grant.



The proposed urban roads and drainage will comply with this Act by ensuring that full and fair compensation is done in case of a land owned by any person whose right of occupancy interferes with activities of road construction. It shall also, sure that every woman whose land will be used for any activities of road construction her right of occupancy will be recognized equally as men and be compensated equally.

### **3.5.10 Land Act No. 2/04 (2004), Amendment of the Land Act (1999)**

This Act has provided general amendments of Land Act of 1999 by adding section 2 which identifies a “sale” be used as transfer of interest in or over land on condition attached to a granted right of occupancy. Section 19 requires that a person who is in a cooperate body or company made under company ordinance including a corporate body the majority of whose shareholders or owners are noncitizens, may only obtain be offered right of occupancy approved by Tanzania Investment Act 1997 to facilitate compliance with development. Section 20 which clarifies that land acquired by non-citizen will have no value except shall be paid compensation on unexhausted improvement. Section 37 explains the sale of right of occupancy and repeal and substation of part X that gives guidance on mortgage, Mortgage right of occupancy, lease, sublease and subsequent mortgage. And also explains rights and responsibility of all actors and stakeholders including mortgagor and mortgagee.

The proposed urban roads and drainage channels’ subproject will involve acquisition, destruction of houses and trees, utilities and private properties. Hence, the proposed subproject is required to restore the destructed properties and rectify affected utilities before construction works begins.

### **3.5.11 Antiquities Act (1964)**

The 1964 Act, offers general protection to objects or structures, which are of archaeological, paleontological, historic, architectural, artistic, ethnological or scientific interest. Also responsibilities of different actors and stakeholders of cultural heritage resources have been clarified.

The provisions of section 10(1) requires that any person who, discovers a relic or monument, or any object or site which may reasonably be supposed to be a relic or monument, in Tanganyika, otherwise than in the course of a search or excavation made in accordance with a license granted under section 13, and the occupier of any land who knows of any such discovery on or under such land, shall forthwith report the same to an administrative officer, the Commissioner, the Conservator or the Curator of the Museum. The discoverer of such a relic, monument, object or site shall take such steps as may be reasonable for the protection thereof and shall, where he makes a report concerning a portable relic or object, if so required (and on payment of the cost of delivery if any) deliver such antiquity or object to an administrative officer, the Commissioner, the Conservator or the Curator of the Museum, as the case may be.

The proposed Morogoro TACTIC Project does not fall on any cultural heritage resources. However, the project will ensure compliance with this Act wherever it encounters any related discoveries.

### **3.5.12 The Standards Act No. 2 of 2009**

The 2009 standard Act has clarified administrative system governing the Tanzania bureau of standards by specifying roles and responsibilities of each actor, financial provision, and establishment of standards and enforcement of provision.

The provision of Part IV, section 18 subsection (1) states that the Minister may, on the recommendation of the board of the Bureau of Standards, subject to the provisions of subsections (2) and (3), by notice published marks in the Gazette, declare any mark which has been approved by the Bureau in respect of any standard prescribed or recognized by the Bureau for any commodity or the manufacturing,



production, processing or treatment of any commodity, to be a standards mark in respect of it and may, in like manner, cancel or amend that mark.

The provisions of section 19 requires that every person who is required to make a statement in a contract, tender, quotation or other similar document as to the question whether the commodity offered or supplied by him complies with or has been manufactured in accordance with a particular National Standard, shall make such a statement provided compliance therewith has been verified by the Bureau. Also subject to the provisions of Part V, section 22, subsection (2) requires that every person to whom a license has been issued to offer a calibration service shall be required to submit such samples of any commodity to the Bureau for calibration against the National Measurement Standard of his equipment or instrument.

The proposed urban roads and drainage channels shall ensure all materials involved in the construction and facilities to be installed for the operation of the proposed subprojects are certified by TBS.

### **3.5.13 Land Acquisition Act 1967, Revised in 2012**

The act offers clarification on the power of the president to acquire land in the public interest or national economy, compensation on land acquired and related conditions, notice and proceedings where the land is withheld and declaration of right of occupancy.

The provision of part II, section 3 clarify that the President may, subject to the provisions of this Act, acquire any land for any estate or term where such land is required for any public purpose. Subject to paragraph (a) subsection (1) section 5 which clarifies that as seen fit by the president that land in certain locally should be examined for the view to its possible acquisition for public interest then workmen authorized by the minister in his behalf are then allowed to enter the land for survey and paragraph (d) to clear, set out and mark the boundaries of the land proposed to be taken and the intended line of the work proposed.

Subject to subsection (2) that as soon as conveniently may be after any entry made under subsection (1), the Government shall pay for all damage done in consequence of the exercise of any of the powers conferred by subsection (1), and, in the case of a dispute as to the amount to be paid, either the Minister or the person claiming compensation may refer such dispute to the Regional Commissioner for the region in which the land is situate and the decision of the Regional Commissioner shall be final. The provisions of part II (b), section 11 subsection (1) required that, where any land is acquired by the President under section 3 the Minister shall on behalf of the Government pay in respect thereof, out of moneys provided for the purpose by Parliament, such compensation as may be agreed upon or determined in accordance with the provisions of this Act. Section 12(2) whether such land is in an urban area or in a rural area, any compensation awarded shall be limited to the value of the unexhausted improvements of the land.

Also subject to the provisions of paragraph (a-d) section 30 clarifies that it shall be lawful for the President to require any corporation to which land has been declared for use to enter a contract with the Government with regard to payment of compensation cost of acquired land, terms of land use, time of land to be used and terms to which the public will be entitled to use and benefit from the work done by corporation.

The provisions of section 36, subsection (1) requires that the minister will grant development proponent a right of occupancy over the land for proposed project, the provision of section 37(3) requires that the development proponent make full disclosure of all trust and other referred interests on the land in a

specified time without which or by falsifying the statement shall be convicted. Section 38(1) and (2) specify that no fees or stamp duty shall be paid under land ordinance for such granted right of occupancy on the first registration.

The proposed Morogoro TACTIC Project is the public development project that will be carried out on the land zoned as road, however due to road width extension and diversion during construction activities more land will be needed as well as the land for contractor's office site. Therefore, the project will comply with all the provisions of this Act by ensuring that all the requirements for the granted right of occupancy are met including payment of compensations to land holders.

#### **3.5.14 Contractors Registration Act (1997)**

This Act provides general provisions on roles and responsibility of contractor's Board and every other related actor, gives guidance on registration procedures and necessary conditions.

The provisions of section 7 subsection (1) part III, states that the Registrar shall keep and maintain registers of contractors of different types, categories and classes in which the name of every person entitled to have his name in them as a registered contractor. Subject to this is subsection (6) in the case of an individual, the qualifications and skills as prescribed by the Board necessary to enable him to discharge in satisfactory manner the obligations which he may reasonably be expected or called upon to undertake as a contractor belonging to the category, type and class in respect of which registration is being sought.

The provision of section 10(3) requires that upon registration, the person shall be issued with a certificate of registration indicating the registration number, type, and category, and class, date of registration and duration of registration. Subject to this provision is section 32b) which gives warning that any fraudulently procures or attempts to procure, whether for himself or for any other person, registration as a contractor or a trading license for a contractor; or commits an offence.

The proposed Morogoro TACTIC Project will ensure to comply with the provisions of this Act by employing contractors that are registered following the procedures underlined by this Act and with relevant certificate of registration.

#### **3.5.15 Engineers Registration Act 1997 (Amendments 2007)**

This Act provides general Amendments of engineers' registration Act of 1997 by deleting and substituting new paragraphs, sections and subsections including redefining engineering project, organizations, institutions, registered engineers and firms. Also clarify the responsibility of the Board, engineers and firms' registration procedures and conditions as well as adding substitutions to help engineers graduate and technicians to get opportunities of being linked to employers and learning.

The provision of subsection 7; the principal Act is amended by adding immediately after section 12 the new section 12A (1) every professional engineer or consulting engineer who has been registered under this Act, shall in addition to such registration possess practicing certificate. Subject to subsection (3) a person who practices engineering activities without valid practicing certificate, commits an offence and can be convicted

Provision of subsection 9; Section 14 of the principal Act is amended in paragraph (a) by deleting subsection (1) and substituting for subsection (1) which requires that a person shall not employ as an engineer any person who is not a professional engineer or consulting engineer, or cause to undertake engineering works or services without employing the services of a professional engineer or consulting

engineer. Subject to subsection (5) where an employer employ any person as a trainer engineer or incorporated engineer, this section shall not apply to that employee's employer.

The proposed upgrading of urban roads and drainage channels has copied with the act by employing NORPLAN Limited, a registered consulting firm by Engineers' Registration Board.

### **3.5.16 Employment and Labour Relations Act (2004)**

This Act gives provisions for fundamental rights of employees including child labor, forced labor discrimination and freedom of association; Employment standards including hours, remuneration, leave and unfair termination of employment; Trade unions, employer association and federation; Organizational rights; collective bargaining; strikes and lock outs and dispute resolutions.

The provision of Part II subpart A, section 5 (1) requires that no person shall employ a child under the age of fourteen years, and subsection (2) a child under eighteen should not be employed in a workplace considered hazardous. Also subject to Subpart B section 6(1) which clarifies that any person who procures, demands or imposes forced labor, commits an offence. Subpart C, subsection 7(2) requires that an employer shall register, with the Labour Commissioner, a plan to promote equal opportunity and to eliminate discrimination in the work place. And Subpart D section 9 (1) a) every employee shall have the right to form and join a trade union; and section 10(1) a) every employer shall have the right to form and join an employer's association;

The provisions of Part III, subpart A, section 14(1) requires that a contract with an employee shall be of the specified period of time and task. Section 15(1) requires that an employer shall provide employee with written statement of particulars and a statement of employee's right in a prescribed form. Subpart B, section 19(1), (3) and (5) requires that an employer shall not require or permit an employee to work more than 12 hours in any day or work overtime unless with agreement and be paid not less than one and one half times the employee's basic wage for any overtime worked. Section 20 (2) (a) and (b) requires that pregnant employees should not work night shift 2 months before their due date as well as nursing mothers 2 months after birth; subsection (4) an employer shall pay an employee at least 5% of that employee's basic wage for each hour worked at night as an overtime. Section 21(1) and 24(1) dictates that employees shall be given a 60 minutes break in a working day and a day off for rest and 24 hours rest a week. Subpart C section 26(1) and 28(1) a) requires calculation of wage rates applicable hourly, daily, weekly or monthly rate of pay, no deduction shall be made unless agreed by employee for respect of debt. Subpart D section 31 (1) and (4) an employee should be given leave with paid remuneration as if he was working. Section 32(1) requires that an employee shall be entitled to sick leave and section 33(1) three months maternity leave. And Subpart E, section 37(1) it shall be unlawful for an unfair termination of an employee.

The provisions of Part IV, section 45 (1) Employer shall register into a trade union or employers' association. Part V, section 61(1) an employer shall deduct dues of a registered trade union from an employee's wages if that employee has authorized the employer to do so in the prescribed form. Section 67(1) recognition as exclusive bargaining agent of employees and section 68(1) an employer or employers Association shall bargain in good faith with a recognized trade union.

The proposed Morogoro TACTIC Project will employ 300 direct employments, notwithstanding the provisions of this Act, the project will comply with the provisions of this Act by ensuring that all the requirements, restriction and rights of employees are respected and guided as underlined by this Act.

### **3.5.17 Urban Planning Act (2007)**

This Act provide the provisions of fundamental principles of urban planning, institutional framework and responsibilities of every actor, the planning processes, land acquisition and compensation and supplementary planning power.

The provisions of Part II section 3a) states that with a view to giving effect to the fundamental principles of the National Land Policy and the Human Settlements Development Policy, all persons and authorities exercising powers, applying or interpreting the provisions of this Act shall be under the duty to improve the level of the provision of infrastructure and social services for sustainable human settlements development.

Provision of part IV, section 29(I) requires that no person shall develop any land within a planning area without planning consent granted by the planning authority or otherwise than in accordance with planning consent and any conditions specified. Subject to the provision of subsection (3) that Where in connection with an application for planning consent to develop land and subject to any other relevant law, the planning authority is of the opinion that proposals for industrial location, dumping sites, sewerage treatment, quarries or any other development activity shall have injurious impact on the environment, the applicant shall be required to submit together with the application of an environmental impact assessment report.

The provisions of Part IV, section 52(1) requires that no person shall carry a development on a conservation area without a consent of the planning authority. Subject to the provision of part V, section 63(2) that in giving planning consent under the provisions of this Act to the temporary development of any land within a planning area, the planning authority concerned may give such planning consent on the condition that the value of such temporary development shall not be taken into account for the purposes of assessing any compensation payable to the landholder of such land and, in such case the value of any temporary development shall not be taken into account for the purpose of assessing compensation payable. Subject to section 64(1), However if land is injuriously affected by the coming into operation of the development project compensation will be done, and section 67 that the compensation under this section shall be paid as provided for under the Land Act and the Village Land Act.

The proposed Morogoro TACTIC Project will ensure to comply with the provisions of this Act by consulting planning authority for fulfilment of all required procedures, has conducted Environmental Impact Assessment and the report will be submitted to the authority, will ensure compensation wherever needed as the payable rates required by this Act.

### **3.5.18 Worker's Compensation Act (2008) RE 2015**

This Act provides general provisions for rights for workers to compensations for occupational accidents and diseases. It includes workers compensation funds, board of trustee and its responsibility, right of compensation and protection, claims for compensations and relevant procedures, determination of compensation including medical and rehabilitation benefits and the roles and responsibilities of an employers to ensure workers compensations and settling of disputes.

The provisions of Part I section 3 provides the objectives of this Act including Paragraph (a) to provide for adequate and equitable compensation for employees who suffer occupational injuries or contract occupational diseases arising out of and in the course of their employment and in the case of death, for their dependents.

The provision of Part IV section 19 (1) requires that where an employee has an accident resulting in the employee's disablement or death, the employee or the dependents of the employee shall subject to the

provisions of this Act, be entitled to the compensation provided under this Act. Subject to section 20 that any accident during the conveyance of an employee to or from his place of employment for the purpose of his employment by any means of conveyance shall be compensated. Also subject to provisions of section 22 (1) Where an employee contracts a disease and the disease has arisen out of and in the course of the employee's employment, the employee shall be compensated

Subject to the provision of Part VI section 58 (I) the manner on which calculation for compensation shall be done will be through calculating the earnings of an employee in the monthly rate at which the employee was being remunerated by the employer at the time immediately before the accident. Provisions of Part VIII section 71 (1) requires that an employer carrying on business in Tanzania within the prescribed period shall register to the Director General in the prescribed form and shall submit prescribed particulars as he may require, and section (4) that failure to do that will be conviction. Subject to the provision of this section 74 that employer will be assessed by Director General according to a tariff of assessment calculated on the basis of the percentage of annual earnings of the employer's employees as the Board may with due regard to the requirements of the Fund for the year of assessment deem necessary.

Provision of section 76(1) requires that where a mandatory in the course of or for the purposes of his business enters into an agreement with a contractor for the execution by or under the supervision of the contractor of the whole or any part of any work undertaken by the mandatory, the contractor shall, in respect of the employees of the contractor employed in the execution of the work, register as an employer in accordance with the provisions of this Act and pay the necessary assessment.

The provision of section 78 requires that an employer or the relevant trade union shall notify any employee who is injured in an accident or who contracts an occupational disease of his rights and the procedures to be followed in order to claim compensation under this Act.

The proposed Morogoro TACTIC Project will ensure to comply with the requirements of this Act by ensuring that the contractor for project execution will register as an employer and pay the necessary assessment fees as required by this Act. Also, throughout project execution, employees' rights as regard to compensation in case of occupational accidents or disease will be done according to the provision of this Act.

### **3.5.19 The Sexual Offenses Act 1998**

An Act provide special provisions in regard to sexual and other offences to further safeguard the personal integrity, dignity, liberty and security of women and children.

The provision of Section 138D subsection (3) requires that for the avoidance of doubt, unwelcome sexual advances by words or action used by a person in authority, in a working place or any other place, shall constitute the offence of sexual harassment.

The proposed Morogoro TACTIC Project will ensure to comply with the provisions of this Act by ensuring that sexual harassment offenses are translated at work place for every employee to know their rights.

### **3.5.20 Law of Marriage Act, 1971**

This Act provides the general provisions of Marriage, marriage registration, annulments and divorces and evidence of property, rights, liabilities and status marriage as well as matrimonial proceedings and offenses.



The proposed Morogoro TACTIC Project will ensure to comply with this Act by respecting marriage, employees will be required to respect their marital status and of others. In addition to this employees and public along the road project will be offered regular HIV and AIDS and gender education and awareness.

### **3.5.21 Law of the Child Act, 2009**

This Act provide general provisions of rights and welfare of the child including care and protection of a child conditions. Also clarifies responsibilities of different actors including parents in ensuring the rights of a child whether at home, foster home, school, institutionalized care, and workplace or in custody. The provision of Part II section 12 requires that a person shall not employ or engage a child in any activity that may be harmful to his health, education, mental, physical or moral development.

The provisions of Part VII, section 78(1) a person shall not employ or engage a child in any kind of exploitative labour. Subject to the provision of subsection (2) that every employer shall ensure that every child lawfully employed or engaged in accordance with the provisions of this Act is protected against any discrimination or acts which may have negative effect on him taking into consideration his age and evolving capacities. In addition to section 79(1) the child shall not be employed or engaged in a contract of the service performance which shall require a child to work at night. And subject to provision of section 81 (1) a child has a right to be paid remuneration equal to the value of the work done.

The proposed Morogoro TACTIC Project will comply with the provisions of this Act by ensuring does not employ a child or impose a forced child labour in any phase of project execution.

### **3.5.22 The Valuation and Valuers Registration Act, 2016 & Regulations No:10**

38.-(1) Subject to this Act, a person shall not offer assistance in inspection, carrying out valuation or preparation of valuation report unless the person has been enlisted by the Board.

50.-(1) In the course of undertaking valuation and preparation of valuation report, a registered valuer shall state the basis and method of valuation adopted and all assumptions used in arriving at values.

51.-(1) In the valuation process, a registered valuer shall apply the appropriate method of valuation and shall include-

- (a) direct market comparative method;
- (b) replacement cost or contractors test method;
- (c) income approach or investment method;
- (d) profit method; and
- (e) residual method

52(2) Notwithstanding subsection (1), valuation conducted together with valuation reports prepared under this Act for purposes of compensation shall be valid for the period of two years commencing from the date of endorsement of the valuation report.

52(3) The endorsement of valuation report under subsection (2) shall be effected within six months after the valuation of interest in property of the last person.

The valuation exercise of the PAPs under TACTIC subproject shall be led by the registered valuer in accordance to this act. All legal procedures on evaluation exercise shall be followed as required.

### **3.5.23 The Valuation and Valuers Regulations of 2018**

Land will be valued by means of the Comparative Method of Valuation, i.e. by determining the market value of a land parcel through an analysis of market prices of similar land parcels sold recently in the same or competing neighborhoods. Where available current base (indicative) market rates for land will



be issued to the Registered Valuer from the Office of the Chief Valuer (Section 53 of the Valuation and Valuers Regulations 2018).

These market base rates for land will be based on consultations (through the Chief Valuer) with District Land Officers and the Regional Valuers and convert indicative rates into specific rates. Specific rates for land will be determined at RAP stage. Any transactional costs associated with acquiring new land will be included in the compensation amount.

3.4.26 The Land (Assessment of the Value of Land for Compensation) Regulations, 2001 The basis for assessment of the value of any land and unexhausted improvement for purposes of compensation under the Act shall be the market value of such land.

Every assessment of the value of land and unexhausted improvement for the purpose of the Act shall be prepared by qualified valuer.

Every assessment of the value of land and unexhausted improvement for the purposes of payment of compensation by Government or Local Government Authority shall be verified by the Chief Valuer of the Government or his representative.

Compensation for loss of any interest in land shall include value of unexhausted improvement disturbance allowance, transport allowance, accommodation allowance and loss of profits.

The project's valuation assessment to the PAPs shall abide to the regulations' requirements.

### **3.5.24 Land Use Planning Act (2007)**

45. – (1) An approved plan published under section 38 shall apply to the area or zone to which it relates, whether or not it is embodied in a local government authority by-law, and every person, agency or the relevant planning authority shall comply with the requirements of the approved plan.

(2) Upon approval of plan and, unless the planning authority otherwise determines, no development shall take place on land unless it is conformity with the approved plan.

47. – (1) Any landholder or occupier of land shall take all steps necessary to ensure voluntary compliance with the aspects of an approved plan that are relevant to activities carried out on the land he holds or occupies.

Part VII section 48(I) of the Act also stipulates that “Where it comes to the notice of planning authority that the development of land has been, or is being carried out after the commencement of the Act, otherwise than in accordance with applicable land use plan, the planning authority may serve an enforcement notice to the owner, occupier or developer of that land.

Since the proposed Morogoro TACTIC project shall involve resettlement exercise, the consultant has conducted sensitization meetings to the PAPs before evaluation to smoothen the exercise and project implementation.

### **3.5.25 The Environmental Management (Hazardous Control and Management) Regulation 2009**

The Regulations emphasizes for proper handling of all types of hazardous materials which are harmful when in contact with humans or environment. The regulations also require the hazardous waste to be guided by principles of environment. In addition, the regulations place responsibility to the hazardous waste generator for the sound management and disposal of such waste and that shall be liable for damage to the environment and human health arising thereby.

The construction contractor shall abide to all hazardous waste control measures especially during construction of in water structures. During operation of the project, all ships shall be provided with hazardous waste management guidelines.

### **3.5.26 Road management Regulation 2009**

The regulation provides for the road authority in whose jurisdiction a road is situate shall be responsible for control and management of road. Regulation 6 provides for road access where by it indicates the requirement s for road access. In addition, Regulation 7 provides for prohibitions of activity in the place where it is designated as a road of access. The law prevent obstruction visibility, or hinders convenient passage of motor vehicles or trailer along the road.

The proponent will observe this by avoid constructing a roads in prohibited areas

### **3.5.27 The Environment Impact Assessment and Audit Regulations G.N No. 349 of 2005 as amended by G.N No. 474 of 2018**

These Regulations set out the EIA procedure and regulatory system for carrying out EIA in Tanzania which requires every proponent to follow. This EIA has been carried out in accordance with these Regulations I.e. Registration of the project with NEMC, Screening exercise, producing scoping report (including development of ToR), and Environmental Impact Statement (EIS). The EIS report take into account environmental, social, cultural, economic and legal considerations, identify anticipated impacts, analyses alternative options, propose mitigation measures and develop management plans. The proponent abides by this Act by doing this EIA.

## **3.6 Relevant International Conventions Ratified by Tanzania Include:-**

- ILO Convention: C138 Minimum Age Convention, 1973 (Ratified by Tanzania (United Republic of) on 16/12/1998) which prohibits Child labour. The contractor under TACTIC project shall ensure no child is employed in its activities.
- ILO Convention: C182 Worst Forms of Child Labour Convention, 1999 (Ratified by Tanzania (United Republic of) on 12/09/2001). PO-RALG through contractor shall ensure no child is employed in its activities.
- Discrimination (Employment and Occupation) Convention, 1958

The International Labour Organization having considered the declaration of Philadelphia and the discriminations prohibited by the Universal Declaration of Human Rights, convened at Geneva by the ILO Governing Body in 1958, passed a Convention on Discrimination (Employment and Occupation). The Convention defines discrimination as any distinction, exclusion or preference made on the basis of race, colour, sex, religion, political opinion, national extraction or social origin, which has the effect of nullifying or impairing equality of opportunity or treatment in employment or occupation; and that, such other distinction, exclusion or preference which has the effect of nullifying or impairing equality of opportunity or treatment in employment or occupation as may be determined by the Member concerned after consultation with representative employers' and workers' organizations, where such exist, and with other appropriate bodies.

The Discrimination (Employment and Occupation) Convention of 1958 has been ratified by Tanzania on 26th February, 2002. Thus, the contents of this convention are binding Tanzania jurisdictions. Each Member for which this Convention is in force undertakes to declare and pursue a national policy

designed to promote, by methods appropriate to national conditions and practice, equality of opportunity and treatment in respect of employment and occupation, with a view to eliminating any discrimination in respect thereof.

The Convention further requires member states for which this Convention is in force to undertake, by methods appropriate to national conditions and practice: to seek the co-operation of employers' and workers' organizations and other appropriate bodies in promoting the acceptance and observance of this policy; to enact such legislation and to promote such educational programmes as may be calculated to secure the acceptance and observance of the policy; to repeal any statutory provisions and modify any administrative instructions or practices which are inconsistent with the policy; to pursue the policy in respect of employment under the direct control of a national authority; to ensure observance of the policy in the activities of vocational guidance, vocational training and placement services under the direction of a national authority; to indicate in its annual reports on the application of the Convention the action taken in pursuance of the policy and the results secured by such action.

The Convention further stipulate that, any Member may, after consultation with representative employers' and workers' organizations, where such exist, determine that other special measures designed to meet the particular requirements of persons who, for reasons such as sex, age, disablement, family responsibilities or social or cultural status, are generally recognized to require special protection or assistance, shall not be deemed to be discrimination.

PO-RALG and associated project implementors shall not practice any kind of discrimination of the employees during both construction and operation phases.

- Termination of Employment Convention, 1982 (ILO Convention No. 158)

Although this convention may exclude certain categories of employees including probationary workers, the convention is generally applicable to all branches of economic activity and to all employed persons. This provision suggests that member states have been given options to apply or to skip the application of certain contents of this convention when dealing with certain category of employees, but before such neglect certain requirements should be considered.

From the above provision it should be learnt that, exclusion of the probationary employees, among others, stated in the Convention is not a compulsive requirement upon member states. This suggests that some members will opt to apply the stipulated Convention provisions to probationary employees expressly or impliedly.

In conjunction with The Employment and Labour Relations (Code of Good Practice) G.N. No 42, PO-RALG and associate project implementers shall comply to the requirements of convention by following proper termination procedures of the employees during both construction and operation phases.

- The Universal Declaration of Human Rights, 1948

The declaration proclaims a common standard of achievement for all peoples and all nations, to the end that every individual and every organ of society, keeping this Declaration constantly in mind, shall strive by teaching and education to promote respect for these rights and freedoms and by progressive measures, national and international, to secure their universal and effective recognition and observance, both among the peoples of Member States themselves and among the peoples of territories under their jurisdiction.<sup>41</sup> The declaration (UDHR) further states clearly that, all human beings are born free and equal in dignity and rights. They are endowed with reason and conscience and should act towards one

another in a spirit of brotherhood. It further declares that, “everyone is entitled to all the rights and freedoms set forth in this Declaration, without distinction of any kind, such as race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth or other status. Furthermore, no distinction shall be made on the basis of the political, jurisdictional or international status of the country or territory to which a person belongs, whether it be independent, trust, non-self-governing or under any other limitation of sovereignty.

The declaration (UDHR) has declared universally that “everyone has the right to work, to free choice of employment, to just and favourable conditions of work and to protection against unemployment. Everyone, without any discrimination, has the right to equal pay for equal work. Everyone who works has the right to just and favourable remuneration ensuring for himself and his family an existence worthy of human dignity, and supplemented, if necessary, by other means of social protection. Everyone has the right to form and to join trade unions for the protection of his interests.”

Even though the Universal Declaration of Human Rights of 1948 not formally by itself legally binding, the Declaration has been adopted in or influenced United Republic of Tanzania, wherein the government commit itself and its people to progressive measures to secure the universal and effective recognition and observance of the human rights set out in the Declaration.

Thus, the declaration is obviously a fundamental document of the United Nations and a powerful tool when applying diplomatic and moral pressure to governments that violates and of its provisions.

PO-RALG and its associates during the subproject implementation shall observe/comply to the provision of human rights during both phases.

### **3.7 Administrative Framework**

In general, the key authority responsible for environmental protection and natural resources management is the Ministry of Natural Resources and the Environment through Division of Environment (DoE) and National Environment Management Council (NEMC). The Ministry is empowered by legislation which governs the use of the natural resources and environment. The Ministry is aided by other government ministries and local government authorities to safeguard the environment.

Below are relevant Institutions, their Roles and Responsibilities to the proposed upgrading of roads and drainage channels under TACTIC project in Morogoro Municipality.

#### **3.7.1 National Environmental Authorities**

The envisaged institutional framework for environmental management in the country includes the following levels of governance:

- The Minister responsible for the environment;
- National Environmental Advisory Committee
- The Office of the Director of Environment (DOE);
- Sector ministries and their environmental sections;
- Regional administrative secretariats (RASs); and Local government authorities (LGAs), they are: city, municipal, district, township, ward, village, mtaa and kitongoji.

The Environmental Management Act of 2004 (EMA) contains detailed descriptions of roles and responsibilities. A brief overview is as follows:

(i) Minister Responsible for Environment

The Minister is responsible for matters relating to environment, including giving policy guidelines necessary for the promotion, protection and sustainable management of the environment in Tanzania. The Minister approves an ESIA and may also delegate the power of approval for an ESIA to the DOE, Local Government Authorities or Sector Ministries. The Minister also:

- Prescribes (in the regulations) the qualifications of persons who may conduct an ESIA;
- Reviews NEMC reports on the approval of an ESIA;
- Issues an ESIA certificate for projects subject to an ESIA;
- Suspends an ESIA certificate in case of non-compliance

(ii) National Environmental Advisory Committee

The National Advisory Environmental Committee is comprised of members with experience in various fields of environmental management in the public and private sector and in civil society. The committee advises the Minister on any matter related to environmental management. Other functions include:

- Examine any matter that may be referred to it by the Minister or any sector Ministry relating to the protection and management of the environment;
- Review and advise the Minister on any environmental plans, environmental impact assessment of major projects and activities for which an environmental impact review is necessary;
- Review the achievement by the NEMC of objectives, goals and targets set by the Council and advise the Minister accordingly;
- Review and advise the Minister on any environmental standards, guidelines and regulations;
- Receive and deliberate on the reports from Sector Ministries regarding the protection and management of the environment;
- Perform other environmental advisory services to the Minister as may be necessary.

(iii) Division of Environment (DoE)

The functions of the Division of Environment include:

- Coordination of various environmental management activities undertaken by other agencies;
- Promotion of the integration of environmental considerations into development policies, plans, programmes, strategies, projects;
- Undertaking strategic environmental risk assessments with a view to ensuring the proper management and rational utilization of environmental resources on a sustainable basis for the improvement of quality of human life in Tanzania;
- Advise the Government on legislative and other measures for the management of the environment or the implementation of the relevant international environmental agreements in the field of environment;
- Monitoring and assessing activities undertaken by relevant Sector Ministries and agencies;
- Preparation and issuing of reports on the state of the environment in Tanzania through relevant agencies;
- Coordination of issues relating to articulation and implementation of environmental management aspects of other sector policies and the National Environment Policy



(iv) National Environment Management Council (NEMC)

The NEMC's purpose and objective is to undertake enforcement, compliance, review and monitoring of ESIA's and to facilitate public participation in environmental decision making.

According to the Environmental Management Act (2004) the NEMC has the following responsibility pertaining to ESIA in Tanzania:

- Registers experts and firms authorized to conduct ESIA;
- Registers projects subject to ESIA;
- Determines the scope of the ESIA;
- Set-ups cross-sectoral Technical Advisory Committee (TAC) to advise on ESIA reviews;
- Requests additional information to complete the ESIA review;
- Assesses and comments on ESIA, in collaboration with other stakeholders,
- Convenes public hearings to obtain comments on the proposed project;
- Recommends to the Minister to approve, reject, or approve with conditions specific EIS;
- Monitors the effects of activities on the environment;
- Controls the implementation of the Environmental Management Plan (EMP);
- Makes recommendations on whether to revoke ESIA Certificates in case of non-compliance;
- Promotes public environmental awareness;
- Conducts Environmental Audits

(v) Sector Ministries

The existing institutional and legal framework the Sector Ministries are required to establish Sector Environmental Sections headed by the Sector Environmental Coordinator.

The Sector Ministries' Environmental Sections;

- Ensure environmental compliance by the Sector Ministry;
- Ensure all environmental matters falling under the sector ministry are implemented and report of their implementation is submitted to the DOE;
- Liaise with the DOE and the NEMC on matters involving the environment and all matters with respect to which cooperation or shared responsibility is desirable or required;
- Ensure that environmental concerns are integrated into the ministry or departmental development planning and project implementation in a way which protects the environment;
- Evaluate existing and proposed policies and legislation and recommend measures to ensure that those policies and legislation take adequate account of effect on the environment;
- Prepare and coordinate the implementation of environmental action plans at national and local levels;
- Promote public awareness of environmental issues through educational programmes and dissemination of information;
- Refer to the NEMC any matter related to the environment;
- Undertake analysis of the environmental impact of sectoral legislation, regulation, policies, plans, strategies and programmes through strategic environmental assessment (SEA);
- Ensure that sectoral standards are environmentally sound;
- Oversee the preparation of and implementation of all ESIA's required for investments in the sector;



- Ensure compliance with the various regulations, guidelines and procedures issued by the Minister responsible for the environment and;
- Work closely with the ministry responsible for local government to provide environmental advise and technical support to district level staff working in the sector.

For the road sub-sector, the Ministry of Infrastructure Development has established the Division of Safety and Environment in which among others its role is to monitor the implementation of policies related to environmental management in road sector.

(vi) Regional Secretariat

The Regional Secretariat, which is headed by the Regional Environmental Management Expert, is responsible for the co-ordination of all environmental management programmes in their respective regions. The Regional Environmental Expert:

- Advises local authorities on matters relating to the implementation of and enforcement of environmental laws and regulations;
- Creates a link between the region and the DOE and the Director General of the NEMC.

(vii) Local Government Authorities

Under the Local Government Act of 1982 (Urban and District Authorities), Local Government Authorities include the City Councils, Municipal Councils, District Councils, Town Councils, Township, Kitongoji, Ward, and Village.

The Environmental Management Committee of each jurisdiction:

- Initiates inquiries and investigations regarding any allegation related to the environment and implementation of or violation of the provisions of the Environmental Management Act;
- Requests any person to provide information or explanation about any matter related to the environment;
- Resolves conflicts among individual persons, companies, agencies non- governmental organizations, government departments or institutions about their respective functions, duties, mandates, obligations or activities;
- Inspects and examines any premises, street, vehicle, aircraft or any other place or article which it believes, or has reasonable cause to believe, that pollutant or other articles or substances believed to be pollutant are kept or transported;
- Requires any person to remove such pollutants at their own cost without causing harm to health and;
- Initiates proceedings of civil or criminal nature against any person, company, agency, department or institution that fails or refuses to comply with any directive issued by any such Committee.

Under the Environmental Management Act (2004), the City, Municipal, District and Town Councils are headed by Environmental Inspectors who are responsible for environmental matters. The functions of the inspectors are to:

- Ensure enforcement of the Environmental Management Act in their respective areas;
- Advise the Environmental Management Committee on all environmental matters;
- Promote awareness in their areas on the protection of the environment and conservation of natural resources;
- Collect and manage information on the environment and the utilization of natural resources;
- Prepare periodic reports on the state of the local environment;

- Monitor the preparation, review and approval of ESIA's for local investors;
- Review by-laws on environmental management and on sector specific activities related to the environment;
- Report to the DOE and the Director General of the NEMC on the implementation of the Environmental Management Act and;
- Perform other functions as may be assigned by the local government authority from time to time.

The road Act 2007 has illustrated the direct link with the Land use planning and resettlement compensation process. Section 14(I) directs that The Minister of Ministry of Works: Transport and Communication (MoWTC) shall cause a plan or survey to be prepared of all public roads declared under this Act and require that the authenticated plans or survey shall be submitted to the Director of Surveys and Mapping for registration. Section 16 requires to follow land acquisition procedures and resettlement compensation in accordance with the Land Acquisition Act. Land Act, Village Land Act and any other written law.

### **3.7.2 Ministry of Lands, Housing and Human Settlement Development**

The Ministry of Lands and Human Settlement Development is responsible for policy, regulation and coordination of matters pertaining to land in Tanzania. The Ministry has the following responsibilities

- The Ministry administers the various land acts: Land Acquisition Act, the Land Act and the Village Land Act.
- Conducts Land use planning, management and land delivery activities
- The Ministry is responsible for land use planning, surveying and demarcating land/parcel/farms, and provision of land ownership and tenancy in both rural and urban areas.
- 

The Commissioner of Lands administers most issues to do with land allocation, acquisition, registration and land management in general. All instances of acquisition of land for public purposes and the need for resettlement and/or compensation have to be referred to the Commissioner.

### **3.7.3 Survey and Mapping Division**

The Surveys and Mapping Division also provides land survey services to government agencies, maintains geodetic survey control networks, prepares and maintains cadastral and topographic maps for the entire country.

The Director of Surveys is responsible for coordinating all public sector mapping activities and for maintaining records of all maps, plans and land surveys which are conducted by government agencies.

### **3.7.4 Local Government Authorities**

The District Councils, City Councils, Municipal Councils, and Village Councils are body Corporate responsible for planning, financing and implementing development programmes within their areas of jurisdiction.

- Municipal/District Land Department with sections /units for physical planning, surveying, valuation;
- District functional departments including Community Development (communities mobilization and sensitization); Environmental Management Offices (acts as appendages of national environmental authorities);
- Land Tribunals (District, Ward levels) for handling and resolving land-related disputes and grievances;

- Various multi-disciplinary, multi-sectoral technical teams and committees of Councilors responsible for social issues at local government levels.

Local governments are not replicated at the regional level. Regional authorities provide technical advice and support and exercise supervision to the District councils. Regional and District Commissioners are responsible for co-ordinating and managing central government affairs.

### **3.7.5 Government Chief Valuer**

The Chief Valuer is the principal advisor to the Government on all matters relating to valuation, and the Head of the Valuation Department within the Ministry, and has the following functions:

- to advise the Government on valuation matters and activities, including valuation rates in purchase and disposal of Government properties;
- to carry out valuation of properties or other assets upon request from the Government, institutions, individuals and members of the public;
- to prepare and maintain a database on property transaction or related data relating to the Government;
- manage complaints arising out of Government valuation

## 4 ENVIRONMENTAL AND SOCIAL BASELINE

This chapter describes the existing environmental and socio-economic setting within subproject area, with a special focus on those conditions that may be impacted by, or have a direct impact on, the proposed sub-project during construction and operations as stipulated in the Environmental Impact Assessment (EIA) and Audit Regulations (2005).

The following is a detailed description of the baseline information, based on physical, biological, socio-economic and cultural characteristic.

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### 4.1 Biophysical Environment

#### 4.1.1 Climatic Condition

##### 4.1.1.1 Temperature and Projection:

Despite the variation of climatic conditions throughout the year the weather is attractive because of its high altitude. Morogoro experiences average daily temperature of 30°C degrees centigrade with a daily range of about 5°C (degrees centigrade).

The highest temperature occurs in November and December, during which the mean maximum temperature is about 33°C (degrees centigrade). The minimum temperature is in June and August when the temperatures go down to about 16°C (degrees centigrade). The mean relative humidity is about 66% and drops down to as far as 37%.

RPC4.5 has been used to project temperature changes during the project's operation period, annual temperatures between 1979-2005 have been considered as reference for projection period of 2020-2040.

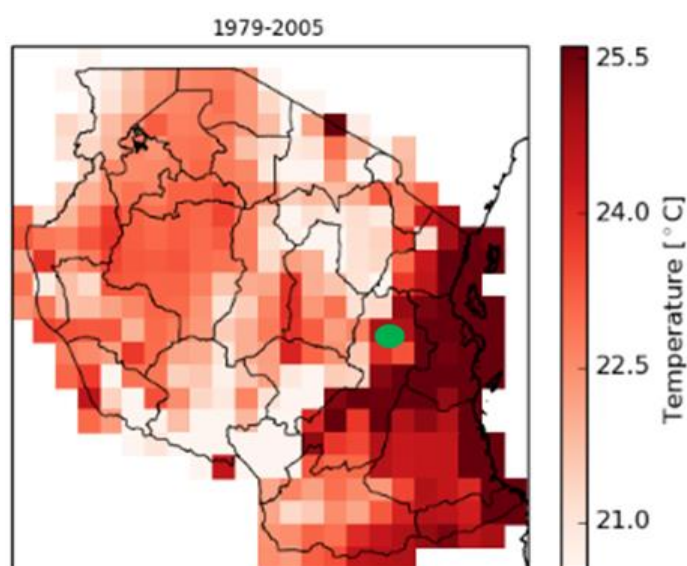
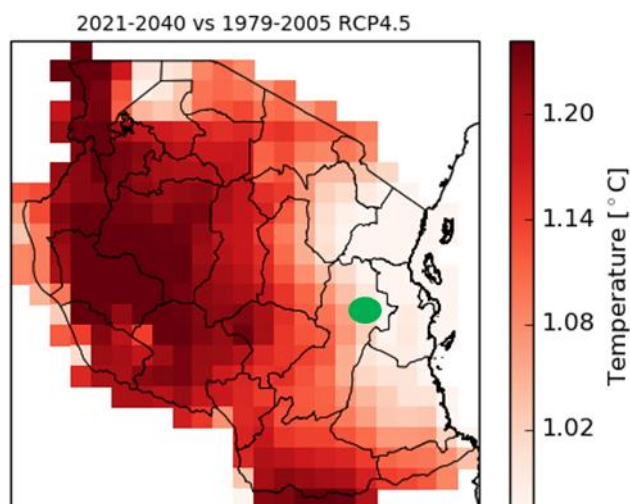


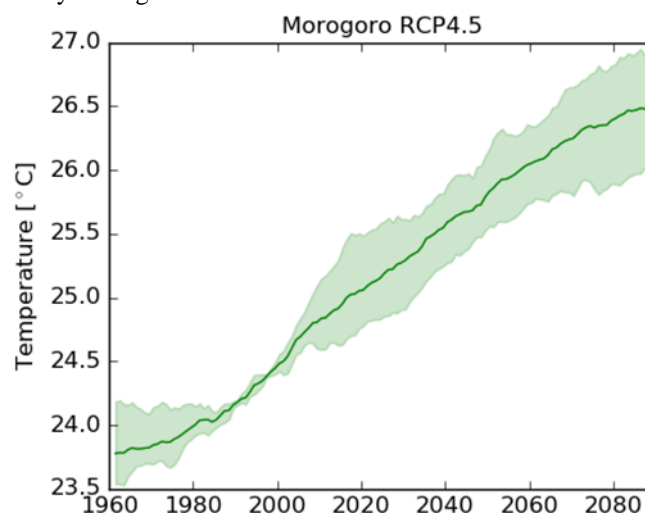
Figure 4-1: Temperature average over the reference period 1979-2005. This map is based on the EWEMBI dataset.

Source: <http://regioclim.climateanalytics.org/choices>



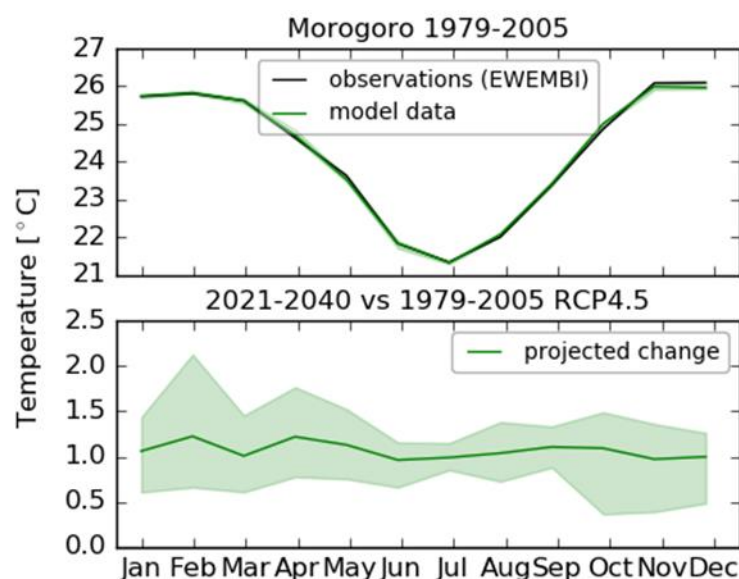
**Figure 4-2: Projected change in temperature for 2021-2040 compared to the reference period 1979-2005. Here the ensemble mean of regional climate model projections is displayed. Grid-cells for which a model-disagreement is found are coloured in grey. The projections are based on the emission scenario RCP4.5.**

Source: <http://regioclim.climateanalytics.org/choices>



**Figure 4-3: Regional climate model projections for temperature displayed as 20 year running mean. The line represents the ensemble mean while the shaded area represents the model spread. The projections are based on the emission scenario RCP4.5.**

Source: <http://regioclim.climateanalytics.org/choices>



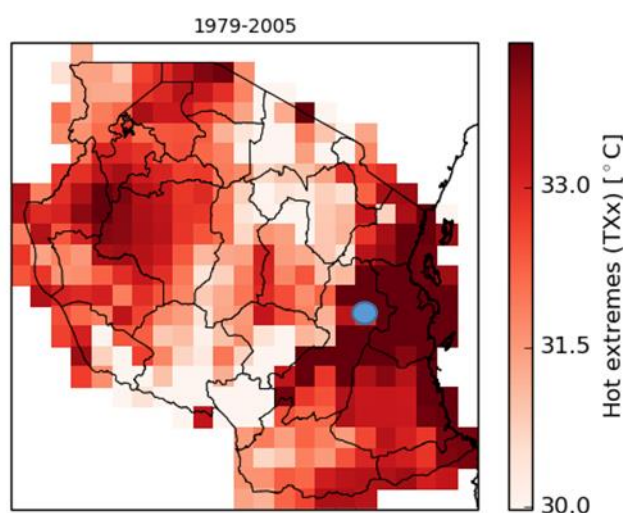
**Figure 4-4: Top: Annual cycle of temperature for the period 1979-2005. Bottom: Changes in annual cycle projected for 2021-2040 compared to the reference period 1979-2005. EWEMBI data is shown in black, regional climate model simulations in green. The green line represents the ensemble mean while the shaded area represents the model spread. The projections are based on the emission scenario RCP4.5.**

Source: <http://regioclim.climateanalytics.org/choices>

Temperature is predicted to increase throughout from year 2021 to 2040, figure 6-9 indicates the highest increase of 1.2°C in February and April and the lowest of 1.0°C in November. Notable period of constant temperature increase is between June and September.

#### 4.1.1.2 Hot Extreme

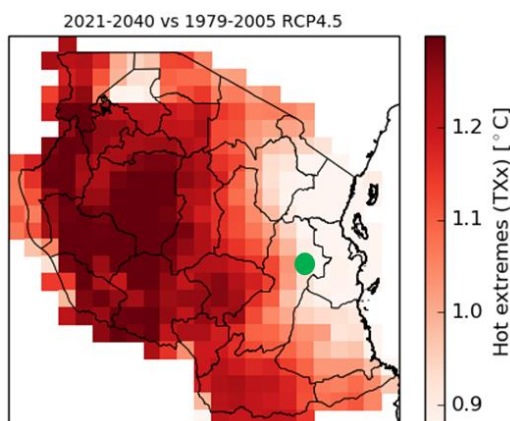
Hot extreme conditions have been projected for Morogoro by using RCP4.5 as indicate in Figure 4-5



**Figure 4-5: Hot extremes (TXx) average over the reference period 1979-2005. This map is based on the EWEMBI dataset.**

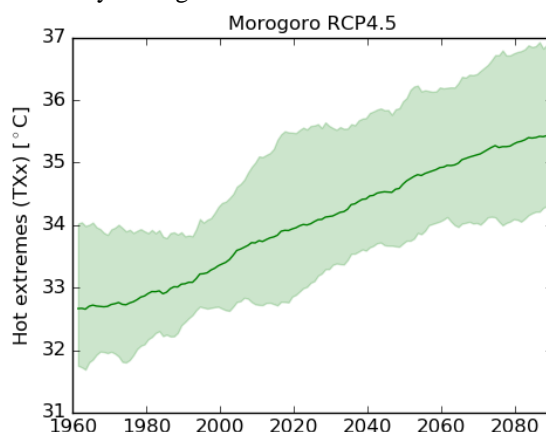
Source: <http://regioclim.climateanalytics.org/choices>





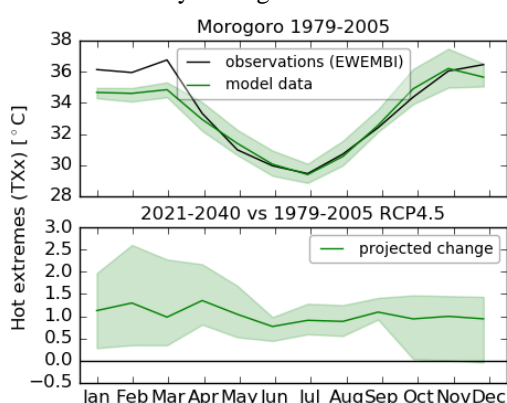
**Figure 4-6: Projected change in hot extremes (TXx) for 2021-2040 compared to the reference period 1979-2005. Here the ensemble mean of regional climate model projections is displayed. Grid-cells for which a model-disagreement is found are colored in gray. The projections are based on the emission scenario RCP4.5.**

Source: <http://regioclim.climateanalytics.org/choices>



**Figure 4-7: Regional climate model projections for hot extremes (TXx) displayed as 20 year running mean. The line represents the ensemble mean while the shaded area represents the model spread. The projections are based on the emission scenario RCP4.5.**

Source: <http://regioclim.climateanalytics.org/choices>



**Figure 4-8: Top: Annual cycle of hot extremes (TXx) for the period 1979-2005. Bottom: Changes in annual cycle projected for 2021-2040 compared to the reference period 1979-2005. EWEMBI data is shown in black, regional climate model simulations in green. The green line represents the ensemble mean while the shaded area represents the model spread. The projections are based on the emission scenario RCP4.5.**

Source: <http://regioclim.climateanalytics.org/choices>

Morogoro Municipality is continuing to experience hot weather extremes, currently is experiencing an average of 33.6°C with projected yearly slight increase, in 2040 hot extreme expected to attain 34°C. Highest hot extreme weather is and shall be experienced in the months of April. Hot extreme is among the climate variable that will contribute to early aging of the bitumen and increase humidity to the atmosphere on the proposed urban roads.

#### 4.1.1.3 Rainfall & Projection:

The total average annual rainfall ranges between 821mm to 1505mm. Long rains occur between March and May and short rains occur between October and December each year. Despite the variation of climate conditions throughout the year, the climate is attractive due to its high altitude. Morogoro Municipality is experiencing two major rain seasons that include: the long rain season and short rain season.

The wettest month (with the highest rainfall) is April (290mm). The driest month (with the lowest rainfall) is August (25mm). Thus it is expected that during April the site will not experience much particulate matter compared with August which is the driest month see Figure 4-1.

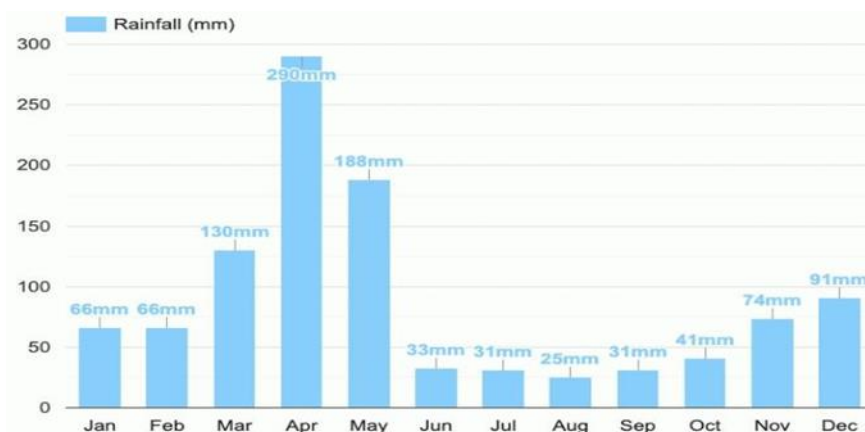


Figure 4-9: Average rainfall Morogoro, Tanzania

Rainfall projection was made with reference period 1979-2005 and projection from 2020-2040.

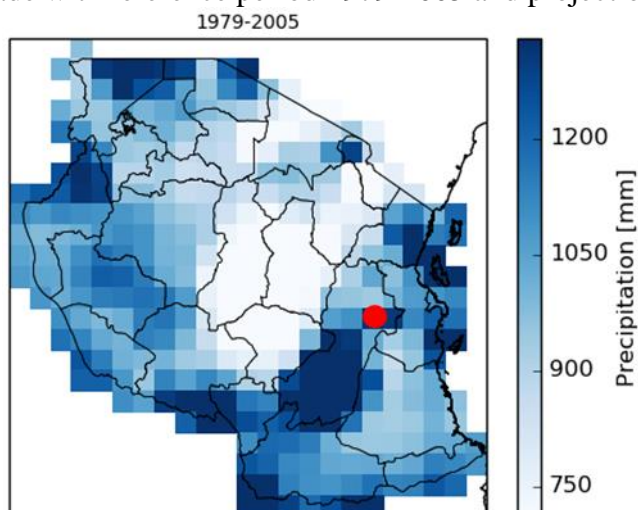
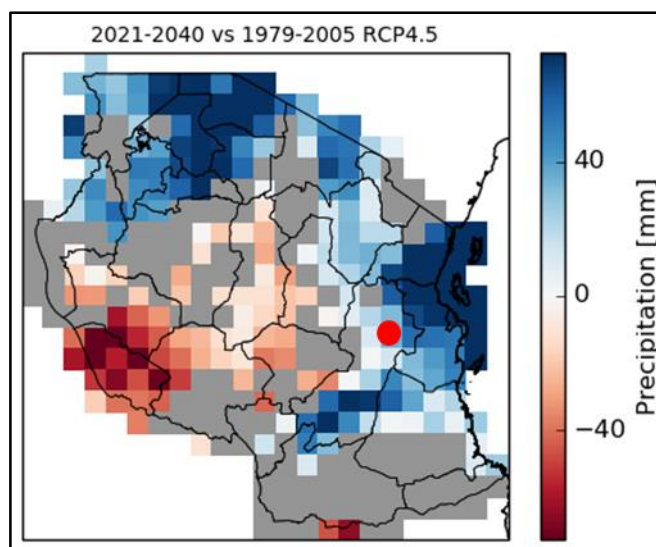
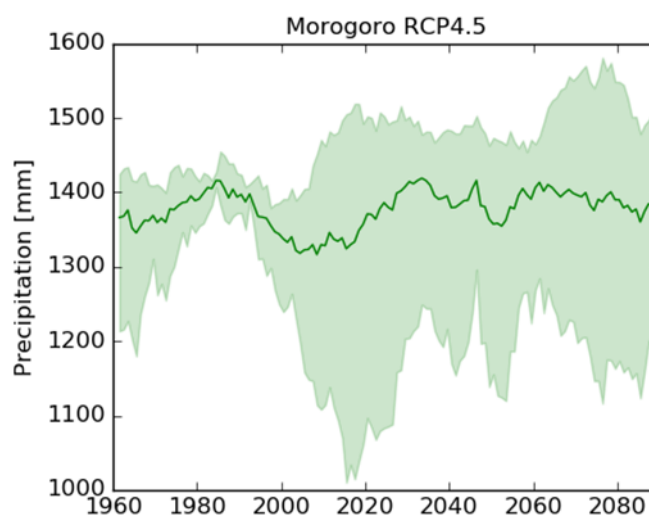


Figure 4-10: Precipitation sum over the reference period 1979-2005. This map is based on the EWEMBI dataset. Source: <http://regioclim.climateanalytics.org/choices>



**Figure 4-11: Projected change in precipitation for 2021-2040 compared to the reference period 1979-2005. Here the ensemble mean of regional climate model projections is displayed. Grid-cells for which a model-disagreement is found are coloured in grey. The projections are based on the emission scenario RCP4.5.**

Source: <http://regioclim.climateanalytics.org/choices>



**Figure 4-12: Regional climate model projections for precipitation displayed as 20 year running mean. The line represents the ensemble mean while the shaded area represents the model spread. The projections are based on the emission scenario RCP4.5.**

Source: <http://regioclim.climateanalytics.org/choices>

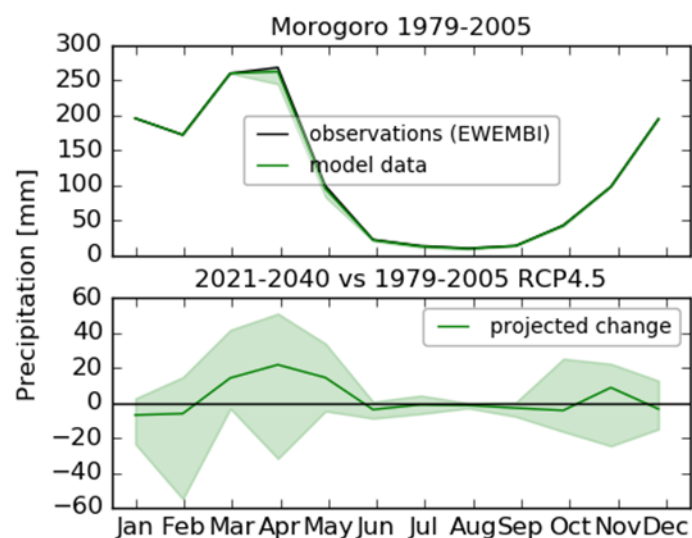


Figure 4-13: Top: Annual cycle of precipitation for the period 1979-2005. Bottom: Changes in annual cycle projected for 2021-2040 compared to the reference period 1979-2005. EWEMBI data is shown in black, regional climate model simulations in green. The green line represents the ensemble mean while the shaded area represents the model spread. The projections are based on the emission scenario RCP4.5.

Source: <http://regioclim.climateanalytics.org/choices>

From the analysis, the Municipality will experience an average of 1320mm rainfall in 2023 with continuous increase up to 1400mm in 2030. In comparison with the reference period of 1979-2005, the month of March, April and May will be experiencing an average rainfall increase.

#### 4.1.1.4 Wet Extreme

This indicates much rain falling too fast that can trigger floods in the project area.

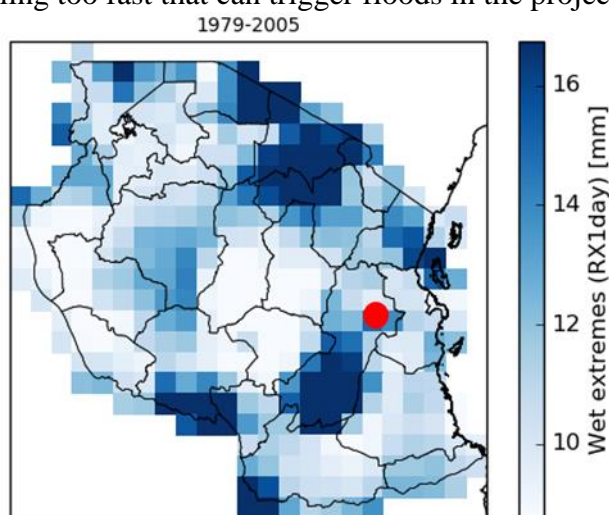
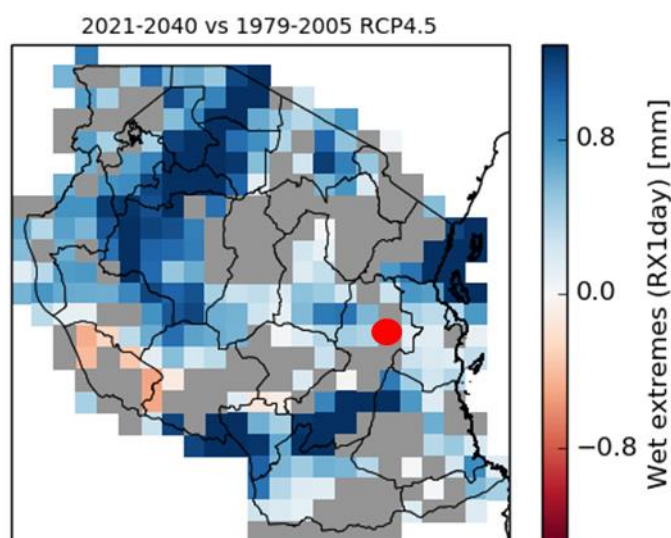


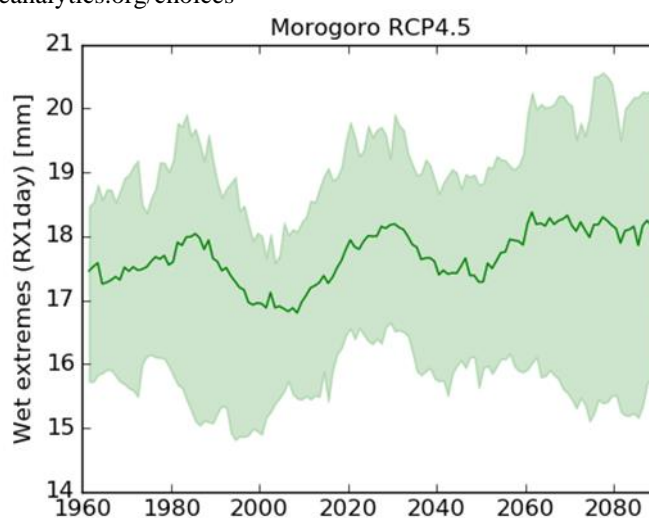
Figure 4-14: Wet extremes (RX1day) average over the reference period 1979-2005. This map is based on the EWEMBI dataset.

Source: <http://regioclim.climateanalytics.org/choices>



**Figure 4-15: Projected change in wet extremes (RX1day) for 2021-2040 compared to the reference period 1979-2005. Here the ensemble mean of regional climate model projections is displayed. Grid-cells for which a model-disagreement is found are coloured in grey. The projections are based on the emission scenario RCP4.5.**

Source: <http://regioclim.climateanalytics.org/choices>



**Figure 4-16: Regional climate model projections for wet extremes (RX1day) displayed as 20 year running mean. The line represents the ensemble mean while the shaded area represents the model spread. The projections are based on the emission scenario RCP4.5.**

Source: <http://regioclim.climateanalytics.org/choices>



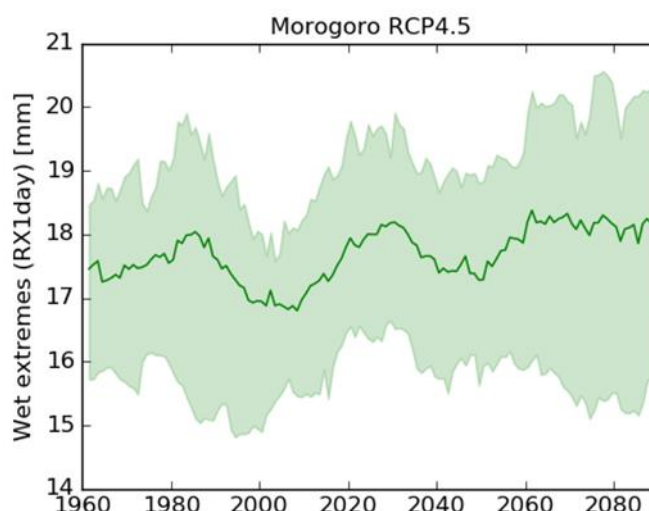


Figure 4-17: Top: Annual cycle of wet extremes (RX1day) for the period 1979-2005. Bottom: Changes in annual cycle projected for 2021-2040 compared to the reference period 1979-2005. EWEMBI data is shown in black, regional climate model simulations in green. The green line represents the ensemble mean while the shaded area represents the model spread. The projections are based on the emission scenario RCP4.5.

Source: <http://regioclim.climateanalytics.org/choices>

Pavement materials will perform poorly under the effects of water i.e. rising water tables or water levels. Thus, between March and May where the Rainfall is high in the project area there will be great possibility of the Road infrastructure's damage as well as flooding of drainage systems.

**Wind:** The area is strongly dominating by winds that show a seasonal character. The wind speed from January to April ranges from 13 kmph to 20 kmph: while from May to July, it ranges from 18kmph to 20kmph, similarly, during the month of August and September, the wind velocity is between 21 kmph to 23kmph as depicted on Figure 4-18. This shows that the study area has the highest wind velocity from May to September which indicate that this period the study area will have more particulate matter emitted from unpaved surfaces.

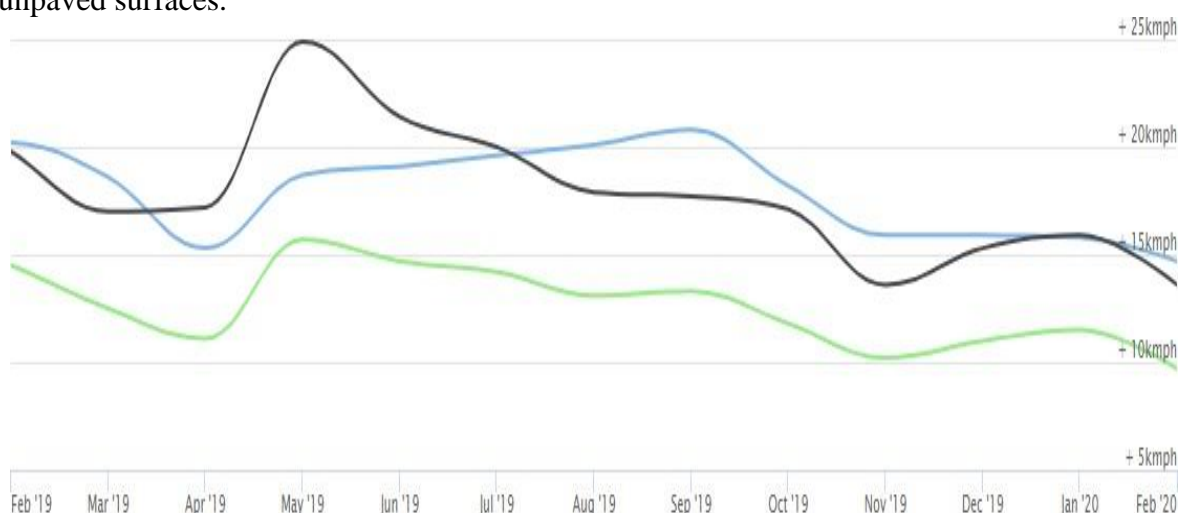


Figure 4-18: Max and Average Wind Speed and Wind Gust

(Source: <https://www.worldweatheronline.com/dar-es-salaam-weather-history/dar-es-salaam/tz.aspx>)

## Wind Rose:



Wind rose for project site is shown in the Figure 4-19 that during May to September (the month with strong wind events) the wind blows South West direction with a speed of 30 to 35 Km/ hour. That means during this period most of air pollutant to be released from the project area will flow in to the same direction as the wind flowing.

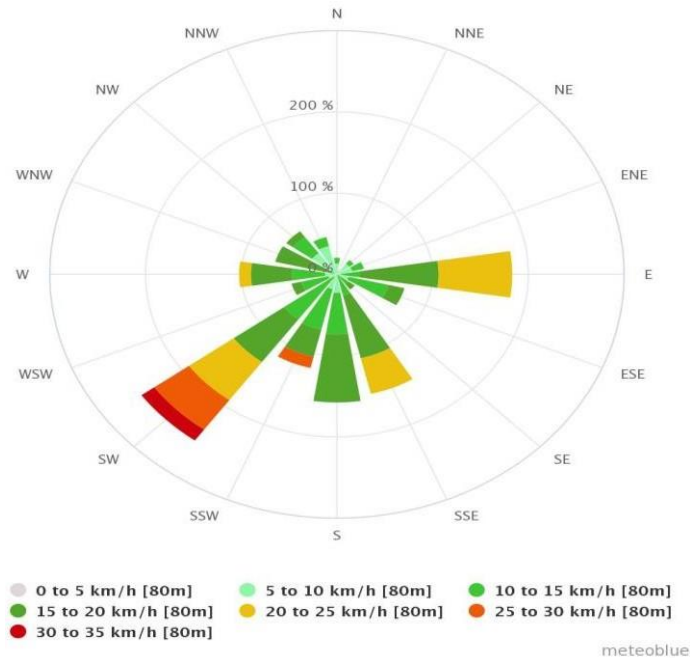


Figure 4-19: Wind Rose

## 4.1.2 Geology, Soil and Topography

### 4.1.2.1 Topography

The Municipality forms part of the Uluguru Mountain Plateau of Eastern Zone, an area of flat and gently undulating plains broken in places by prominent hills. Most parts of the Municipal land lie between 600 meters and 1,600 meters above sea level. With exception of very few slopes, the municipality is relatively homogeneous with gently undulating plains intersected by seasonally streams. In the extreme southern-east and western part of the municipality gives way to mountainous land covered by forest, commonly known as Uluguru Mountains and Mindu mountains respectively. The elevation of the MMC decline as you go far from western to eastern side. The proposed infrastructure passes in number of topographical features available in the municipality such as flat area, hilly areas and low land areas that might be altered by the roads implementation.

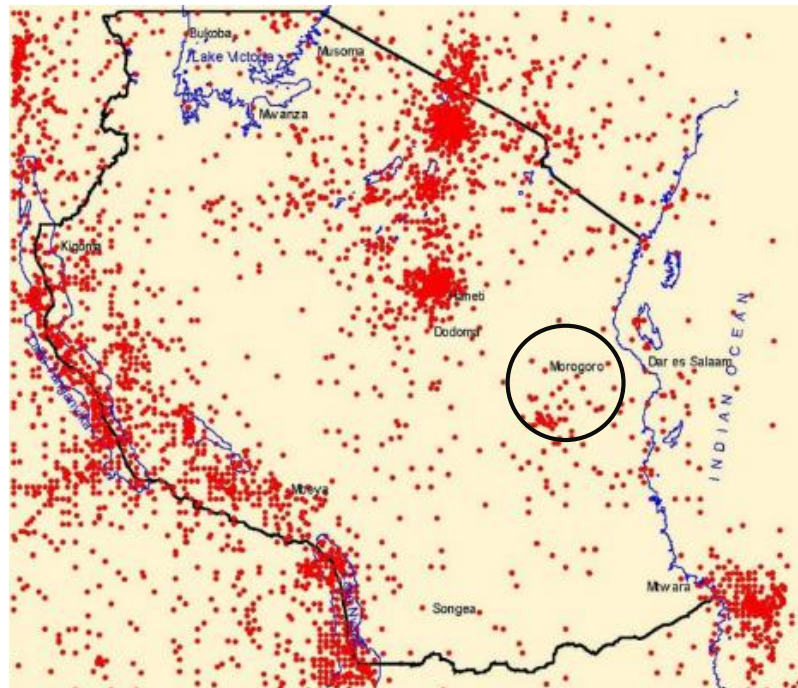
### 4.1.2.2 Soil and Geology

The geology of the area is dominated by Palaeoproterozoic (Usagaran) meta-igneous and sedimentary rocks with relics of Neoarchaeon basement, re-worked during the Neoproterozoic tectothermal events. The soils in the project area are sandy loams, which are moderately deep and excessively drained. In areas with weak geological features can impact sustainability of the proposed urban infrastructure mainly through expansions and contractions as well as soil erosion.

### 4.1.2.3 Seismicity

The earthquake hit Tanzania the Saturday, May 9, 2020 at 02:27 with a magnitude of 4.1. was felt in Morogoro. The epicenter is located at longitude 38.4182 and latitude -8.7248. 226.72 km from Ovalle. It occurred in Selous Game reserve, an average of 85km from Morogoro region boundary.

There is no record of recent seismic activities originating from Morogoro, the region is characterized with weak earthquakes and non-frequent.



**Figure 4-20: Map Showing Earthquake Epicenters (red dots:magnitude≥2)**  
Source: [gst.go.tz/geo-hazard/](http://gst.go.tz/geo-hazard/)

Since the project area experiences weak and non-frequent earthquakes, no impact to the proposed infrastructure is expected.

#### **4.1.3 Vegetation**

All proposed roads and drainage project site are covered by few trees, grasses and Vegetable (See Appendix III) of which will be carefully cleared during both construction and operation phase site clearance is done to minimal and the construction/operation of the project does not cause significant impacts to the biological features of the area. Clearance of vegetation for subproject's implementation shall influence soil erosions along the proposed routes for roads and drainage channels.

#### **4.1.4 Drainage System**

There are four main streams with several tributaries, which form a number of alluvial flood plains. These streams are Morogoro, Ngerengere, Kilakala and Bigwa which traverse the Municipality from west to east to discharge their water into Indian Ocean through Ruvu River. There is also Mindu Dam in the project area which was built in the late 1980s to supplement the over increasing demand of water supply for both industrial and domestic purposes in the Municipal Council. The Dam receives water from five springs, namely, Mzinga, Mgewa, Mlali, Ngerengere and Mkunge.

The Ngerengere and Morogoro rivers, as well as the kikundi River, are major rivers that drain the Ruvu river. Intensive obstructing and irrigation system construction in Watershed Street is diminishing the quantity and duration of water flow, affecting water availability in the river.

The proposed subproject's implementation is expecting to extract water from available surface water sources. Trucks and pumps to be used for water extraction might cause water pollution through accidental or intentional oil/fuel spills during the act.

#### **4.1.5 Air Quality, Noise and Vibration**

The projects are located at Morogoro Municipal Council CBD. The air quality in the projects area depends on the pollutant substances emissions originating from energy consumption mainly households, as well as from traffic. Currently there are no established air quality data in Morogoro region and therefore national and international standards will be used for comparison.

##### **4.1.5.1 Air quality**

The ambient air quality at all sampling locations were measured in December 2021 using ECO-12 Environmental Air Quality taster with model number L211-D00277 and Multi-gas monitor TA8421. The devices were placed at a height level of about 1.2 meter from the ground for air quality parameters measurements.

##### **4.1.5.2 Dust PM<sub>10</sub> and PM<sub>2.5</sub>**

Dust levels in terms of PM<sub>10</sub> and PM<sub>2.5</sub> were measured by using ECO-12 Environmental Quality taster with model number L211-D00277. The device was placed at breath height of about 1.2 meter from the ground to monitor dust concentrations at each identified point. This position is assumed a relatively breathing zone of people at their respective locality or working environment. The recorded average values shown in table below compared with prescribed available limit to check their compliance with local and international standards. Three readings were recorded at each point and the average value used to represent the value at that particular point as presented in Table 4-1

The average measured Concentration of PM<sub>10</sub> and PM<sub>2.5</sub> levels were found to be 6 and 4 µg/m<sup>3</sup> respectively. Based on the study results, the average PM<sub>10</sub> concentrations measured at most of stations were found to be below the respective standards stipulated by IFS/International and Tanzanian Emission standards.

The earthworks related to construction of subprojects will generate dust which is not only associated with nuisance but also a health problem.

##### **4.1.5.3 Noise Quality**

Noise level were measured using IEC 61672-1 Class 2 Data logger. On noise level Meter range; 30 dB – 130 dB (A). On taking measurements, the device-meter scale was set to the ‘A’ weighed measurement scale, which enables the device to respond in the same manner as human ear. During measurement, the device was fixed/and or held approximately 1.2 meter above the ground and at least 3 m away from hard reflecting surface or objects. The source of noise at the project area were observed to be vehicles and other human activities. Three readings were recorded at each point and the average value used to represent the value at that particular point as presented in Table 4-1.

The proposed subprojects have a potential to increase noise levels from transportation of construction materials and other earthworks. The increase in noise can affect workers and communities around the subproject’s sites.

##### **4.1.5.4 Vibration level**

Vibration level were recorded by using digital vibration meter with model number TA8663. On taking measurements the device was set to velocity mode and the probe placed on the ground. Three readings were recorded at each point and the average value used to represent the value at that particular point as presented in Table 4-1

Results show that measured ground vibrations were not more than 4.5 mm/s RMS. This implies that all point was found with vibration levels below the prescribed Australian Standard 2187.2-2006 limit of 10mm/s. Vibration levels are expected during compaction of roads' earth construction materials (subgrades) and cause cracks to the houses adjacent to the proposed roads.

**Table 4-1: Measurement Results**

<b>MOROGORO REGION, MOROGORO MUNICIPAL COUNCIL</b>					
<b>COORDINATES (UTM)</b>	<b>STATION NAME</b>	<b>PARAMETERS</b>	<b>AVERAGE CONCENTRATION</b>	<b>STATUS</b>	<b>TBS/WHO STANDARDS</b>
<b>37M 352834E 9245626N</b>	<b>KIKUNDI DRAINAGE</b>	Oxygen O <sub>2</sub> (% volume)	25.4	Residential activities	
		Carbon monoxide CO (ppm)	0.0		4
		Hydrogen Sulphide H <sub>2</sub> S (ppm)	0.0		
		Combustible Gases LEL (% volume)	17		
		Carbon dioxide CO <sub>2</sub> (ppm)	0.0		500
		Particulate Matter PM <sub>2.5</sub> (µg/m <sup>3</sup> )	0		15
		Particulate Matter PM <sub>10</sub> (µg/m <sup>3</sup> )	0		45
		Noise (dB)	74.8		
		Vibration (mm/s)	0.4		
		Humidity (%)	84		
<b>37M 352646E 9245601N</b>		Temperature (°C)	28		
		Oxygen O <sub>2</sub> (% volume)	27.7		
		Carbon monoxide CO (ppm)	0.0		4
		Hydrogen Sulphide H <sub>2</sub> S (ppm)	0.0		
		Combustible Gases LEL (% volume)	17		

		Carbon dioxide CO <sub>2</sub> (ppm)	370		500
		Particulate Matter PM <sub>2.5</sub> (µg/m <sup>3</sup> )	18		15
		Particulate Matter PM <sub>10</sub> (µg/m <sup>3</sup> )	22		45
		Noise (dB)	76.1		
		Vibration (mm/s)	1.2		
		Humidity (%)			
		Temperature (°C)			
<b>37M 352498E 9245571N</b>		Oxygen O <sub>2</sub> (% volume)	27.0		
		Carbon monoxide CO (ppm)	0.0		4
		Hydrogen Sulphide H <sub>2</sub> S (ppm)	0.0		
		Combustible Gases LEL (% volume)	17		
		Carbon dioxide CO <sub>2</sub> (ppm)	433		500
		Particulate Matter PM <sub>2.5</sub> (µg/m <sup>3</sup> )	17		15
		Particulate Matter PM <sub>10</sub> (µg/m <sup>3</sup> )	21		45
		Noise (dB)	75.9		
		Vibration (mm/s)	0.4		
		Humidity (%)	77		
		Temperature (°C)	30		
<b>37M 352172E 9244736N</b>		Oxygen O <sub>2</sub> (% volume)	20.9		
		Carbon monoxide CO (ppm)	0.0		4
		Hydrogen Sulphide H <sub>2</sub> S (ppm)	0.0		



		Combustible Gases LEL (% volume)	15		500
		Carbon dioxide CO <sub>2</sub> (ppm)	413		
		Particulate Matter PM <sub>2.5</sub> (µg/m <sup>3</sup> )	10		
		Particulate Matter PM <sub>10</sub> (µg/m <sup>3</sup> )	13		
		Noise (dB)	75		
		Vibration (mm/s)	0.2		
		Humidity (%)	64		
		Temperature (°C)	31		
<b>37M 352151E 9244528N</b>		Oxygen O <sub>2</sub> (% volume)	24.2		4
		Carbon monoxide CO (ppm)	0.0		
		Hydrogen Sulphide H <sub>2</sub> S (ppm)	0.0		
		Combustible Gases LEL (% volume)	17		
		Carbon dioxide CO <sub>2</sub> (ppm)	399		
		Particulate Matter PM <sub>2.5</sub> (µg/m <sup>3</sup> )	15		
		Particulate Matter PM <sub>10</sub> (µg/m <sup>3</sup> )	18		
		Humidity (%)	69		
		Temperature (°C)	30		
		Noise (dB)	75.2		
		Vibration (mm/s)	0.1		
<b>37M 352334E 9242860N</b>		Oxygen O <sub>2</sub> (% volume)	22.5		4
		Carbon monoxide CO (ppm)	0.0		

		Hydrogen Sulphide H <sub>2</sub> S (ppm)	0.0		
		Combustible Gases LEL (% volume)	17		
		Carbon dioxide CO <sub>2</sub> (ppm)	408		500
		Particulate Matter PM <sub>2.5</sub> (µg/m <sup>3</sup> )	10		15
		Particulate Matter PM <sub>10</sub> (µg/m <sup>3</sup> )	12		45
		Noise (dB)	79.7		
		Vibration (mm/s)	0.01		
<b>37M 353342E</b> <b>9247654N</b>	MALARIA DRAINAGE	Oxygen O <sub>2</sub> (% volume)	22.5		
		Carbon monoxide CO (ppm)	0.0		4
		Hydrogen Sulphide H <sub>2</sub> S (ppm)	0.0		
		Combustible Gases LEL (% volume)	17		
		Carbon dioxide CO <sub>2</sub> (ppm)	437		500
		Particulate Matter PM <sub>2.5</sub> (µg/m <sup>3</sup> )	6		15
		Particulate Matter PM <sub>10</sub> (µg/m <sup>3</sup> )	10		45
		Noise (dB)	78.6		
		Vibration (mm/s)	0.01		
<b>37M 352661E</b> <b>9246481N</b>		Oxygen O <sub>2</sub> (% volume)	22.4		
		Carbon monoxide CO (ppm)	0.0		4
		Hydrogen Sulphide H <sub>2</sub> S (ppm)	0.0		

		Combustible Gases LEL (% volume)	17		500
		Carbon dioxide CO <sub>2</sub> (ppm)	404		
		Particulate Matter PM <sub>2.5</sub> (µg/m <sup>3</sup> )	11		
		Particulate Matter PM <sub>10</sub> (µg/m <sup>3</sup> )	13		
		Noise (dB)	77.1		
<b>37M 352486E</b> <b>9246243N</b>		Vibration (mm/s)	0.03		4
		Oxygen O <sub>2</sub> (% volume)	27.2		
		Carbon monoxide CO (ppm)	0.0		
		Hydrogen Sulphide H <sub>2</sub> S (ppm)	0.0		
		Combustible Gases LEL (% volume)	16		
		Carbon dioxide CO <sub>2</sub> (ppm)	409		
		Particulate Matter PM <sub>2.5</sub> (µg/m <sup>3</sup> )	5		
		Particulate Matter PM <sub>10</sub> (µg/m <sup>3</sup> )	7		
		Noise (dB)	75.2		
		Vibration (mm/s)	0.1		
<b>37M 350364E</b> <b>9247284N</b>	BARAKUDA DRINAGE AND ROAD	Oxygen O <sub>2</sub> (% volume)	24.2		4
		Carbon monoxide CO (ppm)	0.0		
		Hydrogen Sulphide H <sub>2</sub> S (ppm)	0.0		

		Combustible Gases LEL (% volume)	17		
		Carbon dioxide CO <sub>2</sub> (ppm)	405		
		Particulate Matter PM <sub>2.5</sub> (µg/m <sup>3</sup> )	5		
		Particulate Matter PM <sub>10</sub> (µg/m <sup>3</sup> )	7		
		Noise (dB)	74.6		
		Vibration (mm/s)	0.2		
<b>37M 349956E</b> <b>9247019N</b>		Oxygen O <sub>2</sub> (% volume)	20.6		
		Carbon monoxide CO (ppm)	0.0		
		Hydrogen Sulphide H <sub>2</sub> S (ppm)	0.0		
		Carbon dioxide CO <sub>2</sub> (ppm)	381		
		Particulate Matter PM <sub>2.5</sub> (µg/m <sup>3</sup> )	9		
		Particulate Matter PM <sub>10</sub> (µg/m <sup>3</sup> )	11		
		Noise (dB)	78		
		Vibration (mm/s)	0.2		
<b>37M 352773E</b> <b>9252014N</b>	MUHIMBILI ROAD	Oxygen O <sub>2</sub> (% volume)	20.6		
		Carbon monoxide CO (ppm)	0.0		
		Hydrogen Sulphide H <sub>2</sub> S (ppm)	0.0		
		Combustible Gases LEL (% volume)	16		
		Carbon dioxide CO <sub>2</sub> (ppm)	367		

		Particulate Matter PM <sub>2.5</sub> (µg/m <sup>3</sup> )	26		15
		Particulate Matter PM <sub>10</sub> (µg/m <sup>3</sup> )	61		45
		Noise (dB)	78		
		Vibration (mm/s)	0.2		
<b>37M 352606E</b> <b>9253092N</b>		Oxygen O <sub>2</sub> (% volume)	18.6		
		Carbon monoxide CO (ppm)	16		4
		Hydrogen Sulphide H <sub>2</sub> S (ppm)	0.0		
		Combustible Gases LEL (% volume)	0.0		
		Carbon dioxide CO <sub>2</sub> (ppm)	404		500
		Particulate Matter PM <sub>2.5</sub> (µg/m <sup>3</sup> )	10		15
		Particulate Matter PM <sub>10</sub> (µg/m <sup>3</sup> )	11		45
		Noise (dB)	68		
		Vibration (mm/s)	0.1		
<b>37M 351540E</b> <b>9251864N</b>	VETA KIHONDA TUNGI ROAD 11.4km	Oxygen O <sub>2</sub> (% volume)	22.4		
		Carbon monoxide CO (ppm)	0.0		4
		Hydrogen Sulphide H <sub>2</sub> S (ppm)	0.0		
		Combustible Gases LEL (% volume)	17		
		Carbon dioxide CO <sub>2</sub> (ppm)	530		500
		Particulate Matter PM <sub>2.5</sub> (µg/m <sup>3</sup> )	9		15

		Particulate Matter PM <sub>10</sub> (µg/m <sup>3</sup> )	21		45
		Noise (dB)	73.6		
		Vibration (mm/s)	0.2		
<b>37M 355673E</b> <b>9252633N</b>		Oxygen O <sub>2</sub> (% volume)	24.1		
		Carbon monoxide CO (ppm)	0.0		4
		Hydrogen Sulphide H <sub>2</sub> S (ppm)	0.0		
		Combustible Gases LEL (% volume)	15		
		Carbon dioxide CO <sub>2</sub> (ppm)	389		500
		Particulate Matter PM <sub>2.5</sub> (µg/m <sup>3</sup> )	5		15
		Particulate Matter PM <sub>10</sub> (µg/m <sup>3</sup> )	7		45
		Noise (dB)	69		
		Vibration (mm/s)	0.0		
<b>37M 356246E</b> <b>9252838N</b>		Oxygen O <sub>2</sub> (% volume)	20.6		
		Carbon monoxide CO (ppm)	0.0		4
		Hydrogen Sulphide H <sub>2</sub> S (ppm)	0.0		
		Combustible Gases LEL (% volume)	15		
		Carbon dioxide CO <sub>2</sub> (ppm)	376		500
		Particulate Matter PM <sub>2.5</sub> (µg/m <sup>3</sup> )	18		15
		Particulate Matter PM <sub>10</sub> (µg/m <sup>3</sup> )	35		45
		Noise (dB)	73		



<b>37M 356992E 9247942N</b>		Vibration (mm/s)	0.2		
		Oxygen O <sub>2</sub> (% volume)	27.6		
		Carbon monoxide CO (ppm)	0.0		4
		Hydrogen Sulphide H <sub>2</sub> S (ppm)	0.0		
		Combustible Gases LEL (% volume)	16		
		Carbon dioxide CO <sub>2</sub> (ppm)	401		500
		Particulate Matter PM <sub>2.5</sub> (µg/m <sup>3</sup> )	5		15
		Particulate Matter PM <sub>10</sub> (µg/m <sup>3</sup> )	7		45
		Noise (dB)	75.4		
		Vibration (mm/s)	0.2		
<b>37M 355441E 9247816N</b>	TUBUYU II 2.4km	Oxygen O <sub>2</sub> (% volume)	18.9		
		Carbon monoxide CO (ppm)	0.0		4
		Hydrogen Sulphide H <sub>2</sub> S (ppm)	0.0		
		Carbon dioxide CO <sub>2</sub> (ppm)	437		500
		Particulate Matter PM <sub>2.5</sub> (µg/m <sup>3</sup> )	10		15
		Particulate Matter PM <sub>10</sub> (µg/m <sup>3</sup> )	29		45
		Noise (dB)	74.4		
		Vibration (mm/s)	2.5		
<b>37M 355388E 9250169N</b>		Oxygen O <sub>2</sub> (% volume)	21.7		

		Carbon monoxide CO (ppm)	0.0		4
		Hydrogen Sulphide H <sub>2</sub> S (ppm)	0.0		
		Combustible Gases LEL (% volume)	16		
		Carbon dioxide CO <sub>2</sub> (ppm)	396		500
		Particulate Matter PM <sub>2.5</sub> (µg/m <sup>3</sup> )	4		15
		Particulate Matter PM <sub>10</sub> (µg/m <sup>3</sup> )	8		45
		Noise (dB)	70		
		Vibration (mm/s)	5.9		
<b>37M 355703E</b>	<b>MJIMWEMA ROAD 5.0km</b>	Oxygen O <sub>2</sub> (% volume)	20.6		
<b>9251692N</b>		Carbon monoxide CO (ppm)	0.0		4
		Hydrogen Sulphide H <sub>2</sub> S (ppm)	0.0		
		Combustible Gases LEL (% volume)	15		
		Carbon dioxide CO <sub>2</sub> (ppm)	365		500
		Particulate Matter PM <sub>2.5</sub> (µg/m <sup>3</sup> )	8		15
		Particulate Matter PM <sub>10</sub> (µg/m <sup>3</sup> )	8		45
		Noise (dB)	73		
		Vibration (mm/s)	0.01		
<b>37M 353985E</b>		Oxygen O <sub>2</sub> (% volume)	21.6		
<b>9247871N</b>					

		Carbon monoxide CO (ppm)	0.0		4
		Hydrogen Sulphide H <sub>2</sub> S (ppm)	0.0		
		Carbon dioxide CO <sub>2</sub> (ppm)	365		500
		Particulate Matter PM <sub>2.5</sub> (µg/m <sup>3</sup> )	8		15
		Particulate Matter PM <sub>10</sub> (µg/m <sup>3</sup> )	10		45
		Noise (dB)	73		
		Vibration (mm/s)	0.01		

## Discussion

The average concentration of particulate matter shows high concentration compared to standards on road projects and one point on drainage project. The high average concentration of particulate matters on road projects is due to the fact that, roads are rough roads and transportation activities are going on as usual. The high average concentration of particulate matter in one point near along the Kikundi drainage is because of the posho milling activities going on near the project area. The main source of noise is human activities going on.

### 4.1.6 Water Quality

#### 4.1.6.1 Electrical Conductivity

Electric conductivity at the Anti Malaria area was found to be very low over all points in the study area. Laboratory result show that the electrical conductivity in the study area varies between 1120 to 1201  $\mu\text{S}/\text{cm}$  as shown

Figure 4-21. The highest level of conductivity in the study area might be contributed by the presence of ions in the channel as they receive water from agricultural areas,

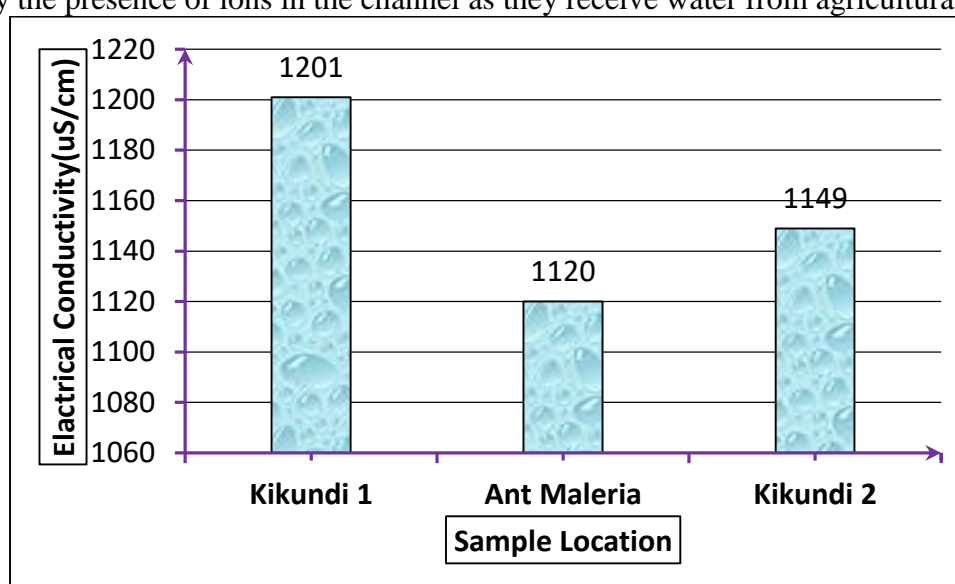


Figure 4-21: Electrical conductivity level at the project site

#### 4.1.6.2 pH

The pH values of the samples ranged from 7.28- 8.02 as shown in

Figure 4-22, where most of the water samples at different location tested in the study were found to be above permissible range of pH value recommended by TBS 6.5-9.6.

The project crosses mainly urban areas with Agriculture activities that use different types of fertilizers that undergo physical chemical properties and rise the pH of the water. These activities are associated with the use of fertilize.

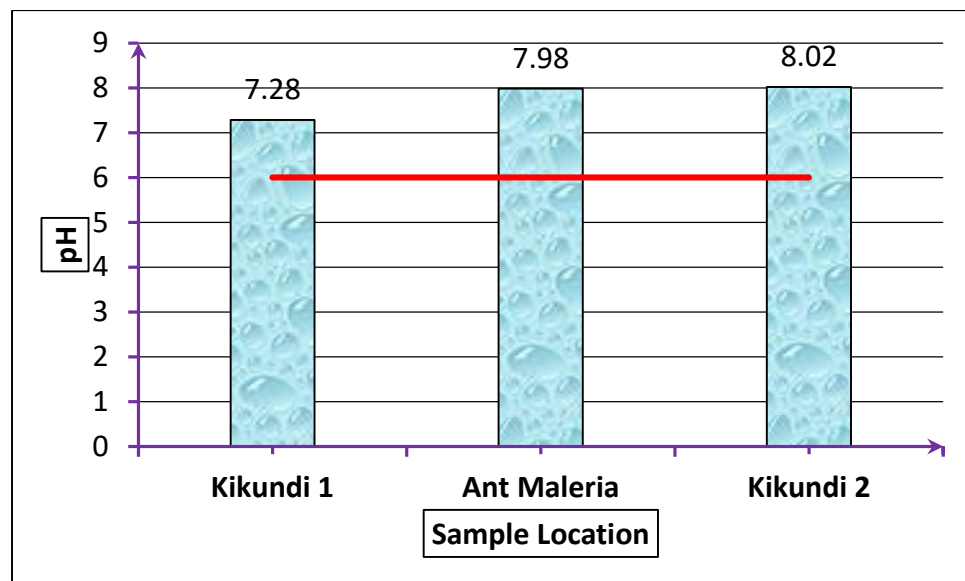


Figure 4-22:pH level at the project site

#### 4.1.6.3 Nitrate and Phosphate

Laboratory result show that the value of nitrate and phosphate are within permissible level as shown in Figure 4-23 and

Figure 4-24

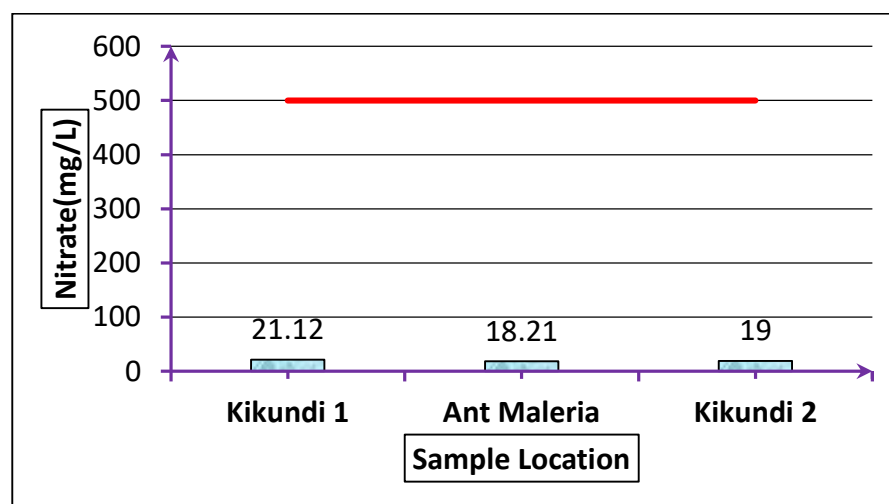


Figure 4-23:Nitrate level at the project site

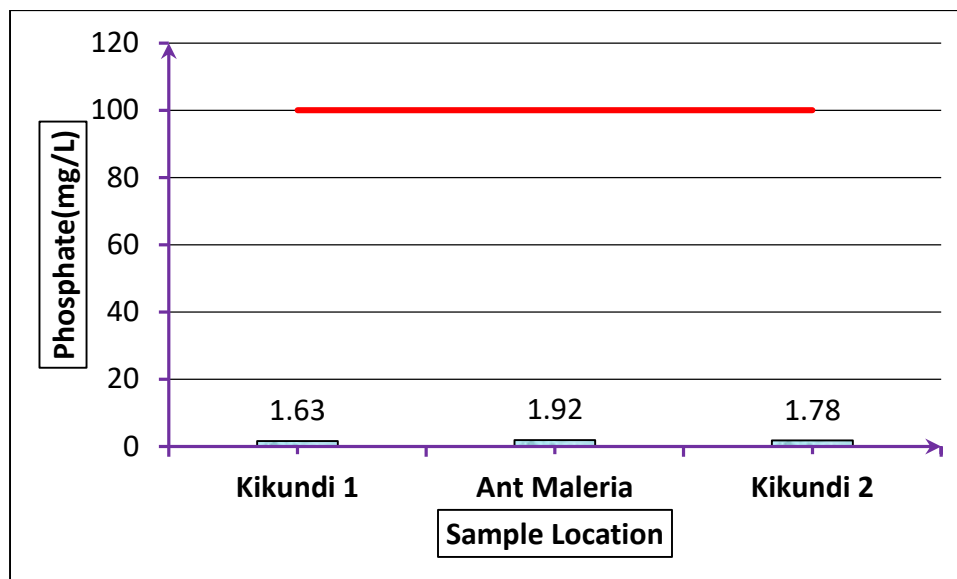


Figure 4-24: Phosphate level at the Proposed Drainage Channels

#### 4.1.6.4 Total coliform

The presence of faecal coliform in aquatic environments may indicate that the water has been contaminated with the faecal material of humans or other animals. Faecal coliform bacteria can enter rivers through direct discharge of waste from mammals and birds, from agricultural and storm runoff, and from human sewage.

All samples taken show low levels of Total coliform contamination which are all below TBS standard as shown in

Figure 4-25. The highest values was observed at Kikundi 2 during field study, discharge of waste water directly to the river which can be a major source of contamination.

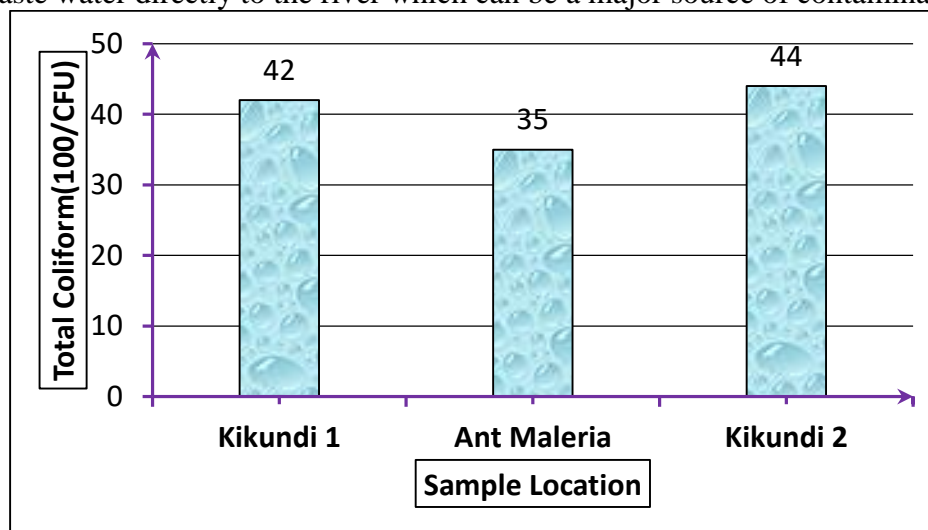


Figure 4-25: Total coliform level at the Proposed Drainage Channels

#### 4.1.7 Hydrology

The project area is drained by parts of three big river systems which are from north to south the Wami, Ruvu and Rufiji. Most of the water contributed by the project area originates from five mountain ranges, which are the Uluguru, Nguru, Kaguru, Rubeho and Migomberame Mountains. In particular the Ulurugu Mountains which are drained by the Ruvu River, are considered one of the major water sources in Tanzania.



## **4.2 Social Economic Environment**

### **4.2.1 Land use**

Land allocation for various uses depend on; location, size and accessibility. Land for business, industry, open space, institutions and residential use have the highest potentiality. Categories of land uses in Morogoro Municipality are as presented in the following sections

#### **A) Residential Use**

Land use for residential purposes is divided into two categories, planned and unplanned residential. The Municipality has land designated for either scattered (low density) or concentrated (high density) settlement pattern. Residential areas are found on the periphery of the CBD. As the population increases, more land for residential purposes is being converted from the nearby village land into urban use. Total municipal land developed for residential purposes covers 443.5 ha.

#### **B) Institutional**

About 19% of Morogoro Municipality is under institutional land use, such as hospitals, educational, religious and governmental offices. Major areas covered under this category are covered by Sokoine University of Agriculture (SUA), Muslim University of Morogoro (MUM), Mazimbu Education Complex, the Junior Seminary, Mgololo Sisters Convent, Bigwa Convent, Bigwa Folk Development, Workshop Areas, Secondary and Primary Schools. Institutional land use category covers about 9,747 ha.

#### **C) Forestry Use**

Forestry involves the process of planting trees, managing and harvesting forest products. Areas under this category are zoned for the purpose of protecting water catchments areas; enhance biodiversity, climatic and ecological balance.

Morogoro Municipality has a total area of 11,318 ha of forest land. Predominant forest reserve areas include Mguru wa Ndege near Mindu Dam, the Uluguru north forest reserve and part of Morogoro forest fuel reserve.

The forest products requirement for the municipal population is much higher than the supplied products from the available forest reserves. On the other hand, there are human activities threatening the existence of the remaining forest reserves, such as frequent fire out breaks, charcoal burning, tree cutting for furniture making, etc.

#### **D) Commercial Use**

This category of land comprises a variety of facilities for sale and purchase of commodities and services, such as automobile services, retail shops, professional offices and commercial recreation facilities, located at the CBD where commercial/residential buildings exist. Commercial land category covers 13% of the total municipal land use.

#### **E) Industrial Use**

Industrial land use category includes processing and manufacturing. Major industries are located at Kihonda, in spite that few are actually operating. Land assigned to industrial uses covers 0.62% of the total municipal area.

#### **F) Open Spaces**

Open spaces include public meeting places, playgrounds, golf courses, cemeteries and parks. They cover 320 ha which is 26% of total municipal land. Management of open space as a recreational and ecological resource has a great potential to the environment and wellbeing of the people.

The upgrading of the project Roads and drainage systems in the Municipality will facilitate and attract development in the nearby areas of the subprojects. Therefore, influx of the people to the project corridor will be inevitable and thus the land use in some areas will be altered to commercial or residential purposes.

#### **4.2.2 Population**

According to 2012 Population and Housing Census report, in the year 1988 Morogoro Municipal Council had a total population of 117,601; while in 2002 had a total of 227,921 people and in 2012 the Municipality had a total population of 315,866, of whom 151,170 were male and 164,166 females

Table 4-2. Moreover, it is further estimated that in 2020 the Municipality is estimated to have a total population of 409,565 people.

During the construction phase, the influx of people from various parts of Morogoro and nearby regions will slightly increase pressure on social services.

**Table 4-2: The Census population by Ward**

S/No.	Ward Names	Population
1	Mwembesongo	26,202
2	Chamwino	27,533
3	Kihonda Maghorofani	21,205
4	Lukobe	19,171
5	Kichangani	19,166
6	Kilakala	18,345
7	Mazimbu	16,679
8	Kihonda	17,857
9	Mafisa	17,369
10	Tungi	13,779
11	Mafiga	13,586
12	K/Ndege	12,203
13	Bigwa	10,149
14	Boma	8,706
15	Mkundi	8,200
16	Kingolwira	7,370
17	Mindu	7,110
18	Uwanja wa Taifa	7,247
19	Mji Mpya	7,359
20	Mbuyuni	6,225
21	Magadu	5,561
22	Mlimani	4,893
23	Mji Mkuu	4,612
24	Kauzeni	3,971
25	Kingo	2,944
26	Sultan Area	2,604
27	Sabasaba	2,339
28	Luhungo	2,133
29	Mzinga	1,348
TOTAL		315,866

Source: Provisional Result from Census 2012

### 4.2.3 Ethnic Groups

Morogoro Municipality has three dominant ethnic groups that includes Waluguru, Wapogoro and Wakutu. Initially the Municipal inhabitants were mainly the Luguru tribe. However, the composition of the current population is getting more cosmopolitan due to the influx of workers, businessmen and fortune seekers from different regions of Tanzania, as well as from outside the country. The majority of

Waluguru occupy the largest part of the Municipal area which covers all wards, followed by Wapogoro occupying some parts of the wards. Moreover, the Municipality is also occupied by other ethnic tribes including Wazaramo, Wakwere, Wachaga, Wasukuma, Wanyakyusa and Maasai.

Proposed construction will attract different people from different places for roads and drains construction. The interaction of ethics groups will lead to culture transfer or deterioration of moral at different occasion.

#### **4.2.4 Economic Activities**

Morogoro Municipality is characterized with mixed economy that of agriculture and business. Like other urban settings the Municipality is a Central Business District (CBD) of Morogoro region characterized with agglomeration of off farm activities including business, small scale enterprises, office work, manufacturing industries of primary and secondary level and other domestic activities. However, agriculture is a dominant economic activity particularly in peri-urban areas the major are subsistence, small scale and commercial farming. Agriculture employ only 32 percent of the municipals total population and it is very common in sub urban areas

Construction of urban roads will improve economic as will easily facilitate timely transportation people and goods and enhance per capital income.

#### **4.2.5 Water Supply**

Water supply to the distribution network is from two main sources, Mindu system and Mambogo system. Water from Mindu Dam gravitates to Mafiga Treatment plant after which it is pumped to Tumbaku reservoir. From here water gravitates to low areas of the distribution network whereas higher areas receive water from elevated tanks whose water is pumped from Tumbaku reservoir site. The Mindu/Mafiga system serves about 70% of the distribution network. Mambogo system serves the distribution system in the southern part of the Municipality. Other small sources serve small discrete areas within the network on the south-eastern part.

In any case during implementation of proposed subproject water for construction shall be drawn from MORUWASA network, impact on the supply capacity water shall be felt.

#### **4.2.6 Roads**

The Municipality has a large internal network of all-weather roads making easy movement of people and goods. The road network makes it easy to conduct business activities. The it is further well connected to the productive hinterland and business hubs of East Africa. The Municipality has a road network of km 582.03 of which 27.77 km are tarmac, 36.40km are covered with gravel and 517.86 km are earth roads. The level of road passability in the Municipality varies with road types based on standards, about 64.1 km of road are passable throughout the year, while 517.86 km are passable with some difficulties during rainy season.

Proposed upgrading of roads shall increase the length of tarmac road network in town and facilitate transportation services for people and goods.

#### **4.2.7 Employment**

Morogoro Municipality has a total of 4,231 permanent employees supporting in providing services to community. Out of the total employees about 3,012 are female and 1,219 male. Some of these staff works at the head office while others in field offices. Moreover, employment data shows that majority of the Municipal Staff are in primary education department (49%), followed by secondary education (28%), health department (12%), and administration department (5%). The rest of the departments and units have a total percentage of staff population of 6%.

The proposed urban infrastructure subproject shall employ an average of 150 people on top of current employment status, However; the employment shall be of short term i.e. construction period.

#### **4.2.8 Child labour**

Despite laid down regulations and policies against child, the problem of child labor is in the increase in Tanzania. From activities carried out by the government, with support from ILO's International Program on the elimination of child labor (IPEC) which has been operating in Tanzania since 1995, there are ample evidences indicated that child labor and in particular of hazardous and exploitative nature was becoming rampant. It is estimated that out of 11,965,146 children of the age between 5 – 17 years in Tanzania, 4,735,528 (39.6%) were reported to have worked in economic activities while 5,721,496 (47.8%) were engaged d in domestic activities. The participation rate in economic activities is highest in rural areas (45.7%) compared to Dar es Salaam and other urban areas (20.0%). Integrated Labor Force and Child Labor Survey). It is estimated that in Morogoro Region 5300 (3000 M and 2300 F) children were reported to have engaged in child labor.) children who were engaged in child labor (MOPSAPORG identification report 2015).

Construction activities under TACTIC project will likely attract child labour, as stipulated in Labour and Employment Act of Tanzania, a child above 14years of age can be employed with a condition not to be subjected to hazardous activities.

#### **4.2.9 Gender-based violence (GBV)**

The number of women who seek GBV health services in Tanzania remains low. The TDHS 2016 indicates that less than 1.1% of women aged 15–49 years who experienced physical and sexual violence sought GBV health care services. Furthermore, a study conducted in rural Tanzania (Morogoro district), revealed that women who had only completed primary school education had lesser GBV knowledge compared to those who had secondary school education- thereby highlighting additional barriers to GBV service access. Considering these challenges, the Government of Tanzania in collaboration with the Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDGEC) and other stakeholders have gone to great lengths to strengthen the health service response for GBV survivors. For example, the development of the National Plan of Action for the Prevention and Eradication of Violence against Women and Children (NPA-VAWC) 2017/18–2021/22 highlights the importance of efficient and effective police response, gender-sensitive prosecution services, as well as health and social welfare services to address violence against women and children. [Caroline Mtaita , Samuel Likindikoki]

Recent GBV incidents with data on child abuse in Morogoro indicates that 155 cases has been reported for the year 2021 which is lower in comparison with Tanga (178) and Mbeya (162) reported respectively. The proposed subproject shall involve equal opportunities for both male and female.

Employment of women in infrastructure project is part of economic empowerment for them, however; this normally create tension to male workers and even violence, harassment e.t.c.

#### **4.2.10 Railway**

Morogoro municipality is a railway line hub connecting different parts of regions. The Central Railway line passes through the middle of Morogoro town which is the major town of the region hence connecting the two northern districts of the region-Kilosa and Morogoro rural with Dodoma Region in the west and Coast Region in the east. TAZARA Railway line also passes through Morogoro Municipality connecting rural district with its major station of Kisaki connecting Morogoro district with Kilombero District in the south. This line however acts as a good link between Kilombero district and Makambako in Iringa region and also between the Southern part of Morogoro district with the Coast region as well as Dar es Salaam.



The proposed roads' infrastructure shall facilitate movement of people and passengers to and from railway stations.

## **5 STAKEHOLDERS CONSULTATIONS AND PUBLIC INVOLVEMENT**

### **5.1 Overview**

Stakeholder engagement refers to a broad, inclusive, and continuous process to engage persons or groups who are directly or indirectly affected by a project, as well as those who may have interests in a project and/or the ability to influence its outcome, either positively or negatively.

There is a growing consensus that timely and broad-based stakeholder involvement is a vital ingredient for effective environmental assessment, as it is for project planning, appraisal and development in general. The World Bank has found that public participation in ESIA tends to improve project design, environmental soundness and social acceptability (Mutemba, 1996).

Mwalyosi and Hughes (1998) identified a similar experience in Tanzania. They found that ESIA that successfully involved a broad range of stakeholders tended to lead to more influential environmental assessment processes and, consequently, to development that delivered more environmental and social benefits. Conversely, ESIA that failed to be inclusive tended to have less influence over planning and implementation, and consequently resulted in higher social and environmental costs.

Stakeholder engagement enhances the effectiveness, efficiency, and accountability of the ESIA process and the project as required by Stakeholders Engagement Plan (SEP). When undertaken in a transparent, balanced manner, it can reduce conflicts and strengthen the sense of ownership of a project and the project's sustainability.

Stakeholder engagement often collaboratively identifies issues and options, and helps make decisions based on input received via the stakeholder engagement process.

Placing sufficient emphasis on stakeholder involvement in the ESIA process can also improve the predictive quality of environmental assessments. This is because the prediction of impacts using ESIA often requires multi-year information and good quality baseline data. Yet one of the commonest problems with 'conventional' environmental assessment is that time and financial limitations, and project cycle schedules, constrain the collection of such data. Hence predictions are often based on a 'snapshot' picture which can be misleading or inaccurate. In contrast, assessments that involve different stakeholder groups, including those in local communities, have greater potential to access a wider information resource-base, and in some cases, generations of cumulative knowledge of their local environment.

#### **a) Objectives of the Public Consultations and Engagement**

Objectives of public consultations and engagement for the proposed subproject under TACTIC are:

- Provide clear and accurate information about the subproject to the communities
- Disseminate information to affected stakeholders to raise their awareness of the proposed subproject.
- Increase stakeholder understanding about the proposed subproject, including its context, aims, opportunities and constraints.
- Accumulate feedback from affected stakeholders to inform project development and ensure that outcomes appropriately meet the relevant needs of those concerned. Consultation will seek to:
  - document stakeholders' concerns and preferences;
  - identify any issues and constraints existing in the subproject's areas which may affect the design ;

- assess and document the commonality and relevance of issues and concerns identified through the consultation to feed the ESIA process.
- Provide updates about consultation outcomes to the stakeholders involved, to keep them informed.
- Influence the perception and attitude among stakeholders consulted to enable and obtain acceptable levels of feedback from stakeholders.
- Inform communities along the way leave about the subproject's schedule
- Gathering from population and their representatives about main environmental and social concerns and perceptions regarding the upgrading
- Gather opinions and suggestions directly from the communities on their preferred mitigation measures
- Gather opinions and concerns of the various minority groups of women, children, disabled and youth on the proposed roads and drainage channels' upgrading

## **5.2 Subproject's Levels of Public Engagement and Consultations**

The public engagement and consultations were conducted in phases which are; 1st Round Consultation and 2nd Round Communities' Consultation.

1st Round Stakeholders engagement involved: **(a) To Inform:** Provide stakeholders with balanced and objective information to help them understand the project, the problem, and the solution alternatives **(b) To Consult:** Gather feedback on the information given. This was followed by: 2nd Round communities' engagement which: **(a) Involve:** Worked directly with communities during the process to ensure that their concerns and desired outcomes are fully understood and taken into account and **(b) Collaborate:** Partner with communities on the decision-making, including developing alternative solution ideas and choosing the preferred solution together.

## **5.3 1<sup>st</sup> Round Stakeholders Engagement Methodology**

### **a) Stakeholders Identification**

The main stakeholders for upgrading of proposed urban infrastructure under TACTIC Project in Morogoro Municipality included; Regional Secretariat of Morogoro (RAS-Morogoro Region), TARURA, TANESCO-Morogoro Region, Regional Traffic Office-Morogoro Region, District Commissioner's Offices-;Morogoro District, Morogoro Municipal Council, TTCL-Morogoro Regional Office, Wami/Ruvu Water Basin-Morogoro, MOROWASA, SOKOINE UNIVERSITY OF AGRICULTURE (SUA) and communities in 11 Wards located along the road (road users: bodaboda/bajaj drivers, traders, commuter bus drivers, cattle herders, people with disabilities, school children and teachers, women and children, religious leaders).

### **b) Stakeholders Analysis**

After identifying and grouping stakeholders, stakeholder analysis was used to characterize stakeholder groups' interests, how they will be affected by the proposed subproject and to what degree, and how those groups may influence the subproject. The stakeholder analysis process revealed important differences among groups, including their concerns and priorities.

Communities and other stakeholders that will be affected by proposed subproject have to be engaged as early as possible during subproject design. By engaging with stakeholders early, it may be possible to

avoid, mitigate, or decrease the subproject's impact. It is generally not practical or feasible to engage with every single stakeholder group at every level.

### c) Public Meetings

Dissemination of subproject's information among communities along the proposed/selected roads and drainage systems through MEOs and WEOs and later through meetings was an important aspect of the public participation process, they needed to be appropriately informed about what is planned in their areas.

Each meeting was hosted by local authorities and was conducted for an average of 2hrs; ESIA team of three (3) members present; one to act as moderator, and other to take notes for the minutes of the meeting.

Public meetings were conducted in 10 streets/mitaa from 10 wards located along roads' sections as detailed in the table below:

**Table 5-1: Mitaa/Street Covered by the ESIA**

Ward	Mitaa	LGA
Kihonda	Kihonda	Morogoro Municipal
Mafisa	Mafisa	Morogoro Municipal
Mazimbu	Modeco A	Morogoro Municipal
	Modeco B	Morogoro Municipal
Mbuyuni	Mbuyuni	Morogoro Municipal
Sultan Area	Sultan Area	Morogoro Municipal
Tungi	Nanenane	Morogoro Municipal
Kingo	Kingo	Morogoro Municipal
Mji Mpya	Mji Mpya	Morogoro Municipal
Mwembesongo	Mwembesongo	Morogoro Municipal
Mji Mkuu	Mji Mkuu	Morogoro Municipal

Source: Field Work conducted in December 2021/January 2022

The discussions focused on environmental, social economic, drainage channels and road safety during the subproject construction and operation phases.

The number of participants was 367 for communities' consultations [See 2] and included local officials, community leaders, women, men, youth, children, the elderly, disabled people, different types of drainage and road users and groups representing community activities. The consultations were led by ESIA consultants with support from Municipal council staff and one member from the design team.

**Table 5-2: Participants on the 1<sup>st</sup> Round Communities' Consultation**

		Participants		
S/No	Ward	Date	Focus Group	No
1	Mazimbu	31.12.2021	Village Leaders	7
			Women & Children	11
			Political Leaders	4
			School Children & Teachers	3
			Religious Leaders	1
			<b>Subtotal</b>	<b>26</b>
2	Membesongo	31.12.2021	Village Leaders	10
			Women & Children	22
			Political Leaders	16
			School Children & Teachers	7
			Religious Leaders	4
			Disabled	4
			Bodaboda	5
			Traders	5
			Commuter Bus Drivers	0
			<b>Subtotal</b>	<b>73</b>
3	Mbuyuni	31.12.2021	Village Leaders	12
			Women & Children	24
			Political Leaders	8
			School Children & Teachers	2
			Religious Leaders	1
			Bodaboda	6
			Traders (Men & Women)	16
			<b>Subtotal</b>	<b>69</b>
4	kihonda	31.12.2021	Village Leaders	13
			Women & Children	25
			Political Leaders	8
			School Children & Teachers	5
			Religious Leaders	1
			Bodaboda	6
			Traders	8
			Commuter Bus Drivers	4
			<b>Subtotal</b>	<b>70</b>
5	Mji mkuu	31.12.2021	Village Leaders	5
			Women & Children	3
			Political Leaders	5
			School Children & Teachers	1

		Participants		
S/No	Ward	Date	Focus Group	No
			Religious Leaders	1
			Bodaboda	0
			Traders	2
			<b>Subtotal</b>	<b>17</b>
6	Sultan area	31.12.2021	Village Leaders	6
			Women & Children	8
			Political Leaders	6
			School Children & Teachers	
			Religious Leaders	0
			Bodaboda	2
			Traders	6
			<b>Subtotal</b>	<b>28</b>
7	Tungi	31.12.2021	Village Leaders	6
			Women & Children	4
			Political Leaders	4
			School Children & Teachers	0
			Religious Leaders	1
			Bodaboda	1
			Traders	1
			<b>Subtotal</b>	<b>17</b>
8	Mji mpya	31.12.2021	Village Leaders	5
			Women & Children	4
			Political Leaders	6
			School Children & Teachers	3
			Religious Leaders	1
			Bodaboda	1
			Traders	2
			<b>Subtotal</b>	<b>22</b>
9	Mafisa	01.01.2021	Village Leaders	4
			Women & Children	5
			Political Leaders	3
			School Children & Teachers	2
			Religious Leaders	1
			Bodaboda	1
			Traders	3



		Participants		
S/No	Ward	Date	Focus Group	No
			<b>Subtotal</b>	<b>19</b>
10	<b>Kingo</b>	01.01.2021	Village Leaders	<b>5</b>
			Women & Children	<b>6</b>
			Political Leaders	<b>3</b>
			School Children & Teachers	<b>2</b>
			Religious Leaders	<b>1</b>
			Bodaboda	<b>1</b>
			Traders	<b>2</b>
			<b>Subtotal</b>	<b>20</b>
			<b>TOTAL</b>	<b>367</b>

**d) Consultative Meetings with Districts' & Regional Authorities and Other Stakeholders**

Consultative meetings at Municipality and regional levels included discussions with districts' Council Management Team (CMT) which comprised of technical staff from all departments and regional officers. Stakeholders' meetings / interviews from other sectors included both managerial and technical staff.

The meeting also included members from: TARURA, TANESCO-Morogoro Region, Regional Traffic Office-Morogoro Region, District Commissioner's Offices, Morogoro Municipal Council, TTCL-Morogoro Regional Office, Wami/Ruvu Water Basin-Morogoro, MOROWASA, SOKOINE UNIVERSITY OF AGRICULTURE (SUA).

**Table 5-3: Supplementary Issues and Concerns Raised By Stakeholders in the Subproject Areas**

S/No	Institution/Village/NGO	Name & Position	Issues and Concerns	Responses	Project's Document Ref
1	Mazimbu Ward and Village Leaders	Norah Mambya	To widen road alignment that will accommodate trucks, walking by foot and bicycles and motorcycle	• The road design shall provide separate pedestrian & cyclist paths	Project's Drawings
		Norah Mambya	Local communities along the proposed road project should be given priority in short term employment vacancies by the contractor and in the supply of goods and commodities	• That is among the national policies' requirement, but district councils shall take lead to monitor its implementation	Project's Drawings
		Maua Sengulo	The tarmac road that will accommodate zebra crossings in areas with public institutions like schools, checkpoints, markets	• The road shall be installed with all safety signs and markings	Project's Drawings
		Willy Mgoda	Collaborative efforts by Governemnt, Health clubs, School Boards and Contractors on raising awareness to combat pregnancies of female school children in the area	• Quartely awareness meetings with villagers, students and construction workers shall be conducted by the contractor	Project's Drawings
2	Mazimbu Ward and Village Leaders	Rukia Lwanga	<ul style="list-style-type: none"> <li>Road humps to be built in the road</li> <li>Bajaj and four wheeled motor vehicles to pass in the road purposely designed for them</li> </ul>	• The road shall be installed with all safety signs, markings and speed calming measures	Project's Drawings
		Shabani Baroti	<ul style="list-style-type: none"> <li>Road sign which show an area designed for bodaboda parking</li> <li>Passengers' lounge or waiting centre at Bajaj parking area</li> </ul>	• The road shall be installed with all safety signs, markings and speed calming measures	• Project's Drawings
		Mary Mwanjela	• Traffic lights to be placed at Bajaj parking area	• The road shall be installed with all safety signs, markings and speed calming measures	• Project's Drawings
3	Mazimbu Ward and Village Leaders	Asha Mona	• Easy and quick transportation of goods and commodities	• The road shall facilitate easy transportation of people and goods	Monitoring Plan
		Esta Paulo	<ul style="list-style-type: none"> <li>Water drainage channels on both roadsides should be filled with concrete and constructed in more safe and secu</li> <li>Construct specific lanes to be used by bodaboda, bajaj and pedestrians</li> </ul>	• The road side drains at populated areas shall be covered and the road shall consider pedestrians and cyclists	• Project's Drawings
4	Mazimbu Ward and Village Leaders	Prisca G Kimako	• Diversion road to be constructed during construction	• Provision of diversion roads is mandatory during construction	Project's Drawings
5	Morogoro District Commissioner's Office	Enedy Mwanakatwe–Community Development Officer	During the upgrade of the road the members of the community will be employed by the contractor.	The contactor is liable to prioritize employment needs of the communities along the road	Project's Drawings
			Municipal Council has to consider planting trees in road reserves (on road shoulders); to include in planting trees in the road design to conserve environment and also as a source of revenue from harvesting of timber	• The proposal shall be conveyed to Municipal for considerations although depends much on financial capability of the agency	Project's Drawings
		Enedy Mwanakatwe–Community Development Officer	Resettlement Action Plan should be transparent and clearly defined	• All legal procedures shall be followed during identification and valuation exercise	Project's Drawings
			Issues of safeguard i.e. Health, HIV/AIDS should be addressed by other parties and not the contractor	• The proposal shall be conveyed to Municipal for considerations	Project's Drawings
		Enedy Mwanakatwe–Community Development Officer	• The road project will cause for the loss of infructurature properties i.e houses, offices, and business structu went further by asking on whether the government will compensate both land and structures to be affect project. The stakeholders insisted that the government should act fast to timely compensate the affected peop	• Guidelines for resettlement exercise shall be given by Municipal council and the communities shall be sensitized prior to valuation.	Project's Drawings
6	Petervigne Pre&primary School	Teaching staff	<ul style="list-style-type: none"> <li>Humps should be constructed at the road heading to school</li> <li>Zebra crossing to be placed</li> </ul>	• The road shall be installed with all safety signs, markings and speed calming measures	Project's Drawings
7	Vocation Training center School	Teaching staff	<ul style="list-style-type: none"> <li>Priority to protecting students from HIV/AIDS, early pregnancies to school girls students and gender based should be given priority during construction phase</li> <li>The contractor should avoid using child labourers during projects construction i.e.fetching water, carrying sa</li> <li>Ward and Village Government leaders to strategically plan on providing education moral and ethical values who will be able to protect their children from HIV/AIDS, early pregnancies to school girls and gender based</li> <li>Road Safety education to students to reduce the incidents of deaths and injuries caused by road accidents</li> </ul>	• Quartely awareness meetings on HIV/Aids and Road Safety with villagers, students and construction workers shall be conducted by the contractor	Contactor's Site Specific ESMP, Monthly Progress Reports & Monitoring Plan

S/No	Institution/Village/NGO	Name & Position	Issues and Concerns	Responses	Project's Document Ref
8	Kihonda Primary School	Acting Headteacher	<ul style="list-style-type: none"> <li>Humps should be constructed at Open Market area opposite to school</li> <li>Road signs for cautions, information and direction</li> <li>Zebra crossing at road junction to school</li> <li>Culvert bridge to be built to allow free flow of water from other side of the road; instead of flowing on top of surface especially during rainy season</li> </ul>	<ul style="list-style-type: none"> <li>The road shall be installed with all safety signs, markings and speed calming measures</li> <li>Hydrological study has been conducted by the design consultant in order to provide proper size of drainage structures</li> </ul>	Project's Drawings
9	Mtawala Primary School	Acting Headteacher	<ul style="list-style-type: none"> <li>Road management and safety to be provide to school children</li> <li>GBV to be provided to both children and school management staff in general</li> </ul>	<ul style="list-style-type: none"> <li>Access paths shall be connected with pedestrian walkway</li> <li>Quartely awareness meetings on HIV/Aids and Road Safety with villagers, students and construction workers shall be conducted by the contractor</li> </ul>	Project's Drawings
10	Sultan Area village and ward: Ward and Village Leaders	Happy Ntabago	The road should be wider and adhere all safety signs.	<ul style="list-style-type: none"> <li>The road design shall provide separate pedestrian &amp; cyclist paths</li> </ul>	Project's Drawings
		Elizabeth Chiwaya	Road construction should consider people walking on foot.	<ul style="list-style-type: none"> <li>The design shall consider safe use of the road for all users</li> </ul>	Project's Drawings
		Hawa Uvilla	Education about GBV to be provided to the societies along the project area	<ul style="list-style-type: none"> <li>Quartely awareness meetings on HIV/Aids, GBV and Road Safety with villagers, students and construction workers shall be conducted by the contractor</li> </ul>	Contactor's Site Specific ESMP, Monthly Progress Reports & Monitoring Plan
		Yusuph Ahmed Hussein	<ul style="list-style-type: none"> <li>Parents should talk openly to their children about risk practices that could lead to HIV infections</li> <li>Enhancing HIV/AIDS prevention awareness campaigns in churches, mosques and schools</li> </ul>	<ul style="list-style-type: none"> <li>Quartely awareness meetings on HIV/Aids and Road Safety with villagers, students and construction workers shall be conducted by the contractor</li> </ul>	Contactor's Site Specific ESMP, Monthly Progress Reports & Monitoring Plan
		Zuhura Abbasi	<ul style="list-style-type: none"> <li>Contractors should put more emphasis to their labourers on adhering to traditional customs and values of o that protect female school children</li> <li>Reviewing our by-laws by Ward executive Committee and Full Council at District Council level</li> </ul>	<ul style="list-style-type: none"> <li>Community's relation between villagers and construction workers shall be emphasized by the contractor</li> </ul>	
11	Sultan Area village and Ward: Women and Children	Lilian P Kagoma – WEO	<ul style="list-style-type: none"> <li>Water drainage channels along the road should be firmly built to allow water flow properly instead of cutting the road</li> </ul>	<ul style="list-style-type: none"> <li>The road design and construction shall be done according to standard, topographical survey has been done to determine upper and lower levels to allow proper setting of the road surface</li> </ul>	Project's Drawings
		Peter J Dhahabu	<ul style="list-style-type: none"> <li>Road humps in highly populated areas along the road</li> <li>Specific lanes for bodaboda, bajaj, pedestrians to be included in the design</li> <li>Zebra crossings and cattle crossings to be included in the design</li> </ul>	<ul style="list-style-type: none"> <li>The road shall be installed with all safety signs, markings and speed calming measures</li> <li>The operational phase includes provisions for road maintenance.</li> </ul>	
		Rehema Kiswanya	<ul style="list-style-type: none"> <li>Family level conversation should be centred on human sexuality, reproductive health education respect to gender, HIV/AIDS prevention for safer behavioral conduct for our children so that they will be responsible and disciplined future parents</li> </ul>	<ul style="list-style-type: none"> <li>We insist family education to start now for protection of our kids/families</li> </ul>	
12	Sultan Area village and ward: School children and Teachers	Bashiri Issa Ntatie	<ul style="list-style-type: none"> <li>Road signs at school junction</li> <li>Road crossings at school junction</li> <li>Road humps in residential and at school junction</li> </ul>	<ul style="list-style-type: none"> <li>The road shall be installed with all safety signs, markings and speed calming measures</li> </ul>	
13	Sultan Area village and ward: Mosque and Religious Leaders	Leonard Cameron Mwishea	<ul style="list-style-type: none"> <li>Working schedule should consider to specific hours in Fridays and Sundays to allow workers and villagers devote their time to worship God</li> </ul>	<ul style="list-style-type: none"> <li>The contractor shall not deny the workers' right to worship</li> </ul>	
14	Sultan Area village and ward: Cattle Herders	Mohamed Saadi	<ul style="list-style-type: none"> <li>Road signs to be placed to indicate cattle crossings</li> </ul>	<ul style="list-style-type: none"> <li>The road shall be installed with all safety signs, markings and speed calming measures</li> </ul>	
15	Sultan Area village and ward : Ward and Village Leaders	Ally Said Awadhand Hemed R Hemed	<ul style="list-style-type: none"> <li>The contractor should construct a dipper drainage to avoid floods during heavy rain season</li> <li>The GBV awareness to be consulted to the stakeholders before construction kick off.</li> </ul>	<ul style="list-style-type: none"> <li>All sharp corners shall be reduced during design</li> <li>We insist family education to start now for protection of our kids/families</li> </ul>	Project's Drawings

S/No	Institution/Village/NGO	Name & Position	Issues and Concerns	Responses	Project's Document Ref
		Ally Ahmed, Anna Igonja and Halima Idrisa Matekenya	<ul style="list-style-type: none"> <li>Government and other stakeholders should disseminate brochures, fliers, posters and where possible banners for effective HIV/AIDS prevention campaign in the village</li> <li>Establish Moral and Ethics Committee at Village level</li> </ul>	<ul style="list-style-type: none"> <li>Quartely awareness meetings on HIV/Aids, GBV and Road Safety with villagers, students and construction workers shall be conducted by the contractor</li> </ul>	
		Husein Bakari Muhina and Ally Ahmed	<ul style="list-style-type: none"> <li>To take full responsibility of educating and providing leadership in behaviour information among school female and male children which will protect them from HIV, early pregnancies and GBV</li> </ul>	<ul style="list-style-type: none"> <li>Quartely awareness meetings on HIV/Aids, GBV and Road Safety with villagers, students and construction workers shall be conducted by the contractor</li> </ul>	<ul style="list-style-type: none"> <li>Contactor's Site Specific ESMP, Monthly Progress Reports &amp; Monitoring</li> </ul>
16	Sultan Area village and ward: School children and Teachers	Bashiri Issa Ntatie	<ul style="list-style-type: none"> <li>Road safety education to students</li> <li>Zebra crossing</li> <li>Road signs</li> <li>Road humps to limit speed</li> <li>Pedestrian lane on roadside</li> </ul>	<ul style="list-style-type: none"> <li>The road shall be installed with all safety signs, markings and speed calming measures</li> <li>The operational phase includes provisions for road maintenance.</li> </ul>	Project's Drawings; BOQs
17	Sultan Area village and ward: Commuter bus drivers	Nyadhi Anutodoyo	<ul style="list-style-type: none"> <li>Bus bays to be placed in safer places which do not have corners, steep sloping and near the bridges</li> </ul>	<ul style="list-style-type: none"> <li>Bus bays shall be allocated as per your proposal</li> </ul>	Project's Drawings
18	Sultan Area village and ward: people with disabilities	Peter J Dhahabu	<ul style="list-style-type: none"> <li>Road signs to indicate people with disabilities i.e. the deaf, blind and physically disabled</li> </ul>	<ul style="list-style-type: none"> <li>The road shall be installed with all safety signs, markings and speed calming measures</li> </ul>	Project's Drawings
		Peter J Dhahabu	<ul style="list-style-type: none"> <li>Contractor should be aware of the specific days dedicated to worshipping to God and adjust the construct schedule</li> </ul>	<ul style="list-style-type: none"> <li>The contractor shall observe worshipping sessions during construction</li> </ul>	<ul style="list-style-type: none"> <li>Contactor's Site Specific ESMP, Monthly Progress Reports &amp; Monitoring Plan</li> </ul>
		Peter J Dhahabu	<ul style="list-style-type: none"> <li>The contractor should irrigate the road during dry season to avoid dust during construction</li> </ul>		Contactor's Site Specific ESMP
19	Mji mpya Village, Mji mpya Ward: Bodaboda/Bajaj drivers	Shaban Daud, Faraji Dumba and Idd Ahmad	<ul style="list-style-type: none"> <li>Bus bays</li> <li>Road humps</li> <li>Road signs</li> <li>Police post</li> <li>Road crossings for people a</li> </ul>	<ul style="list-style-type: none"> <li>The road shall be installed with all safety signs, markings and speed calming measures</li> </ul>	Project's Drawings
20	Mji mpya Village, Mji mpya Ward Ward and Village leaders	Zaituni Rajabu	<ul style="list-style-type: none"> <li>The road should have sideways for pedestrians and bicycles</li> </ul>	<ul style="list-style-type: none"> <li>The road design shall provide separate pedestrian &amp; cyclist paths</li> </ul>	Project's Drawings
		Elda Chumbula	<ul style="list-style-type: none"> <li>NGOs should provide awareness creation education about GBV</li> </ul>	<ul style="list-style-type: none"> <li>Quartely awareness meetings on HIV/Aids, GBV and Road Safety with villagers, students and construction workers shall be conducted by the contractor</li> </ul>	Contactor's Site Specific ESMP, Monthly Progress Reports & Monitoring Plan,
		Tekla Mbaruku - Meo	<ul style="list-style-type: none"> <li>To take full responsibility of leading by example as role models and strongly protect morals and ethics of the co during construction of the road and drainage</li> </ul>	<ul style="list-style-type: none"> <li>There is a need for the contractor management to have a formal meeting with village leaders on how to handle community issues</li> </ul>	Project's Drawings
		Tekla Mbaruku - Meo	<ul style="list-style-type: none"> <li>To provide leadership in the provision of education on child protection and rights, HIV/AIDS awareness cre Gender Based rights to be provided in the community</li> </ul>	<ul style="list-style-type: none"> <li>Quartely awareness meetings on HIV/Aids, GBV and Road Safety with villagers, students and co workers shall be conducted by the contractor</li> </ul>	Project's Drawings
21	Mji mpya Village, Mji mpya Ward: Women and children	Leah Anyitikike - MEO	<ul style="list-style-type: none"> <li>Broad and deep water drainage channels on both sides of the road to avoid water flowing over the surface of during rainy season</li> </ul>	<ul style="list-style-type: none"> <li>The storm drain channels shall be designed following the amount of runoffs predicted. Generally, they shall be large enough to accommodate the predicted stormwater quantities</li> </ul>	Project's Drawings
		Leah Anyitike -MEO	<ul style="list-style-type: none"> <li>We should live and behave as role models in our families encourage our children emulate from us</li> <li>Family level conversation should be centred on human sexuality, reproductive health education respect to HIV/AIDS prevention for safer behavioral conduct for our children so that they will be responsible and di future parents</li> </ul>	<ul style="list-style-type: none"> <li>Quartely awareness meetings on HIV/Aids, GBV and Road Safety with villagers, students and construction workers shall be conducted by the contractor</li> </ul>	

S/No	Institution/Village/NGO	Name & Position	Issues and Concerns	Responses	Project's Document Ref
22	Mji mpya Village, Mji mpya Ward: : School children and Teachers	Leah William, Wema yusuph and Kasimu Lukinga	<ul style="list-style-type: none"> <li>Zebra crossing</li> <li>Road signs</li> <li>Road sign to indicate students in places where schools are built</li> <li>Culvert bridge at a junction of mtawala Primary School</li> <li>Speed limiting humps</li> </ul>	<ul style="list-style-type: none"> <li>The road shall be installed with all safety signs, markings and speed calming measures</li> </ul>	Project's Drawings
23	N Mji mpya Village, Mji mpya Ward: Traders	Rehema Matonya	<ul style="list-style-type: none"> <li>To build a business centre for traders to avoid disturbances when conducting our business on roadsides</li> </ul>	<ul style="list-style-type: none"> <li>Business taken into consideration during bus stand design</li> </ul>	Project's Drawings
		Nyasoro Kilima	<ul style="list-style-type: none"> <li>Enforcement to counter incidents of early pregnancies to school female children and thefts</li> <li>To educate and instil on moral and ethical behaviour to our school female children to avoid early pregnancies</li> <li>HIV infections</li> </ul>	<ul style="list-style-type: none"> <li>Quartely awareness meetings on HIV/Aids, GBV and Road Safety with villagers, students and construction workers shall be conducted by the contractor</li> </ul>	Contractor's Site Specific ESMP, Monthly Progress Reports & Monitoring Plan, RISE SEP
24	Mji mpya Village, Mji mpya Ward: People with disabilities	Maimuna Omary and Zaituni Rajabu	<ul style="list-style-type: none"> <li>Culvert bridge at Mtawala Primary School</li> <li>Speed limiting humps</li> <li>Road signs</li> <li>Road crossings for people and cattle</li> </ul>	<ul style="list-style-type: none"> <li>The road shall be installed with all safety signs, markings and speed calming measures</li> </ul>	Project's Drawings
25	Mji mpya Village, Mji mpya Ward: Religious Leaders	Issa Kaukwa and Shaban Daudi	<ul style="list-style-type: none"> <li>The road design should consider placing signboards showing mosque and church</li> <li>The road design should be realigned to allow the existing of Mosque be outside road reserve area</li> </ul>	<ul style="list-style-type: none"> <li>The road shall be installed with all safety signs, markings and speed calming measures</li> </ul>	Project's Drawings
26	Morogoro District Commissioner's Office	Albert Msando – District Commissioner for Morogoro District	<ul style="list-style-type: none"> <li>Propose on component of drainage should have a master plan on the ongoing feasibility study.</li> </ul>	<ul style="list-style-type: none"> <li>The aim of the project is to improve economic situation of the area, we understand most of the residents are farmers and they will all get benefited by the project</li> </ul>	Monitoring Plan
			<ul style="list-style-type: none"> <li>It also facilitates transportation of industrial manufactured goods from Dar-es-Salaam to nearby District for consumption</li> </ul>	<ul style="list-style-type: none"> <li>Economic growth of the area include easy supply of household commodities as well</li> </ul>	Monitoring Plan
27		Adam J salumu	<ul style="list-style-type: none"> <li>Communities should be sensitized on building the culture of protecting road infrastructures i.e. bridges to road incidents of sabotage like cutting steel, loosen bolts and nuts to sell them as scrap metals</li> </ul>	<ul style="list-style-type: none"> <li>Among the strategies is communities' consultation and involvement during design.</li> </ul>	
28	Morogoro Municipal Council – Municipal Executive Director's Office	Rubereje J. – Acting MD for Morogoro MC	<ul style="list-style-type: none"> <li>Newly constructed tarmac road will reduce the extent of damage to perishable agricultural produce i.e. fresh vegetables and fruits including tomatoes, peas, fruits have been spoiled before reaching marketing destination due to poor condition</li> </ul>	<ul style="list-style-type: none"> <li>Damage of agricultural produce is due to poor road condition and longer times for transportation. This shall end after construction</li> </ul>	Monitoring Plan
			<ul style="list-style-type: none"> <li>The newly constructed road will also increase revenues of Morogoro Municipal Council through SGR and with neighbouring Morogoro new market which has economic potentials on trade</li> </ul>	<ul style="list-style-type: none"> <li>When the revenues are increased, the economy is growing and hence the project's objectives fulfilled</li> </ul>	Monitoring Plan
29	Mbyuni Village, Mbuyuni Ward: Ward and Village Leaders	Ward leaders	<ul style="list-style-type: none"> <li>To widen drainage alignment and increase depth to allow speedily flow of water</li> <li>To widen road alignment that will accommodate trucks, walking by foot and bicycles and motorcycle</li> <li>To build bridge along the drainage where currently people used to bypass</li> <li>Road signs should be placed for precautions, prohibitive and information to drivers and users of the road</li> <li>Zebra crossings for pedestrians should wider.</li> </ul>	<ul style="list-style-type: none"> <li>The road design shall provide separate pedestrian &amp; cyclist paths</li> <li>The road shall be installed with all safety signs, markings and speed calming measures</li> </ul>	
		Bodaboda group	<ul style="list-style-type: none"> <li>Education about Gender based violence to be provided to the people living along the drainage.</li> <li>Society living along the project area during the project construction should ensure peace, respect of cultural values and harmony prevail in the community.</li> <li>Education on child protection and rights to be provided in the community</li> </ul>	<ul style="list-style-type: none"> <li>Sensitization on GBV and cultural value to be provided by contractor and the village leaders</li> </ul>	Contractor's Site Specific ESMP, Monthly Progress Reports & Monitoring
30	Mji mkuu Village, Mji Mkuu Ward: Bodaboda/Bajaj	Illuminatha Martin	<ul style="list-style-type: none"> <li>Parking area for bodaboda</li> <li>Road signs to be established</li> <li>Temporary employment to be given to local societies living along the project area</li> </ul>	<ul style="list-style-type: none"> <li>The road design shall provide separate pedestrian &amp; cyclist paths</li> </ul>	Project's Drawings
	Mji mkuu Village, Mji Mkuu Ward: Ward leader	Anorld Benedict	<ul style="list-style-type: none"> <li>Temporary bridge along the kikundi drainage should be constructed near kikundi primary school as construction will be on process</li> <li>For relocation of permanent settlement contractor advised to take consideration before project construction k</li> </ul>	<ul style="list-style-type: none"> <li>All necessary requirements before the project start will be taken into consideration</li> </ul>	Project's Drawings
		Tulia Issa	<ul style="list-style-type: none"> <li>We should live and behave as role models in our families encourage our children emulate from us</li> </ul>	<ul style="list-style-type: none"> <li>Quartely awareness meetings on HIV/Aids, GBV and Road Safety with</li> </ul>	Project's Drawings



S/No	Institution/Village/NGO	Name & Position	Issues and Concerns	Responses	Project's Document Ref
			<ul style="list-style-type: none"> <li>Family level conversation should be centred on human sexuality, reproductive health education respect to HIV/AIDS prevention for safer behavioural conduct for our children so that they will be responsible and d future parents</li> </ul>	villagers, students and construction workers shall be conducted by the contractor	
31	Kingo Village, Kingo Ward: Community Development Officer	Sezaria Joseph Mrema	<ul style="list-style-type: none"> <li>To widen drainage with depth to allow smooth flow of water during heavy rain season in order to avoid flood</li> <li>To have periodic cleaning of the drainage after construction</li> <li>To realocate smoothly infrastructure like Tannesco poles and waste water system before construction kick off</li> <li>Currently road like Tubuyu ii has sharp corners along this road should be reduced the sharpness of the Conne</li> </ul>	<ul style="list-style-type: none"> <li>The road and drainage design shall consider enough depth and shall negotiate, all sharp corners shall be reduced</li> </ul>	
32	Kihonda Village, Kihonda Ward:	Boniface Ngofilo	<ul style="list-style-type: none"> <li>To involve causal labour within the project area</li> <li>Road Signs to observed during construction of the project</li> <li>The project will construct road with lenth size of 20 kilometers</li> <li>They proposed the construction camp to located within kihonda ward</li> <li>He constructed bus stand should consider low income earner as priority group.</li> </ul>	<ul style="list-style-type: none"> <li>  The road shall be installed with all safety signs, markings and speed calming measures</li> </ul>	
		Idd S. Kidangi	<ul style="list-style-type: none"> <li>Road reserve should be clearly as marked shown in the road design</li> </ul>	<ul style="list-style-type: none"> <li>Road reserve beacons have been installed byTARURAtthroughout</li> </ul>	Project's Drawings
33	Kihonda Village, Kihonda Ward:: Religious Leaders	Fatuma Msale and Kanuti Ndunguru	<ul style="list-style-type: none"> <li>The contractor should consider building of culvert bridges on top of water drainage channels in both sides o to allow worshippers access mosque and churches</li> <li>Diversion road should be built during road construction</li> <li>The road design should include a lane for pedestrians</li> <li>Culvert bridges at Kikundi primary school area where water is flooding during rainy season and at the sig Kikundi Primary School</li> </ul>	<ul style="list-style-type: none"> <li>The design and construction shall consider proper stormwater flows; we should not expect overtopping of the road by rain water.</li> <li>Diversion roads must be included within the construction corridor to allow other daily economic activities</li> </ul>	
34	Nanenane Village, Tungi Ward: Ward and Village Leaders	Mwanitu Sembogo Community Development officer	<ul style="list-style-type: none"> <li>To widen road alignment that will accommodate trucks, walking by foot and bicycles and motorcycle</li> <li>Zebra crossings for pedestrians and livestock</li> <li>To build water drainage channels on both sides of the road</li> </ul>	<ul style="list-style-type: none"> <li>The road shall be installed with all safety signs, markings and speed calming measures</li> </ul>	Project's Drawings
		Mwanitu Sembogo Community Development officer	<ul style="list-style-type: none"> <li>HIV/AIDS educational campaigns in public meetings to sensitize more people</li> <li>Avoid unprotected sexual intercourse</li> </ul>	<ul style="list-style-type: none"> <li>Quartely awareness meetings on HIV/Aids, GBV and Road Safety with villagers, students and construction workers shall be conducted by the contractor</li> </ul>	Project's Drawings
		Hellena Benjamin	<ul style="list-style-type: none"> <li>Contractors should be actively involved in educating his employees to abstain from marital relationship to training on early pregnancies to school female children</li> <li>Collaborative efforts by Governemnt, Health clubs, School Boards and Contractors on raising awareness t pregnancies of female school children in the area</li> </ul>	<ul style="list-style-type: none"> <li>Awareness meetings on HIV/Aids, GBV and Road Safety with villagers, students and construction workers shall be conducted by the contractor</li> </ul>	Project's Drawings
		Ford Mwakilembe	<ul style="list-style-type: none"> <li>To take full responsibility for behaviour formation from family level which is a basis for protection aga pregnancies and HIV</li> <li>Hostel accommodation for school female children</li> </ul>	<ul style="list-style-type: none"> <li>We recommend heads of families to start in house awareness as from now</li> </ul>	
		Kalika Deo- Religion leader	<ul style="list-style-type: none"> <li>The improvement road will enable the residents living along the road to easily travel in areas where social se available. For example; the road will help people from Tungi ward to easily access social services in M municipal town.</li> </ul>	<ul style="list-style-type: none"> <li>Easy accessibility to social services and reduced travel time are objectives of this project</li> </ul>	Project's Drawings
35	Nanenane Village, Tungi Ward: Ward and Village Leaders	Maria Shio, Namala Mchunguzi na Zainabu Makarabo	<ul style="list-style-type: none"> <li>Traffic lights useful at night time</li> <li>Roundabout in suitable area</li> <li>Road signboards to indicate bodaboda parking areas</li> </ul>	<ul style="list-style-type: none"> <li>The road shall be installed with all safety signs, markings and speed calming measures</li> <li>The operational phase includes provisions for road maintenance.</li> </ul>	Project's Drawings
36	Nanenane Village, Tungi Ward: Ward and Village Leaders	Hassan Shomary,Said Kolongo na Amosi Marwa	<ul style="list-style-type: none"> <li>Broaden the width of road to allow easy negotiation of two cars</li> <li>Road humps in highly populated areas along the road</li> </ul>	<ul style="list-style-type: none"> <li>The road shall be installed with all safety signs, markings and speed calming measures</li> <li>The operational phase includes provisions for road maintenance.</li> </ul>	Project's Drawings



S/No	Institution/Village/NGO	Name & Position	Issues and Concerns	Responses	Project's Document Ref
		Ford Mwakilembe	<ul style="list-style-type: none"> <li>Family level conversation should be centred on human sexuality, reproductive health education respect to HIV/AIDS prevention for safer behavioral conduct for our children so that they will be responsible and do not have future parents</li> </ul>	<ul style="list-style-type: none"> <li>We recommend families' education to start as from now</li> </ul>	Project's Drawings
		Mwajuma Tengeri	<ul style="list-style-type: none"> <li>Government to scale up HIV/AIDS preventive services including voluntary counseling and testing, treatment of opportunistic infections and massive HIV/AIDS awareness campaigns in our village</li> </ul>	<ul style="list-style-type: none"> <li>Quarterly awareness meetings on HIV/Aids, GBV and Road Safety with villagers, students and construction workers shall be conducted by the contractor</li> </ul>	Project's Drawings
37	Mafisa Village, Mafisa Ward: bodaboda group	Said Y Daudi	<ul style="list-style-type: none"> <li>Traffic to enforce road safety laws</li> </ul>	<ul style="list-style-type: none"> <li>The road shall be installed with all safety signs, markings and speed comforting measures</li> </ul>	Project's Drawings
38	Mafisa, Mafisa Ward: Traders	Erick Hamad	<ul style="list-style-type: none"> <li>To build a proposed lane for passage of goods and commodities</li> <li>Lighting should be posed along the tarmac road</li> <li>Safety signs should be adhered</li> </ul>	<ul style="list-style-type: none"> <li>Periodic maintenance shall be done before the start of the proposed construction. Street light shall be installed at village centers and all feeder roads shall be considered</li> </ul>	Project's Drawings

#### **5.4 Summary of Key Findings from Stakeholders Consultation & Public Engagement**

From the engagement activities performed, stakeholders identified a number of issues that they anticipate from the proposed i.e (Veta-Kihonda-Tungi Road, Mjimwema Road, Tubuyu II Road, Baracuda Road) ii. (Kikundi Drainage, Anti Malaria drainage and Baracuda Draiang)

These include the following:

- NGOs should provide awareness creation education about HIV/AIDS and GBV in the area
- The roads will reduce travelling costs to the societies and accelerate economic growth hence will improve social economic condition of the area;
- Realignment of road during design is needed at Veta-Kihonda road to reduce sharp corners
- Poor drainage system as results of heavy floods within the municipal
- The Municipal Council proposed to have storm water master plan
- To widen road alignment that will accommodate trucks, walking by foot and bicycles, parking areas and motorcycle
- The proposed road should have parking areas for vehicles at all business centres along the road;
- Storm water drains at street centers should be covered for safety purposes;
- Road safety signs should be in place throughout;
- Road crossings should be provided at all junctions to; residential areas, schools and other public institutions;
- High transportation costs shall be reduced after road's improvement;
- Road humps should be provided as speed calming measure at residential areas;
- Road signs which show areas designed for bodaboda parking;
- Poor roads' condition contributes to tear and wear of motor vehicles travelling this road;
- Tarmac road is durable and has longer life span to sustain movement trucks loaded with heavy cargo compared to gravel road;
- There should be road safety trainings before and after completion of the construction phase;
- Road signboards to indicate schools' locations;
- Water abstraction points for MOROWASA should not be disturbed by the contractor;
- Service ducts should be included in the design for existing water pipelines and future extensions;
- TANESCO and MORUWASA is ready to cooperate, the project should include related costs in the BoQ.

#### **5.5 Pictures of Stakeholders in 1<sup>st</sup> Round Consultative Meeting**



**Picture 5-1: Leaders at Nanenane Street in Tungi Ward -Morogoro Municipality.**

Source: Site Pictures, December 2021



**Picture 5-2: Kihonda Mtaa in Kihonda Ward – Morogoro Municipality**

Source: Site Pictures, December 2021



**Picture 5-3: Muhimbili road at Kihonda Ward, SGR area.**

Source: Site Pictures, January 2022



**Picture 5-4: Mafisa Mtaa in Mafisa Ward – Morogoro Municipal Council**



Source: Site Pictures, January 2022



**Picture 5-5: Mbuyuni Mtaa in Mbuyuni Ward – Morogoro Municipal Council**

Source: Site Pictures, December 2021



**Picture 5-6: Mazimbu Mtaa in Mazimbu Ward- Morogoro Municipal Council**

Source: Site Pictures, December 2022



**Picture 5-7: Morogoro DC, Municipal technical term and NORPLAN consultants**  
Source: Site Pictures, December 2021



**Picture 5-8: Mji Mpya Mtaa in Mji Mpya Ward – Morogoro Municipality.**  
Source: Site Pictures, December 2021



**Figure 5-1: Meeting**

Source: Site Pictures, December 2021



**Picture 5-9: Mwembesongo Mtaa in Mwembesongo Ward – Morogoro Municipality.**

Source: Site Pictures, December 2021



**Picture 5-10: Sultan Area Mtaa in Sultan Area Ward – Morogoro Municipal Council**

Source: Site Pictures, December 2022



## **6 IMPACTS ASSESSMENT AND PROJECT ALTERNATIVES**

Several environmental and socio-economic impacts are likely to occur from the proposed construction of Morogoro urban infrastructure. This section provides an outline of the key potential impacts that are likely to occur during the pre-construction, construction and operational phases of the proposed project. Potential impacts have been identified based on primary field data, on the review and analysis of the secondary data.

The assessment of environmental impacts and their significance is largely dependent on the extent and duration of the expected change, size of the resource affected and their sensitivity to the change. Project impacts can be adverse and/or beneficial.

### **6.1 Methodology**

The assessment of environmental impacts and their significance is largely dependent on the extent and duration of the expected change, size of the resource affected and their sensitivity to the change. Project impacts can be adverse and/or beneficial and the methodology defined in section 1.7 has been applied to describe and assess both.

#### **6.1.1 Matrices**

Impact identification is a process designed to ensure that all potential significant impacts are identified and taken into account in project design and implementation. Several 'tools' are available to assist in impact identification. The most frequently used, are checklists of impacts, although matrices, network diagrams and map overlays are also commonly used. In this ESIA study, a checklist and matrix methods were used.

The checklists, which have been developed from previous experiences, provide lists of potential impacts associated with specific activities. They provide a quick method of identifying the impacts and in such help also practitioners to avoid overlooking some of potential impacts associated with a particular activity. The matrix provides a rather systematic way of evaluating the identified impacts.

#### **6.1.2 Focused Approach-Impacts Mapping**

The approach was also used to identify and locate all possible impacts on receiving environments resulting from upgrading of urban roads and drainage channels. Odometer was used to measure distance along the proposed roads and cameras were used to capture real time pictures. See Table 6-1 Overleaf.

#### **6.1.3 Experts Knowledge**

Expert or knowledge-based systems were used to assist diagnosis, problem solving and decision-making.

Determining the boundaries within which the EIA will be undertaken is an important step in the impacts identification process since this will also determine the extent in which the impacts will be experienced. Project boundaries which are mainly Institutional, temporal and spatial boundaries as shown in section 1.7

## **6.2 Impacts Associated with the Proposed Project**

Like any infrastructure's development project, a number of impacts are expected to occur from the proposed upgrading of roads and drainage channels under TACTIC in Morogoro Municipality. The impacts will mainly result from the execution of the project at four stages as listed below: -

### **6.2.1 Impacts associated with Mobilization (Pre-Construction) Phase**

- Creation of Employment Opportunities (+ve)
- Land acquisition (-ve)

### **6.2.2 Impacts during Construction Phase**

- Employment during Construction (+ve)
- Change in the Original Land Use, Scenic and Visual Quality (+ve)
- Improved Local Socio-economy (+ve)
- Improved Government Revenue through collected Taxes (+ve)
- Vibration and Noise Pollution (-ve)
- Poor Air Quality due to Emissions and Dust (-ve)
- Solid and Liquid Waste Generation (-ve)
- Oil, Grease, Fuel spillage (-ve)
- Risk to increased incidences of diseases transmission including HIV/AIDS (-ve)
- Risk to Health and Safety (-ve)
- Land Scarring at Borrow Sites (-ve)
- Soil and Water Pollution (-ve)
- Destruction of River Banks Vegetation and Aquatic Flora and Fauna (-ve)
- Destruction of Adjacent Land Use and Properties (-ve)
- Loss of Properties close to the Project Sites (-ve)
- Destruction of Terrestrial Vegetation (-ve)
- Construction related Risk and Accidents (-ve)
- Increased risk of traffic related road accidents (-ve)
- Child Labor
- Gender Based Violence (GBV)

### **6.2.3 Impacts during Operation Phase**



- Socio-economic Boost at the Project Area (+ve)
- Improved Government Revenue through collected Taxes (+ve)
- Extension of Services and Ward (+ve)
- Traffic Volume Increase and Risk to Road Accidents (-ve)
- Liquid waste management (-ve)
- Increased Pressure on Utilities (-ve)
- Noise Pollution (-ve)
- Air Pollution (-ve)
- Risk to increased incidences of diseases transmission including HIV/AIDS and STD (-ve)

### **6.2.4 Impacts during Decommissioning Phase**



- Reduced benefit to the community (-ve)
- Air Pollution (-ve)
- Noise Pollution and Vibrations (-ve)
- Increased Solid Wastes Volume (-ve)
- Change in the Scenic Quality (-ve)




Details for each listed impact above are provided in Section 6.1 and their corresponding Mitigation and Enhancement Measures in Chapter 7 of this report / statement.

**Table 6-1: Impacts Mapping Along the Proposed Roads under TACTIC**




Row No:	Chainage			Description	Picture Presentation	Impacts	Site-Specific Mitigation Measure
	Start	Intermediate	End				
				Properties Located Within Reserve Road			
Muhimbili Road 1.2Km							
1	00+000	00+500		Electrical Pole and Underground Water system		<u>Construction Phase</u> <ul style="list-style-type: none"> <li>Underground water distribution network will be relocated which increase road project will cost.</li> <li>Shortage of water to some of the areas will create disturbance.</li> <li>Reallocation of electrical Pole will increase project cost and disturbance users</li> </ul>	<ul style="list-style-type: none"> <li>Communicate with MORUWASA on the cost, permit and schedule for relocation to facilitate the project construction.</li> <li>Alternative of water availability should be known and present before reallocation of the existing system.</li> <li>Inform the community on the scheduled activity before the project starts.</li> <li>Provide safety and hazards warning signs during relocation</li> </ul>
2		00+500	01+200	Electrical Pole and Underground Water system RHS		<u>Construction Phase</u> <ul style="list-style-type: none"> <li>Underground water distribution network will be relocated which increase road project will cost.</li> <li>Shortage of water to some of the areas will create disturbance.</li> <li>Reallocation of electrical Pole will increase project cost and disturbance users</li> </ul>	<ul style="list-style-type: none"> <li>Communicate with MORUWASA on the cost, permit and schedule for relocation to facilitate the project construction.</li> <li>Alternative of water availability should be known and present before reallocation of the existing system.</li> <li>Inform the community on the scheduled activity before the project starts.</li> <li>Provide safety and hazards warning signs during relocation</li> </ul>
Mji Mwema road 5.3Km							






Row No:	Chainage			Description	Picture Presentation	Impacts	Site-Specific Mitigation Measure
	Start	Intermediate	End				
1	00+000	00+100		Sharp corner and poor visibility		<p><b>Pre-Construction Phase</b></p> <ul style="list-style-type: none"> <li>Possible Road accidents involving deaths/Injuries to pedestrians, bicyclists, and motorcyclists</li> <li>Outcomes of road crashes have impacts on household income, unemployment, physical ability (permanent disability), divorce rate, and income gaps for surviving victims of road-crashes</li> </ul>	<ul style="list-style-type: none"> <li>The design should consider realignment option/s to allow visibility towards both sides of the corner/s</li> <li>The design should take into consideration pedestrian and cyclists pathways on both sides of the carriage way</li> <li>Safety road signs should be in place during the road operation phase</li> <li>Road users should be provided with road safety awareness/education before and during operation phase.</li> <li>Provide appropriate speed limit towards and from the junction. E.g. 30-50km/hr</li> <li>Provide road markings at/towards the corner. E.g. single yellow/white solid line, double solid line etc</li> </ul>
2	00+400	00+600		Sharp corner ,poor visibility and Electrical Pole		<p><b>Pre-Construction Phase</b></p> <ul style="list-style-type: none"> <li>Possible Road accidents involving deaths/Injuries to pedestrians, bicyclists, and motorcyclists</li> <li>Outcomes of road crashes have impacts on household income, unemployment, physical ability (permanent disability), divorce rate, and income gaps for surviving victims of road-crashes</li> </ul> <p>Electrical Hazard risk during relocation of electricity distribution line to people nearby and workers. Generation of electrical equipment wastes as some of the parts may not be re-used</p>	<ul style="list-style-type: none"> <li>The design should consider realignment option/s to allow visibility towards both sides of the corner/s</li> <li>The design should take into consideration pedestrian and cyclists pathways on both sides of the carriage way</li> <li>Safety road signs should be in place during the road operation phase</li> <li>Road users should be provided with road safety awareness/education before and during operation phase.</li> <li>Provide appropriate speed limit towards and from the junction. E.g. 30-50km/hr</li> <li>Provide road markings at/towards the corner. E.g. single yellow/white solidline, double solid line etc</li> <li>The power line should be relocated before construction starts</li> </ul> <p>All electric equipment wasted be collected and disposed by the electric company as required</p>
3	03+600	04+700		TANESCO Transformer and Electrical Pole		<p><b>Pre &amp; Construction Phases</b></p> <ul style="list-style-type: none"> <li>Electrical distribution line will be relocated which increase of the road project.</li> <li>There will be temporary electricity power cut around the area during relocation of distribution line.</li> <li>Electrical Hazard risk during relocation of electricity distribution line to people nearby and workers. Generation of electrical equipment wastes as some of the parts may not be re-used</li> </ul>	<ul style="list-style-type: none"> <li>All the electric pole be installed at their designated place before removing the current distribution line if possible so that the time for electricity cut be reduced</li> <li>Provide prior information to the public about the time of relocating the line and the risks of electric exposure</li> <li>The power line should be relocated before construction starts</li> </ul>



Row No:	Chainage			Description	Picture Presentation	Impacts	Site-Specific Mitigation Measure
	Start	Intermediate	End				
							<ul style="list-style-type: none"><li>All electric equipment wasted be collected and disposed by the electric company as required.</li></ul>
4		05+000	05+300	T Junction to SGR		<p><b>Construction Phase</b> During construction the T junction will be closed temporarily and create inconvenience to the road users</p> <p><b>Operation Phase</b> •Being a busy area, T junction might be the cause of road accidents during operation</p>	<ul style="list-style-type: none"><li>Community should be informed on the temporary closure of the road</li><li>Smooth turning curves/radius at the T junction should be designed and constructed</li><li>Safety road signs should be provided at/towards the junction</li><li>All necessary Road markings should be provided on all possible road sections</li><li>Vehicle speeding should be limited to 30-50km/hr</li></ul>
Ngerengere Link Road 2.2 km							
1	00+400	00+900		River Ngerengere		<p><b>Construction Phase</b></p> <ul style="list-style-type: none"><li>River bank's erosion as a result of future shifting/migration towards the road is certain to impact the road to be constructed</li><li>Soil erosion and impacts on water quality during construction, when removal of vegetation for initial clearing, grubbing, and grading activities exposes soil and makes it more susceptible to erosion.</li></ul>	<ul style="list-style-type: none"><li>•Temporary and permanent erosion control methods should be in place and include silt fences, flotation silt curtains, interceptor ditches, seeding , riprap of exposed embankments, erosion mats e.t.c.</li><li>•Clearing of vegetation and reshaping land should be minimized, and vegetated buffers to the river should be preserved.</li><li>•Perennial indigenous vegetation buffers should be retained or reestablished between the road and river. Appropriate buffers reduce the immediate contamination risk to river by acting as stormwater contaminant filters and allow time for effective remedial action in the event of a chemical spill incident. The buffer should be wide enough to be self-sustaining,</li></ul>




Row No:	Chainage			Description	Picture Presentation	Impacts	Site-Specific Mitigation Measure
	Start	Intermediate	End				
							<ul style="list-style-type: none"><li>•There should be site-specific erosion and sediment control plans to minimize environmental impacts of storm water run-off during construction activities.</li></ul>
2	1+200	1+020		Fence for TANESCO Sub Station at SGR		<p><b>Re-Construction Phase</b></p> <ul style="list-style-type: none"><li>• The fence is within the proposed design width, shall be further on the RHS.</li><li>• Solid Waste generation as a result of fence demolition, i.e. m</li></ul>	<ul style="list-style-type: none"><li>•Communicate with TANESCO on the cost, permit and schedule for relocation to facilitate the project construction.</li><li>•Demolition wastes should be collected, re-used and/or disposed at an authorized Mafisa dumpsite</li></ul>
Tubuyu II 2.3km							
1	00+600	01+000		Pipe Culvert		<p><b>Pre-Construction Phase</b></p> <ul style="list-style-type: none"><li>• If designed without regard for water movement, culvert may pose barriers to the upstream movement disrupting the flow of runoff.</li><li>• Culverts serve as an entry point of pollutants that accumulate from water that runs off towards the road</li></ul>	<ul style="list-style-type: none"><li>•Culvert site should be where the channel gradient is uniform for a distance upstream and downstream in the channel. This will avoid areas where there may be sudden increases in water velocity immediately upstream or downstream of the installation. The gradient must be constant at the crossing itself. Steeper channel gradient shall result in higher flow velocity and the culvert be subject to greater risk of erosion and washout caused by the momentum of water striking the culvert inlet area.</li><li>•Drainage structure design and installation should be sized according to the probability of occurrence of an expected peak discharge during the design life of the road</li><li>•Culvert should be suitably protected from erosion, scour and road maintenance equipment</li></ul>



Row No:	Chainage			Description	Picture Presentation	Impacts	Site-Specific Mitigation Measure
	Start	Intermediate	End				
Veta Kihonda Tungi Road 11.4 Km							
1	01+1000	01+120				<p><u>Pre &amp; Construction Phases</u></p> <ul style="list-style-type: none"><li>Electrical distribution line will be relocated which increase will cost of the road project.</li><li>There will be temporary electricity power cut around the area during relocation of distribution line.</li><li>Electrical Hazard risk during relocation of electricity distribution line to people nearby and workers. Generation of electrical equipment wastes as some of the parts may not be re-used</li></ul>	<ul style="list-style-type: none"><li>All the electric pole be installed at their designated place before removing the current distribution line if possible so that the time for electricity cut be reduced</li><li>Provide prior information to the public about the time of relocating the line and the risks of electric exposure</li><li>The power line should be relocated before construction starts</li><li>All electric equipment wasted be collected and disposed by the electric company as required.</li></ul>
2	01+1200	01+130		Junction to KDP Lodge LHS		<p><u>Pre - Construction Phase</u></p> <p>During construction the T junctions will be closed temporarily create inconvenience to the road users</p>	<ul style="list-style-type: none"><li>Community and pupils should be informed on the temporary closure of the road</li><li>Smooth turning curves/radius at the T junctions should be designed and constructed</li><li>Safety road signs should be provided at/towards the junction</li><li>All necessary Road markings should be provided on all possible road sections</li><li>Vehicle speeding should be limited to 30-50km/hr</li></ul>
Mapande Road 1.15km							
1	00+000	00+200		Junction to Barakuda		<p><u>Construction Phase</u></p> <p>During construction the T junctions will be closed temporarily and create inconvenience to the road users</p>	<ul style="list-style-type: none"><li>Community and students should be informed on the temporary closure of the road</li><li>Smooth turning curves/radius at the T junctions should be designed and constructed</li><li>Safety road signs should be provided at/towards the junction</li><li>All necessary Road markings should be provided on all possible road sections</li><li>Vehicle speeding should be limited to 30-50km/hr</li></ul>

Row No:	Chainage			Description	Picture Presentation	Impacts	Site-Specific Mitigation Measure
	Start	Intermediate	End				
2	00+200	00+300		Houses on both sides of the road to be affected		<p><u>Pre-Construction Phase</u></p> <ul style="list-style-type: none"><li>• Demolition of residential building/s within 15m from the proposed road center.</li><li>• Inconvenience to owner/s and /or tenant/s during demolition and road construction stages.</li><li>• Direct economic impact to the owner/s.</li><li>• Dust and noise generation during demolition and road construction</li></ul>	<p>There should be sensitization meeting with residential building owner/s and tenant/s.</p> <p>Fair valuation and early compensation/s should be conducted.</p> <p>Water spraying on dust areas during construction should be regularly practiced</p>
3	01+000	01+1000		Water distribution pipe above the ground LHS		<p><u>Construction Phase</u></p> <ul style="list-style-type: none"><li>•The road construction activities i.e. excavations/earth cut/s might click the pipelines and cause accidental leaks</li><li>•Temporary disruption of water supply to the community</li><li>• Dust and noise generation during demolition and road construction</li><li>•Possible Road accidents involving deaths/Injuries to pedestrians, bicyclists and motorcyclists</li><li>• Possibility of causing house break to houses on the RHS and LHS</li></ul> <p><u>Post-Construction Phase</u></p> <ul style="list-style-type: none"><li>• Inaccessibility for the water pipeline’s section maintenance after the road construction</li></ul>	<ul style="list-style-type: none"><li>• The pipelines should either be reallocated or protected with metallic pipe casing/s of larger diameter during construction that will also provide maintenance accessibility during road’s operation</li><li>•Community should be informed on temporary disruption of water supply services</li><li>•There should be sensitization meeting with road users on road safety during and after construction phase</li><li>•Water spraying on dust areas during construction should be regularly practiced</li><li>•Safety road signs should be in place during the road operation phase</li><li>• Vibration level analysis should be conducted to the house close to the road</li><li>• Before and after picture of house close to the road should be taken to assess the impact after construction</li><li>• Side Safety guard rail should be constructed to house that are in corner and slope</li></ul>



Row No:	Chainage			Description	Picture Presentation	Impacts	Site-Specific Mitigation Measure
	Start	Intermediate	End				
4		01+1000	00+500	Electrical Pole		<p><b><u>Pre &amp; Construction Phases</u></b></p> <ul style="list-style-type: none"><li>• Electrical distribution line will be relocated which increase will cost of the road project.</li><li>• There will be temporary electricity power cut around the area during relocation of distribution line.</li><li>• Electrical Hazard risk during relocation of electricity distribution line to people nearby and workers. Generation of electrical equipment wastes as some of the parts may not be re-used</li></ul>	<ul style="list-style-type: none"><li>• All the electric pole be installed at their designated place before removing the current distribution line if possible so that the time for electricity cut be reduced</li><li>• Provide prior information to the public about the time of relocating the line and the risks of electric exposure</li><li>• The power line should be relocated before construction starts</li><li>• All electric equipment wasted be collected and disposed by the electric company as required.</li></ul>

### **6.3 Impacts Evaluation**

Identification of impacts was followed by prediction or estimation of the magnitude, extent and duration of the impact in comparison with the situation without that project. The matrix method was used (Table 6-2) to be able to predict whether impacts are likely to occur as well as their scale, the initial reference or baseline data prior to the project was determined, and the future changes forecasted with or without the proposed project.

The impact evaluation was based on experts' knowledge as well as checklists filled basing on site conditions and stakeholders' consultation / responses. The significance of impacts was tested using the following criteria:

- The magnitude and likelihood of the impact and its spatial and temporal extent
- The likely degree of recovery of the affected environment
- The value of the affected environment
- The level of public concern
- The extensive over space and time (magnitude)
- The intensive in concentration or in proportion to assimilative capacity (the ability of the environment or a portion of the environment, such as a stream, lake, air mass, or soil layer, to carry waste material without adverse effects on the environment or on users of its resources)
- Exceeding environmental standards or thresholds
- Compliance with environmental policies, land use plans, sustainability strategy
- Adverse and serious effect to ecologically sensitive areas
- Adverse and serious effect to heritage resources, other land uses, communities and/or indigenous people, traditions and values

The impacts were further rated at a scale of “-3” to “+3” through “0” in the following manner: -

+3	High positive impacts
+2	Moderate positive impacts
+1	Minor positive impacts
0	No impacts
-1	Minor negative impacts
-2	Moderate negative impacts
-3	High negative impacts

Mitigation and enhancement measures are developed for significant impacts that were rated +2, +3, -2, and -3. Some impacts appear to have less significant values as they stand alone, nonetheless cumulatively they have significant impact to the environment, these were considered and were discussed under cumulative and residue impacts.

In the next sections, significant impacts (positive and negative) associated with each phase of the project are analyzed (Table 6-2) and discussed in detail in section 6.4. The proposed mitigation and enhancement measures for the impacts are presented in section 7.

**Table 6-2: Impact Correlation Matrix for the Proposed TACTIC Project Zone 3 in Morogoro Municipality at Different Project Phases**

S/N	PARAMETER/ACTIVITIES	MOBILIZATION AND CONSTRUCTION PHASE									OPERATION PHASE				DEMOBILIZATION PHASE		
		Procuring the contractor and construction supervision staff	Putting up a site office	Site clearance and removal of vegetation around the	Equipment mobilization	Transportation of materials to the site	Setting out of the proposed road and drainage	Excavation and concreting of foundation	Backfilling and disposal of overburden materials	Construction of the proposed road and	Operation of the proposed road and drainage	Road and Drainage Maintenance works	Solid and Liquid waste handling and management	Monitoring vehicles for weight limit capacity requirement	Removal of temporary Structure	Disposal of any remaining unwanted materials	Termination of Temporary employment
1.	Benefits to communities resulting from employment and other economic activities linked to the project	+1	+2	+2	+1	+1	+2	+3	+1	+3	+3	+1	+1	+2	+2	+1	-3
2	Improved access to external markets by local people	0	0	0	0	0	0	0	+1	0	+3	0	0	+1	0	0	0
3	Improved access to social services by local communities	0	0	0	0	0	0	0	+1	+1	+3	+1	0	+1	0	0	0
4.	Change in original land use, scenic and visual quality	0	0	+1	0	0	+1	+2	0	+1	+2	0	0	0	0	0	0
5.	Improved local social economic	0	+1	+1	0	+1	+1	+1	+1	+2	+3	+1	0	0	0	+1	-2
6.	Influx of job mongers	-1	-1	-2	-1	-1	-2	-2	-1	-2	0	0	0	0	-1	0	0
7.	Improved government revenue through collection of taxes	0	0	0	0	0	0	+1	0	+2	+3	0	0	0	0	0	0
8.	Vibration and noise pollution	-1	-2	-1	0	-2	-1	-2	0	-2	-1	0	0	-1	-1	0	0
9.	Poor air quality due to emission of dust	0	-3	-2	-1	-2	-2	-2	-1	-2	-1	0	0	0	-1	-1	0

S/N	PARAMETER/ACTIVITIES	MOBILIZATION AND CONSTRUCTION PHASE									OPERATION PHASE				DEMOBILIZATION PHASE		
		Procuring the contractor and construction supervision staff	Putting up a site office	Site clearance and removal of vegetation around the	Equipment mobilization	Transportation of materials to the site	Setting out of the proposed road and drainage	Excavation and concreting of foundation	Backfilling and disposal of overburden materials	Construction of the proposed road and	Operation of the proposed road and drainage	Road and Drainage Maintenance works	Solid and Liquid waste handling and management	Monitoring vehicles for weight limit capacity requirement	Removal of temporary Structure	Disposal of any remaining unwanted materials	Termination of Temporary employment
10.	liquid waste management	0	-1	-1	0	-1	0	-1	0	-2	-2	0	0	0	-1	0	0
11.	Oil, grease and fuel spillage	0	-1	-1	0	-1	0	-2	0	-2	-2	-2	-1	-1	-1	0	0
12.	Risks to increased incidences of diseases transmission including HIV/AIDS	0	-1	-1	0	0	-1	-2	-1	-3	0	0	0	0	0	0	0
13.	Risk to health and safety	0	0	0	-2	-1	0	-1	-1	-1	-2	-1	-1	0	-1	0	0



S/N	PARAMETER/ACTIVITIES	MOBILIZATION AND CONSTRUCTION PHASE									OPERATION PHASE				DEMOBILIZATION PHASE		
		Procuring the contractor and construction supervision staff	Putting up a site office	Site clearance and removal of vegetation around the project site	Equipment mobilization	Transportation of materials to the site	Setting out of the proposed road and drainage	Excavation and concreting of foundation	Backfilling and disposal of overburden materials	Construction of the proposed bridge	Operation of the proposed road and drainage	Road and drainage Maintenance works	Solid and Liquid waste handling and management	Monitoring vehicles for weight limit capacity requirement	Removal of temporary Structure	Disposal of any remaining unwanted materials	Termination of Temporary employment
14.	Land scaring at Borrow pit sites	0	0	0	0	0	0	0	-1	-2	-1	0	0	0	0	0	0
15.	Soil and water pollution	0	0	-1	0	0	0	-1	-1	-2	0	0	-1	0	0	-1	0
16.	Destruction of river banks vegetation and aquatic flora and fauna	0	0	-1	0	0	0	-1	0	-2	0	0	0	0	0	0	0
17.	Soil erosion and sedimentation of stream/river beds	0	0	0	0	0	0	0	0	-3	0	0	0	0	0	-1	0
18.	Destruction of adjacent land use and properties	0	-1	-1	0	0	-1	0	0	-2	0	0	0	0	0	-1	0
19	Loss of properties close to the project site	-1	-1	-1	-1	0	-1	0	0	-1	0	0	0	0	0	0	0
20	Increased risk of traffic related accidents	0	0	0	0	-1	0	0	0	-1	-2	0	0	0	0	0	0
21	Destruction of terrestrial vegetation	0	0	-1	0	0	-1	-1	0	-2	0	0	0	0	0	0	0
22	Construction related risks and accidents	0	0	0	0	0	0	-1	0	-2	0	0	0	0	0	0	0
23	Disruption of pedestrians and non-motorized transport movement	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

S/N	PARAMETER/ACTIVITIES	MOBILIZATION AND CONSTRUCTION PHASE									OPERATION PHASE				DEMOBILIZATION PHASE		
		Procuring the contractor and construction supervision staff	Putting up a site office	Site clearance and removal of vegetation around the project site	Equipment mobilization	Transportation of materials to the site	Setting out of the proposed road and drainage	Excavation and concreting of foundation	Backfilling and disposal of overburden materials	Construction of the proposed bridge	Operation of the proposed road and drainage	Road and drainage Maintenance works	Solid and Liquid waste handling and management	Monitoring vehicles for weight limit capacity requirement	Removal of temporary Structure	Disposal of any remaining unwanted materials	Termination of Temporary employment
24	Traffic volume increase / decrease	0	0	0	-1	-1	0	0	0	0	-2	0	0	0	0	0	0
25	Decreased risk of traffic related road accidents	0	0	0	0	0	0	0	0	+1	+2	+1	0	0	0	0	0
26	Extension of Services and Ward	0	0	0	+1	+1	0	+1	0	+2	+3	+1	0	0	0	0	0
27	Increase in storm water, solid and liquid waste generation	0	0	0	-1	-1	0	-1	0	-2	-2	-1	0	0	+2	0	0

## 6.4 Description of Potential Environmental and Socio-economic Impacts

A number of minor to major environmental and socio-economic impacts are likely to occur from the implementation of this project. The impacts will mainly result from site clearance, transportation of construction materials, and actual construction works. Such potential environmental and social impacts include: -

### 6.4.1 Pre-construction Phase Impacts

Prior Construction, the project must be planned, designed and tendered for the Contractor to implement the construction works. Thereafter, the Contractor must mobilize to site. This include office setting and mobilization of resources (i.e. equipment, materials and staff). The acquiring of relevant permits for construction activities, including materials excavations, is also seen through at this phase.

The mobilization impacts magnitude and receptor systems sensitivity will generally be low. The impacts will further be temporary and permanent and are generally reversible. The identified impacts during pre-construction phase are further explained hereafter: -

#### POSITIVE IMPACTS

##### 6.4.1.1 Creation of Employment Opportunities (+ve)

Design and concept development of the project create employment opportunities to various professionals directly or indirectly linked to the project. The proposed project during preconstruction phase has created employment to the following teams: -

- Architects and Land Surveyors for concept development
- Engineers Design teams for practicability (i.e. Hydrologists, geologists, structural engineers, highway engineers, materials engineers, electrical engineers, etc.)
- Environmental Experts, Valuer and Sociologist team to carry out Environmental and Social Impact Assessments and Resettlement Action Plans (if any).
- Economists and Quantity Surveyors to develop Cost Analysis and economic viability

The impact is considered positive short term will medium magnitude

#### NEGATIVE IMPACTS

##### 6.4.1.2 Land Acquisition (-ve)

For the proposed upgrading of roads and drainage infrastructure anticipated that cover 5 roads and 2 drainage systems This might lead into loss of agricultural land, change of land use pattern and vegetation clearance. However, all matters concerning the land ownership for the proposed subproject have been settled.

The impact is considered to be negative long terms with low significance

### 6.4.2 Impacts during Construction Phase

The identified potential impacts during construction phase are further explained hereafter: -

#### POSITIVE IMPACTS

##### 6.4.2.1 Employment during Construction (+ve)

Construction of the proposed project components will create employment opportunities to the following staff directly or indirectly linked to the project.

- Supervising engineering team
- Contractor staff (managerial, skilled and unskilled labour force)
- Suppliers of plants, machinery, materials, and essential services

- Construction monitoring personnel from various government agencies.
- Local communities will also benefit through direct employment as labourers, while others will acquire income through sell of food stuffs to the project staff.

It is expected the construction phase will create employment opportunities and will have a medium magnitude

#### **6.4.2.2 Improved Local Socio-economy (+ve)**

Construction of the proposed project components will bring about the following socio-economic benefits: -

- Employment of local workers during the construction phase of the project
- Increased business opportunities around the project sites
- Increased or strengthening of local economy through the establishment of microenterprises such as food vendors and other necessities groceries.

The impact is considered to be positive long term with medium significance

#### **6.4.2.3 Improved Government Revenue through collected Taxes (+ve)**

Construction materials to be purchased and services to be provided on the proposed project will all be subjected to the Value-Added Tax (VAT) which goes into the government treasury. Companies and employments will equally give their share to the statutory contributions to the government (NSSF, PPF etc.). Overall, this is one of the positive impacts to result from the proposed project.

The impact is considered to be positive long term with medium significance

#### **6.4.2.4 Change in Original Land Use, Scenic and Visual Quality (+ve)**

The proposed project components will change the outlook of the project area. The more improved alternatives for the current scenery will be constructed / erected and thus change the outlook of the project areas as well as the surrounding environment. Specifically, the proposed structures will result into beautification and a better outlook.

The impact is considered to be positive long term with medium significance

### **NEGATIVE IMPACTS**

#### **6.4.2.5 Vibration and Noise Pollution (-ve)**

The major sources of noise / vibration are expected from operation of vehicles / equipment / machinery on the project sites. Other source of noise and vibration will be expected from the use of explosives during rock blasting activities, if any.

Other potential impact of project activities (e.g., hammering / knocking and vehicular traffic) on air quality, and noise and elevated vibration levels are also anticipated. Measures for control of vibration and excessive noise levels beyond 85 dB (A) will be instituted as will be guided in the mitigation measures.

The impact is considered to be negative short terms with medium significance

#### **6.4.2.6 Poor Air Quality due to Emissions and Dusts (-ve)**

Exhaust emissions mainly comprised of Carbon monoxide (CO), Oxides of Sulphur (SO<sub>x</sub>), Oxides of Nitrogen (NO<sub>x</sub>), Hydrocarbons (HC) and possibly Lead (Pb) are expected to occur from operation of vehicles and construction equipment at the project sites. The air quality around project areas may thus be affected by machinery due to exhaust emissions during clearing or demolition, transporting, placing, grading and compacting of the sites. However, the extent of air pollution will be taken into consideration by undertaking some of the activities during non-working hours and weekends.

Dust will be emitted from excavations and operation of equipment and vehicles during construction activities. Dust is strongly considered as a source of respiratory disease, but the extent of dust will almost be the same as it is at present time. Dust can also impair visibility among vehicle drivers, cyclists and pedestrians, during construction period of the proposed facility.

The impact is considered to be negative sort terms with medium significance

#### **6.4.2.7 Solid and Liquid Waste Generation (-ve)**

Solid and liquid waste will be generated from construction works mainly from site clearance and actual construction works in the project area. Solid and liquid waste (e.g. hydrocarbons) can adversely impact the surface water, ground water, soil and air and can affect the soil use and the aesthetic beauty of an area. The Contractor will be guided in the environmental management plan on proper waste management in accordance with existing regulations and by-laws.

The impact is regarded as negative short term with low significance

#### **6.4.2.8 Hydrocarbons Spillage (-ve)**

Hydrocarbon spills around the construction site should be avoided to minimize slippage and other health hazards to personnel. Moreover, Hydrocarbon spills will not just pose injury risks and affect the quality of the soil but will also alter the physical properties of oil-contaminated soil which will also control the stability of slopes as well as the bearing capacity of foundations and other structures.

The impact is considered to be negative long term with medium significance

#### **6.4.2.9 Risk to Increased Incidences of Diseases Transmission including HIV/AIDS and STIs (-ve)**

The project has a great potential for fuelling the negative impacts associated with HIV/AIDS in the area. The interaction between construction workers and the residents may result into increased transmission of HIV/AIDS and Sexually Transmitted Infections (STIs) among the two groups.

Again, potential socio-economic impacts resulting from an influx of job seekers into existing communities, including potential competition for resources and the delivery of social services, disruptions to social fabric, may result into public health impacts such as the transmission of infectious diseases, HIV/AIDS and STDs, as well as effects on women and economic impacts such as inflation.

The HIV/AIDS spread impact on the Morogoro subproject is considered to be negative long term with medium significance

#### **6.4.2.10 Risk to Health and Safety**

This will arise as a result of increased risk to construction / project personnel, occupational hazards as result of poor instruction and / or awareness on safety regulations, ignorance of safety signs, warnings and reckless operations by personnel.

The impact is considered to be negative long term with medium significance

#### **6.4.2.11 Land Scarring at Borrow Sites (-ve)**

Disturbances, particularly land scarring at borrow sites or sources of construction materials (Sand, aggregates and stones) will be realized during construction stage. Borrow materials to be used for construction works will be collected from sources far from the project sites. The immediate impact of borrow areas/sites is land scarring in the course of sourcing materials.

Borrow pits located near settlements are a source of concern in terms of human health and safety.

Such borrow pits could become breeding areas for mosquitoes during the rainy season should they become inundated with water. Other health and safety concerns could be to children who may use the



collected water as play grounds and contact water borne diseases or possibly drown. (Nwachukwu, et al)

The impact is considered to be negative long term with medium significance

#### **6.4.2.12 Soil and Water Pollution (-ve)**

The accumulation of solid wastes in construction site is likely to result into environmental pollution. Likewise, uncontrolled discharge of liquid wastes will result into pollution of surface and ground water, especially to surface water sources around the workers' office. For example, improper siting of pit latrines may result into contamination of both ground and surface water sources.

The spillage of fuels, oils, grease and paints may lead into land contamination and pollution of water sources, and ultimately may cause damage to natural vegetation and soil micro-fauna and flora. The contractor must be guided on how to mitigate these impacts

The impact is considered to be negative long term with medium significance.

#### **6.4.2.13 Destruction of River Banks Vegetation and Aquatic Flora and Fauna (-ve)**

Since water from Ngerengere River may be used during construction phase, the movement of trucks close to the river banks during water abstraction could result into destruction of river banks and their vegetation. This could lead into increased river bank erosion and sedimentation of river bed.

Moreover, uncontrolled cutting and clearing of the vegetation while working close to the river banks is destructible. The presence of heavy machinery and trucks could further result into pollution of water source due to leakage of oils.

The impact is considered to be negative short term with medium significance.

#### **6.4.2.14 Destruction of Terrestrial Vegetation (-ve)**

The construction of the of storm water drainage channels, upgrading of Roads, construction of workers office and construction materials storage yard will result into vegetation clearing, soil excavations and stockpiling of overburden and waste soils / rock materials. Generally, destruction of natural vegetation is inevitable during construction.

The impact is considered to be negative long term with medium significance.

#### **6.4.2.15 Destruction of Adjacent Land Use and Properties (-ve)**

Improper design, inadequate number of culverts and wrongly located / placed culverts may cause concentration of storm water flow resulting into destruction of adjacent land use and/or public properties. Changes in drainage patterns may result into concentration of water flow leading into flooding, soil erosion and consequently damaging the adjacent farmlands, houses and other public properties below the roadbed. The destruction of adjacent lands may also occur due to uncontrolled stockpiling of spoils and movement of mobile equipment during construction and/or workings of borrow pits.

The impact is considered to be negative long term with medium significance.

#### **6.4.2.16 Construction related Risks and Accidents (-ve)**

The construction related accidents are likely to occur when dealing with operation of heavy equipment and general construction activities. Materials like blocks or glasses may also fall during construction and cause serious injuries.

The impact is considered to be negative short term with medium significance

#### **6.4.2.17 GBV(-ve)**

During construction phase the GBV shall be expected to those who seek for employment. The demand of employment will influence sexually corruption in order to be employed, moreover workers may use

their income obtained from construction of the subprojects and use for corrupting on the community. i.e students, this may affecting the community and sociality as resulting with diseases such as HIV, family misunderstanding and unplanned pregnancy.

This is considered negative impact, short term with low magnitude

#### **6.4.2.18 Risk of Child Labour**

In the project area many children work to ensure survival of their families and themselves. During construction, the contractor/subcontractors might knowingly or unknowingly employ workers under the age of 18 which is against the labor law of Tanzania.

During employment in construction and related activities child labor is associated with increased musculoskeletal disorders, physical impairment, and psychological distress.

This is considered negative, medium significance and long term.

#### **6.4.2.19 Climate Change Risks**

The construction of infrastructures has many impacts on the environment and contributes enormously to climate change. Although construction practices/related activities (i.e. clearing of vegetation) typically do not produce large quantities of GHGs compared to the operations of many other sectors. During construction of the proposed subproject in Morogoro Municipal, the input of steel, cement and asphalt, and management of excavated materials are the largest contributors to material-related greenhouse gas emissions.

Impacts on the microclimate and meteorology of the local area will be negligible since there will be minor changes in surface reflection, no aerodynamic disturbances and average temperature and rainfall increase during operation of the project

This is considered negative, medium significance and long term.

#### **6.4.3 Impacts during Operation Phase**

Being simple layouts of limited structures, the potential impacts associated with operation are relatively minor, and these can largely be mitigated through good design and construction practices.

In terms of magnitude, the operational impacts are also classified as being low, meaning they are generally short term, and singular events. The operational impacts are both temporary and permanent. Furthermore, the impacts are generally reversible. The sensitivity of the receptor systems is low for the entire project area, meaning they are highly adaptable and non-fragile.

Unlike the construction phase the probability of occurrence of operational impacts is low. Clearly marked road signs to guide traffic can reduce the incidence of accidents and drainage clearance can reduce clogging/blockage of channel. All potential negative operational impacts can be effectively mitigated by implementation of relatively simple, low cost measures. The potential positive operational impacts for the project, through proper management and monitoring plans can easily be enhanced to benefit the municipality.

The identified potential impacts during operation phase are further explained hereafter: -

### **POSITIVE IMPACTS**

#### **6.4.3.1 Socio-Economic Boost (+ve)**

During construction and operation phases, social interactions and commercial activities growth is anticipated due to increased economic activities as a result of improved transportation infrastructure. For an area which had little / no traffic at all this change is highly significant, as assurance of

transportation means will facilitate economic boost by transportation / business of agricultural products and other goods.

Due to socio-economic boost, many businesses will be established. This will in-turn lead to increase in government revenue through collected tax from the established businesses. The increase in revenue will contribute a lot in bringing about development to the streets along the project streets, as well as the municipality is general.

This impact is considered positive, medium significance and long term.

#### **6.4.3.2 Traffic Volume Decrease in the Municipal Centre (+ve)**

During operation phase, traffic congestion in the municipal centre is expected to be decreased significantly. This is due to the improvement of urban infrastructure.

This impact is considered positive ,medium significance and short term.

#### **6.4.3.3 Extension of Services and Municipality (+ve)**

The construction of the proposed project components / facilities in the project wards, will result in the extension of social and economic services to the project areas due to expected population influx.

This impact is considered positive long term and medium significance

### **NEGATIVE IMPACTS**

#### **6.4.3.4 Traffic Volume Increase at the main Project Area (-ve)**

During construction and operation phases, traffic congestion is anticipated due to increased economic activities as a result of improved urban infrastructure. The established facilities, will attract road users travelling in different destination. This will pose potential traffic volume increase which may also increase risk to traffic related road accidents. The latter is likely to occur because of speeding drivers affecting both the travelers and the residents.

This impact is considered negative long term and medium significance

#### **6.4.3.5 Noise Pollution (-ve)**

Noise pollution during operation phase will mainly be associated with the vehicles passing by and entering / exiting parking at the project areas. Other sources include established business operations (music vendors and recreational services) on the roads' sides and within the project areas. These noises if not properly controlled can cause adversely effects on project area residents' / neighbours' wellness and comfort; likewise, for other road, stand and parking users.

#### **6.4.3.6 Air Pollution (-ve)**

Like for the construction phase, the source of air pollution is expected mainly to be emissions from the moving vehicles.

This impact is considered negative short term and medium significance

#### **6.4.3.7 Oil and Grease / Hydrocarbon Spillage (-ve)**

Since vehicles are the major component for the proposed main facilities, oil / grease spillage has high occurrence probability during operational phase. This is because automobile from different parts of the council, and trucks from different regions will be accessing the project areas; and their conditions is not really known to the facilities' operators. Moreover, there is a garage and filling station at the trucks parking areas where the spillage of oil / grease is inevitable. Control of these spillages is crucial to avoid soil contamination and other hazards such as fire, etc.

This impact is considered negative short term and low significance

#### **6.4.3.8 Increase in Storm Water, Solid and Liquid Waste Generation (-ve)**

Storm water quantity is expected to be significant as the road surface will be hard and impermeable. Also, Solid wastes generation from project road, buildings and facilities users, will also be significant, and population influx will lead to increased sanitation requirements.

The impact is considered to be negative long term with medium significance

#### **6.4.3.9 Liquid waste management (-ve)**

Likewise, the community along the drainage tend to connect sewage into storm water drainage and hence conveying storm water contaminated with sewage instead of storm water only as intended. This brings about public health concerns bearing the close proximity of the downstream community to the drainage. The case of cholera outbreak in Morogoro and persistent dysentery specifically in slums area justifies the cause.

The impact is considered to be negative long term with medium significance.

#### **6.4.3.10 Risk to Increased Incidence of Diseases Transmission Including HIV/AIDS and STD/STI**

Generally, the project will increase level of social interaction at the project areas. All stages of the project (investigation, design, construction, implementation and decommissioning) will attract people (for instance–job seekers, vendors, contractor’s team, regulators, commuters, accommodation facilities, businesses, recreational facilities, etc.). This poses high potential in likelihood of HIV / AIDS and other infectious diseases spread.

The HIV/AIDS spread impact on the Morogoro subproject is considered to be negative long term with medium significance

#### **6.4.4 Impacts during Decommissioning Phase**

Upon implementing proper operation and maintenance practices, the project is not expected to be decommissioned anytime soon, especially since the design life of the infrastructure is 20 years. However, if the need arises and the subproject must be decommissioned, the impacts magnitude and receptor systems sensitivity will be low. The impacts will further be negative, both temporary and permanent and are generally reversible.

The identified impacts during Decommissioning phase are further enlightened hereafter: -

##### **NEGATIVE IMPACTS**

#### **6.4.4.1 Loss of Income / Employment to Employees (-ve)**

- Loss of employment and income to workers, local economy, MMC and the nation as a whole
- Change in lifestyle and quality of workers due to being laid off

It is expected the Decommissioning phase will create employment opportunities and will have a medium magnitude

#### **6.4.4.2 Reduced Benefit to the Community (-ve)**

The community socio-economic benefits, such as, business and entrepreneurial opportunities, socio-cultural networks, and local economy boost will be reduced

The impact is considered to be negative short term with low significance

#### **6.4.4.3 Air Pollution (-ve)**

The emission of Dusts will not be avoided due to demolition activities and movement of machines and trucks.

The impact is considered to be negative short term with low significance

#### **6.4.4.4 Noise Pollution and Vibrations (-ve)**

Noise nuisance and vibrations due to demolition activities and movement of machines and trucks, will also be inevitable.

The impact is considered to be negative short terms with low significance

#### **6.4.4.5 Increased Solid Wastes Volume (-ve)**

Increased wastes volume which will require support to national policies that stress on (proper handling of rubble and waste during decommissioning.

The impact is considered to be negative long terms with medium significance

#### **6.4.4.6 Change in the Scenic Quality (-ve)**

Change in the scenic quality and in view shade due to demolition of the existing infrastructure and movement of machine / vehicles.

The impact is considered to be negative long terms with medium significance

### **6.5 Project Alternatives**

The EIA procedures section discusses the alternatives that will be considered as part of the ESIA Phase as required by Regulation 13(4)(f) of the EIA and Audit Regulations, 2005. Therefore, it is required that a number of possible proposals and alternatives for accomplishing the same objectives be considered. In principle, these should include an analysis of the location, construction materials and technology, timing, input and design alternatives as well as the do-nothing option.

#### **6.5.1 The No-Go Alternative**

The no-go alternative assumes that the proposed project will not go ahead i.e. it is the option of not constructing the proposed Iringa road and drainage subproject. This alternative would result in no environmental and social impacts on the site or surrounding local area. It provides the baseline against which other alternatives are compared and will be considered throughout the report. The following implications will occur if the “No-Go” alternative is implemented:

- The positive social and economic impacts likely to result from the project such to stimulate economic growth as it will reduce transport cost and facilitate the transportation of products from the project areas to the market centers in Iringa and outside the region and the creation of local employment opportunities will not be realized;
- There will be lost opportunity for skills transfer and education/training of local communities;

#### **6.5.2 Project Site Location**

There is no location alternative to the proposed road and drainage subproject as it is dependent on the existing location of the road and drainage system that will be improved to bitumen standard.

#### **6.5.3 Alternatives Sources for Construction Materials**

The proposed facilities structures are envisaged to be developed from various construction materials some of which have been indicated in Table 2-7. These construction materials will be sourced from common places used for other ongoing projects within Morogoro Region. For the case of sand and aggregates the existing borrows pits and quarry sites will be utilized while water for various construction activities will be obtained from MORUWASA or Ngerengere River. Alternatively, water for



construction works may be extracted from boreholes depending on the aquifer situation as may be determined by relevant Basin Water Board i.e. Wami Ruvu Basin Water Board.

Cement will be sourced locally, and their types and origin include Mtwara (Dangote Cement) Dar es Salaam (Twiga Cement), Tanga (Simba Cement) or Mbeya (Tembo Cement). Use of cement from these local sources is not envisaged to lead to the scarcity of the product due to steady production of cement from these industries. Reinforcement bars will also be sourced locally from hardware shops in Morogoro Region

#### **6.5.4 Solid Waste Management Alternatives**

The proposed subproject will generate solid waste from office site. An integrated solid waste management system is recommendable.

##### **Alternative one: Source reduction**

The contractor will give priority to Reduction at Source of the materials. This option will demand solid waste management awareness programme.

##### **Alternative two: Recycling**

- o Transfer the collected amount of waste from the special designated equipment's and machines into larger skip-type containers. The containers have to be placed at well-accessible, strategically chosen sites;
- o Transport of the loaded containers to the dumpsite and exchange of containers, so as to guarantee permanent disposal capacity at the container sites. The containers are exchanged and the transport vehicles operate continuously between different sites and the open dumpsite at Mafisa.

##### **Alternative three: Transportation of waste**

Recycling, Reuse and composting of the waste will be the second alternative in priority. This will call for a source separation programme to be put in place. The recyclables will be sold to waste buyers within the surrounding areas.

#### **6.5.5 Recommendations on Project Alternatives**

On behalf of Morogoro Municipal Council, the Consultant thus recommends that, the proposed construction of road and drainage system subproject should proceed on the conditions that; proper planning is implemented and the project adheres to all proposed measures presented in the Scoping Report and the ESMP of this ESIA report. This precautionary approach will reduce the identified social and environmental impacts in the project area.

## **7 POTENTIAL IMPACTS MITIGATION AND ENHANCEMENT MEASURES**

### **7.1 Introduction**

This Section presents the description of possible measures to lessen the identified negative impacts and / or enhance the identified positive impacts to this project. Implementation of recommended measures during construction phase is primarily the responsibility of the Contractor under the supervision of Resident Engineer to ensure that all measures are implemented. There should be a strong unambiguous statement in the Contract document to guide the Contractor.

To ensure that the proposed mitigation measures are carried out by the Contractor during Construction Phase, the design Consultant is expected to clearly set out in the tender document the Contractor's obligation to undertake the respective Environmental and Social Mitigation Measures.

The Environmental and Social Management Plan (ESMP) also provides costs estimates and schedule for the implementation activities. During operation and maintenance, the responsibility will be solely under Morogoro Municipal Council. Most of the negative impacts which are to occur during construction phase can be reduced or avoided through the application of sound construction management guidelines.

### **7.2 Mitigation Measures for Negative Impacts During Pre-Construction Phase**

#### **7.2.1 Land Acquisition**

- There is no acquisition of land for the construction of the subproject's components; however, during construction, all related activities should be confined along the existing agreeable boundaries and tracks / roads and drainage channels.
- In case damage of private properties at other areas cannot be avoided, then compensation arrangement must be made to affected people before commencement of construction works.

### **7.3 Enhancement Measures for Positive Impacts During Pre-Construction Phase**

#### **7.3.1 Creation of Employment Opportunities**

- Assessment and procurement of qualified staff for the construction and supervision works should be well observed to ensure works quality and HSSE sustainability

### **7.4 Mitigation Measures for Negative Impacts During Construction Phase**

#### **7.4.1 Noise Nuisance and Vibration**

- The Contractor and Construction Supervisors shall be obliged to comply with the existing environmental quality standards (air pollution and noise levels) in a workplace. TBS/OSHA have set working standards for the limits regarding noise pollution.
- The Contractor will also be required to post as much signs as possible to remind the public and site workers on these limits and requirements.
- Workers in vicinity of strong noise should wear earplugs and helmets and their working time should be limited
- Maintenance of machinery and vehicles should be enhanced to keep their noise at a minimum level
- Where the noise level is beyond 85 Db (A), ear muffs / plugs shall be provided to all those working within the construction site

- Generally, the Contractor must follow procedures for noise abatement as prescribed above and in the Standard Specifications for Road Works Section 1709 and Section 1222, respectively

#### **7.4.2 Poor Air Quality due to Emission and Dust**

- Operate and maintain vehicles and equipment to always be in good working condition since poor engine performance leads to incomplete combustion and hence emission of smoke.
- Provide workers with proper PPEs i.e. air / dust masks
- Apply water to minimize dust via trickling method
- The trucks hauling dusty soils and cement should be covered with tarpaulins to prevent wind from blowing them to the extent of becoming a nuisance
- Generally, Abatement of vehicle emissions and dust must be done as prescribed above and in the Standard Specifications for Road Works Section 1707 and Section 1708, respectively

#### **7.4.3 Solid and Liquid Waste Generation**

- The generated solid wastes shall be collected in solid waste collection receptacles at proper disposal points, to be identified by the Contractor with the assistance from the Municipal Council and the public.
- Morogoro residents shall be allowed and encouraged to collect for recycling all the recyclable wastes especially plastic materials; as well as reuse of materials such as spoils; where spoil materials may be disposed into the un-restored borrow pits located in different areas within the Municipality (however, it must be ensured that they are in suitable condition i.e. not contaminated).
- The Contractor must construct excreta disposal facilities that shall also be used for wastewater collection and disposal. The affordable and suitable facility at this phase is pit latrines or cesspits which will be filled / sealed once construction is over.
- Encourage and reward employees who show good practice of solid waste management.
- Ensure all wastewater is collected and treated to meet the discharge limits
- Desludging frequency should be established where the emptying trucks for disposal of sludge will be used to dispose-off the sludge into the Municipal Waste Stabilization Ponds.
- The Environmental Code of Practice for Roadworks of 2009 further recommend for the maintenance of the septic tank draining can be considered in case the lower part of the foam cushion is <75mm from the base of the deflector at the pit exit; the top of the mud bed is <50cm from the outlet pipe; and height of the mud added to that of foam is higher than 1/3 the height of the liquid in the pit.
- Waste materials including, but not restricted to, refuse, garbage, sanitary wastes, industrial wastes, and oil and other petroleum products, shall be disposed-off by the Contractor. Disposal of non-combustible materials shall be by burying, where burial of such materials is approved by the Engineer, or by removal from the construction area. Waste materials removed from the construction area shall be dumped at an approved dump.
- Generally, wastes should be handled as specified above and in the Standard Specification for Road Works Section 1713.

#### **7.4.4 Oil, Grease and Lubricant Spillage**

- Dripping pans shall be used while servicing the construction equipment.
- Any construction equipment dripping oils and other lubricants shall be withdrawn from work until the leakages are sealed.
- No refuelling or repairing the machinery except in designated areas that have an impermeable surface to enable proper and effective clean-up of any spills. Spill kits with suitable absorbent and adsorbent materials and equipment shall be present to ensure timely and appropriate clean-up of any spills.
- Use drip pans underneath standing machinery / generators to prevent contamination of the ground.
- Any spillages shall be cleaned up by either burning in place or collecting the contaminated soils and burning them at the central disposal area, all to the satisfaction of the Engineer.
- Grease / Oil disposal is a challenge; landfilling is the conventional and most viable option to dispose waste grease/oil. Currently there is no conventional landfill in Morogoro Municipality, thus the produced oily wastes or contaminated soil if are in significant quantity, they should be transferred to Dump Site.
- All used fuels, oils, other plant or vehicle fluids, and old tyres and tubes shall be collected to a central disposal point, on a regular basis and disposed-off as specified above and in the Standard Specification for Road Works Section 1713.

#### **7.4.5 Risk to Increased Incidence of Diseases Transmission Including HIV/AIDS and STD**

- Morogoro Municipal Council shall abide to provisions of the National HIV/AIDS policy for controlling the epidemic.
- The Contractor shall prepare and submit an HIV/AIDS awareness sessions programme for approval and implementation during construction phase.
- The Contractor shall conduct HIV/AIDS and related health education workshop to workforce and the project surrounding communities.
- The Contractor shall deploy the locally available labour to reduce risks of spreading of communicable diseases through the new comers.

#### **7.4.6 Risk to Health and Safety**

- Appropriate working gear (such as dust masks, ear plugs, reflector jackets, safety boots etc.) and good construction site management shall be provided.
- The Contractor shall ensure that the construction site is hygienically kept with adequate provision of facilities including waste disposal receptacles, sewage, fire-fighting and clean and safe water supply.
- A well-stocked First Aid Kit (administered by qualified medical personnel) shall be maintained at the construction site. The medical personnel shall also be responsible for primary treatment of ailments and other minor medical cases as well as providing some health education to the workforce.
- Regular check-ups of workers' health should be conducted to ensure their well-being at the project site and if preventive medicines (prophylaxis) are necessary they should also be provided to them.
- Regular trainings on health issues and use of personal protective gears should be provided to all workers in form of on-job training to create awareness on OHS as well as proper wastes handling, personal hygiene and personal protection against diseases.

- Generally, the project shall have to be implemented in compliance to labour laws in Tanzania, in particular, the Occupational Health and Safety Act (2003). Clauses to protect the health and safety of workers shall be included in the contract documents for implementation stage.
- The Contractor shall prepare and submit a Road Safety Awareness Sessions Programme for the general community, for approval and implementation during construction phase.

#### **7.4.7 Land Scaring at Borrow Pits**

- The excavation and restoration of the borrow pits and their surroundings, shall be carried out in an environmentally sound manner to the satisfaction of the Resident Engineer, and in a compliance with Government regulations particularly the Environmental Assessment and Management Regulations for Road Sector and the Standard Specification for Road Works.
- Borrow materials to be used for construction works will be collected from sources far from the project site.
- Operators of borrow pits should be licenced and must get the necessary permission from government Ministry of Environment.
- The borrow pit operators must sign an agreement of total reclamation or recovery of the land immediately after use, and provision of safety measures while operating the pit. Operators and contractors should be prosecuted, if they fail to comply with the directives.
- Before final acceptance and payment under the terms of the contract all the borrow areas no longer in use shall be properly restored. The side slopes shall be stabilized with vegetation and proper drainage provided.
- The government through its relevant agencies like NEMC should ensure enforcement of rules and regulations which include siting a borrow pit about 200m from the edge of an existing or a proposed highway.
- There should be perimeter fencing of the pit area, to prevent accident to human beings and other roaming animals into the pits. There should be only one gate for both entry and exit into the pit. The pit area and the gate must be vigilantly guarded 24 hours to avert trespassing.
- Warning signs are necessary at strategic locations to inform passers-by of the imminent danger ahead. Such signs must be simplified and easily understandable to all, including cattle grazers traversing the area.

#### **7.4.8 Soil and Water Pollution**

- Avoid construction of workers' office facilities close to surface water sources.
- As per The Environmental Code of Practice for Roadworks of 2009, the Ministry of Water Development and Livestock and the Ministry of Health through a joint advisory Board have designated sanitary zones where in general the minimum distance between a water collection point and a source of contamination must be 30m.
- Pit latrines must be located not less than 60 meters from surface water sources and the bottom of the pit latrine should not be less than 1m below the water table to avoid groundwater contamination.
- Generally, in order to avoid further pollution, Solid and liquid wastes must be handled as prescribed above and in section 8.4.3 and in the Standard Specification for Road Works Section 1713.



#### **7.4.9 Destruction of River Banks Vegetation and Aquatic Flora and Fauna**

- The Contractor must use a water pump to haul water from the rivers / streams at a distance of not less than 50m from the river / stream banks.
- The Contractor must minimize destruction of stream / river bank vegetation by avoiding unnecessary cuttings/excavations during construction close to the river banks.
- All bare areas around the river banks must be planted with grass/shrubs to stabilize soils and minimize river bank erosion.
- For materials needs, excavate only at licenced quarry areas

#### **7.4.10 Destruction of Terrestrial Vegetation**

- The destruction of natural vegetation could not be avoided during construction. However, the problem shall be minimized by confining the construction activities within the road reserve and designated areas.
- The Contractor should avoid unnecessary cutting of trees or clearing of land.
- All cleared and compacted areas should be scarified and planted with grass to stabilize the soil.

#### **7.4.11 Destruction of Adjacent Land Use and Properties**

- Contractor must ensure proper design and placement of adequate drainage channels with wide aperture to avoid concentration of storm water flow to adjacent lands.
- Movement of equipment must be confined within the road reserve and project area boundaries.
- All spoils must be stockpiled and disposed off timely at permitted areas by the Engineer.

#### **7.4.12 Construction Related Risk of Accidents**

- Contractor must take precautions and educate workers on the use of safety gears.
- Warning signs should be placed on all potential accidents risk areas
- The Engineer shall be notified by the Contractor immediately when any accident occurs whether on Site or off Site in which the Contractor is directly involved which results in any injury to any person whether directly concerned with the site or whether a third party. Such initial notification may be verbal and shall be followed by a written comprehensive report within 24 hours of the accident.
- Transportation of any material by the Contractor shall be in suitable vehicles which when loaded do not cause spillage and all loads shall be suitably secured. Any vehicle which does not comply with this requirement or any of the local traffic regulations and laws shall be removed from the site.
- Arrangement shall be made with the appropriate Authority before entering in or working on existing and associated works.
- Contractor must follow safety procedures prescribed above and in the Standard Specifications for Road Works (Section 1237); as well as in the Occupational Health and Safety Act No. 5 of 2003.

#### **7.4.13 Public Health and Safety Impacts from Work office Operations**

Although all the impacts related to the work office are incorporated in the impacts during construction phase, since the office will be within the project area boundaries; their mitigation measures are further explained hereunder for more clarity: -

- Contractor shall prepare a waste management plan for work sites

- Contractor shall prepare workers and public health, safety and occupational hazards management plan in accordance with Environmental Health and Safety (EHS) Guidelines
- Fencing of construction office and provision of road signs for safety.
- For general health of labourers in the work office, the Contractor is recommended to arrange for a central canteen within the office so as food / decomposable wastes can be easily managed, and general hygiene can be easily monitored
- Contractor must initiate STD and HIV/AIDs awareness campaigns at the labour office and settlements near the project area. Local NGOs can be engaged to carry out such activities on behalf of the Contractor.
- For social welfare of the workers and the community in general, the Contractor is advised to arrange for facilities for games and other recreation activities after labour work. Such activities shall include soccer, basketball, interesting TV show, etc.
- Pit latrines, if necessary shall be well located (50m from any water bodies) to avoid contaminating ground water facilities
- Ablution units connected to septic tanks and soak-away pits shall be used to minimise pollution and maintain a healthy environment
- Workmen shall be provided with all necessary Personal Protective Equipment (PPE)
- The Contractor should adhere to Occupational Health and Safety Authority (OSHA) regulations and EHS guidelines in work sites including prevention and reporting of injuries.
- At the end of Construction phase, i.e. during demobilization, the workers' office site and other facilities should be removed at the end of defect liability period.
- All construction equipment / vehicles and machinery should be removed immediately from the site at the end of defects liability period.
- The removed materials should be transported and kept in safe place for use by the Contractor in another similar works.
- In some cases, the Workers' office can be retained for use by the local communities as a Ward Office. However, since the office is temporary and will be removed, the area should be cleaned and all domestic wastes, debris / waste metals, grease and oils must be cleaned up and disposed of in a manner approved by Resident Engineer.

#### **7.4.14 Child Labour**

- The developer and contractor should ensure no employment to persons under 18 years of age
- Labor inspectors should enforce the labor law on any violations during construction and all violations be treated as criminal offenses.
- Awareness to the public on minimum age for employment and labour rights should be conducted
- Parents and project communities should ensure children's access to basic services i.e. food, shelter, education, health, sanitation and hygiene.

#### **7.4.15 Gender Based Violence**

The contractor will implement provisions that ensure that gender-based violence at the community level is not triggered by the Project, including:

- effective and on-going community engagement and consultation, particularly with women and girls;

- review of specific project components that are known to heighten GBV risk at the community level, e.g. compensation schemes; employment schemes for women; etc.
- Specific plan for mitigating these known risks, e.g. sensitization around gender equitable approaches to compensation and employment; etc

The contractor will ensure adequate referral mechanisms are in place if a case of GBV at the community level is reported related to project implementation

## **7.5 Enhancement Measures for Positive Impacts During Construction Phase**

### **7.5.1 Creation of Employment Opportunities**

- Employment priority should be given to interested and qualified local residents to enable them grow, skilful and economically, as well as minimize the effects of social disruption.
- Upon project completion, the labourers can be provided with acknowledgement / appreciation certificates to aid them in finding other similar jobs easily.

### **7.5.2 Improved Local Socio-economy**

- Food vendors and small business set-ups should be encouraged and prioritized to interested and qualified local residents to boost local economy as well as minimize the effects of social disruption.

### **7.5.3. Improved Government Revenue through collected Taxes**

- The Contractor shall make sure that the purchased materials are from licensed suppliers who comply with taxation regulations to ensure the Government gets Tax returns and be able to implement other development projects.
- All the construction activities must be liable to relevant registrations including ERB and CRB which are authorized government bodies to ensure proper construction management.

### **7.5.3 Change in Original Land Use, Scenic and Visual Quality**

- Contractor and Supervision consultant should observe all the required construction ethics, especially where the environment restoration is required. Apart from reinstating all the relevant affected areas, planting trees around the project sites and on the sides of the access roads will add a lot of value to the aesthetic environment, air pollution control and the environmental sustainability efforts as a whole.

## **7.6 Mitigation Measures for Impacts During Operation Phase**

### **7.6.1 Increase on Traffic Volume and Risk to Road Accidents**

- Sensitization of the communities about the increased traffic.
- Public awareness on Road Safety to avoid accidents and encourage proper use of roads and road signs.
- Use of alternative route where possible.

### **7.6.2 Noise Pollution**

- Road safety rules, which include speed limit should be observed since vehicles travelling at a low speed do not produce a lot of noise.
- The road-sides recreation vendors should be limited not to operate with loud music / adverts / plays; at all hours.

### **7.6.3 Air Pollution**

- The transport vehicles entering the project facilities should be maintained regularly and checked by vehicle inspectors to ensure that they are always in good optimum condition since poor engine performance leads to incomplete combustion and hence emission of exhaust and smoke.
- Planting trees around the project areas, and on the sides of the access roads will add a lot of value to the aesthetic environment, air pollution control and the environmental sustainability efforts.

### **7.6.4 Liquid waste management**

- The Municipality should ban all sewage connections to the storm water drainage and establish regular inspection of the drainage at local level to ensure there is no new sewage connection. Also should ensure the public health laws are effectively implemented to those new connections / connectors.
- Awareness / education on sanitation facilities usage and ethics should be provided to the project facilities users (drainage). This can be provided via posters and directional signs

### **7.6.5 Oil and Grease / Hydrocarbons Spillage**

- Regular cleaning of the paved areas and drainages to remove the dust and vehicle oil deposits
- Oil / Grease traps shall be incorporated in the storm water drainage channels as per design
- Dripping pans shall be used while servicing the vehicles.
- Any vehicle dripping oils and other lubricants shall be withdrawn from work until the leakages are sealed.
- No refuelling or repairing the vehicles except in designated area, i.e. the garage, that have an impermeable surface to enable proper and effective clean-up of any spills. Spill kits with suitable absorbent and adsorbent materials and equipment shall be present to ensure timely and appropriate clean-up of any spills.
- Use drip pans underneath standing machinery / generators to prevent contamination of the ground
- Any spillages shall be cleaned up by either burning in place or collecting the contaminated soils and burning them at the central disposal area, all to the satisfaction of the Developer.
- Grease / Oil disposal is a challenge; landfilling is the conventional and most viable option to dispose waste grease/oil. Currently there is no conventional landfill in Morogoro Municipality, thus the produced oily wastes or contaminated soil if are in significant quantity, they should be transferred to Dump Site.
- All used fuels, oils, other plant or vehicle fluids, and old tyres and tubes shall be collected to a central disposal point, on a regular basis and disposed of as specified above and in the Standard Specification for Road Works Section 1713

### **7.6.6 Risk to Increased Incidence of Diseases Transmission Including HIV/AIDS and STD/STI**

- HIV/AIDS information and education targeting the behaviour and attitudes of people involved in the project cycle will be necessary. Information should be provided; including public awareness information (and program as much as possible) will be provided at all strategic points to promote self-awareness and policy compliance.
- Generally, the project will increase level of social interaction at the project areas. All stages of the project (investigation, design, construction, implementation and

decommissioning) will attract people (for instance – job seekers, vendors, contractor’s team, regulators, commuters, accommodation facilities, businesses, recreational facilities, etc.). This poses high potential in likelihood of HIV / AIDS and other infectious diseases spread.

#### **7.6.7 Climate Change Risks**

##### **Adaptation strategies for floods and reduce impacts on bridges**

- Protect bridges from damages caused by flooding by strengthening the bridge piers and foundations, or by increasing the hydraulic capacity of the bridge by raising the bridge deck
- Minimize the occurrence of flooding or reduce its magnitude by increasing infiltration within the catchment area draining through the bridge structure, or diverting high flows to drainage systems with a higher drainage capacity

##### **Extreme heat and increases in diurnal temperature variation can damage expansion joints and deck surface materials:**

- Use paving materials that are more resistant to expansion in extreme heat conditions
- Build bridges with heat resistant materials or use coatings

##### **Adaptation strategies to reduce impacts on road**

- Raising Road Level is one solution to adapt to climate change events, especially flooding. The road surface level will be raised to an elevation higher than expected flood level to reduce risk of road damage and to prevent an inaccessible road during flood event.
- Side slope should be adjusted from 1:2 to 1:3 or flatter to prevent flood damage and erosion from road surface runoff.

#### **7.7 Enhancement Measures for Positive Impacts During Operation Phase**

##### **7.7.1 Improved Local Socio-economy**

- Various vendors, shops and groceries and business centers will be established at the project areas leading to socio-economic boost in Morogoro. All these establishments should be monitored from the initial stages to make sure they comply with governing laws and regulations before they operate out of control. Moreover, leasing priorities should be given to interested and qualified local residents to boost local economy as well as minimize the effects of social disruption.

##### **7.7.2 Improved Government Revenue through Collected Taxes**

- Public awareness on the taxes and collection should be provided to educate people on its importance and benefits.
- Tax collection methods should be clear and transparent to avoid any complaints and encourage cooperation.

##### **7.7.3. Extension of Services and Locality**

- All the municipal services to be extended at the project wards, (water services, sanitation services, communication services, etc.), must be carried out in accordance to legal and well documented plans to ensure sustainability.



## **7.8 Mitigation Measures for Impacts During Decommissioning Phase**

### **7.8.1 Reduced Benefit to the Community**

- Notice to demolish any of the project components and / or relocation arrangement should be made aware to the public way before the actual activity to prepare the community with the change and seek opportunities elsewhere.

### **7.8.2 Air Pollution**

- Operate and maintain demolition vehicles and equipment to always be in good working condition since poor engine performance leads to incomplete combustion and hence emission of smoke.
- Provide demolition workers with proper PPEs i.e. air / dust masks.
- Apply water to minimize dust (i.e. trickling method).
- The trucks hauling dusty spoils from the demolition sites should be covered with tarpaulins to prevent wind from blowing them to the extent of becoming a nuisance.

### **7.8.3 Noise Pollution and Vibrations**

- The Contractor and Demolition Supervisors shall be obliged to comply with the existing environmental quality standards in a workplace (air pollution and noise levels also provided in the monitoring plan). The proponents shall set working standards for the limits regarding noise pollution. The Contractor will also be required to post as much signs as possible to remind the public and site workers on these limits and requirements.
- Workers in vicinity of strong noise should wear earplugs and helmets and their working time should be limited.
- Demolition works should be limited to daytime only to avoid noise annoyance to the community during the night.
- Maintenance of machinery and vehicles should be enhanced to keep their noise at a minimum level.
- Where the noise levels are beyond 85 Db (A), ear muffs or plugs shall be provided to all those working within the demolition.

### **7.8.4 Increased Solid Wastes Volume**

- The generated solid wastes shall be collected in solid waste collection receptacles for proper disposal points to be identified by the Contractor with the assistance from the Client and the public.
- Morogoro Residents shall be allowed and encouraged to collect for recycling all the recyclable wastes especially plastic and metal materials; as well as reuse of materials such as spoils; where spoil materials may be disposed into the numerous borrow pits located in different areas within the region before they are restored (however, it must be ensured that they are in suitable condition i.e. not contaminated).
- Waste materials including, but not restricted to, refuse, garbage, sanitary wastes, industrial wastes, and oil and other petroleum products, shall be disposed-off by the Contractor. Disposal of combustible materials shall be by burying, where burial of such materials is approved by the Engineer; by burning, where burning of approved materials is permitted; or by removal from the construction area. Waste materials removed from the construction area shall be dumped at an approved dump near the project sites.

#### **7.8.5 Change in the Scenic Quality**

- The removal of solid wastes should be done as quickly as possible to avoid aesthetic pollution due to rubble presence for a long period.
- If there is any new / alternative proposed project at that time, the demolition should take place when that proposed project is ready to be implemented to revive the aesthetic environment of the area.

## **8 ENVIRONMENTAL AND SOCIAL IMPACTS MANAGEMENT PLAN**

### **8.1 Overview**

The purpose of the Environmental and Social Management Plan (ESMP) is to describe the mitigation and enhancement actions to be taken, during the various project phases, in order to ensure that the identified potential negative impacts will be eliminated or reduced to acceptable levels and positive ones to be enhanced to add more benefits to the project. The ESMP also identifies the relevant responsible authorities; and identifies the source of funds required to implement its requirements.

It is important to recognize that various measures have already been incorporated into the engineering designs. For example, inclusion of numerous clauses included in the general and particular specifications, describing how the Contractor shall carry out the works with the objective of minimizing (or eliminating altogether) various environmental and social impacts. In order to have effective ESMP there should be an integration of efforts among the relevant institutions. This ESMP therefore specifies roles and responsibilities of various institutions during project implementation. However, it is important that all responsible institutions should appreciate that they are united and should interact and work towards a common goal of minimizing adverse environmental impacts associated with the project.

PO-RALG shall ensure compliance by the Contractor to civil works specifications and the Supervising Consultant to ensure that the Contractor incorporates and implements all ESMP requirements in the design as well as construction. The effective implementation of ESMP also requires that all persons working for the subproject are aware of the importance of its environmental requirements; their roles and responsibilities in the implementation of the ESMP. They should be aware of the significant actual or potential environmental impacts of their work activities; the benefit of improved performance and the consequences of not complying with environmental requirements.

#### **8.1.1. Institutional Roles and Responsibilities**

**Financing Agency:** World Bank is the financing agency for this subproject on behalf of the GoT. The financier will also be responsible for providing funds for implementation of recommended measures and compliance monitoring.

**Implementing Agency:** The implementing agency for this project is PO-RALG on behalf of the GoT. The implementer also holds final responsibility for the environmental performance of the subproject.

PO-RALG will be ultimately responsible for fulfilling the requirements of EMA 2004 (Tanzania's Environmental Legislation), including Environmental Audits. The implementation of the specific requirements will largely be carried out by the Contractor (during Construction Phase), and Morogoro Municipal Council offices (during Operational Phase). Morogoro Municipal Council will hire the services of a Construction Supervisor to ensure ESMP compliance during Construction Phase.

**Supervision Consultant:** The Supervision Consultant will be appointed by PO-RALG and is responsible for monitoring and supervision of the construction works including implementation of ESMP.

**Contractor:** The Contractor shall be responsible for implementing construction works and ensure compliance with environmental requirements. The Contractor shall appoint a site engineer who will be responsible for implementation and management of the ESMP and the

required environmental monitoring works. The Contractor will be required to provide at the project site an Environmental and Social Manager, as well as a Health and Safety Manager. These experts must have the relevant qualifications, background and experience in similar projects, and shall be responsible for implementing the final version of the ESMP and Health and Safety plans.

**Local Government Authorities and Local NGOs / CBOs:** The involvement of the local authority (Beneficiary) is crucial for successful implementation of the ESMP because some of the mitigation measures are better undertaken by the local communities with the support of the local government authorities and NGOs. The respective local government authorities and local NGOs should be well informed and invited to comment on the ESIA report at the design stage rather than when all major decisions have been taken. Copies of this report should be available at Morogoro Municipal Council offices at all times. This is to ensure that the PO-RALG through her Environmental and Community Development Officers will be involved in monitoring compliance with the recommended measures.

**Local Communities:** Generally, the local communities do support the subproject because they know it is going to benefit them. The Morogoro Municipal Council offices should encourage the project areas' communities to participate in the project through temporary employment and small business establishment during construction phase.

## **8.2 Impacts Management Plan**

Plan for the implementation of mitigation and enhancement measures for the proposed subproject are provided in Table 8-2. The Plan indicates institutional responsibilities, time to take the action and estimated costs. The proposed costs are only indicative, should the proposed development proceed as suggested, actual costs shall be included in the overall cost of the project.

Based on the EMA (2004), NEMC is required to ensure compliance of all the agreed conditions. PO-RALG is committed to implement the mitigation measures suggested by the Environmental and Social Impact Management Plan (ESMP).

For the proposed urban infrastructure upgrading under TACTIC project, most of the impacts will be experienced during construction phase. In order to reduce the impact of the construction activities on local communities and the environment, the Construction Contractor shall implement the following SubPlans in accordance with the following stipulations: -

### **8.2.1 Personnel and Training Programme**

#### **8.2.1.1 Personnel and Capacity Enhancement**

The environmental sustainability of any development projects is dependent on the capacity of institutions at all levels (i.e. staffing, training, and other necessary support services) to carry out the associated ESMP implementation work. Thus, it is vital that PO-RALG allocate sufficient resources for training and capacity building. These efforts will not only benefit the authorities; but will also build local capacity to undertake other development initiatives.

The training program for various role players will include an orientation program on the ESMP, Environmental Assessment Processes, Participatory Methodologies and Project Management. The training on ESMP may be integrated with social framework and other related training program for cost

effectiveness. Estimated cost for implementing this capacity enhancement strategy is included in the overall cost for implementing the ESMP and Monitoring Plans.

### **8.2.1.2 Training Programs**

Training programs will be developed and delivered to PO-RALG for the implementation of environmental safeguards of the proposed subproject. Following training needs assessment; specific and tailored training will be developed and agreed upon developer and key stakeholders for implementation of safeguards in the course of subproject implementation

The Contractor shall also prepare an Environmental Training Plan for all construction workers:

### **8.2.1.3 Grievance Management**

The development of proposed infrastructure components may lead to dispute arising if the ESMP is not properly implemented. Hence, settlement for grievances or disputes are predicted in case construction activities interfere with / affect private land and / or properties of adjacent residents. Occurrence of grievances / complaints / disputes calls for immediate valuation and compensation procedures according to the relevant rules.

Alternatively, a similar arrangement of using the existing Dispute Desk will be devised at the project's mitaa and wards' offices involving representatives from subproject areas to respond to any environmental grievances which may arise during implementation and operation.

The Contractor and Client will resolve any arising complains during subproject construction, related to work implementation such as compensation for loss or damage of individual or institutional properties

## **8.2.2 Emergency Preparedness and Response Plan**

### **8.2.2.1 Objective**

The objective of the Emergency Preparedness and Response Plan is to assist the Contractor's staff in developing their emergency procedures. Emergency preparedness helps to minimize human suffering and economic losses that can result from emergencies. The degree of planning for emergency will depend on the size, access and location of the office and the construction site. It is therefore strongly recommended that the contractor should ensure that the local community members and construction workers be involved in developing the emergency response plan.

### **8.2.3. Noise Management / Monitoring Plan**

Construction will involve many working hours at an open space relatively away from the community residents. Thus, the major sources of noise / vibration are expected from operation of vehicles / equipment / machinery on approach roads; and approach roads; hammering / knocking and vehicular traffic.

**Table 8-1: Noise Limits for Different Working Environments**

<b>Location / Activity</b>	<b>Equivalent (LA<sub>eq</sub>,8h)</b>	<b>I (LA Maximum LA<sub>max</sub>, fast)</b>
Heavy Industry (no demand for oral communication)	85 dB(A)	110 dB(A)
Light industry (decreasing demand for oral communication)	50-65 dB(A)	110 dB(A)



Open offices, control rooms, service counters or similar	45-50 dB(A)	-
Individual offices (no disturbing noise)	40-45 dB(A)	-
Classrooms, lecture halls	35-40 dB(A)	-
Hospitals	30-35 dB(A)	40 dB(A)

**Note:** LA<sub>eq,8h</sub> means Equivalent 8-hour continuous A-weighted sound pressure level (dB (A)).  
LA<sub>max</sub>, fast means Maximum A-weighted sound pressure level for “Fast” response time (0.125sec).

### **8.2.3 Air Quality Management Plan**

The air quality around subproject’s areas may be affected by machinery due to exhaust emissions during clearing or demolition, transporting, placing, grading and compacting of the site. Furthermore, dust will be emitted from excavations and operation of equipment and vehicles within the road alignment and at borrow pit / quarry sites.

The Contractor shall propose methods and actions to control dust resulting from construction related activities, crushing and concrete batching plants, earthworks including road construction, embankment and channel construction, haulage of materials and construction of work office.

### **8.2.5. Wastes Management Plan**

Solid and liquid wastes will be generated from construction works. The wastes can adversely impact the surface water, ground water, soil and air, as well as the soil use and the aesthetic beauty of an area. During the construction stage, the Contractor shall prepare a Waste Management Plan before commencement of project works.

### **8.2.6. Stockpiles Management Plan**

The Contractor shall prepare a Stockpiles Management Plan for the total works which shall be subject to prior approval of the Environmental Supervisor, and the operation shall cease if so instructed by the Supervisory Engineer.

Shall be prohibited where they might interfere with the natural or designed drainage patterns. Likewise, River locations shall be prohibited if they might undermine or damage riverbanks or carry too much fine material downstream. Rock or gravel taken from a river shall be far enough removed to limit the depth of material removed to one-tenth of the width of the river at any one location, and not to disrupt the river flow, or damage or undermine the riverbanks.

## **8.3. Implementation of The Management Plan**

The Environmental and Social Measures incorporated in the detailed engineering design shall be handed over to the Contractor during construction period. The Contractor shall take stock of the contents of the Environmental and Social Management Plan of the subproject and shall implement it during the construction period under close supervision of PO-RALG through Supervising Consultant. During the Operation Phase, Morogoro Municipal Council will solely manage and implement the ESMP.

## **8.3 Environmental and Social Management Cost**

The principal environmental and social costs include the cost for implementing the proposed measures. These costs (TZS 352,000,000/=) are indicated in Table 8-2. PO-RALG shall cover all the costs proposed in the ESMP.

It should be noted that most of the costs for mitigation measures are included in the bills of quantities of the overall works. Likewise, the costs for the environmental and social supervisor shall be included in the overall supervision cost of the works. The supervisors shall be engaged for at least 15 man-days a month over the entire construction period

## **8.4 Gender Based Violence and Sexual Exploitation Abuse/Sexual Harassment**

### **8.4.1 Sexual Exploitation and Abuse/Sexual Harassment (SEA/SH) Response and Prevention Action Plan**

To mitigate these risks the project Contractor will develop and implement a Sexual Exploitation and Abuse/Sexual Harassment (SEA/SH) Prevention and Response Action Plan with an Accountability and Response Framework as part of the C-ESMP. The SEA/SH Action Plan will follow guidance on the World Bank's Good Practice Note for Addressing Sexual Exploitation and Abuse and Sexual Harassment (SEA/SH) in Investment Project Financing involving Major Civil Works (February 2020). The SEA/SH Action Plan will include how the project will ensure necessary steps are in place for:

- Prevention of SEA/SH: Integrate provisions related to sexual harassment and sexual exploitation and abuse in the employee Code of Conducts (COCs) and ongoing sensitization of staff on responsibilities related to the COC and consequences of non-compliance; project-level IEC materials.
- Response to SEA/SH: including survivor-centered coordinated multi-sectoral referral and assistance to complainants according to standard operating procedures; staff reporting mechanisms; written procedures related to case oversight, investigation and disciplinary procedures at the project level, including confidential data management.
- Engagement with the community: including development of confidential community-based complaints mechanisms discrete from the standard GRM; mainstreaming of Prevention SEA/SH awareness-raising in all community engagement activities; community-level IEC materials; regular community outreach to women and girls about social risks and their PSEA/SH-related rights.
- Management and Coordination: including integration of prevention and response to SEA/SH in job descriptions, employment contracts, performance appraisal systems, etc.; development of contract policies related to SEA/SH, including whistle-blower protection and investigation and disciplinary procedures; training for all project management; management of coordination mechanism for case oversight, investigations and disciplinary procedures; supervision of dedicated PSEA/SH focal points in the project and trained community liaison officers.

- Ensure clear human resources policy against sexual harassment that is aligned with national law.
- Ensure appointed human resources, environmental, social and health and safety personnel is well trained on PSEA/SH;
- Mandatory and repeated training and awareness raising for the workforce about refraining from unacceptable conduct toward local community members, specifically women;
- Informing workers about national laws that make sexual harassment and gender-based violence a punishable offence which is prosecuted;
- Introducing a Worker Code of Conduct as part of the employment contract, and including sanctions for non-compliance (e.g., termination), and
- Contractor to adopt a policy to cooperate with law enforcement agencies in investigating complaints about SEA/SH.

#### **8.4.2 Prevention and Mitigation of Gender Based Violence (GBV) at the community**

The contractor will implement provisions that ensure that gender-based violence at the community level is not triggered by the Project, including:

- Effective and on-going community engagement and consultation, particularly with women and girls;
- Review of specific project components that are known to heighten GBV risk at the community level, e.g., compensation schemes; employment schemes for women; etc.
- Specific plan for mitigating these known risks, e.g., sensitization around gender equitable approaches to compensation and employment; etc

The contractor will ensure adequate referral mechanisms are in place if a case of GBV at the community level is reported related to project implementation

**Table 8-2: Environmental and Social Management Plan (ESMP) for the Proposed Construction urban (Roads & Drainage) Infrastructure in Morogoro Municipality**

IDENTIFIED IMPACT	MITIGATION / ENHANCEMENT MEASURES	IMPLEMENTER	RESPONSIBLE ORGANIZATION	ESTIMATED COSTS (TZS)
<b>A. PRE-CONSTRUCTION PHASE</b>				
A1. Land Acquisition (-ve)	<ul style="list-style-type: none"> <li>There is no acquisition of land for the construction of the Project's components; however, during construction, all related activities should be confined along the existing agreeable boundaries and tracks / roads.</li> <li>In case damage of private properties at other areas cannot be avoided, then compensation arrangement must be made with affected people before further progression of construction works.</li> </ul>	<b>PO-RALG</b>	Morogoro Municipal Council( <b>Highway Engineer and Environmental Officer</b> ) Consulting Firm ( <b>Highway Engineer</b> )	Part of the Project
A2. Creation of Employment Opportunities (+ve)	<ul style="list-style-type: none"> <li>Assessment and procurement of qualified staff for the construction and supervision works should be well observed to ensure works quality and HSSE sustainability</li> </ul>	<b>PO-RALG</b>	Morogoro Municipal Council	Part of the Project
<b>SUBTOTAL A</b>				<b>0</b>

IMPACT			ORGANIZATION	COSTS (TZS)
<b>B. CONSTRUCTION PHASE</b>				
B1. Noise Nuisance and Vibration (-ve)	<ul style="list-style-type: none"> <li>The Contractor and Construction Supervisors shall be obliged to comply with the existing environmental quality standards (air pollution and noise levels) in a workplace.</li> <li>Morogoro Municipal Council shall set working standards for the limits regarding noise pollution.</li> <li>The Contractor will also be required to post as much signs as possible to remind the public and site workers on these</li> <li>Workers in vicinity of strong noise should wear earplugs and helmets and their working time should be limited</li> <li>Maintenance of machinery and vehicles should be enhanced to keep their noise at a minimum level</li> <li>Where the noise level is beyond 85 Db (A), ear muffs / plugs shall be provided to all those working within the construction site</li> <li>Generally, the Contractor must follow procedures for noise abatement as prescribed above and in the Standard Specifications for Road Works Section 1709 and Section 1222, respectively</li> </ul>	<b>PO-RALG</b>	<p>Morogoro Municipal Council (Highway Engineer and Environmental Officer)</p> <p>Consulting Firm (<b>Highway Engineer</b>)</p>	5,000,000



IMPACT			ORGANIZATION	COSTS (TZS)
<b>B. CONSTRUCTION PHASE</b>				
B2. Poor Air Quality due to Emission and Dust (-ve)	<ul style="list-style-type: none"> <li>Operate and maintain vehicles and equipment to always be in good working condition since poor engine performance leads to incomplete combustion and hence emission of smoke.</li> <li>Provide workers with proper PPEs i.e. air / dust masks</li> <li>Apply water to minimize dust via trickling method</li> <li>The trucks hauling dusty soils and cement should be covered with tarpaulins to prevent wind from blowing them to the extent of becoming a nuisance</li> <li>Generally, Abatement of vehicle emissions and dust must be done as prescribed above and in the Standard Specifications for Road Works Section 1707 and Section 1708, respectively</li> </ul>	<b>PO-RALG</b>	Morogoro Municipal Council ( <b>Highway Engineer and Environmental Officer</b> ) Consulting Firm ( <b>Highway Engineer</b> )	5,000,000
B3. Solid and Liquid Wastes Generation (-ve)	<ul style="list-style-type: none"> <li>The generated solid wastes shall be collected in solid waste collection receptacles at proper disposal points, to be identified by the Contractor with the assistance from the Client and the public.</li> <li>Morogoro residents shall be allowed and encouraged to collect for recycling all the recyclable wastes especially plastic materials; as well as reuse of materials such as spoils; where spoil materials may be disposed into the unrestored borrow pits located in different areas within the region (however, it must be ensured that they are in suitable condition i.e. not contaminated).</li> <li>The Contractor must construct excreta disposal facilities that shall also be used for wastewater collection and disposal. The affordable and suitable</li> </ul>	<b>PO-RALG</b>	Morogoro Municipal Council ( <b>Highway Engineer and Environmental Officer</b> ) Consulting Firm ( <b>Highway Engineer</b> )	18,000,000

IMPACT			ORGANIZATION	COSTS (TZS)
<b>B. CONSTRUCTION PHASE</b>				
	<p>facility at this phase is pit latrines or cesspits which will be filled / sealed once construction is over.</p> <ul style="list-style-type: none"> <li>• Encourage and reward employees who show good practice of solid waste management.</li> <li>• Ensure all wastewater is collected and treated to meet the discharge limits</li> <li>• Desludging frequency should be established where the emptying trucks for disposal of sludge will be used to dispose-off the sludge into the Municipal Waste Stabilization Ponds.</li> <li>• The Environmental Code of Practice for Roadworks of 2009 further recommend for the maintenance of the septic tank draining can be considered in case the lower part of the foam cushion is &lt;75mm from the base of the deflector at the pit exit; the top of the mud bed is &lt;50cm from the outlet pipe; and height of the mud added to that of foam is higher than 1/3 the height of the liquid in the pit.</li> <li>• Waste materials including, but not restricted to, refuse, garbage, sanitary wastes, industrial wastes, and oil and other petroleum products, shall be disposed-off by the Contractor.</li> <li>• Disposal of non-combustible materials shall be by burying, where burial of such materials is approved by the Engineer, or by removal from the construction area. Waste materials removed from the construction area shall be dumped at an approved dump.</li> <li>• Generally, wastes should be handled as specified above and in the Standard Specification for Road Works Section 1713</li> </ul>			

IMPACT			ORGANIZATION	COSTS (TZS)
<b>B. CONSTRUCTION PHASE</b>				
B4. Oil, Grease and Lubricant Spillage (-ve)	<ul style="list-style-type: none"> <li>Dripping pans shall be used while servicing the construction equipment.</li> <li>Any construction equipment dripping oils and other lubricants shall be withdrawn from work until the leakages are sealed.</li> <li>No refuelling or repairing the machinery except in designated areas that have an impermeable surface to enable proper and effective clean-up of any spills. Spill kits with suitable absorbent and adsorbent materials and equipment shall be present to ensure timely and appropriate clean-up of any spills.</li> </ul>	PO-RALG	Morogoro Municipal Council (Highway Engineer and Environmental Officer)	9,000,000

	<ul style="list-style-type: none"> <li>• Use drip pans underneath standing machinery / generators to prevent contamination of the ground.</li> <li>• Any spillages shall be cleaned up by either burning in place or collecting the contaminated soils and burning them at the central disposal area, all to the satisfaction of the Engineer.</li> <li>• Grease / Oil disposal is a challenge; landfilling is the conventional and most viable option to dispose waste grease / oil. The produced oily wastes or contaminated soil if are in significant quantity, they should be transferred to a nearby landfill for disposal.</li> <li>• All used fuels, oils, other plant or vehicle fluids, and old tyres and tubes shall be collected to a central disposal point, on a regular basis and disposed-off as specified above and in the Standard Specification for Road Works Section 1713.</li> </ul>		Consulting Firm (Highway Engineer)	
B5. Risk to Increased Incidence of Diseases Transmission Including HIV/AIDS and STD (-ve)	<ul style="list-style-type: none"> <li>• Morogoro Municipal council shall abide to provisions of the National HIV/AIDS policy for controlling the epidemic</li> <li>• The Contractor shall prepare and submit an HIV/AIDS awareness sessions programme for approval and implementation during construction phase</li> <li>• The Contractor shall conduct HIV/AIDS and related health education workshop to workforce and the project surrounding communities</li> <li>• The Contractor shall deploy the locally available labour to reduce risks of spreading of communicable diseases through the new comers.</li> </ul>	PO-RALG	Morogoro Municipal Council (Highway Engineer, Environmental Officer and Public Health Officers)  Village Government (Mtaa / Ward Executive Officers)	36,000,000
B6. Risk to Health and Safety (-ve)	<ul style="list-style-type: none"> <li>• Appropriate working gear (such as dust masks, ear plugs, reflector jackets, safety boots etc.) and good construction site management shall be provided.</li> </ul>	PO-RALG	Morogoro Municipal Council (Highway Engineer,	18,000,000

	<ul style="list-style-type: none"> <li>• The Contractor shall ensure that the construction site is hygienically kept with adequate provision of facilities including waste disposal receptacles, sewage, fire-fighting and clean and safe water supply.</li> <li>• A well-stocked First Aid Kit (administered by qualified medical personnel) shall be maintained at the construction site. The medical personnel shall also be responsible for primary treatment of ailments and other minor medical cases as well as providing some health education to the workforce.</li> <li>• Regular check-ups of workers' health should be conducted to ensure their well-being at the project site and if preventive medicines (prophylaxis) are necessary they should also be provided to them.</li> <li>• Regular trainings on health issues and use of personal protective gears should be provided to all workers in form of on-job training to create awareness on OHS as well as proper wastes handling, personal hygiene and personal protection against diseases.</li> <li>• Generally, the project shall have to be implemented in compliance to labour laws in Tanzania, in particular, the Occupational Health and Safety Act (2003). Clauses to protect the health and safety of workers shall be included in the contract documents for implementation stage.</li> <li>• The Contractor shall prepare and submit a Road Safety Awareness Sessions Programme for the general community, for approval and implementation during construction phase.</li> </ul>		<b>Environmental Officer and Public Health Officers)</b> Consulting Firm <b>(Highway Engineer)</b>	
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	<ul style="list-style-type: none"> <li>• Appropriate working gear such as rubber safety boots, gloves and coveralls should be worn, and good construction site management shall be provided.</li> <li>• The Contractor shall ensure that during relocation of the poles all workers and public are aware of the associated electricity risks and are away from the relocation site(s).</li> <li>• Cordon off possible hazard – zones for example, range of conductor wire falling if breakage occurs.</li> <li>• Display of warning signs for the possible dangers.</li> <li>• A well-stocked First Aid Kit, administered by qualified medical personnel shall be maintained at the relocation site(s) to be used in case of any emergency.</li> </ul>	PO-RALG	<p>Morogoro Municipal Council (<b>Highway Engineer, Environmental Officer and Public Health Officers</b>)</p> <p>TANESCO (<i>Electrical Engineer</i>)</p>	
B8. Land Scaring at Borrow Pits (-ve)	<ul style="list-style-type: none"> <li>• The excavation and restoration of the borrow pits and their surroundings, shall be carried out in an environmentally sound manner to the satisfaction of the Resident Engineer, and in a compliance with Government regulations particularly the Environmental Assessment and Management Regulations for Road Sector and the Standard Specification for Road Works.</li> <li>• Borrow materials to be used for construction works will be collected from sources far from the project site.</li> <li>• Operators of borrow pits should be licenced and must get the necessary permission from government Ministry of Environment.</li> <li>• The borrow pit operators must sign an agreement of total reclamation or recovery of the land immediately after use, and provision of safety measures while operating the pit. Operators and</li> </ul>	PO-RALG	<p>Morogoro Municipal Council (<b>Highway Engineer and Environmental Officer</b>) Consulting Firm (Highway Engineer)</p>	25,000,000



	contractors should be prosecuted, if they fail to comply with the directives.			
B9. Soil and Water Pollution (-ve)	<ul style="list-style-type: none"> <li>Avoid construction of workers' office site facilities close to surface water sources.</li> <li>As per The Environmental Code of Practice for Roadworks of 2009, the Ministry of Water Development and Livestock and the Ministry of Health through a joint advisory Board have designated sanitary zones where in general the minimum distance between a water-collection point and a source of contamination must be 30m.</li> <li>Pit latrines must be located not less than 60 meters from surface water sources and the bottom of the pit latrine should not be less than 1m below the water table to avoid groundwater contamination.</li> <li>Generally, in order to avoid further pollution, Solid and liquid wastes must be handled as prescribed above and in section 8.4.3 and in the Standard Specification for Road Works Section 1713</li> </ul>	<b>PO-RALG</b>	<p>Morogoro Municipal <b>(Highway Engineer and Environmental Officer)</b></p> <p>Consulting Firm <b>(Highway Engineer)</b></p>	15,000,000
B10. Destruction of River Banks Vegetation and Aquatic Flora and	<ul style="list-style-type: none"> <li>The Contractor must use a water pump to haul water from the rivers / streams at a distance of not less than 50m from the river / stream banks.</li> </ul>	<b>PO-RALG</b>	Morogoro Municipal Council	20,000,000

Fauna (-ve)	<ul style="list-style-type: none"> <li>The Contractor must minimize destruction of stream / river bank vegetation by avoiding unnecessary cuttings / excavations during construction close to the river banks. • All bare areas around the river banks must be planted with grass/shrubs to stabilize soils and minimize river bank erosion.</li> <li>For materials needs, excavate only at licenced quarry areas</li> </ul>		<b>(Highway Engineer and Environmental Officer)</b>  Consulting Firm <b>(Highway Engineer)</b>	
B11. Destruction of Terrestrial Vegetation (-ve)	<ul style="list-style-type: none"> <li>The destruction of natural vegetation could not be avoided during construction. However, the problem shall be minimized by confining the construction activities within the road reserve and designated areas.</li> <li>The Contractor should avoid unnecessary cutting of trees or clearing of land.</li> <li>All cleared and compacted areas should be scarified and planted with grass to stabilize the soil.</li> </ul>	<b>PO-RALG</b>	Morogoro Municipal Council <b>(Highway Engineer and Environmental Officer)</b> Consulting Firm <b>(Highway Engineer)</b>	10,000,000
B12. Destruction of Adjacent Land Use and Properties (-ve)	<ul style="list-style-type: none"> <li>Contractor must ensure proper design and placement of adequate drainage channels with wide aperture to avoid concentration of storm water flow to adjacent lands.</li> <li>Movement of equipment must be confined within the road reserve and project area boundaries.</li> <li>All spoils must be stockpiled and disposed-off timely at permitted areas by the Engineer.</li> </ul>	<b>PO-RALG</b>	Morogoro Municipal Council <b>(Highway Engineer and Environmental Officer)</b> Consulting Firm <b>(Highway Engineer)</b>	100,000,000

B13. Construction Related Risk of Accidents (-ve)	<ul style="list-style-type: none"> <li>Contractor must take precautions and educate workers on the use of safety gears.</li> <li>Warning signs should be placed on all potential accidents risk areas</li> <li>The Engineer shall be notified by the Contractor immediately when any accident occurs whether on Site or off Site in which the Contractor is directly involved which results in any injury to any person whether directly concerned with the Site or whether a third party. Such initial notification may be verbal and shall be followed by a written comprehensive report within 24 hours of the accident.</li> <li>Transportation of any material by the Contractor shall be in suitable vehicles which when loaded do not cause spillage and all loads shall be suitably secured. Any vehicle which does not comply with this requirement or any of the local traffic regulations and laws shall be removed from the Site.</li> <li>Arrangement shall be made with the appropriate Authority before entering in or working on existing and associated works.</li> </ul>	PO-RALG	<p>Morogoro Municipal Council (<b>Highway Engineer and Environmental Officer</b>)</p> <p>Consulting Firm (<b>Highway Engineer</b>) in collaboration with Ministry of Home Affairs (<b>Traffic Department</b>)</p>	5,000,000
B14. Public Health and Safety Impacts from Work office Operations (-ve)	<ul style="list-style-type: none"> <li>Contractor is to prepare a waste management plan for work sites</li> <li>Prepare workers and public health, safety and occupational hazards management plan in accordance with Environmental Health and Safety (EHS) Guidelines</li> <li>Fencing of construction office and provision of road signs for safety.</li> <li>For general health of labours in the work office, the Contractor is to arrange for a central canteen within the office so as food / decomposable wastes can be</li> </ul>	PO-RALG	<p>Morogoro Municipal Council (<b>Highway Engineer, Environmental Officer and Public Health Officers</b>)</p> <p>Consulting Firm (<b>Highway Engineer, Sociologist and</b></p>	5,000,000

	<p>easily managed and general hygiene can be easily monitored</p> <ul style="list-style-type: none"> <li>• Contractor is to initiate STD and HIV/AIDs awareness campaigns at the labour office and settlements near the project area. Local NGOs can be engaged to carry out such activities on behalf of the Contractor.</li> <li>• For social welfare of the workers and the community in general, the Contractor is advised to arrange for facilities for games and other recreation activities after labour work. Such activities shall include soccer, basketball, interesting TV show, etc.</li> <li>• Pit latrines, if necessary shall be well located (50m from any water bodies) to avoid contaminating ground water facilities</li> <li>• Ablution units connected to the latrines, or if possible septic tanks and soak-away pits shall be used to minimise pollution and maintain a healthy environment</li> <li>• Workmen shall be provided with all necessary personal protective equipment (PPE)</li> <li>• The Contractor should adhere to Occupational Health and Safety Authority (OSHA) regulations and EHS guidelines in work sites including prevention and reporting of injuries.</li> <li>• At the end of Construction phase, i.e. during demobilization, the workers' office site and other facilities should be removed at the end of defect liability period. • All construction equipment / vehicles and machinery should be removed immediately from the site at the end of defects liability period.</li> </ul>		<b>Environmental Officer)</b>	
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	<ul style="list-style-type: none"> <li>The removed materials should be transported and kept in safe place for use by the Contractor in other works.</li> <li>In some cases, the Workers 'office' can be retained for use by the local communities as a Ward office as the case may be. However, since the office is temporary and will be removed, the area should be cleaned and all domestic wastes, debris / waste metals, grease and oils must be cleaned up and disposed of in a manner approved by Resident Engineer.</li> </ul>			
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B15. Change in Original Land Use, Scenic and Visual Quality (+ve)	<ul style="list-style-type: none"> <li>Contractor and Supervision consultant should observe all the required construction ethics, especially where the environment restoration is required. Apart from reinstating all the relevant affected areas, planting trees around the project sites and on the sides of the access roads will add a lot of value to the aesthetic environment, air pollution control and the environmental sustainability efforts as a whole.</li> </ul>	<b>PO-RALG)</b>	Morogoro Municipal Council ( <b>Highway Engineer and Environmental Officer</b> )	Part of the Project
B16. Creation of Employment Opportunities (+ve)	<ul style="list-style-type: none"> <li>Employment priority should be given to interested and qualified local residents to enable them grow, skilful and economically, as well as minimize the effects of social disruption.</li> <li>Upon project completion, the labourers can be provided with acknowledgement / appreciation certificates to aid them in finding other similar jobs easily.</li> </ul>	<b>PO-RALG</b>	Morogoro Municipal Council ( <b>Highway Engineer, Sociologist and Environmental Officer</b> )	Part of the Project

B17. Improved Local Socio-economy (+ve)	<ul style="list-style-type: none"> <li>Food vendors and small business set-ups should be encouraged and prioritized to interested and qualified local residents to boost local economy as well as minimize the effects of social disruption.</li> </ul>	PO-RALG	Morogoro Municipal Council ( <b>Sociologist and Economist</b> )	Part of the Project
B18. Improved Government Revenue through collected Taxes (+ve)	<ul style="list-style-type: none"> <li>The Contractor shall make sure that the purchased materials are from licensed suppliers who comply with taxation regulations to ensure the Government gets Tax returns and be able to implement other development projects.</li> <li>All the construction activities must be liable to relevant registrations including ERB and CRB which are authorized government bodies to ensure proper construction management.</li> </ul>	PO-RALG	Morogoro Municipal Council ( <b>Sociologist and Economist</b> )	Part of the Project
Child Labour	<ul style="list-style-type: none"> <li>The developer and contractor should ensure no employment to persons under 18years of age</li> <li>Labor inspectors should enforce the labor law on any violations during construction and all violations be treated as criminal offenses.</li> <li>Awareness to the public on minimum age for employment and labour rights should be conducted</li> <li>Parents and project communities should ensure children's access to basic services i.e. food, shelter, education, health, sanitation and hygiene.</li> </ul>	PO-RALG	Morogoro Municipal Council ( <b>Sociologist</b> ) and Parents & Communities	5,000,000
Gender Based Violence (GBV)	<p>The contractor will implement provisions that ensure that gender-based violence at the community level is not triggered by the Project, including:</p> <ul style="list-style-type: none"> <li>effective and on-going community engagement and consultation, particularly with women and girls in villages and learning institutions in the project area;</li> <li>review and ensure that specific project components that are known to heighten GBV risk at the community level, e.g.</li> </ul>	PO-RALG	Morogoro Municipal Council (Sociologist) and Contractor, Communities	15,000,000



	<p>compensation schemes; employment schemes for women; etc. are managed and implemented in a manner that will safeguard against violence against women.</p> <ul style="list-style-type: none"> <li>• Specific plan for mitigating these known risks, e.g. sensitization around gender-equitable approaches to compensation and employment; etc.</li> <li>• The contractor will ensure adequate referral mechanisms are in place if a case of GBV at the community level is reported related to project implementation.</li> </ul>			
<b>SUBTOTAL B</b>				<b>291,000,000</b>

<b>IDENTIFIED IMPACT</b>	<b>MITIGATION / ENHANCEMENT MEASURES</b>	<b>IMPLEMENTER</b>	<b>RESPONSIBLE ORGANIZATION</b>	<b>ESTIMATED COSTS (TZS)</b>
<b>C. OPERATION PHASE</b>				

C1. Increase on Traffic Volume and Risk to Road Accidents (-ve)	<ul style="list-style-type: none"> <li>• Sensitization of the communities about the increased traffic</li> <li>• Public awareness on Road Safety to avoid accidents and encourage proper use of roads and road signs</li> <li>• Use of alternative route where possible</li> </ul>	<b>PO-RALG</b>	Morogoro Municipal Council <i>(Project's Joint Task Force)</i> in collaboration with Ministry of Home Affairs <i>(Traffic Department)</i>	15,000,000
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<p>C2. Liquid Waste management (-ve)</p>	<ul style="list-style-type: none"> <li>• The Municipality should ban all sewage connections to the storm water drainage and establish regular inspection of the drainage at local level to ensure there is no new sewage connection. Also should ensure the public health laws are effectively implemented to those new connections / connectors.</li> <li>• Awareness / education on sanitation facilities usage and ethics should be provided to the project facilities users (drainage). This can be provided via posters and directional signs</li> </ul>	<p><b>PO-RALG</b></p>	<p>Morogoro Municipal Council (<i>Project's Joint Task Force</i>)</p>	<p>Part of the project</p>
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C3. Noise Pollution and Vibration (-ve)	<ul style="list-style-type: none"> <li>Road safety rules, which include speed limit should be observed since vehicles travelling at a low speed do not produce a lot of noise</li> <li>The road-sides recreation vendors should be limited not to operate with loud music / adverts / plays; at all hours. • The facility operators / authority shall be obliged to comply with the existing environmental quality standards (air pollution and noise levels also provided in the monitoring plan) in a workplace. MMC shall set working standards for the limits regarding noise pollution.</li> <li>The operators will also be required to post as much signs as possible to remind the public and facility workers on these limits and requirements.</li> </ul>	PO-RALG	Morogoro Municipal Council ( <i>Project's Joint Task Force</i> )	3,000,000
C4. Air Pollution (-ve)	<ul style="list-style-type: none"> <li>The transport vehicles entering the project facilities should be maintained regularly and checked by vehicle inspectors to ensure that they are always in good optimum condition since poor engine performance leads to incomplete combustion and hence emission of exhaust and smoke.</li> <li>Planting trees around the project areas, and on the sides of the access roads will add a lot of value to the aesthetic environment, air pollution control and the environmental sustainability efforts.</li> </ul>	PO-RALG	Morogoro Municipal Council ( <i>Project's Joint Task Force</i> )	3,000,000
C5. Oil, Grease and Lubricant (Hydrocarbons) Spillage	<ul style="list-style-type: none"> <li>Regular cleaning of the paved areas and drainages to remove the dust and vehicle oil deposits</li> <li>Oil/Water traps shall be incorporated in the storm water drainage channels as per design (appendix C.8)</li> <li>Dripping pans shall be used while servicing the vehicles.</li> <li>Any vehicle dripping oils and other lubricants shall be withdrawn from work and taken to the service bay until the leakages are sealed.</li> <li>No refuelling or repairing the vehicles except in designated area, i.e. the parking areas service bay /</li> </ul>	PO-RALG	Morogoro Municipal Council( <i>Project's Joint Task Force</i> )	15,000,000

	<p>garage, that have an impermeable surface to enable proper and effective clean-up of any spills. Spill kits with suitable absorbent and adsorbent materials and equipment shall be present to ensure timely and appropriate clean-up of any spills.</p> <ul style="list-style-type: none"> <li>• Use drip pans underneath standing machinery / generators to prevent contamination of the ground</li> <li>• Any spillages shall be cleaned up by either burning in place or collecting the contaminated soils and burning them at the central disposal area, all to the satisfaction of the Developer.</li> </ul>			
C6. Risk to Increased Incidence of Diseases Transmission Including HIV/AIDS and STD/STI (-ve)	<ul style="list-style-type: none"> <li>• HIV/AIDS information and education targeting the behaviour and attitudes of people involved in the project cycle will be necessary. Information should be provided; including public awareness information (and program as much as possible) will be provided at all strategic points to promote self-awareness and policy compliance.</li> </ul>		Morogoro Municipal Council ( <i>Project's Joint Task Force</i> )	25,000,000
C7. Improved Local Socio-economy (+ve)	<ul style="list-style-type: none"> <li>• Various vendors, shops and groceries and business centres will be established at the project areas leading to socio-economic boost in Morogoro. All these establishments should be monitored from the initial stages to make sure they comply with governing laws and regulations before they operate out of control. Moreover, leasing priorities should be given to interested and qualified local residents to boost local economy as well as minimize the effects of social disruption.</li> </ul>	PO-RALG	Morogoro Municipal Council	Part of the project
C8.Improved Government Revenue through collected Taxes (+ve)	<ul style="list-style-type: none"> <li>• Public awareness on the taxes and collection should be provided to educate people on its importance and benefits.</li> <li>• Tax collection methods should be clear and transparent to avoid any complaints and encourage cooperation.</li> </ul>	PO-RALG	Morogoro Municipal Council	Part of the project

	<ul style="list-style-type: none"> <li>Maintenance works at the roads, channels and culverts, should be done in a regular basis to show the importance of revenue collection and to ensure project sustainability.</li> </ul>			
C9. Extension of Services and Locality (+ve)	<ul style="list-style-type: none"> <li>All the municipal services to be extended at the project wards, (water services, sanitation services, communication services, etc.), must be carried out in accordance to legal and well-documented plans to ensure sustainability.</li> </ul>	PO-RALG	Morogoro Municipal Council	Part of the project
Climate Change Risks	<b>Adaptation strategies for floods and reduce impacts on bridges</b> <ul style="list-style-type: none"> <li>Protect bridges from damages caused by flooding by strengthening the bridge piers and foundations, or by increasing the hydraulic capacity of the bridge by raising the bridge deck</li> <li>Minimize the occurrence of flooding or reduce its magnitude by increasing infiltration within the catchment area draining through the bridge structure, or diverting high flows to drainage systems with a higher drainage capacity</li> </ul>	PO-RALG	Contractor	Part of the project
<b>SUBTOTAL C</b>				<b>61,000,000</b>

IDENTIFIED IMPACT	MITIGATION / ENHANCEMENT MEASURES	IMPLEMENTER	RESPONSIBLE ORGANIZATION	ESTIMATED COSTS (TZS)
<b>D. DECOMMISSIONING PHASE</b>				



IDENTIFIED IMPACT	MITIGATION / ENHANCEMENT MEASURES	IMPLEMENTER	RESPONSIBLE ORGANIZATION	ESTIMATED COSTS (TZS)
D1. Reduced Benefit to the Community (-ve)	<ul style="list-style-type: none"> <li>Notice to demolish any of the project components and / or relocation arrangement should be made aware to the public way before the actual activity to prepare the community with the change and seek opportunities elsewhere.</li> </ul>	PO-RALG	Morogoro Municipal Council( <i>Project Engineer, Planning, Environmental and Social Officers</i> ) <i>Urban Officer, and</i>	Part of the project
D2. Air Pollution (-ve)	<ul style="list-style-type: none"> <li>Operate and maintain demolition vehicles and equipment to always be in good working condition since poor engine performance leads to incomplete combustion and hence emission of smoke.</li> <li>Provide demolition workers with proper PPEs i.e. air / dust masks</li> <li>Apply water to minimize dust (i.e. trickling method)</li> <li>The trucks hauling dusty spoils from the demotion sites should be covered with tarpaulins to prevent wind from blowing them to the extent of becoming a nuisance.</li> </ul>	PO-RALG	Morogoro Municipal Council ( <i>Highway Engineer and Environmental Officer</i> )	Part of the project
D3. Noise Pollution and Vibrations (-ve)	<ul style="list-style-type: none"> <li>The Contractor and Demolition Supervisors shall be obliged to comply with the existing environmental quality standards (air pollution and noise levels also provided in the monitoring plan) in a workplace. The proponents shall set working standards for the limits regarding noise pollution. The Contractor will also be required to post as much signs as possible to remind the public and site workers on these limits and requirements.</li> <li>Workers in vicinity of strong noise should wear earplugs and helmets and their working time should be limited</li> <li>Demolition works should be limited to daytime only to avoid noise annoyance to the community during the night</li> </ul>	PO-RALG	Morogoro Municipal Council (Highway Engineer and Environmental Officer)	Part of the project

IDENTIFIED IMPACT	MITIGATION / ENHANCEMENT MEASURES	IMPLEMENTER	RESPONSIBLE ORGANIZATION	ESTIMATED COSTS (TZS)
	<ul style="list-style-type: none"> <li>Maintenance of machinery and vehicles should be enhanced to keep their noise at a minimum level</li> <li>Where the noise levels are beyond 85 Db (A), ear muffs or plugs shall be provided to all those working within the demolition.</li> </ul>			
D4. Increased Solid Wastes Volume (-ve)	<ul style="list-style-type: none"> <li>The generated solid wastes shall be collected in solid waste collection receptacles for proper disposal points to be identified by the Contractor with the assistance from the Client and the public.</li> <li>Morogoro Residents shall be allowed and encouraged to collect for recycling all the recyclable wastes especially plastic and metal materials; as well as reuse of materials such as spoils; where spoil materials may be disposed into the numerous borrow pits located in different areas within the region before they are restored (however, it must be ensured that they are in suitable condition i.e. not contaminated).</li> <li>Waste materials including, but not restricted to, refuse, garbage, sanitary wastes, industrial wastes, and oil and other petroleum products, shall be disposed-off by the Contractor. Disposal of combustible materials shall be by burying, where burial of such materials is approved by the Engineer; by burning, where burning of approved materials is permitted; or by removal from the construction area. Waste materials removed from the construction area shall be dumped at an approved dump near the project sites.</li> </ul>	PO-RALG	Morogoro Municipal Council (Highway Engineer and Environmental Officer)	Part of the project

IDENTIFIED IMPACT	MITIGATION / ENHANCEMENT MEASURES	IMPLEMENTER	RESPONSIBLE ORGANIZATION	ESTIMATED COSTS (TZS)
D5. Change in the Scenic Quality (-ve)	<ul style="list-style-type: none"> <li>The removal of solid wastes should be done as quickly as possible to avoid aesthetic pollution due to rubble presence for a long period.</li> <li>If there is any new / alternative proposed project at that time, the demolition should take place when that proposed project is ready to be implemented to revive the aesthetic environment of the area.</li> </ul>	PO-RALG	Morogoro Municipal Council Engineer and Environmental Officer (Highway and)	Part of the project
SUBTOTAL D				0
TOTAL COSTS FOR IMPACT MITIGATION MEASURE (SUBTOTAL A, B, C & D)				352,000,000

## **9 ENVIRONMENTAL AND SOCIAL MONITORING PLAN**

### **9.1 Overview**

Monitoring refers to the systematic collection of data through a series of repetitive measurements over a long period of time to provide information on characteristics and functioning of environmental and social variables in specific areas over time. There are four types of monitoring that are also relevant to this ESIA.

- **Baseline Monitoring** – the measurement of environmental parameters during a pre-project period and operation period to determine the nature and ranges of natural variations and where possible establish the process of change.
- **Impact / Effect Monitoring** involves the measurement of parameters (performance indicators) during establishment, operation and decommissioning phase in order to detect and quantify environmental and social change, which may have occurred as a result of the project. This monitoring provides experience for future projects and lessons that can be used to improve methods and techniques.
- **Compliance Monitoring** takes the form of periodic sampling and continuous measurement of levels of compliance with standards and thresholds – e.g. for waste discharge, air pollution, etc.
- **Mitigation Monitoring** aims to determine the suitability and effectiveness of mitigation programmes designed to diminish or compensate for adverse effects of the project.

The monitoring plan provides the procedures and actions that recognize and analyse environmental and social changes consequent to the pre-construction, construction and operational phases of the project. The monitoring ensures that:

- Legal standards for environmental parameters are not exceeded
- Mitigation measures are implemented in the manner described in the ESMP
- Changes to baseline environmental and social conditions during the project activities are continually monitored
- Early warning of environmental and social damage is recognized so that action may be taken, if possible, to prevent or reduce the seriousness of the unwanted impact
- Corrective actions or new adaptive management programs are implemented, as required, if proposed mitigation measures are unable to reduce and/or eliminate potential project related impacts, or meet the predetermined level of performance

For effective monitoring, the following measures shall also be taken: -

- Monitoring shall be conducted and/or supervised by Environmental and Social Specialists, Project Implementor (PO-RALG), who are mainly relevant personnel from TARURA and Morogoro Municipality
- Certified methods of measurements and sampling shall be employed
- Measuring equipment shall be accurately calibrated
- Quality control of sampling and measurements undertaken shall be ensured
- The Project Contractor and Consultant will retain Environmental Personnel within their organizational structures to ensure that the monitoring program is properly implemented
- Detailed Emergency Response Plan, Environmental and Social Management and Monitoring Plan, Occupational Health and Safety Plan, should be developed by the

Contractor, approved by supervision consultant and the Client, and implemented prior to commissioning and operation of the project components.

## **9.2 Monitoring Categories**

The monitoring program can be split into categories namely: -

- i. Environmental Monitoring
- ii. Socio-Economic Monitoring
- iii. Operational and Management Performance Monitoring

### **9.2.1 Environmental Monitoring**

This environmental monitoring program will cover monitoring of the following parameters: -

- Water sources
- Air emissions
- Noise levels
- Solid and hazardous waste
- Sewage management
- Trucking and motorized machinery movements
- Safety Records and adherence with site safety rules

### **9.2.2 The Socio-economic Monitoring**

The socio-economic impacts of the subproject on the neighbouring communities (mainly positive) will be monitored. A basic socio-economic survey should be undertaken annually. Key parameters to be monitored will include change in income levels, job creation, internal costs of transportation, small business establishments, etc. The socio-economic survey will be a mechanism to enable monitoring of benefits to the community.

### **9.2.3 Operational and Management Performance Monitoring**

This involves checking that all data are properly documented and interpreted, to ensure corrective actions are properly followed up and implemented.

## **9.3 ESMP Audits**

Annual audits of the ESMP shall be undertaken by an appropriately qualified person. The audit will determine whether or not the ESMP conforms to the requirements of the Client and has been properly implemented and maintained.

An audit report will be prepared identifying any opportunities for improvement and any corrective actions required. The results of the audit will be discussed in project lessons learnt, tool-box talks, and project meetings, as appropriate. Minutes from each meeting shall record and assign actions to individuals as appropriate, to ensure that best practice continues to be adopted on the ground and reflected in the ESMP.

### **9.3.1 Corrective and Preventive Action**

Corrective or preventative actions identified during internal audits shall be appropriate to the magnitude of the problem and appropriate to the environmental harm encountered. Ultimately the Client has a responsibility for closing out any corrective or preventative actions resulting from the compliance monitoring, audits and external regulatory compliance monitoring. Additionally, assessment and follow-up reviews on the effectiveness of corrective and preventive actions will be undertaken and the outcomes documented, communicated and implemented.

Compliance shall be included as a regular agenda item at management meetings and project meetings. Minutes from each meeting shall record and assign actions to individuals where appropriate. A summary of environmental and consent compliance will be included in the Monthly Progress Reports.

### **9.3.2 Management Review**

PO-RALG responsible for ensuring that an audit of compliance with environmental legislation and objectives and targets is carried out on a twelve-monthly basis as a minimum, or as major changes to legislation or policy occur.

The management review will include representatives from PO-RALG, the Contractor and the Consultant responsible for managing aspects of the subproject's ESMP. The review will include consideration of the results / recommendations of ESMP audits undertaken; and assess if the ESMP is achieving its current objectives.

## **9.4 Reporting**

Table 9-1 hereafter provide the recommended monitoring, auditing and reporting requirements



**Table 9-1: Monitoring, Auditing and Reporting Requirements**

<b>MONITORING/ AUDITING REQUIREMENTS</b>	<b>DESCRIPTION OF TASKS</b>	<b>FREQUENCY</b>	<b>RESPONSIBILITY</b>	<b>REPORTING</b>
ESMP Compliance Monitoring	<ul style="list-style-type: none"> <li>Inspect Contractors' resources, consent and designation conditions.</li> <li>Check Satisfactory implementation of mitigation measures for general construction management</li> <li>Regular site audits to check Contractor's operating in a way that minimises impact on the environment.</li> <li>Collecting environmental and social concerns / complaints from the residents and other stakeholders</li> <li>Identify new risk.</li> </ul>	Monthly	Environmental Consultant / the supervising firm	Quarterly Compliance Monitoring Report
Accident / near miss accident	<ul style="list-style-type: none"> <li>Environmental incidents and Emergencies control at the construction sites and office, as per Contractor's HSE Management Plan</li> </ul>	During Occurance	Contractor or Environmental Consultant	Incident/Accident record book
ESMP Review – management review	<ul style="list-style-type: none"> <li>Update the ESMP as required should there be any changes to environmental management processes or new risks identified.</li> </ul>	Quarterly	Environmental Consultant	ESMP Record of Amendment
ESMP Audit	<ul style="list-style-type: none"> <li>Formal internal audit following an approved audit programme. Identify new risks and see if the ESMP meets the requirements of the Contract and has been properly implemented and maintained.</li> </ul>	Annually	Appropriately qualified person	ESMP audit report

## **9.5. Implementation of the Monitoring Plan**

To ensure that recommended measures are properly implemented, monitoring is essential. Table 9-2 provides details of the attributes to be monitored, frequency, and institutional responsibility and estimated costs. These costs are only approximations and therefore indicative. Costs that are to be covered by the developers should be included in the subproject cost.

**Table 9-2: Social and Environmental Monitoring Plan for Implementation of Mitigation Measures for The Proposed Construction of Urban Infrastructure in Morogoro Municipality**

ENVIRONMENTAL ASPECT	PARAMETERS	MONITORING FREQUENCY	SAMPLING AREA	MEASUREMENT UNITS	MONITORING RESPONSIBILITY	ANNUAL COSTS ESTIMATES (TZS)
<b>A. PRE- CONSTRUCTION PHASE</b>						
Land Acquisition (-ve)	<b>Rate of compensation for land and properties</b> GRM grievances	Project area	Once before construction	Valuation Report	PO-RALG/Contractor	5,000,000
Creation of Employment Opportunities (+ve)	Percentage of local construction labourers	Quarterly a year	Project site(s)	Number of local people employed in the project	Contractor / Supervising firm / ward leaders	N/A
<b>SUBTOTAL A</b>						<b>5,000,000</b>

ENVIRONMENTAL ASPECT	PARAMETERS	MONITORING FREQUENCY	SAMPLING AREA	MEASUREMENT UNITS	MONITORING RESPONSIBILITY	ANNUAL COSTS ESTIMATES (TZS)
<b>B. CONSTRUCTION PHASE</b>						
Noise pollution	Noise Level	Monthly	Project site(s)	dBA	Contractor / Environmental Supervisor	9,000,000
Air Quality	Dust (PM <sub>10</sub> )	Once in three months	Project site(s)	μ g/m <sup>3</sup>	Contractor / Environmental Supervisor	18,000,000
Waste Management	Solid and Liquid waste	Once a week	Project site(s)	Kg for Solid waste, Litters for Liquid waste	Contractor / Supervising firm / Morogoro Municipal Council	Contractual Obligation
Oil, Grease and Lubricant Spillage	Facilities for disposal of Hydrocarbon wastes	Project area	monthly	Visual	PO-RALG/Contractor	5,000,000
Frequency of Illness of construction workers (HIV/AIDS)	Illness of construction workers	Once in a month for the construction period	Project site(s)	Number of cases	Contractor / Supervising firm	5,000,000
Safety and health risks	Number and type of safety equipment such as mask, helmet gloves and ear plugs. Health and sanitation facilities in site.	Quarterly a year	Project site(s)	Number of safety measures provided	Contractor / Environmental Supervisor / OSHA / Morogoro Municipal Council	Contractual Obligation
Land Scaring at Borrow Pits	Quantities	Project site	Weekly	M <sup>3</sup>	PO-RALG/Contractor	3,000,000
Soil and Water Pollution	Turbidity, TDS, Nitrates Oil, Grease, color	Project area	Monthly	NTU, mg/L, Hazen	PO-RALG/Contractor/ Ministry of Water & Irrigation	6,000,000

Destruction of River Banks Vegetation and Aquatic Flora	<b>V. Area</b>	Construction Corridor	Quarterly during construction	M2	PO-RALG/Contractor	6,000,000
Dust suppression	Water sprinkling	Everyday	Project site(s)	Frequency of water sprinkling	Contractor / Supervising firm	5,000,000
Waste Management	Solid and Liquid waste	Once a week	Project site(s)	Kg for Solid waste, Litters for Liquid waste	Contractor / Supervising firm / Morogoro Municipal Council	Contractual Obligation
<b>SUBTOTAL B</b>						<b>57,000,000</b>

ENVIRONMENTAL ASPECT	PARAMETERS	MONITORING FREQUENCY	SAMPLING AREA	MEASUREMENT UNITS	MONITORING RESPONSIBILITY	ANNUAL COSTS ESTIMATES (TZS)
<b>C. OPERATION STAGE</b>						
Increase on Traffic Volume and Risk to Road Accidents	Increased number of people, Crimes incidences, Supply of Social services	Project Area	Once every six months	Nos	PO-RALG/Contractor	
Liquid Waste management	Liquid waste	Everyday	Project site(s)	Kg for Solid Waste and Litres for Liquid waste	Morogoro Municipal Council Environmental Consultant	2,000,000
Noise Pollution	Noise level	Twice every Month for the first two years	Project site(s)	dBA	Morogoro Municipal Council Environmental Consultant	1,200,000
Air Pollution	Dust pollution (PM10)	Once in three months	Project site(s)	$\mu\text{ g/m}^3$		1,800,000
Oil, Grease and Lubricant	Facilities for disposal of solid wastes	Project area	monthly	Visual	PO-RALG/Contractor	3,000,000
Risk to Increased Incidence of Diseases Transmission Including HIV/AIDS and STD/STI	Illness of construction workers	Once in a month for the construction period	Project site(s)	Number of cases	Contractor / Supervising firm	2,000,000
Improved Local Socio-economy	Increased economic activities	Regional area	Annually	Regional GDP	PO-RALG/Contractor	6,000,000



Improved Government Revenue through collected Taxes	Increased economic activities	Regional area	Annually	Regional GDP	PO-RALG/Contractor	7,000,000
Extension of Services and Locality	Increased economic activities	Regional area	Annually	Regional GDP	PO-RALG/Contractor	90,000,000
<b>SUBTOTAL C</b>						<b>32,000,000</b>

ENVIRONMENTAL ASPECT	PARAMETERS	MONITORING FREQUENCY	SAMPLING AREA	MEASUREMENT UNITS	MONITORING RESPONSIBILITY	ANNUAL COSTS ESTIMATES (TZS)
<b>D. Decommission phase</b>						
Reduced Benefit to the Community	Increased economic activities	Regional area	Annually	Regional GDP	PO-RALG/Contractor	6,000,000
Air Pollution	Dust pollution (PM10)	Twice every Month for the first two years	Project site(s)	$\mu\text{ g/m}^3$	Morogoro Municipal Council Environmental Consultant	2,500,000
Noise Pollution	Noise level	Once in three months	Project site(s)	dBA		1,500,000
Increased Solid Wastes Volume	Solid and Liquid waste	Everyday	Project site(s)	Kg for Solid Waste and Litres for Liquid waste	Morogoro Municipal Council Environmental Consultant	2,000,000
Change in the Scenic Quality	Land use	Project area	Annual	Acres	PO-RALG/Contractor	Project Cost
<b>SUBTOTAL C</b>						<b>12,000,000</b>
<b>TOTAL MONITORING COSTS</b>						<b>106,000,000</b>

## **10 COST BENEFIT ANALYSIS**

### **10.1 Overview**

The objective of a benefit-cost analysis is to translate the effects of an investment into monetary terms and to account for the fact that benefits generally accrue over a long period of time while capital costs are incurred primarily in the initial years. The primary transportation-related elements that can be monetized are travel time costs, vehicle operating costs, safety costs, on-going maintenance costs, and remaining capital value (a combination of capital expenditure and salvage value).

### **10.2 Benefits**

Benefits of a road upgrading are the direct, positive effects of that project; e.g the improvement may reduce the number or severity of crashes, eliminate long delays during peak hours, or provide a shorter route. In road projects' benefit cost analysis, the usual procedure is that benefits are first estimated in physical terms and then valued in economic terms.

The benefits of Road upgrading project have been estimated by comparing the amount of travel time, vehicle kilometre travelled and expected number of crashes for the Alternative to the Base Case.

#### **10.2.1 Estimation of Benefits in Physical Terms**

- Estimate the number of crashes eliminated
- Travel time saved
- Vehicle-kilometers reduced

#### **10.2.2 Translating of Physical Benefits into Monetary Values.**

- Travel-Time Savings: The valuation of travel time savings is calculated using standardized cost-per-hour-per-person figures for different vehicles (auto or truck).
- Vehicle Operating Cost Savings: The number of vehicle-kilometers- traveled (VKT) is the most common variable that affects vehicle operating costs. Once the change in vehicle kilometers is estimated, the valuation of vehicle operating costs is calculated using standardized cost-per-kilometer figures for different vehicles (auto or truck)
- Safety Benefits: Are one of the principal benefits that can result from road improvements. Benefits occur when the number of crashes is reduced and/or the severity of the crashes is reduced on a road.

#### **10.2.3 Project Cost**

In economic terms, the cost of a road investment is the value of the resources that must be consumed to bring the project about. The total value of design review, environmental study, tendering, construction, environmental & social impact mitigation, environmental & social monitoring and any additional maintenance costs is presented below:

- Engineering Design Cost: Makes up the cost for road infrastructure design
- Environmental & Social Study Cost: Makes up the cost for conducting ESIA study and certification of the project by NEMC
- Environmental & Social Impacts Mitigation and Monitoring Cost: Makes up the cost for road project's environmental and social impacts management and monitoring
- Capital Cost: Makes up the total investment required to prepare a highway improvement for service, from engineering through landscaping. These include: engineering, right of way, major structures, grading and drainage, sub-base and base, surfacing, and miscellaneous items.
- Major Rehabilitation Costs: May be needed to maintain the serviceability of a major transportation facility e.g. pavement overlay. The cost of overlays or other major preservation

activities should be included in the analysis and allocated to the year when they are anticipated to occur.

- **Routine Annual Maintenance Costs:** It is important to account for the future operating and maintenance costs of the facility. Bridges require preventive maintenance, and roadway lanes have to be lowed and patched each year.
- **Remaining Capital Value (RCV):** The remaining capital value is calculated by determining the percentage of useful life remaining beyond the analysis period, and multiplying that percentage by the construction cost for that component. The estimate of the remaining capital value at the end of the analysis period is then converted to a present value and subtracted from the initial capital cost.

## **11 DECOMMISSIONING PLAN**

### **11.1 INTRODUCTION**

The preliminary decommissioning plan serves to establish decommissioning as an important consideration from the inception of the subproject, during design and throughout the operation of the project. The plan has the following purposes:

- a) The primary purpose of the preliminary plan is to ensure that the subproject designers are cognizant of decommissioning during the initial design of the factory in general. Thus, where design choices that would enhance decommissioning are available for types of materials and system components, and location of components, these choices should be made.
- b) Another purpose of the plan is to identify the ultimate decommissioning options and final project status. These options would be evaluated and narrowed to the decommissioning method of choice as the end of project life is approached.
- c) The final purpose of the plan is to demonstrate to regulatory agencies that important aspects of decommissioning are considered as early as possible during the initial design of the facility. The plan serves as the starting point to demonstrate that areas such as decommissioning methods, costs, schedules, and operating impact on decommissioning will be reviewed and refined throughout the operating life of the project.

### **11.2 PLAN CONTENT**

The plan provides a general description of decommissioning options and methods considered feasible for the project. The description should demonstrate that the option and methods considered are practical and that they protect the health and safety of the public as well as decommissioning personnel. Design personnel should study the proposed decommissioning methods and take steps to ensure that the design incorporates features that will facilitate smooth decommissioning.

Considerations include:

- A. Options of decommissioning
- B. Provisions for adequate material-handling equipment.
- C. An estimate of manpower, materials, and costs anticipated to support decommissioning.
- D. A description of the anticipated final disposition and status of the facilities and site.
- E. A discussion demonstrating that adequate financing will be programmed for decommissioning.
- F. Identification of records that should be maintained during development and operation which might facilitate smooth decommissioning, including a set of “as built” drawings.

### **11.3 DECOMMISSIONING OPTIONS**

However, for this subproject decommissioning is not an option as the structures will always be needed to save the purpose noted. Only regular maintenance and rehabilitation for their sustenance are the option available for the implemented infrastructure.

### **11.4 PROJECT CLOSURE**

As noted above for this subproject no decommission is expected as compared to usual type of the projects, the structures will be required to serviced and maintained to ensure their continual performance to address the intended social need. However, the closure of construction works i.e. demobilization will be done as indicated below.

After the construction work is done demobilisation will be required and especially to the temporary construction structures at site (if any). The demobilization will entail:- Reinstatement of the excavated

area(s) at sites; Removal of any remaining construction materials; Use of spoils to reinstate the excavated area; Removal of spoiled material from the sloppy areas to avoid the movement of soil and sediment into the sea; Removal of construction equipment and machineries to offsite; Rehabilitation or restoration of the disturbed areas at site to ensure it is safe for public use and Security and safety measures in the course of demobilization.

The rehabilitation shall be done according to the condition of the structures. Monitoring of the condition of the structures shall be done every quarter of the year and once there are signs of early worn out appropriate measures to include maintenance or rehabilitation shall be done accordingly. The management of storm water drainage channels shall be done as recommended in the management plan of chapter 8.



## **12 SUMMARY AND CONCLUSION**

The ESIA team has scrutinized the environmental and social implications of the proposed construction and/or upgrading of urban infrastructure (Roads at Kihonda, Mazimbu, Tungi and Mji Mwema ward and Drainage systems i.e Kikundi I&II and Anti Malaria )in Morogoro municipality, Tanzania.

The ESIA study was conducted to comply with the Environmental Management Act (2004) and was done in accordance with the ESA and Audit Regulations (2005). Stakeholder consultations were conducted during the study to encompass local government authorities, communities in the project neighbourhoods and interested parties. Standard methodologies for impact identification were used including checklist, matrix and professional judgment.

Among the potential negative impacts included Vibration and Noise Pollution , Poor Air Quality due to Emissions and Dust ,Solid and Liquid Waste Generation , Oil, Grease, Fuel spillage , Risk to increased incidences of diseases transmission including HIV/AIDS , Risk to Health and Safety ,Land Scarring at Borrow Sites , Soil and Water Pollution , Destruction of River Banks Vegetation and Aquatic Flora and Fauna , Destruction of Adjacent Land Use and Properties ,Loss of Properties close to the Project Sites , Destruction of Terrestrial Vegetation , Construction related Risk and Accidents and Increased risk of traffic related road accidents:, while positive impacts comprised of Employment during Construction ,Change in the Original Land Use, Scenic and Visual Quality ,Improved Local Socio-economy ,Improved Government Revenue through collected Taxes.

Based on the findings, it is evident that development of the proposed subproject shall be impacted by climate change scenarios i.e from extreme temperatures and rainfalls as described in chapter 2 of this ESIA. The study has proposed various mitigation measures as outlined in chapter seven which includes provision of road's visibility, safety markings and signs in the design as well as proper road design to withstand climate change scenarios, provision of water drainage structures with capacities to allow free flow of runoffs from either side of the roads, safety and health trainings to the workers and communities and fair valuation among others.

However, in order to ensure climate resilience for the proposed urban infrastructure, climate adaptation measures as described in chapter 2 have been incorporated into the designs of both roads and drainage channels.

The study concludes that a number of environmental impacts have been identified and assessed; none of these are considered to be that severe after mitigation as to prevent the further planning, design and construction of the proposed subproject. Thus, the subproject development in the area can be considered suitable subject to the implementation of the mitigation measures as indicated in the Environmental and Social Management Plan.

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## APPENDICES

## APPENDIX I: APPROVAL TOR LETTER



THE UNITED REPUBLIC OF TANZANIA

VICE PRESIDENT'S OFFICE  
UNION AND ENVIRONMENT

NATIONAL ENVIRONMENT MANAGEMENT COUNCIL  
(NEMC)



In reply please quote:  
Ref: EC/EIA/2022/3857

Date: 08/06/2022

MOROGORO MUNICIPAL COUNCIL,  
P.O. Box 166,  
**MOROGORO**

**RE: SCOPING REPORT AND TERMS OF REFERENCE (ToR) FOR  
PROPOSED UPGRADING OF URBAN ROADS (21.5KM) TO  
BITUMEN STANDARD AND DRAINAGE SYSTEMS IN  
MOROGORO DISTRICT, MOROGORO REGION**

Reference is made to the above captioned subject.

2. The National Environment Management Council (NEMC) acknowledges receipt of Terms of Reference (ToR) and Project brief for undertaking EIA study for the above mentioned project.

3. The Terms of Reference have been reviewed and found generally to be adequate to guide the Environmental and Social Impact Assessment (ESIA) study of the named project. The ESIA report should therefore observe requirements of ESIA and Audit Regulations, 2005 specifically Regulation 51 and 52. Furthermore the following should also be included in the ESIA report: -

- i. All key stakeholders are consulted including neighbors and the Local Government Authorities. Their views and concerns should be addressed. Records of meetings, communication and comments should be provided with proof of service. Consultation forms should bear **date** and each consulted stakeholder should **sign** against his/her **name** as the law requires;
- ii. Ensure all copies of relevant documents/certificates including the land acquisition process documents showing properties impacted by the project are appended to the report
- iii. Compliance status of all applicable legal and policy frameworks and their respective requirement is addressed in the ESIA report.
- iv. The EIA report should discuss the management of the hazardous waste i.e used oil;

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All correspondence should be addressed to the Director General

- v. On the cover page, the Council requests you to write the project title in full i.e. proposed upgrading of urban roads and drainage systems in Morogoro Municipal Council, Morogoro region
4. Upon submission of the ESIA report, the Council will arrange for a technical review of the document by the Cross-sectoral Advisory Committee (AC). Prior to review, representatives of the AC will visit the project area to inspect the site and verify adequacy of the ESIA Report. As you submit the ESIA report you will be required to as well pay to the Council review cost through a control number to be generated by the system.
5. We look forward to your cooperation on this matter.



A. N. Sembeka

**For: Director General**

Cc: NORPLAN Tanzania Limited,  
P.O Box 2820,  
**DAR ES SALAAM**


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**All correspondence should be addressed to the Director General**



## APPENDIX II: LABORATORY RESULT

**THE UNITED REPUBLIC OF TANZANIA  
MINISTRY OF WATER**



**Morogoro Water Laboratory**  
P.O. Box 628,  
Maji Fort, Morogoro Rd  
Morogoro  
Tanzania  
4<sup>th</sup> Jan 2022.

Telegram: MTC  
Telephone: 255-022-2614744  
Fax No. 255-022-2612018  
Email: morogoro@mtc.go.tz

**WATER SAMPLE ANALYTICAL RESULTS**


Analysis requested by... **NORPLAN TANZANIA LIMITED**... Sampling date... **31.12.2021**.  
Date received... **31.12.2021** Region... **Morogoro**... District... **Morogoro Municipal** Source of Water... **Stream**... Purpose... **Construction**

**Physical/chemical results**

No.	Parameter	Units	Kikundi 1 - Kimojo (K1)	Ast-Makera-Mafisa (K2)	Kikundi - Mbuyuni (K3)	Tanzania Standards of water quality for construction (TZS2065:2017)
1.	pH		7.28	7.98	8.02	>6
2.	Electrical Conductivity (E.C)	µS/cm	1201.00	1120	1149	n.m
3.	Nitrate (NO <sub>3</sub> )	mg/L	21.12	18.21	19.00	≤500
4.	Phosphate (P)	mg/L	1.63	1.92	1.78	≤100
5.	Total Coliform	100/CFU	42	35	44	n.m

n.m - not mentioned

**Remarks:**  
Parameters analyzed (physical/chemical) comply with Tanzanian Standards

Reporting Officer:   
Date: **04/01/2022**

**MOROGORO WATER LABORATORY**  
P.O. BOX 628  
Maji Fort, Morogoro Rd  
Morogoro  
Tanzania  
4<sup>th</sup> Jan 2022.

Scanned with CamScanner

## APPENDIX III:LIST OF COUNSULTED STAKHOULDER

### HALMASHAURI YA MANISPAA YA MOROGORO

**MUHTASARI WA KIKAO CHA MRADI WA USHINDANI KATIKA UBORESHAJI WA MIUNDOMBINU KWENYE MIJI YA TANZANIA (TACTIC) KILICHOFANYIKA TAREHE 13/01/2022 KATIKA UKUMBI WA MIKUTANO WA SOKO KUU LA CHIFU KINGALU MOROGORO**

#### **Wajumbe waliohudhuria:-**

1. Mhe. Albert G. Msando	—	Mkuu wa Wilaya ya Morogoro - Mwenyekiti
2. Ndg. Ally H. Machela	—	Mkurugenzi wa Manispaa – Katibu
3. Mhe. Pascal M. Kihanga	—	Mstahiki Meya - Mjumbe
4. Mhe. Lt. Col. (Mst) Ahmed Salum Mazora	—	Diwani - Mjumbe
5. Mhe. AbdulAziz Abood	—	Mbunge – Mjumbe
6. Mhe. Dr. Christine Ishengoma(Mb)	—	Mbunge – Mjumbe
7. Mhe. Abdallah Ally Meya	—	Diwani – Mjumbe
8. Mhe. Ally Rashid Kalungwana	—	Diwani – Mjumbe
9. Mhe. Joel Albart Kisome	—	Diwani – Mjumbe
10. Mhe. Zuber George Mkalaboko	—	Diwani – Mjumbe
11. Mhe. Eng. Hamisi Ndwata	—	Diwani – Mjumbe
12. Mhe. Mch. Thomas Benedict Butabile	—	Diwani – Mjumbe
13. Mhe. Abdallah Mohamed Chamgulu	—	Diwani – Mjumbe
14. Mhe. Salum Mrisho Chunga	—	Diwani – Mjumbe
15. Mhe. Namala Johaness Mchunguzi	—	Diwani – Mjumbe
16. Mhe. Peter Joel Dhahabu	—	Diwani – Mjumbe
17. Mhe. Amini Abdallah Tunda	—	Diwani – Mjumbe
18. Mhe. Salima Bonzo Mbandu	—	Diwani – Mjumbe
19. Mhe. Zamoyoni J. Abdallah	—	Diwani – Mjumbe
20. Mhe. Rahma Lashayo Maumba	—	Diwani – Mjumbe
21. Mhe. Grace L. Mkumbae	—	Diwani – Mjumbe
22. Mhe. Hamisi Ally Kilongo	—	Diwani – Mjumbe
23. Mhe. Latifa Saidi Ganzel	—	Diwani – Mjumbe
24. Mhe. Melichior Peter Mwamnyanyi	—	Diwani – Mjumbe
25. Mhe. Gilbert Barnabas Mtafani	—	Diwani – Mjumbe
26. Mhe. Amina H. Zihuye	—	Diwani – Mjumbe
27. Mhe. Mwanaidi E. Ngulungu	—	Diwani – Mjumbe
28. Mhe. Selestini Savin Mbilinyi	—	Diwani – Mjumbe
29. Mhe. Warda O. Bazia	—	Diwani – Mjumbe
30. Mhe. Samueli Alfred Msuya	—	Diwani – Mjumbe
31. Mhe. Juma Issa Kiduka	—	Diwani – Mjumbe
32. Mhe. Zinduna Kombo Selemani	—	Diwani – Mjumbe

33. Mhe. Rashid Ramadhani Matessa	—	Diwani – Mjumbe
34. Mhe. Rashidi R. Matessa	—	Diwani – Mjumbe
35. Eng. Juma Gwisu	—	Kaimu Mhandisi wa Ujenzi wa Manispaa
36. Ndg. Jeremiah Lubeleje	—	Afisa Takwimu, Mipango na ufuatiliaji wa Manispaa
37. Ndg. Emeline Kihunrwa	—	Kaimu Afisa Mipangomiji, Ardhi na Maliasili wa Manispaa
38. Ndg. Mariam A. Ngasingwa	—	Kaimu HPDC MORUWASA
39. Ndg. Anna J. Swai	—	Mtendaji wa Kata ya Mji Mpya
40. Ndg. Winfred A. Kipako	—	Afisa Tarafa Manispaa
41. Ndg. Dauson Jeremiah	—	Afisa Mazingira
42. Eng. Erick Mtambi	—	Mhandisi wa TARURA
43. Sheikh Ramadhan Rashid	—	Sheikh wa BAKWATA Wilaya
44. Ndg. Tatu Ally	—	Mtendaji wa Kata ya Kihonda
45. Eng. Stephen Tungu	—	Mhandisi wa MORUWASA
46. Bishop Godfrey Sehaba	—	Askofu wa Kanisa la Anglican
47. Dean Emmanuel Tengeneza	—	Makamu Askofu wa Kanisa la KKKT
48. Ndg. Fatma H. Mkwenda	—	Mtendaji wa Kata ya Sabasaba
49. Ndg. Justa Medard	—	Mtendaji wa Kata ya Kilakala
50. Ndg. Maria J. Shine	—	Mtendaji wa Kata ya Kingo
51. Ndg. Mariam K. Ngoda	—	Mtendaji wa Kata ya Uwanja wa Taifa
52. Ndg. Lilian P. Kagoma	—	Mtendaji wa Kata ya Sultan Area
53. Ndg. Masanja M. Nkinga	—	Mtendaji wa Kata ya Mazimbu
54. Ndg. Maria Mwangumu	—	Mtendaji wa Kata ya Tungi
55. Ndg. Boniface Kapumbe	—	Fundi wa TARURA
56. Ndg. Eneidy Mwanakatwe	—	Afisa Maendeleo ya Jamii wa Manispaa
57. Eng. A.L. Kyamba	—	Meneja wa TANROADS
58. Eng. L.L. Sikambala	—	Mhandisi wa TANROADS
59. Eng. Shaban Athumani	—	Mhandisi wa TANESCO
60. Eng. Elikarim S. Tyeah	—	Kaimu Mwanasheria wa Manispaa
61. Ndg. Erasmus Haule	—	Kaimu Afisa Usalama Wilaya
62. Ndg. Hadija K. Hamisi	—	Mtendaji wa Kata ya Mji Mku
63. Ndg. Mariam S. Rajabu	—	Mtendaji wa Kata ya Mbuyuni
64. Ndg. Mariam S. Nassoro	—	Kutoka Tanzania Commercial Benki (TCB)
65. CPA Edward B. Malima	—	Mweka Hazina wa Manispaa
66. Eng. Tamim Katakweba	—	Mkurugenzi wa MORUWASA
67. Ndg. Joseph Boaz	—	Meneja Biashara
68. Ndg. Selemani Almasi	—	Afisa Mahusiano

**Sekretarieti:-**

1. Ndg. Daudi Kibwana	—	Katibu wa Mikutano
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HMM/TACTIC/01/2021/2022  
Kufungua Kikao. Mkuu wa Wilaya ya Morogoro ambaye ndiye Mwenyekiti aliwakaribisha Wajumbe na Wadau kwenye kikao cha kujadili miradi ya uboreshaji miundombinu. Alifungua kikao saa 5:30 asubuhi.

HMM/TACTIC/02/2021/2022  
Kuridhia agenda za kikao. Wajumbe waliridhia agenda zifuatazo  
1. Kufungua kikao  
2. Taarifa ya upembuzi yakinifu wa miradi ya barabara, mitaro pamoja na kituo cha mabasi  
3. Kufunga kikao.

HMM/TACTIC/03/2021/2022  
Taarifa ya upembuzi yakinifu wa miradi ya barabara, mitaro pamoja na kituo cha mabasi  
Ilielezwa kuwa Kampuni ya uhandisi ya NORPLAN inashirikiana na Urban Solution pamoja na TYPESA CO kutekeleza miradi ya barabara, mitaro na kituo cha basi Mkoa wa Morogoro. Miradi hiyo inafadhiliwa na Benki ya Dunia.  
Miradi hiyo ipo katika hatua ya upembuzi yakinifu ili kubaini changamoto zinazoikabili.

Miradi inayoshughulikiwa ni kama ifuatavyo:-

1. Mradi wa barabara
2. Mradi wa mitaro
3. Mradi wa kituo cha basi

#### **1.0 Mradi wa barabara una urefu wa kilometa 20 kama ifuatavyo:-**

- i) VETA Kihonda – Tungi Kilometa 11.4 Mradi unatekelezwa katika Kata za Kihonda na Tungi
- ii) Barabara ya Muhimbili Kilometa 1.2 Kata ya Mazimbu
- iii) Barabara ya Mji Mwema Kilometa 5 Kata ya Tungi.
- iv) Tubuyu II road kilometa 2.4
- v) Mapande road kilometa 1.2 (Barakuda)

#### **2.0 Mradi wa mitaro/ mifereji una urefu wa takribani kilometa 4.1**

- i) Mfereji wa Ant-malaria kilometa 1.45 Kata ya Mwembesongo, Mafisa, Mjimpya, Sabasaba, Uwanja wa Taifa na Kiwanja cha Ndege
- ii) Barakuda mita 650 Kata ya Mazimbu
- iii) Kikundi kilometa 2.0 Kata za Mbuyuni, Sultan Area, Mji Mkuu na Kingo.

### 3.0 Kituo cha basi chenye ukubwa wa eneo la kilometa za mraba 63962.

#### Changamoto

MRADI	JINA	MAELEZO
Kikundi	Drainage 1.48KM	Makazi ya watu hayataathirika kwani kuna upande hauna makazi unaweza kutumika, eneo la Sutan kuna miembe na nyumba kando kabisa ya mfereji, kuna bomba la maji taka na maji safi (Sabasaba Road).
Barakuda	Drainage 650M	Mfereji huu haujajengewa baadhi ya maeneo unapitia katikati ya nyumba za watu hivyo kutaathiri baadhi ya nyumba hasa kwenye kona na miti iliyopo kando ya njia ya maji ambayo ni ya asili.  Mfereji umepita karibu sana na makazi ya watu.
Ant-Maralia	Drainage 1.45 KM	Mfereji huu unahitaji kujengewa ili kuwa na kingo imara ili usiathiri makazi na hakuna nyumba itakayo athirika kwa kuwa mfereji ni mpana. Kuna bomba la maji taka lina katikaa Dar es Salaam – Morogoro road.
Veta Kihonda Tungi	Roadi 11.4 KM	Kutokana na kona zilizopo kuna majengo yataguswa mfano ofisi za magereza, kuna power station ya TANESCO, Bwawa kando ya barabara.  Inapita karibu eneo la Magereza, barabara ina kona nyingi na inapita karibu na bwawa la Ngerengere na power Station ya TANESCO.
Muhimbili	Road 11.4 KM	Barabara ina korido la kutosha TANESCO wana nguzo nyingi barabarani ili kupata korido la kutosha na kuna bomba kubwa la maji upande mmoja wa barabara.

Mjimwema	Road 1.2 KM	Barabara hii ina korido ya kutosha, TANESCO wana transformer ambayo iko kwenye korido makazi hayataathirika.
Tubuyu II	Road 2.4 KM	Barabara ina korido jembamba katika baadhi ya maeneo na inapita katika makazi ya watu, kuna eneo lina makaburi upande mmoja na upande mwingine ni makazi ya watu, uhamishwaji wa makaburi utasaidia kuongea korido na ni eneo la kona,, pia kuna magenge ya biashara karibu na kona ambayo yataathirika.
Mapande/ Barakuda road	Road 1.2 KM	Barabara inapita katika makazi ya watu korido yake ni nyembamba na kuna bomba la maji safi linakatiza barabara.
Kituo cha basi	Kituo cha basi chenye ukubwa wa heka 15 sawa na mita za mraba 63962.	Eneo hili litachukua takribani meta za mraba zipato 63,962. Eneo hili halina makazi ya lipo tayari kwa kuendelezwa.

#### **Mjadala na Maamuzi**

Wajumbe walipongeza kwa Halmashauri ya Manispaa ya Morogoro kuwa ni miongoni mwa Halmashauri 12 za kwanza kupatiwa mradi huo na Benki ya Dunia.

Wajumbe walielezwa kuwa Kampuni ya NORPLAN imeshafanya upembuzi yakinifu na wapo katika hatua ya ukamilishaji wa taarifa kisha wataikabidhi kwa Mkuu wa Wilaya ya Morogoro. Aidha inatarajiwa fedha kutolewa na Benki ya Dunia mwezi Aprili, 2022 na utekelezaji utanza mwezi Julai, 2022.

Wajumbe walishauri kuwa Wananchi wapewe elimu wakati wa utekelezaji wa mradi ili kupunguza migogoro.

- **Kuhusu kutunza vyanzo vya maji**

Wajumbe walishauri kuwa vyanzo vya maji vilivyopo kwenye Kata za pembezoni kama vile Kata za Mlimani, Luhungu, Mzinga na Bigwa vitunzwe



Aidha, Mkuu wa Wilaya alishauri Wadau wabuni mradi wa kupanda miti ili kuondokana na mabadiliko ya hali ya hewa.

- **Kuhusu kufungua barabara kwenye Kata za pembezoni**

Wajumbe waliomba Kata za pembezoni kama vile Mindu barabara zifunguliwe. Mstahiki Meya alichukua hoja hiyo na kuahidi kufanya ziara kwenye Kata husika.

- **Kuhusu mto Morogoro kujaa mchanga na kusababisha mafuriko:-**

Wajumbe walishauri mto Morogoro ufukuliwe ili kuepusha mafuriko wakati wa mvua za masika kwenye Kata za Mwembesongo, Kichangani na Mafisa.

- **Kuhusu Watumishi wa shirika la Mzinga kuwa na Mifugo Mingi:-**

Wajumbe walishauri Sheria ya ufugaji mjini izingatiwe baada ya kugundulika kuwa mtu mmoja ana Ng'ombe zaidi ya 300 hivyo kusababisha uharibifu wa mazingira.

- **Kuhusu nguzo za umeme za TANESCO zilizopo ndani ya mita 20 za barabara ya Muhimbili**

Mheshimiwa Mkuu wa Wilaya aliwaeleza Watumishi wa TANESCO kuwa nguzo za umeme zilizopo katika barabara ya Muhimbili ziko ndani ya mita 20 za barabara inayoelekea stendi ya Mwendokasi ya SGR hivyo wazisogeze.

Wajumbe walishauri Benki ya Dunia iongeze urefu wa barabara kwenye eneo la Manispaa.

Wajumbe waliagiza kila Mheshimiwa Diwani ambaye mradi utatekelezwa kwenye Kata aandikiwe barua na nakala apewe Mkuu wa Wilaya ya Morogoro kwa taarifa.

Baada ya mjadala Wajumbe waliipokea taarifa na kuiridhia.

HMM/TACTIC/04/  
2021/2022  
Kufunga kikao.

Kabla ya kufunga kikao Mwenyekiti aliwakaribisha Viongozi wa Dini ili kuomba dua.

Baada ya dua Mwenyekiti aliwashukuru Wajumbe kwa kuchangia hoja mbalimbali zilizojadiliwa. Alifunga kikao saa 09:20 alasiri.

Muhtasari umethibitishwa tarehe.....

19/01/2022



Mhe. Albert Msando  
MKUU WA WILAYA  
**MWENYEKITI**

**MKUU WA WILAYA  
MOROGORO**



Ndg. Ally H. Machela  
MKURUGENZI WA MANISPAA  
**KATIBU**

**MKURUGENZI WA MANISPAA  
MOROGORO**

MRADI WA USHINDANI KATIKA UBORESHAJI WA MIUNDOMBINU KWENYE MUJI YA TANZANIA  
(TACTIC)

UPEMBUZI YAKINIFU, USANIFU, TATHMINI ZA ATHARI KWA MAINGIRA NA JAMII, UANDAAJI WA GHARAMA ZA MRADI NA UANDAAJI WA ZABUNI KWA AJILI YA UBORESHAJI WA MIUNDOMBINU  
KATIKA HALMASHAURI ZA MANISPAA ZA  
MOROGORO, SONGEA, SUMBAWANGA NA MBEYA (TACTIC KANDA Na: 3)

MAHUDHURIO KWA AJILI YA: MIKUTANO, USHAURI NA MAHOJIANO

HALMASHAURI YA MANISPAA/JUJI: MOROGORO MSHAURI:..... NORPLAN

MTAA/KATA: Kinno

No	JINA	TAASISI	WADHIFA	SIMU Na:	SAHIHI	TAREHE
1	WINFRED A. KIFAKU	DCI office	D.O.	0768840845	[Signature]	13/1/2022
2	DAVIDSON JEREMIAH	MMC	EMO	0745330172	[Signature]	13/1/2022
3	WAKOBA D. BAZA	MMC	Diwani	0652-430712	[Signature]	13/1/2022
4	ERICK MTAMBI	TARURA	Ab CM	0713 265943	[Signature]	13/01/2022
5	SAMUEL MBOYA	MMC	DIWANI	0983200022	[Signature]	18/01/22
6	SHEIKH RAMADHAN RASHID	BAKWAFA (W)		0782-66746	[Signature]	13/1/22
7	JIJIMA I. KIDUKA	MMC	DIWANI	0789546499	[Signature]	13/1/2022
8	DR. C. b. Ishengena	MMC	Mbunge V/M	0754337770	[Signature]	13/1/2022
9	TAFU H. ALLY	MMC	WEO-KITINDA	0656187535	[Signature]	13/1/2022
10	Eng. Stephen Tungi	MORUMBA	ENGINEER	0753679144	[Signature]	13/01/2022

MRADI WA USHINDANI KATIKA UBORESHAJI WA MIUNDOBINU KWENYE MIJI YA TANZANIA  
(TACTIC)

UPEMBUZI YAKINIFU, USANIFU, TATHMINI ZA ATHARI KWA MAINGIRA NA JAMII, UANDAAJI WA GHARAMA ZA MRADI NA UANDAAJI WA ZABUNI KWA AJILI YA UBORESHAJI WA MIUNDOBINU  
KATIKA HALMASHAURI ZA MANISPAA ZA  
MOROGORO, SONGEA, SUMBAWANGA NA MBEYA (TACTIC KANDA Na: 3)

MAHUDHURIO KWA AJILI YA: MIKUTANO, USHAURI NA MAHOJIANO

HALMASHAURI YA MANISPAA/JILI: MOROGORO MSHAURI:..... NORPLAN

MTAA/KATA: Kinzo

Na	JINA	TAASISI	WADHIFA	SIMU Na:	SAHIHI	TAREHE
1	MARIAM A. MGRISALANI	MORUWASA	Ag. HPDC	0712752887	<i>Mariam</i>	13/01/2022
2	ANNA J. SUSA	MMC	WFO - NJIMPA	0713477914	<i>Anna</i>	13/01/2021
3	PETER KHAMATI	MMC	DIWANI	0657347470	<i>Peter</i>	
4	AMINI A. TUNDA	MMC	DIWANI	0713448156	<i>Amini</i>	13/01/2022
5	SALIM B. MBANU	MMC	DIWANI	0712741245	<i>Salim</i>	11
6	ZAMONYI ABDALA	MMC	DIWANI	0715 859672		
7	MHE LI. COL A. S. MAZORA	MMC	DIWANI	0713443241	<i>Li. Col</i>	13/01/2022
8	RAHMA L. MAUMBA	MMC	DIWANI	0654 438702	<i>Rahma</i>	13/01/2022
9	GRACE L. MUMBAG	MMC	DIWANI	0712393532	<i>Grace</i>	13/01/2022
10	HAMISI KILOKO	MMC	DIWANI	0717663636	<i>Hamisi</i>	13/01/2022



MRADI WA USHINDANI KATIKA UBOSHHAJI WA MIUNDOMBINU KWENYE MUJI YA TANZANIA  
(TACTIC)

UPEMBUZI YAKINIFU, USANIFU, TATHMINI ZA ATHARI KWA MAINGIRA NA JAMII, UANDAAJI WA GHARAMA ZA MRADI NA UANDAAJI WA ZABUNI KWA AJILI YA UBOSHHAJI WA MIUNDOMBINU  
KATIKA HALMASHAURI ZA MANISPAA ZA  
MOROGORO, SONGEA, SUMBAWANGA NA MBEYA (TACTIC KANDA Na: 3)

MAHUDHURIO KWA AJILI YA: MIKUTANO, USHAURI NA MAHOJIANO

HALMASHAURI YA MANISPAA/JILI: MOROGORO MSHAURI:..... NORPLAN

MTAA/KATA: KINDU

Nr	JINA	TAASISI	WADHIFA	SIMU Na:	SAHIHI	TAREHE
1	BISHOP GODFREY SACHABA	ANGELICAN CHURCH	AS KOFU	0759597030	<i>[Signature]</i>	13.01.2022
2	DEAN EMANUEL TENGENEZA	KKKT	M/ASKOFU	0784819166	<i>[Signature]</i>	13-01-2022
3	FRIDA H. MUKWENGA	SABABAB	WEO	0719908150	<i>[Signature]</i>	13/01/2022
4	JUSTA MEDARD	KILAKALA	WEO	0753894547	<i>[Signature]</i>	13/01/2022
5	MARIA G. SHINE	KINGO	WEO	0712524955	<i>[Signature]</i>	13/01/2022
6	MARAM K. NIGORA	ULUWASA WATATA	WEO	0673706039	<i>[Signature]</i>	13/01/2022
7	LIZAN P. KAGOMA	SULTAN AREA	WEO	0714205170	<i>[Signature]</i>	13/01/2022
8	Masanja M. Nkinga	MHC- Marimbu	WEO	0687975100	<i>[Signature]</i>	13.01.2022.
9	MARIA Mwakiboni	TICHA	WEO	0782-79661	<i>[Signature]</i>	13/01/2022
10	BONIPHACE KAPURBE	TARURA MOTO	TICHA (M)	0676754538	<i>[Signature]</i>	13/01/2022

MRADI WA USHINDANI KATIKA UBORESHaji WA MIUNDOMBINU Kwenye MIJI YA TANZANIA  
(TACTIC)

UPEMBUZI YAKINIFU, USANIFU, TATHMINI ZA ATHARI KWA MAINGIRA NA JAMII, UANDAJI WA GHARAMA ZA MRADI NA UANDAJI WA ZABUNI KWA AJILI YA UBORESHaji WA MIUNDOMBINU  
KATIKA HALMASHAURI ZA MANISPAA ZA  
MOROGORO, SONGEA, SUMBAWANGA NA MBEYA (TACTIC KANDA Na: 3)

MAHUDHURIO KWA AJILI YA: MIKUTANO, USHAURI NA MAHOJIANO

HALMASHAURI YA MANISPAA/JUJI: MOROGORO MSHAURI:..... NORPLAN

MTAA/KATA: KIWU

Na	JINA	TAASISI	WADHIFA	SIMU Na:	SAHIHI	TAREHE
1	Latifa Canzel	HALMASHAURI	DIWANI	0684482365	<i>[Signature]</i>	13/1/2022
2	Enefy Mwanakatwe	MMC	MCDO	0765404505	<i>[Signature]</i>	—
3	Jug A. L. Kyamba	RM-TANROADS	Menepi	0765057435	<i>[Signature]</i>	13/1/2022
4	Fay. Sikambale, L. L	loPLU-TANROADS	loPLU	0765509081 0784702104	<i>[Signature]</i>	13.01.2022
5	Eng. Shabani Alimani	TANESCO	Mhandisi	0755-447532	<i>[Signature]</i>	13/01/2022
6	MELCHIOR Mwananyani	MMC	DIWANI	0786091547	<i>[Signature]</i>	13.01.2022
7	GILBERT B. MAFANI	MMC	DIWANI KATA	0717909919	<i>[Signature]</i>	13/01/2022
8	AMINA H. ZIHUYE	MMC	DIWANI	0713382285	<i>[Signature]</i>	13/01/2022
9	Mwanandi E. Ngulungu	MMC	DIWANI	0784-686708	<i>[Signature]</i>	13/01/2022
10	MBILINYI SELESTIN	MMC	DIWANI	076664612	<i>[Signature]</i>	13/01/2022



MRADI WA USHINDANI KATIKA UBORESHAJI WA MIUNDOMBINU KWENYE MUJI YA TANZANIA  
(TACTIC)

UPEMBUIZI YAKINIFU, USANIFU, TATHMINI ZA ATHARI KWA MAINGIRA NA JAMII, UANDAJI WA GHARAMA ZA MRADI NA UANDAJI WA ZABUNI KWA AJILI YA UBORESHAJI WA MIUNDOMBINU  
KATIKA HALMASHAURI ZA MANISPAA ZA  
MOROGORO, SONGEA, SUMBAWANGA NA MBEYA (TACTIC KANDA Na: 3)

MAHUDHURIO KWA AJILI YA: MIKUTANO, USHAURI NA MAHOJIANO

HALMASHAURI YA MANISPAA/JUE: Morogoro MSHAURI:..... NORPLAN

MTAA/KATA: Kiwao

Na	JINA	TAASISI	WADHIFA	SIMU Na:	SAHIHI	TAREHE
1	Albert C. Msando	DC Moko	DC	13/01/2022	<i>[Signature]</i>	
2	Pascal M. Kihanga	MANISPAA Morogoro	MEYA	0715117780	<i>[Signature]</i>	13/01/2022
3	Ally - H. Machelo	MD - Morogoro	MD - Morogoro	0715 48639	<i>[Signature]</i>	13
4	Lt. Col. A.S. Mazoni	Diw. Kawenzi		0713443241	<i>[Signature]</i>	
5	Abdul Aziz Abasi	MP	MP	0784261888	<i>[Signature]</i>	13/1/2022
6	Dr. C. K. Kibenge	MB	MB	0784557770	<i>[Signature]</i>	13/1/2022
7	HAMISI R. MKOMA	NORPLAN	Senior Social Expert	0782 270797	<i>[Signature]</i>	13/1/2022
8	ABDULLAH MEYA	MANISPAA DIWANI	DIWANI	0712995510	<i>[Signature]</i>	13/1/2022
9	ELIKAYUM TIEA	Ag. MNC	Ag. MS	076271939	<i>[Signature]</i>	13/1/2022
10	ALLY RASHIDI			0713 408049	<i>[Signature]</i>	13/1/2022

**MAHUDHURIO YA KIKAO CHA WAJUMBE NA WAADAU WA TACTIC  
TAREHE 13/01/2022**

SN	JINA	CHEO	SAINI
1	Zindung Kombo Silemani	Dinani	
2	ERASMUS HALE	IDS0	
3	HADJA K. HAMISI	WED-MSI MKAU	
4	MARIAM S. RAJABU	WED-MBUTHUNI	
5	MARIAM S. PASIRO	TANZANIA COMMERCIAL BANK (TCB)	
6	CPA, EDWARD B. MALIMWA	MT	
7	RASHID R. MAJESSA	AWANI	
8	Daudi A. Kibwana	CC	
9	Stella Venush	O/A	
10	Eng. Jamini Katakweba	MD-MORUWASA	
11	Joseph Boaz	MENEJA BUSARA	
12	SEHEMANI ALMASI	AFISA MAHUSIANO	

MRADI WA USHINDANI KATIKA UBRESHAJI WA MIUNDOMBINU KWENYE MIJI YA TANZANIA  
(TACTIC)

UPEMBUZI YAKINIFU, USANIFU, TATHMINI ZA ATHARI KWA MAINGIRA NA JAMILI, UANDAAJI WA GHARAMA ZA MRADI NA UANDAAJI WA ZABUNI KWA AJILI YA UBRESHAJI WA MIUNDOMBINU  
KATIKA HALMASHAURI ZA MANISPAA ZA  
MOROGORO, SONGEA, SUMBAWANGA NA MBEYA (TACTIC KANDA Na: 3)

MAHUDHURIO KWA AJILI YA: MIKUTANO, USHAURI NA MAHOJIANO

HALMASHAURI YA MANISPAA/JUE: ..... MOROGORO

MATAA/KATA: ..... SUDAN AREA

MSHAURI:..... NORPLAN

No	JINA	TAASISI	WADHIIFA	SIMU No:	SAHIHI	TAREHE
11	SYLVESTER SIMON		Mjumbie	0713817676	[Signature]	31/12/2021
12	Juma Waziri Ng'andu		Mjumbie	0682413238	[Signature]	31/12/2021
13	REHEMA KIBANIKE		Mjumbie	0914 472569	R.K	31/12/2021
14	FARHA A. SYKES		MJUMBE	0715305990	[Signature]	31/12/2021
5						
6						
7						

J.M. ENINIAJIWA  
SULTANI AREA



MRADI WA USHINDANI KATIKA UBORESHAJI WA MIUNDOMBINU KWENYE MUJI YA TANZANIA  
(TACTIC)

UPEMBUZI YAKINIFU, USANIFU, TATHMINI ZA ATHARI KWA MAINGIRA NA JAMII, UANDAAJI WA GHARAMA ZA MRADI NA UANDAAJI WA ZABUNI KWA AJILI YA UBORESHAJI WA MIUNDOMBINU  
KATIKA HALMASHAURI ZA MANISPAA ZA  
MOROGORO, SONGEA, SUMBAWANGA NA MBEYA (TACTIC KANDA NA: 3)

MAHUDHURIO KWA AJILI YA: MIKUTANO, USHAURI NA MAHOJIANO

HALMASHAURI YA MANISPAA/JUJI: Morogoro MSHAURI:..... NORPLAN

MTAA/KATA: SULTAN AREA

N°	JINA	TAASISI	WADHIFA	SIMU Na:	SAHIHI	TAREHE
1	HAMISI RAMADHANU	SULTAN AREA	M/KITI WAKAMA	0713914807	<i>[Signature]</i>	31-DES-2021
2	MEHAMISI SAADI	SULTAN AREA	M/KITI WAKAMA	0752362404	<i>[Signature]</i>	31/12/2021
3	WAMARA HUSSEIN BUSUKWA	SULTAN AREA	M/KITI WAKAMA	0715677251	<i>[Signature]</i>	31/12/2021
4	LEONARA GEMEREN MUKISHA	SULTAN AREA	M/KITI WA UJAZEE	0658 464649	<i>[Signature]</i>	31/12/2021
5	ELIZABETH A. CHIWAHA	SULTAN AREA	M/KITI WA KOTA	0674966100	<i>[Signature]</i>	31/12/2021
6	GUMA GUMU DITA	SULTAN AREA	M/KITI WA SIMU	0717833987	<i>[Signature]</i>	31/12/2021
7	HAWA UJILLA	SULTAN AREA	MED	0682 600283	<i>[Signature]</i>	31/12/2021
8	ASHA MAKDA	SULTAN AREA	MED	0675 910255	<i>[Signature]</i>	31/12/2021
9	HAPPY NTABAGO	SULTAN AREA	MED	0716 745458	<i>[Signature]</i>	31/12/2021
10	REHEMA KISWANYA	SULTAN AREA	AEK	0715657251	<i>[Signature]</i>	31/12/2021

MRADI WA USHINDANI KATIKA UBORESHAJI WA MIUNDOMBINU KWENYE MUJI YA TANZANIA  
(TACTIC)

UPEMBUZI YAKINIFU, USANIFU, TATHMINI ZA ATHARI KWA MAINGIRA NA JAMII, UANDAAJI WA GHARAMA ZA MRADI NA UANDAAJI WA ZABUNI KWA AJILI YA UBORESHAJI WA MIUNDOMBINU  
KATIKA HALMASHAURI ZA MANISPAA ZA  
MOROGORO, SONGEA, SUMBAWANGA NA MBEYA (TACTIC KANDA NA: 3)

MAHUDHURIO KWA AJILI YA: MIKUTANO, USHAURI NA MAHOJIANO

HALMASHAURI YA MANISPAA/JUJI: Morogoro MSHAURI:..... NORPLAN

MTAA/KATA: SULTAN AREA

N°	JINA	TAASISI	WADHIFA	SIMU Na:	SAHIHI	TAREHE
11	PETER J. DHAHABU	SULTAN AREA	MH. DIWANI	0657347470	<i>[Signature]</i>	21/12/2021
12	LILIAN P. YAGOMA	SULTAN AREA	WED	0714205170	<i>[Signature]</i>	31/12/2021
13	YUSUPH AHMED HUSEIN	SULTAN AREA	MED	0714 947272	<i>[Signature]</i>	31/12/2021
14	BASHIRI ISSA NTATE	SULTAN AREA	MWALIMU	0687500504	<i>[Signature]</i>	31/12/2021
5						
6						

58 MIFANAZIWA  
SULTAN AREA

MRADI WA USHINDANI KATIKA UBORESHAJI WA MIUNDOMBINU KWENYE MIJI YA TANZANIA  
(TACTIC)

UPEMBUZI YAKINIFU, USANIFU, TATHMINI ZA ATHARI KWA MAINGIRA NA JAMII, UANDAAJI WA GHARAMA ZA MRADI NA UANDAAJI WA ZABUNI KWA AJILI YA UBORESHAJI WA MIUNDOMBINU  
KATIKA HALMASHAURI ZA MANISPAA ZA  
MOROGORO, SONCEA, SUMBAWANGA NA MBEYA (TACTIC KANDA Na: 3)

MAHUDHURIO KWA AJILI YA: MIKUTANO, USHAURI NA MAHOJIANO

HALMASHAURI YA MANISPAAJHE: MOROGORO MSHAURI:..... NORPLAN

MTAA/KATA: TUNG'I

Na	JINA	TAASISI	WADHIFA	SIMU Na:	SAHIHI	TAREHE
1	MARIA Mwakibomo	Manispaa Morogoro	WEO	0744-44471	<i>[Signature]</i>	31/12/2021
2	NAMALA MICHUNGU	MANISPAA M DIWANI	DIWANI	095555001	<i>[Signature]</i>	31/12/21
3	RAHMA KIKOTI	MANISPAA MOROGORO	MJUMBE	0712 206251	<i>[Signature]</i>	31/12/2021
4	ZAINAB KAKARABO	MANISPAA MOROGORO	MJUMBE	0655242695	<i>[Signature]</i>	31/12/2021
5	MARIA SHIO	MANISPAA MOROGORO	MJUMBE	0658 113250	<i>[Signature]</i>	31/12/2021
6	SABIR J. KOLONKO	MANISPAA - MOROGORO	MJUMBE	0715-410670	<i>[Signature]</i>	31/12/2021
7	ADAM A. SALUM	MANISPAA MOROGORO	MJUMBE	0684706002	<i>[Signature]</i>	31/12/2021
8	REHEMA S. NAKAPALLA	II	MJUMBE	0786838637	<i>[Signature]</i>	31/12/2021
9	HASSAN S. SHOMARI	II	MJUMBE	079120473	<i>[Signature]</i>	31/12/2021
10	KALIKA WE DEO	- II -	PASTOR	0710411920	<i>[Signature]</i>	31/12/2021

MRADI WA USHINDANI KATIKA UBORSHAJI WA MIUNDOMBINU KWENYE MIJI YA TANZANIA  
(TACTIC)

UPEMBUZI YAKINIFU, USANIFU, TATHMINI ZA ATHARI KWA MAINGIRA NA JAMII, UANDAAJI WA GHARAMA ZA MRADI NA UANDAAJI WA ZABUNI KWA AJILI YA UBORSHAJI WA MIUNDOMBINU  
KATIKA HALMASHAURI ZA MANISPAA ZA  
MOROGORO, SONGEA, SUMBAWANGA NA MBEYA (TACTIC KANDA Na: 3)

MAHUDHURIO KWA AJILI YA: MIKUTANO, USHAURI NA MAHOJIANO

HALMASHAURI YA MANISPAA/HJI: MOROGORO MSHAURI:..... NORPLAN

MFAA/KATA: TUNG-I

Na	JINA	TAASISI	WADHIFA	SIMU Na:	SAHIBI	TAREHE
1	MWANITU SEMBOTO	MANISPAA MOROGORO	C.D.O	0713408009	<i>OB</i>	31/12/2021
2	<i>M. Q. MAMU</i>	MANISPAA MOROGORO	M/M	0452813123	<i>[Signature]</i>	31/12/21
3	Mwasuma S. TENGEN	MANISPAA	M/M	0718401604	<i>MD</i>	31/12/2021
4	FORD B. MWAKILEMBE	MOROGORO MC	AFISA AFYA	0712660895	<i>[Signature]</i>	31/12/2021
5	AMDS MARWA	MOROGORO MC	MED	0787400240	<i>[Signature]</i>	31/12/2021
6	HAILELUSA J. MO	MOROGORO MC	MED	0753129204	<i>[Signature]</i>	31/12/2021
7	HELEN BENJAMIN	MOROGORO MC	AFO	0752985781	<i>[Signature]</i>	31/12/2021
8						
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*[Stamp: AFISA AFYA TUNG-I MOROGORO]*



MRADI WA USHINDANI KATIKA UBORSHAJI WA MIUNDOMBINU KWENYE MUI YA TANZANIA  
(TACTIC)

UPEMBUZI YAKINIFU, USANIFU, TATHMINI ZA ATHARI KWA MAINGIRA NA JAMII, UANDAAJI WA GHARAMA ZA MRADI NA UANDAAJI WA ZABUNI KWA AJILI YA UBORSHAJI WA MIUNDOMBINU  
KATIKA HALMASHAURI ZA MANISPAA ZA  
MOROGORO, SONGEA, SUMBAWANGA NA MBEYA (TACTIC KANDA Na: 3)

MAHUDHURIO KWA AJILI YA: MIKUTANO, USHAURI NA MAHOJIANO

HALMASHAURI YA MANISPAA/HA: MOROGORO MSHAURI:..... NORPLAN

MTAA/KATA: KINGO

No	JINA	TAASISI	WADHIFA	SIMU Na:	SAHIHI	TAREHE
1	KATO KANTABURA	OFISI YA KATA KINGO	MWENYEKITI MWERE	0652007003	<i>[Signature]</i>	01/01/2022
2	JUMANNE S. MOHAMED	-II-	MWENYEKITI MANGO	0784309013	<i>[Signature]</i>	01/01/2022
3	HAWA B. CHANGURU	-II-	MWENYEKITI SALIM ABDULAH	0653-044466	<i>[Signature]</i>	01/01/2022
4	MARIA J. SHINE	-II-	WEO KINGO	0712524955	<i>[Signature]</i>	01/01/2022
5	NANCY BONIFACE	-II-	MEO - KINGO	0710913661	<i>[Signature]</i>	01/01/2022
6	SEZARIA JOSEPH MREMA	-II-	CDO - KINGO	0754886040	<i>[Signature]</i>	01/01/2022
7	MUSA ZIOTA SHIJA	-II-	AFISA AFYA	0719814471	<i>[Signature]</i>	01/01/2022
8	SALIM DANIEL MUMUNYI	-II-	MEO	0655-700283	<i>[Signature]</i>	01/01/2022
9						
10						

**AFISA MTENDAJI  
KATA YA KINGO  
S. B. P. 158  
MOROGORO**

MRADI WA USHINDANI KATIKA UBORESHAJI WA MIUNDOMBINU KWENYE MIJI YA TANZANIA  
(TACTIC)

UPEMBUZI YAKINIFU, USANIFU, TATHMINI ZA ATHARI KWA MAINGIRA NA JAMII, UANDAAJI WA GHARAMA ZA MRADI NA UANDAAJI WA ZABUNI KWA AJILI YA UBORESHAJI WA MIUNDOMBINU  
KATIKA HALMASHAURI ZA MANISPAA ZA  
MOROGORO, SONGEA, SUMBAWANGA NA MBEYA (TACTIC KANDA Na: 3)

MAHUDHURIO KWA AJILI YA: MIKUTANO, USHAURI NA MAHOJIANO

HALMASHAURI YA MANISPAA/JJI: MOROGORO MSHAURI:..... NORPLAN

MTAA/KATA: KINGO

Na	JINA	TAASISI	WADHIFA	SIMU Na:	SAHIHI	TAREHE
1	SALUM Masid Mohamed		mwanao	-	MSid	01/01/2022
2	Rafii Mapambano		-	-	Rafi	01/01/2022
3	JOH REMPTUS MACHY		-	-	JR	01/01/2022
4	STILI V. Ahusi		-	06 8239695	Stili	01/01/2022
5	LUCAS JULIUS		11	0743030060	Lucas	01/01/2022
6	ZAKARIA A. ALLIMANIFI		Mjumbe mtas wa reh	0624271650	Zakaria	01/01/2022
7	JUMMANNE-R. FUSSI		MWANANCHI	0712-466782	JR	01/01-2022
8	JOYCE MATERU		MWANANCHI	0714-065000	Joyce	01/01/2022
9	MKAMITI M. TAMBULU		MWANANCHI	0765121031	Mkamiti	01/01/2022
10	ELIAUSIKU RICHARD		MWANANCHI	0747186933	Eliausiku	01/01/2021

MRADI WA USHINDANI KATIKA UBORESHAJI WA MIUNDOMBINU KWENYE MIJI YA TANZANIA  
(TACTIC)

UPEMBUZI YAKINIFU, USANIFU, TATHMINI ZA ATHARI KWA MAINGIRA NA JAMII, UANDAAJI WA GHARAMA ZA MRADI NA UANDAAJI WA ZABUNI KWA AJILI YA UBORESHAJI WA MIUNDOMBINU  
KATIKA HALMASHAURI ZA MANISPAA ZA  
MOROGORO, SONGEA, SUMBAWANGA NA MBEYA (TACTIC KANDA Na: 3)

MAHUDHURIO KWA AJILI YA: MIKUTANO, USHAURI NA MAHOJIANO

HALMASHAURI YA MANISPAA/JJI: MOROGORO MSHAURI:..... NORPLAN

MTAA/KATA: KINGO

Na	JINA	TAASISI	WADHIFA	SIMU Na:	SAHIHI	TAREHE
1	MUUSA KASITA	MWANANCHI	MWANANCHI	0782141354	M. Kasita	01/01/2022
2	ALISHA YUSUPH		MWANANCHI	0764443223	A. Yusuph	01/01/2022
3						
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5						

AFISA MTENDAJI  
KATA ZA KINGO  
S. L. P. 134  
MOROGORO

MRADI WA USHINDANI KATIKA UBORESHAJI WA MIUNDOMBINU KWIENYE MJI YA TANZANIA  
(TACTIC)

UPEMBUZI YAKINIFU, USANIFU, TATHMINI ZA ATHARI KWA MAINGIRA NA JAMII, UANDAaji WA GHARAMA ZA MRADI NA UANDAaji WA ZABUNI KWA AJILI YA UBORESHAJI WA MIUNDOMBINU  
KATIKA HALMASHAURI ZA MANISPAA ZA  
(MOROGORO, SONGEA, SUMBAWANGA NA MBEYA (TACTIC KANDA N° 3))

MAHUTAHURIO KWA AJILI YA: MURUTANO, UHAJIRI NA MAHUSIANO

HALMASHAURI YA MANISPAA/UTU: MOROGORO MSHAJIRI: NORPLAN

MEAA/KATA: MAZIMBU

N°	JINA	TAASIS	WADHIFA	SIMU N°	SAHIBI	TAREHE
1	Rocky GODFLEY	MAFICIA	MWANAFUNZI	0653321316	R.G. Faustine	30/12/2021
2	ZULFA SELEMANI	MAZIMBU B	MWANAFUNZI	—	Z.S. mahagabi	30/12/2021
3	FAITH NIWANYIKA	DR. MEZGER	MWANAFUNZI	—	F.F. Niwanyika	30/12/2021
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KATA YA MAZIMBU  
MANISPAA MOROGORO  
30/12/2021.

MRADI WA USHINDANI KATIKA UBORSHAJI WA MIUNDOMBINU KIWENYE MIJI YA TANZANIA  
(TACTIC)


UPEMBUZI YAKINIFU, USANIFU, TATHMINI ZA ATHARI KWA MAINGIRA NA JAMILI, UANDAUI WA GHARAMA ZA MRADI NA UANDAUI WA ZABUNI KWA AJILI YA UBORSHAJI WA MIUNDOMBINU  
KATIKA HALMASHAURI ZA MANISPAA ZA  
MOROGORO, SONGEA, SUMBAWANGA NA MBEYA (TACTIC KANDA N° 3)

MAHUCHURIO KISIA AJILI YA: MISUTANO, USHAJI NA MAHOLIANO

HALMASHAURI YA MANISPAA: MOROGORO MSHAJI: NORPLAN

MTAA/KATA: MAZIMBU

N°	JINA	TAARU	WADHIFA	SIMU N°	SAHIBI	TAREHE
1	THEODORA B. MGAJALA		PSW	0658968988	Thm	30/12/2021
2	ADELA P. HILAL		MJUMBE	0785972647	Adm	30/12/2021
3	SHABANI I. BAROTI		MJUMBE	077911155	Shm	30/12/2021
4	FELISIAHA KATABARO		MJUMBE	0713576738	Katabaro	30/12/2021
5	HENRY S. MAPUNDA		MJUMBE	0715705187	Hm	30/12/2021
6	EVOD J. KIDEHA		MJUMBE	0654230944	Evod	30/12/2021
7	MOTAHAMMED MATHEW		MJUMBE	0655327460	Mthm	30/12/2021
8	MARY MWANJELA		MJUMBE	0787633878	Mwyl	30/12/2021
9	WILLY MGOBA		MJUMBE	0682017295	Wm	30/12/2021
10	MARY MWENDA		BALOTI	0719012631	Mm	30/12/2021





MRADI WA USHINDANI KATIKA UBORISHAJI WA MIUNDOMBINU KWENYE MUJI YA TANZANIA  
(TACTIC)

UPEMBEUZI YAKINIFU, USANIFU, TATHMINI ZA ATHARI KWA MAINGIRA NA JAMII, UANDAaji WA GHARAMA ZA MRADI NA UANDAaji WA ZABUNI KWA AJILI YA UBORISHAJI WA MIUNDOMBINU  
KATIKA HALMASHAURI ZA MANISPAA ZA  
MOROGORO, SONGEA, SUMBAWANGA NA MBEYA (TACTIC KANDA N° 3)

MAHUCHURIO KWA AJILI YA: MIBUTANO, UHAJIRI NA MAHODJIANO

HALMASHAURI YA MANISPAA/ISI: **MOROGORO** MESHABU: **NORPLAN**

MTAUKATA: **MAZIMBU**

N°	JINA	TAASISI	WADHIFA	SIMU N°	SAHIBI	TAREHE
1.	KIHEWA BOWARI		MUKTI MTAA	0655-328466	<i>[Signature]</i>	30/12/21
2.	ESTER PAULO		BALORI	0652-847280	<i>[Signature]</i>	30/12/21
3.	JOYCE MDOE		MTJUMBE	0711515560	<i>[Signature]</i>	30/12/21
4.	SHARIFA IKWARI		MTJUMBE	0712945888	<i>[Signature]</i>	30/12/21
5.	PRISCA KIMALLO		MTJUMBE	0714886000	<i>[Signature]</i>	30/12/21
6.	GERMANUS MBIAA		BALORI	0769892052	<i>[Signature]</i>	30/12/21
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*[Circular Stamp: MANISPAA MOROGORO, S. L. 10.6, 30/12/2021]*

MRADI WA USHINDANI KATIKA UBORSHAJI WA MIUNDOMBINU KUWENYE MJI YA TANZANIA  
(TACTIC)


LIPEMBUI YAKINIFU, USANIFU, TATHMINI ZA ATHARI KWIA MAINGIRA NA JAMILI, UANDAAJI WA CHARAMA ZA MRADI NA UANDAAJI WA ZABUNI KWIA AJILI YA UBORSHAJI WA MIUNDOMBINU  
KATIKA HALMAASHAURI ZA MANISPAA ZA  
MOROGORO, SONGEA, SUMBAWANGA NA MBEYA (TACTIC KANDA N° 3)

MAHURUDHURIO KWIA AJILI YA: MRUTANO, USHAURI NA MAHOFIANO

HAJIAASHAURI YA MANISPAA/JILI: MOROGORO MISHAURI: NORPLAN

MAZIMBU

N°	JINA	TAASISI	WADHIFA	SIMU N°	SAHIBI	TAREHI
1	PASCAL KIHABWA	MAZIMBU	DIWANI/MEYA	0715117780	Phiso	30/12/2021
2	Masanga Nkingu	MAZIMBU	WEO	0687975100	J. Nkingu	30/12/2021
3	MAYA S SENGULO	MAZIMBU	MEO	0711901458	M -	30/12/2021
4	FRANCIS LUWANA	MAZIMBU	MEO	0753233409	J. Luwana	30/12/2021
5	NORAH MAMBA	II	MEO	0787-504443	N. Mamba	30/12/2021
6	GRACE NGOTENO	II	CEO	0784321411	G. Ngoteno	30/12/2021
7	ASHA MONA	II	EHO	0712595288	A. Monna	30/12/2021
8						
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 30/12/2021



MAHARID - 30/12/2021 - KIKAO CHA KAMATI YA MAENDELEO YA KATA YA MAZIMBIL.				
JINA	CHED	WATA	NAMBA YA SIMU	SAHHI
1. PASAM M. KIHANGA	DIWANI	Mazimbu	0715117780	at Phungu
2. Masanja Nkinga	WEO	Mazimbu	0687975100	at Phungu
3. HENRY MAPUNDA	MIKITI	RELI	0715705187	Phungu
4. KILEWA BOHORI	MIKITI	Boma (D)	0655-328466	Phungu
5. ESTA PAULO	BAHOZI	BOMABA	0652-847280	Phungu
6. JOYCE MDOE	MJUMBE	MODECO A	0711515560	Phungu
7. RUKIA LWANGA	MEO	RELI NGUZO	0715088082	Phungu
8. MAUA S. SENGULO	MEO	MODECO B	0714-901458	Phungu
9. FRANCIS LWANGA	MEO	MODECO A	0655/854215	Phungu
10. SHARAH I. BAROTI	MJUMBE	MODECO B	0779911151	Phungu
11. ABELA P. HIRAL	MJUMBE	MODECO B	0785972643	Phungu
12. SHARIFA T. IKWABE	MJUMBE	RELI	0712943888	Phungu
13. THEODORE B. MAMAMBA	PSW	MAMAMBA	0658763988	Phungu
14. NORAH MAMBYA	MEO	M/DARATIA/BOMA	0787-504443	Phungu
15. ASHA MUMA	ETHO	KATA	0712595288	Phungu
16. MOHAMMED MAHEMU	MIKITI	Boma B	0655327460	Phungu
17. GERMANUS MGRATA	BAHOZI	MAMAMBA	0769822552	Phungu
18. PRISCA G. KIMAKO	BAHOZI	NGUZO	0714886050	Phungu
19. WILLY MGOBA	MJUMBE	MODECO B	0682017293	Phungu
20. MARY MWENDA	BAHOZI	MODECO A	0719012631	Phungu
21. MARY MWANTELA	MJUMBE	RELI	0787633878	Phungu
22. EVOD J. KIDEITA	MJUMBE	M/DARATIA	0655230944	Phungu
23. FELISIATH E. KATABARO	MJUMBE	NGUZO	0713576738	Phungu
24. LUDOVICK Y. NGARO	BODA	BOMA B	0655-655826	Phungu
25. FAITH F. MWANYIKA	MWANYIKA	MODECO B	0758768988	Phungu

MRADI WA USHINDANI KATIKA UBOSHAIJI WA MIUNDOMBINU KWENYE MUJI YA TANZANIA  
(TACTIC)

UPENDELEZI YAKINIFU, USANIFU, TATHMINI ZA ATHARI KWA MAINGIRA NA JAMII, UANDAaji WA GHARAMA ZA MRADI NA UANDAaji WA ZABUNI KWA AJILI YA UBOSHAIJI WA MIUNDOMBINU  
KATIKA HALIMASHAURI ZA MANISPAA ZA  
MOROGORO, SONGEA, SUMBAWANGA NA MBEYA (TACTIC KANDA N°: 3)

MAHUDHURIO KWA AJILI YA: MIKUTANO, USHAURI NA MAHOJIANO

HALIMASHAURI YA MANISPAA/JUE: Morogoro MSHAUJI:..... NORPLAN

HALIMASHAURI YA MANISPAA/JUE: Morogoro

HALIMASHAURI YA MANISPAA/JUE: Morogoro

NO.	JINA	TAASISI	WADHIFA	SIMU N°:	SAHIHI	TAREHE
1	SAMUEL A. MSUYA	MMC	DIWANI	0783200023	<i>[Signature]</i>	31/12/2021
2	MARIAM S. RABU	MMC	MEO	0715471733	<i>[Signature]</i>	31.12.2021
3	JONATHAN A. MURAGAN	"	Mkazi	0712-049352	<i>[Signature]</i>	" " "
4	JOSEPH X. MAGAZI		MKATI MURAGAN	0715594287	<i>[Signature]</i>	31/12/2021
5	SALYMU S. KIMANJA		Mkati MURAGAN	0655461534	<i>[Signature]</i>	31/12/2021
6	KELLEN J. HURI		Mkati MURAGAN	0655187895	<i>[Signature]</i>	
7	HIZA MAREKA		MEO	0653483632	<i>[Signature]</i>	- 73 -
8	STANLEY R. MURAGAN		MKATI MURAGAN	0752-90146	<i>[Signature]</i>	31/12/2021
9	Mwandambwa Joseph		Mjumbe Bambaone	0715815153	<i>[Signature]</i>	21
10	ALICIA P. MURAGAN		CEO	0713908875	<i>[Signature]</i>	31/12/2021

MRADI WA USHINDANI KATIKA UBORESHAJI WA MIUNDOMBINU KWENYE MIJI YA TANZANIA  
(TACTIC)

UPEMBUZI YAKINIFU, USANIFU, TATHMINI ZA ATHARI KWA MAINGIRA NA JAMILI, UANDAAJI WA GHARAMA ZA MRADI NA UANDAAJI WA ZABUNI KWA AJILI YA UBORESHAJI WA MIUNDOMBINU  
KATIKA HALMASHAURI ZA MANISPAA ZA  
MOROGORO, SONGEA, SUMBAWANGA NA MBEYA (TACTIC KANDA NA: 3)

MAHUDHURIO KWA AJILI YA: MIKUTANO, USHAURI NA MAHOJIANO

HALMASHAURI YA MANISPAA: Morogoro MSHAURI:..... NORPLAN

MTAA/KATA: W. MBUYUNI

N°	JINA	TAASISI	WADHIFA	SIMU NA:	SAHIHI	TAREHE
1	MONICA S. MBAYUNI	MMC	ME0	0718940317	<i>[Signature]</i>	31/12/2021
2	LALLAD MWATAWALA	MMC	ME0	0655233505	<i>[Signature]</i>	31/12/2021
3	JOSEPH Mponzo	NORPLAN	Conselleur	068392580	<i>[Signature]</i>	31/12/2021
4					<i>[Signature]</i>	31/12/2021
5					<i>[Signature]</i>	
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*[Signature]*  
AFISA MTEMBUZI  
KATA YA MBUYUNI

MRADI WA USHINDANI KATIKA UBORESHAJI WA MIUNDOMBINU KWENYE MUJI YA TANZANIA  
(TACTIC)

USHIBUZI YAKINIFU, USANIFU, TATHMINI ZA ATHARI KWA MAINGIRA NA JAMII, UANDAAJI WA GHARAMA ZA MRADI NA UANDAAJI WA ZABUNI KWA AJILI YA UBORESHAJI WA MIUNDOMBINU  
KATIKA HALMASHAURI ZA MANISPAA ZA  
MOROGORO, SONGEA, SUMBAWANGA NA MBEYA (TACTIC KANDA N°: 3)

MAHUDHURIO KWA AJILI YA: MIKUTANO, USHAURI NA MAHOJIANO

HALMASHAURI YA MANISPAA: Morogoro MSHAURI:..... NORPLAN

MTAA/KATA: LA MBUYUNI.

N°	JINA	TAASISI	WADHIFA	SIMU N°	SAHIHI	TAREHE
1	RACHAEL C KEMBELE	—	(MJIUMBE) BARAZA LA WAZEE	0755024430		31/12/2021
2	GRACE J. MAKINGA		MJIUMBE WA MTAA SA BALEL	0658-670490		31-12-2021
3	BANARI H. NYAMWA		K/KATA CCM	0657-481639		31-12-2021
4	NEEMA ROSATI KIRENGA	—	Mama Mwangi mto	0746566415		31-12-2021
5	RIYANA M. MDUMKA	—	MJIUMBE	0652118583		31-12-2021
6	LUCIANA L. FRANCIS	—	MJIUMBE	0713312979	L.L.	31/12/2021
7	HABIBA RAMADHAN		" "	0655653997	R.H	31/12/2021
8	ESTHERIA NAFUHALI		MJIUMBE	0654231910	E.M.	31/12/2021
9	MSAKELE HUSSEIN		" "	0652461355	M.S.K.	31/12/2021
10	DOTO SOIN		" "	0653377159	Soin	31/12/2021



MRADI WA USHINDANI KATIKA UBORESHAJI WA MIUNDOMBINU KWENYE MIJI YA TANZANIA  
(TACTIC)

LIPEMBUIZI YAKINIFU, USANIFU, TATHMINI ZA ATHARI KWA MAINGIRA NA JAMII, UANDAAJI WA GHARAMA ZA MRADI NA UANDAAJI WA ZABUNI KWA AJILI YA UBORESHAJI WA MIUNDOMBINU  
KATIKA HALMASHAURI ZA MANISPAA ZA  
MOROGORO, SONGEA, SUMBAWANGA NA MBEYA (TACTIC KANDA N°: 3)

MAHUDHURIO KWA AJILI YA: MIKUTANO, USHAURI NA MAHOJIANO

HALMASHAURI YA MANISPAA: MOROGORO MSHAURI: NORPLAN

NITAA/KATA: YA MBOYOWI

No	JINA	TAASISI	WADHIFA	SIMU No:	SAHIHI	TAREHE
1	VERONIC KIBASIB			0653076879	V. K	31/12/2021
2	ASHA ABAS			0688275154	A. A	31/12/2021
3	SHANI RUFENHA		MJUMBE	0675485259		31/12/2021
4	SHANI RUFENHA		MJUMBE	0659832384		31/12/2021
5	JASIN J. RULANGA		MJUMBE	0754530672		31/12/2021
6	MDIKA A. SHARANI		BODA	0779-127326		31/12/2021
7	SUKHMAN K. LUKAGO		BODABODA	0655-477321		31/12/21
8	SMIDI I. KINYOGOLI		MKULIMA	0716952795		31/12/2021
9	JAFARI SAID		BODA BODA	0792146353		31/12/2021
10	ABBAS W. CHAMLONDO		KIONGOZI WA DINI	0692858702		31/12/2021

MRADI WA USHINDANI KATIKA UBORESHaji WA MIUNDOMBINU Kwenye Miji ya Tanzania  
(TACTIC)

UPESIMBUZI YAKINIFI, USANIFI, TATHMINI ZA ATHARI KWA MAINGIRA NA JAMII, UANDAAJI WA CHARAMA ZA MRADI NA UANDAAJI WA ZABUNI KWA AJILI YA UBORESHaji WA MIUNDOMBINU  
KATIKA HALMASHAURI ZA MANISPAA ZA  
MOROGORO, SONGEA, SUMBAWANGA NA MBEYA (TACTIC KANDA N°: 3)

MAHUDHURIO KWA AJILI YA: MIKUTANO, USHAURI NA MAHOJIANO

HALMASHAURI YA MANISPAA/REGI: MOROGORO MSHAURI:..... NORPLAN

MTAA/KATA: JK Morogoro

N°	JINA	TAASISI	WADHIFA	SIMU N°:	SAMIHI	TAREHE
1	AYOUB IMAIL		MKAZI	0656006848	AJUBU	31/12/2021
2	DAUDI PETER		MKAZI	0621580510	DAUD	31/12/2021
3	ASHA SERA		MTUMBE	0714 596959	A	31/12/2021
4	FATOMA ALLY		MKAZI	0713010114	F.A	31/12/2021
5	JOSEPH NESPHERY		MKAZI	0676503572	J. Nespbery	31/12/2021
6	CHRISTINA SEVERIN		MKAZI	0673049780	C. Severin	31/12/2021
7	HUSNA BASHIRU		MKAZI	-		31/12/2021
8	ASHURA MUMBA		MKAZI	0655 514893	A	31/12/2021
9	PILI NGOMA		- 11 -	0718604959	Pigema	31/12/2021
10	KWADRU KUDRA		- 11 -	0718604959	KUDRA	31/12/2021



MRADI WA USHINDANI KATIKA UBORESHAJI WA MIUNDOMBINU KWENYE MUJI YA TANZANIA  
(TACTIC)

UPEMBUZI YAKINIFU, USANIFU, TATHMINI ZA ATHARI KWA MAINGIRA NA JAMII, UANDAAJI WA GHARAMA ZA MRADI NA UANDAAJI WA ZABUNI KWA AJILI YA UBORESHAJI WA MIUNDOMBINU  
KATIKA HALMASHAURI ZA MANISPAA ZA  
MOROGORO, SONGEA, SUMBAWANGA NA MBEYA (TACTIC KANDA Na: 3)

MAHUDHURIO KWA AJILI YA: MIKUTANO, USHAURI NA MAHOJIANO

HALMASHAURI YA MANISPAA/JUJI: Morogoro MSHAURI: NORPLAN

MTAA/KATA: JA. Mbezi

No	JINA	TAASISI	WADHIFA	SIMU Na:	SAMIHI	TAREHE
1	AMINA R.T. KITEA		MKAZI			31/12/2021
2	MARIAM STEVEN		- II -	0689913851	M. Steven	31/12/2021
3	CHARITA MPPUNDA		- II -	065831564	S. M	31/12/2021
4	ZUWENA JUMANE		- II -	0752201901	Z. J	31/12/2021
5	PANKRATIA LINYATA		- II -		P. L	31/12/2021
6	KURWA BIHALI		MWALIMU	0757004156		31/12/2021
7	STABANI K. MPTO		Boda	0683 021471		31/12/2021
8	RAPHAEL M. RAPHAEL		Balozi	0674361339		31/12/2021
9	Shafiq Hassan			0712994982		31/12/2021
10	AMINA .I. MALIGO			0759784940	A.I. Maligo	31/12/2021

MRADI WA USHINDANI KATIKA UBORESHAJI WA MIUNDOMBINU KWENYE MUJI YA TANZANIA  
(TACTIC)

LIFEMBUZI YAKINIFU, USANIFU, TATHMINI ZA ATHARI KWA MAINGIRA NA JAMILI, UANDAAJI WA GHARAMA ZA MRADI NA UANDAAJI WA ZABUNI KWA AJILI YA UBORESHAJI WA MIUNDOMBINU  
KATIKA HALMASHAURI ZA MANISPAA ZA  
MOROGORO, SONGEA, SUMBAWANGA NA MBEYA (TACTIC KANDA N°: 3)

MAHUDHURIO KWA AJILI YA: MIKUTANO, USHAURI NA MAHOJIANO

HALMASHAURI YA MANISPAA/JIRI: MOROGORO MSHAURI: NORPLAN

MTAA/KATA: ya Mbuyuni

N°	JINA	TAASISI	WADHIFA	SIMU N°:	SAHIHI	TAREHE
1	MENDRADO SHITILI		MKAZI	0713129043	MENDRADO	31/12/2021
2	NALMA A. KINYUGUZI		- " -	-		31/12/2021
3	JENIFA WILLIAM		- " -	-	JENIFA	31/12/2021
4	MAIFE ALIY		- " -	0782269749	M.A. SHARIFE	31/12/2021
5	JACKSON JACOB		- " -	0782134944		31/12/2020
6	SOFIA JEREMIA		- " -	0784012611	S.J	31/12/2021
7						
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 M. A. SHARIFE  
 M. A. SHARIFE  
 M. A. SHARIFE

MBADI WA USHINDANI KATIBA UBORESHALI WA MIUNDOMBEU KIRENYE MJI YA TANZANIA  
(TACTIC)

UREMBAZI VAKINDU, USANIFU, TATHMINI ZA ATHABI KWA MAINGIRI NA JAMULI UANDAAJI WA GHARAMA ZA MBADI NA UANDAAJI WA ZABUNI KWA AJILI YA UBORESHALI WA MIUNDOMBEU  
KATIBA HAMAHAJURI ZA MANDARI ZA  
MOROGORO, SONGEA, SUMBAWANGA NA MBEYA (TACTIC KANDA NA 3)

KWAJILINDO (KWA AJILI YA MISTAKINDO UHARU) NA MANDARINI

WICHAJIRI: **MOROGORO** KANDA: **MWEMBE-SONGE**

KWAJILINDO: **NORPLAN**

NO	JINA	TAARU	WADHIFA	UMU PIR	SAHIBI	TAKHIE
1	ALLY R. KALUNGUWA	OFISI YA KATA	DUKA NJI KATIBI	0713 409049	A	31/12/2021
	AMINA S. MTHINA	OFISI YA KATA	MTIENDAJI KATA	0685 424272	Alfauzi	31/12/2021
	TULI B. MBAGA	—	MEO	0913 444161	Blubaga	31/12/2021
	PETRO J. MARANDA	—	MEO	0715 659370	—	31/12/2021
	MARIAM K. NCHAN	OFISI TA KATA	MEO	0673 706331	Ngunda	31/12/2021
	EMILIANA J. MITHA	OFISI YA KATA	MEO	0625 010627	Baraka	31/12/2021
	BAINESS C. NEMBAKHERA	OFISI YA KATA	MEO	0686 714525	Mtambaka	31/12/2021
	Dafnu Mjama	ofisi ya kata	MEO	0653 177475	Dafny	31/12/2021
	ANNA MISHAMBO	ofisi ya kata	PAFO	0784 556531	A. Jando	31/12/2021
	AURELIAN PHILIPPO	OFISI YA KATA	M/KATI	0716 816869	Admire	31/12/2021

31 DEC 2021  
P.O. BOX 186  
MOROGORO

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NO	NAME	LOCATION	CONTACT	PHONE	DATE	STATUS
1	ROSE HIRIOMWANA		M/KITU	0717137787	31/12/2021	
2	PILI SHIRIMWANA		BALOTI	07169000	31/12/2021	
3	PUS LAMWANA			071583879		
4	MUSHEKURU KUMWANA	MUSHEKURU		07542440	31/12/2021	
5	HASHIM SIKUMWANA	MUSHEKURU	M/KITU	071913670	31/12/2021	
6	JUMA S. SETH	MUSHEKURU	M/KITU	07122278	31/12/2021	
7	HASHIMU BITO		M/KITU	071430483		
8	SATUM NUYA		MUSHEKURU	06777707	31/12/2021	
9	HUSSEIN SAMU		MUSHEKURU	06874400	31/12/2021	
10	NASSORO SAMU		M/KITU	073759030	31/12/2021	
11	MUHAMMAD S. KUMWANA		M/KITU	06990305	31/12/2021	
12	OLISE RASHID		M/KITU	07167000	31/12/2021	
13	IBRAHIM MADUSA	SHIRIMWANA	MUSHEKURU	067330078	31/12/2021	
14	PETER ATANAS	MUSHEKURU	BALOTI	07169888	31/12/2021	
15	D.S. MUSELWA		MUSHEKURU	071430483		
16	HASHIM S. KUMWANA		MUSHEKURU	07167000	31/12/2021	
17	HASSANI KUSE		MUSHEKURU	07170635	31/12/2021	
18	MUHAMMAD KUMWANA		MUSHEKURU	06740030	31/12/2021	
19	ABDUL WAHAB KUMWANA		MUSHEKURU	06520500	31/12/2021	



MUSHEKURU						
NO	NAME	LOCATION	CONTACT	PHONE	DATE	STATUS
1	MUHAMMAD KUMWANA	MUSHEKURU	M/KITU	0717155557	31/12/2021	
2	ANISA KACHU	MUSHEKURU	M/KITU	06860000	31/12/2021	
3	MUHAMMAD KACHU	MUSHEKURU	M/KITU	0655129393	31/12/2021	
4	AMINA H. TINDO	MUSHEKURU	MUSHEKURU	071823006	31/12/2021	
5	ANNA P. MULO	MUSHEKURU	MUSHEKURU	071823006	31/12/2021	
6	FRANCIS MULO	MUSHEKURU	MUSHEKURU	071823006	31/12/2021	
7	TWANA ALL RAMADHAN	MUSHEKURU	MUSHEKURU	06823928	31/12/2021	
8	CHAMA KACHU	MUSHEKURU	MUSHEKURU	071430483	31/12/2021	
9	MUHAMMAD S. KUMWANA	MUSHEKURU	MUSHEKURU	06544814	31/12/2021	
10	MUHAMMAD S. KUMWANA	MUSHEKURU	MUSHEKURU	07133070	31/12/2021	
11	OMAR K. KACHU	MUSHEKURU	MUSHEKURU	071823006	31/12/2021	
12	MUHAMMAD KACHU	MUSHEKURU	MUSHEKURU	06554014	31/12/2021	



MAHIDHURIO YA MJIUTANO WA MRADI WA USHINDANI KATIKA UBORERHAJI WA MUNDOMBINU KUTIKA (NORPLAN) TAREHE 31/12/2021			
JINA	CEO	NO. SIMU	SAINI
01 M.H. HASSAN MARINGO	MWENYETU	0655290403	
02 PATRICK SICHONE	KATIBU	0654380777	<i>Pat</i>
03 KHERI MGOITO	MJUMBE	0653749202	<i>Kheri</i>
04 F.M. CAMERON	"	0654134360	<i>F.M.</i>
05 KIBWANA MWAJIBU	"	0712-889964	<i>Kibwana</i>
06 ILLUMINATI MARIKWA	AFISA AFYA	0768170961	<i>ILLUMINATI</i>
07 NASRA S MAYUNGO	CEO	0789553534	<i>Nasra</i>
08 TULIA ISSA	MJUMBE	0788572181	<i>Tulia</i>
09 ARNOLD BENEDICT	CEO	0655530044	<i>Arnold</i>



MRADI WA USHINDANI KATIKA UBORERHAJI WA MUNDOMBINU KWENYE MJI YA TANZANIA  
(TACTIC)

UPOMBEU YAMIFU, UAMIFU, TATHMINI ZA ATHARI KWA MANDARA NA JAME, DANDAALI WA CHARANA ZA MRADI NA DANDAALI WA JAZIRI KWA AJILI YA UBORERHAJI WA MUNDOMBINU  
KATIKA MAMASHAURI ZA MANDARA ZA  
MOROGORO, SONGEA, SUMBAWANGA NA MBEYA (TACTIC KANDA NA 3)

MAHIDHURIO KIBIJI YA: MJIUTANO, UHAJIRI NA MAHOJIANO

HADHARAUZI YA MANDARA: MOROGORO MSHABIRI: NORPLAN

MTAAKATA: MJI Mkuu

NO	JINA	TAARU	WACHIFA	SIMU NO	SAINI	TAREHE
1	M.H. HASSAN MARINGO	MJI Mkuu	M.H. HASSAN MARINGO	0655290403	<i>M.H.</i>	31/12/2021
2	PATRICK SICHONE	MJI Mkuu	I.WEO	0654380777	<i>Pat</i>	31/12/2021
3	KHERI MGOITO	MJI Mkuu	MWENYETU	0653749202	<i>Kheri</i>	31/12/2021
4	F.M. CAMERON	MJI Mkuu	M.H.T	0654134360	<i>F.M.</i>	31/12/2021
5	KIBWANA MWAJIBU	MJI Mkuu	M.JUMBE	0712-889964	<i>Kibwana</i>	31/12/2021
6	ILLUMINATI MARIKWA	J	AFISA AFYA	0768170961	<i>ILLUMINATI</i>	31/12/2021
7	ARNOLD BENEDICT	" - "	CEO	0655530044	<i>Arnold</i>	31/12/2021
8	NASRA S MAYUNGO	" - "	MJUMBE	0789553534	<i>Nasra</i>	31/12/2021
9	TULIA ISSA	" - "	MJUMBE	0788572181	<i>Tulia</i>	31/12/2021



MRADI WA USHINDANI KATIKA UBORSHAJI WA MIUNDOMBINU KWENYE MIJI YA TANZANIA  
(TACTIC)

UPENDELEZI YAKINIFU, USANIFU, TATHMINI ZA ATHARI KWA MAINGIRA NA JAMILI, UANDAJI WA GHARAMA ZA MRADI NA UANDAJI WA ZABUNI KWA AJILI YA UBORSHAJI WA MIUNDOMBINU  
KATIKA HALMASHAURI ZA MANISIPAA ZA  
MOROGORO, SONGEA, SUMBAWANGA NA MBEYA (TACTIC KANDA No: 3)

MAHUDHURIO KWA AJILI YA: MIKUTANO, USHAURI NA MAHOJIANO

HALMASHAURI YA MANISIPAA/JILI: MOROGORO MSHAURI: NORPLAN

MTAA/KATA: KIHONDA

No	JINA	TAASISI	WADHIFA	SIMU No:	SAHIBI	TAREHE
1	HAMIS A. KILONGO	DIWANI	DIWANI	071766026	Hamis	31/12/2021
2	JATU H. ALU	KIHONDA WARD	WEO	065613755	Jatu	31/12/2021
3	ASHERI M. NDAHANI	KIHONDA WARD	Mikiti	075465043	Asher	31/12/2021
4	JUMA J. ALU	MAGEERZA	Mikiti	07699557	Juma	31/12/2021
5	HASSANI MHINA	KIHONDA	Mikiti	0717,005919	Hassani	31/12/2021
6	CLARENCE JUNGULU	YESPA	Mikiti	0756835155	Clarence	31/12/2021
7	BONIFASI L. NGOFU	KIEGEA'A	Mikiti	0768396287	Bonifasi	31/12/2021
8	CHEKA WAZIRI	KILIMANJARO	MEO	0687832521	Cheka	31/12/2021
9	EZRA C. MWAYA	KIHONDA WARD	JWO	0712560040	Ezra	31/12/2021
10	SHA A. NYUNYE	MAGEERZA	MEO	0675672574	Sha	31/12/2021

MRADI WA USHINDANI KATIKA UBORSHAJI WA MIUNDOMBINU KWENYE MIJI YA TANZANIA  
(TACTIC)

UPENDELEZI YAKINIFU, USANIFU, TATHMINI ZA ATHARI KWA MAINGIRA NA JAMILI, UANDAJI WA GHARAMA ZA MRADI NA UANDAJI WA ZABUNI KWA AJILI YA UBORSHAJI WA MIUNDOMBINU  
KATIKA HALMASHAURI ZA MANISIPAA ZA  
MOROGORO, SONGEA, SUMBAWANGA NA MBEYA (TACTIC KANDA No: 3)

MAHUDHURIO KWA AJILI YA: MIKUTANO, USHAURI NA MAHOJIANO

HALMASHAURI YA MANISIPAA/JILI: MOROGORO MSHAURI: NORPLAN

MTAA/KATA: KIHONDA

No	JINA	TAASISI	WADHIFA	SIMU No:	SAHIBI	TAREHE
1	ASHA KHATIBU			0789-032903	A. KHATIBU	31-12-2021
2	FATUMA R. MISAHE			0743656637	Fatuma	31/12/2021
3	ABDULLAH ABSSAN			075122235	Abdullah	31/02/2021
4	KHARIMA KAMOTE			—	Kharamote	31/02/2021
5	Ramadhani S.MUNO				Ramadhani	31/02/2021
6	IDA S. KIDANGA			065544057	Ida	31/12/2021
7	A.A. NYIKA			0655401125	A.A. Nyika	31/12/2021
8	KASUTI NDUNGURU			0755459954	Kasuti	31/12/2021
9	SALIM T. CHAGGA			071369787	Salim	
10	WANJA J. MOHEDI			0653832391	Wanja	31/12/2021

MRADI WA USHINDANI KATIKA UBORSHAJI WA MIUNDOMBINU KWENYE MJI YA TANZANIA  
(TACTIC)

UPEMBUI YAKINIFU, USANIFU, TATHMINI ZA ATHARI KWA MAINGIRA NA JAMII, UANDAAJI WA GHARAMA ZA MRADI NA UANDAAJI WA ZABUNI KWA AJILI YA UBORSHAJI WA MIUNDOMBINU  
KATIKA HALMASHAURI ZA MANISPAA ZA  
MOROGORO, SONGEA, SUMBAWANGA NA MBEYA (TACTIC KANDA Na: 3)

MAHUDHURIO KWA AJILI YA: MIKUTANO, USHAURI NA MAHOJIANO

HALMASHAURI YA MANISPAA/JILI: MOROGORO MSHAURI:..... NORPLAN

MTAA/KATA: KWU

Na	JINA	TAASISI	WADHIFA	SIMU Na:	SAHIHI	TAREHE
1	JOEL ALBERT KISOME	MMC	DIWANI	07189737A8		13/1/2022
2	ZUBERU G. MICALABORO	MMC	DIWANI	0693998665		13/1/2022
3	ELI HATUWI NDWATO	MMC	DIWANI	071680454		13/1/2022
4	MCH THOMAS BURABILI	MMC	DIWANI	071770776		13/01/2022
5	ABDALLAH CHAMUSHA	MMC	DIWANI	071204034		13/01/2022
6	SALUM CHUNGA	MMC	DIWANI	0714182158		13/01/2022
7	NAMALA J. MCHAMUSHA	MMC	DIWANI	0755555065		13/01/22
8	JEREMIAH WBELEJE	MMEC	MESO	0787396476		13/01/22
9	ELI JUMA LUMU	MMC	DIWANI	0754943229		13/1/2022
10	EMELINE E. KIKUNDA	MMC	MESO	0754949216		13/1/2022

MRADI WA USHINDANI KATIKA UBORSHAJI WA MIUNDOMBINU KWENYE MIJI YA TANZANIA  
(TACTIC)

UPEMBUZI YAKINIFU, USANIFU, TATHMINI ZA ATHARI KWA MAINGIRA NA JAMII, UANDAAJI WA GHARAMA ZA MRADI NA UANDAAJI WA ZABUNI KWA AJILI YA UBORSHAJI WA MIUNDOMBINU  
KATIKA HALMASHAURI ZA MANISPAA ZA  
MOROGORO, SONGEA, SUMBAWANGA NA MBEYA (TACTIC KANDA Na: 3)

MAHUDHURIO KWA AJILI YA: MIKUTANO, USHAURI NA MAHOJIANO

HALMASHAURI YA MANISPAA/JILI: MOROGORO MSHAURI:..... NORPLAN

MTAA/KATA: KITOMPA

No	JINA	TAASISI	WADHIFA	SIMU Na:	SAHIHI	TAREHE
1	Rukia Ramadhani Mwananchi		Mwananchi	0783 469728	Rukia	31/12/2021
2	Supan Aliy		mwananchi	0656664260	Aliy	31/12/2021
3	Haji Rashid Sakum		mwananchi	078616278	Haji	31/12/2021
4	Odilia Thomas		"	071271089	Thomas	31/12/2021
5	EVONIA NDOGOI		MWANANCHI	0713736938	Evonia	31/12/2021
6	CHEKA MWINYI		MWANANCHI	0717750621	Cheka	31/12/2021
7	BERNADA LUSIAN		MWANANCHI	0555274958	Berna	31/12/2021
8	ASHA KHATIBU		MWANANCHI	0678435407	Asha	31/12/2021
9	JOHN MAGOA		"	0784510125	John	"
10	MWANAISHA		MWANANCHI	0678306819	Mwanaisha	31/12/2021

MRADI WA USHINDANI KATIKA UBORSHAJI WA MIUNDOMBINU KWENYE MIJI YA TANZANIA  
(TACTIC)

UPEMBUZI YAKINIFU, USANIFU, TATHMINI ZA ATHARI KWA MAINGIRA NA JAMII, UANDAAJI WA GHARAMA ZA MRADI NA UANDAAJI WA ZABUNI KWA AJILI YA UBORSHAJI WA MIUNDOMBINU  
KATIKA HALMASHAURI ZA MANISPAA ZA  
MOROGORO, SONGEA, SUMBAWANGA NA MBEYA (TACTIC KANDA Na: 3)

MAHUDHURIO KWA AJILI YA: MIKUTANO, USHAURI NA MAHOJIANO

HALMASHAURI YA MANISPAA/JILI: MOROGORO MSHAURI:..... NORPLAN

MTAA/KATA: KITOMPA

No	JINA	TAASISI	WADHIFA	SIMU Na:	SAHIHI	TAREHE
1	ANIFA MOHAMED		MWANANCHI	0985 799525	Anifa	
2	PEGEC EDWARD KILALA		MWANANCHI	0656662661	Pegec	31/12/2021
3	GRACE P. MUGENDO		MWANANCHI	0716 505846	Grace	31/12/2021
4	JOHN RUFIN		MWANANCHI	0782637325	John	31/12/2021
5	MICHAEL - MUSA		MWANANCHI	-	MUSA	31/12/2021
6	MOHAMED ABDELH		MWANANCHI	0717332052	Mohamed	31/12/2021
7	BOAZ MUSIBI		MWANANCHI	0716614977	Boaz	31/12/2021
8	PETRO PATRICK		MWANANCHI	0783826683	Petro	31/12/2021
9	JOVIN B. DALMAT		MWANANCHI	0787097128	Jovin	31/12/2021
10	BOAZ BIKI		MWANANCHI	0785596644	Boaz	31/12/2021



MRADI WA USHINDANI KATIKA UBOSHHAJI WA MIUNDOMBINU KWENYE MIJI YA TANZANIA  
(TACTIC)

UPEMBUZI YAKINIFU, USANIFU, TATHMINI ZA ATHARI KWA MAINGIRA NA JAMILI, UANDAAJI WA GHARAMA ZA MRADI NA UANDAAJI WA ZABUNI KWA AJILI YA UBOSHHAJI WA MIUNDOMBINU  
KATIKA HALMASHAURI ZA MANISPAA ZA  
MOROGORO, SONGEE, SUMBAWANGA NA MBEYA (TACTIC KANDA NA: 3)

MAHUDHURIO KWA AJILI YA: MIKUTANO, USHAURI NA MAHOJIANO

HALMASHAURI YA MANISPAA/JUE: Morogoro MSHAURI:..... NORPLAN

MTAA/KATA: Kihonda

No	JINA	TAASISI	WADHIFA	SIMU Na:	SAHIHI	TAREHE
1	APSSOLO CHRISTOPHER			0657 20840	N. DOCKA	31/12/2021
2	SUMA BAKARI		MSUMBE	0656 860427	S. BAKARI	31/12/2021
3	DAVID M. MWAKIINYA		MIKITA M KWA	0714867146	Muta	31/12/2021
4	Alimadi Juma		MSumbe	0715671528	Alimadi	31/12/2021
5	SEBASTIAN K. MUKANYULO		MSumbe	0715-500304	Sebastian	31/12/2021
6	SHOMARI AMANI		MSumbe	0715-445455	Shomari	31/12/2021
7	SOSTHENES KAVULA		MSumbe	0784513434	Sosthenes	31/12/2021
8	MOHAMED SALUM		MSumbe	0752005350	Mohamed	31/12/2021
9	CHALE MIZAMBA		MSumbe	0714510644	Chale	31/12/2021
10	ASHA MARIOLA		MUHAMMADI	0714 946616	Asha	31/12/2021

MRADI WA USHINDANI KATIKA UBOSHHAJI WA MIUNDOMBINU KWENYE MIJI YA TANZANIA  
(TACTIC)

UPEMBUZI YAKINIFU, USANIFU, TATHMINI ZA ATHARI KWA MAINGIRA NA JAMILI, UANDAAJI WA GHARAMA ZA MRADI NA UANDAAJI WA ZABUNI KWA AJILI YA UBOSHHAJI WA MIUNDOMBINU  
KATIKA HALMASHAURI ZA MANISPAA ZA  
MOROGORO, SONGEE, SUMBAWANGA NA MBEYA (TACTIC KANDA NA: 3)

MAHUDHURIO KWA AJILI YA: MIKUTANO, USHAURI NA MAHOJIANO

HALMASHAURI YA MANISPAA/JUE: Morogoro MSHAURI:..... NORPLAN

MTAA/KATA: Kihonda

No	JINA	TAASISI	WADHIFA	SIMU Na:	SAHIHI	TAREHE
1	M. Salum Chohola	Bahizi		0655560234		31/12/2021
2	Ramadhani			090714734851		31/12/2021
3	AMASHA MTEMKELE			0655 210073 0655965433		31/12/2021
4	AGNES KASWALALA			0692636448		31/12/2021
5	MUSTAFA KAMOTE			0657940066		31/12/2021
6	IDDI MTAALI	MSIKITI	IMAMU MSABIRI	0719121994	Mtelleu	31/12/2021
7						
8						
9						
10						

AFISA MTAALI  
KATA KIHONDA  
ELP  
AFISA MTAALI  
KATA KIHONDA  
ELP

MRADI WA USHE: DANI KATIKA UBORESHAJI WA MIUNDOMBINU KWENYE MUJI YA TANZANIA  
(TACTIC)

UPEMBUZI YAKINIFU, USANIFU, TATHMINI ZA ATHARI KWA MAINGIRA NA JAMII, UANDAAJI WA GHARAMA ZA MRADI NA UANDAAJI WA ZABUNI KWA AJILI YA UBORESHAJI WA MIUNDOMBINU  
KATIKA HALMASHAURI ZA MANISPAA ZA  
MOROGORO, SONGEA, SUMBAWANGA NA MBEYA (TACTIC KANDA N°: 3)

MAHUDHURIO KWA AJILI YA: MIKUTANO, USHAURI NA MAHOJIANO

HALMASHAURI YA MANISPAA/JJJE: Morogoro MSHAURI:..... NORPLAN

MTAA/KATA: Kihonda

N°	JINA	TAASISI	WADHIFA	SIMU N°:	SAHIHI	TAREHE
1	HANAYIA SINGEA	KIHONDA KATA	MEO	0639 624641		31-12-2021
2	TUSEKILE MWAMBUNJI	MANISPAA KIHONDA KATA	ALGO-CHIEF (AO)	0714550630		31/12/2021
3	MARIAM MKAMBILA	KIHONDA KATA	MEO	0657-252440		31/12/2021
4	GEORGEY GELUKWA	KIHONDA KATA	MEO	0656 957424		31/12/2021
5						
6						
7						
8						
9						
10						

KATA - KIHONDA  
S.L.P. 106 MOROGORO

KATA - KIHONDA  
S.L.P. 106 MOROGORO

MRADI WA USHINDANI KATIKA UBORSHAJI WA MIUNDOMBINU KWENYE MIJI YA TANZANIA  
(TACTIC)

UPEMBUZI YAKINIFU, USANIFU, TATHMINI ZA ATHARI KWA MAINGIRA NA JAMII, UANDAAJI WA GHARAMA ZA MRADI NA UANDAAJI WA ZABUNI KWA AJILI YA UBORSHAJI WA MIUNDOMBINU  
KATIKA HALMASHAURI ZA MANISPAA ZA  
MOROGORO, SONGEA, SUMBAWANGA NA MBEYA (TACTIC KANDA N°: 3)

MAHUDHURIO KWA AJILI YA: MIKUTANO, USHAURI NA MAHOJIANO

HALMASHAURI YA MANISPAA/JIDI: MOROGORO MSHAURI:..... NORPLAN

MTAA/KATA: MJIMPIYA

No	JINA	TAASISI	WADIHIFA	SIMU No:	SAHIHI	TAREHE
1	Emmanuel MILISA		XIKITI	0719555411		31/12/2021
2	REHEMA - D. MAFUMA		M/KITI	0718525318	R. Mafuma	31/12/2021
3	ZATUNI RAFABU		MJUMBE	0656981996		31/12/2021
4	ASIA MOHAMED		M/KITI	0718 54 5544		31/12/2021
5	MAIMUNA CHAR		MJUMBE	0659-193232		31/12/2021
6	Shahin A. Mafuma		M/KITI	0787-459191		31/12/2021
7	LINNAH H. LYIMO		K/M.KITI	0679410371		31/12/2021
8	ISSA H. KUKWA		M/KITI	0655377777		31/12/2021
9	SHIRAZI DAUD		MJUMBE	0712578020		31/12/2021
10	FATUMA R. NGAWEMBISA		MJUMBE	0652443111		31/12/2021

IFISA MIUNDOMBINU  
KATA YA MJIMPIYA



MRADI WA USHINDANI KATIKA UBORESHAJI WA MIUNDOMBINU KWENYE MJI YA TANZANIA  
(TACTIC)

UPEMBUZI YAKINIFU, USANIFU, TATHMINI ZA ATHARI KWA MAINGIRA NA JAMII, UANDAAJI WA GHARAMA ZA MRADI NA UANDAAJI WA ZABUNI KWA AJILI YA UBORESHAJI WA MIUNDOMBINU  
KATIKA HALMASHAURI ZA MANISPAA ZA  
MOROGORO, SONGEA, SUMBAWANGA NA MBEYA (TACTIC KANDA Na: 3)

MAHUDHURIO KWA AJILI YA: MIKUTANO, USHAURI NA MAHOJIANO

HALMASHAURI YA MANISPAA/UT: MOROGORO MSHAURI:..... NORPLAN

MTAA/KATA: MJIMPIA

Na	JINA	TAASISI	WADHIFA	SIMU Na:	SAHIHI	TAREHE
1	DDI AHMAD		M/Kiti	0715381225		31/12/2021
2	ANNA J. SWAI		WEO	0713477414	JS	31/12/2021
3	KASSIM R. LUKINGA		M/Kiti	0719426541		31/12/2021
4	WEMA - H. JUSUPH		MJUMBE	0718436334		31/12/2021
5	LEAH WILLIAM		MJUMBE	0685890100		31/12/2021
6	FARAJI B DUMBA		MJUMBE	0718140114		31/12/2021
7	MARYCLAUDE KABANO		meo	0713371128		31/12/2021
8	SABIR A. MKWINDA		M/Kiti / SIMBA	0713610391		31/12/2021
9	FELISTIA ANTHON		MJUMBE	0654-874286		31-12/2021
10	NYASOLO C. KILIMA		MEU	0717171529		31/12/2021

AFISA MIENDAJI KATA  
KATA YA MJIMPIA

MRADI WA USHINDANI KATIKA UBORESHaji WA MIUNDOMBINU Kwenye MUJI YA TANZANIA  
(TACTIC)

UPEMBUZI YAKINIFU, USANIFU, TATHMINI ZA ATHARI KWA MAINGIRA NA JAMII, UANDAJI WA CHARAMA ZA MRADI NA UANDAJI WA ZABUNI KWA AJILI YA UBORESHaji WA MIUNDOMBINU  
KATIKA HALMASHAURI ZA MANISPAA ZA  
MOROGORO, SONGEA, SUMBAWANGA NA MBEYA (TACTIC KANDA Na: 3)

MAHUDHURIO KWA AJILI YA: MIKUTANO, USHAURI NA MAHOJIANO

HALMASHAURI YA MANISPAA/JUJ: MOROGORO MSHAURI:..... NORPLAN

MTAA/KATA: YA MJI MPA

N°	JINA	TAASISI	WADHIFA	SIMU Na:	SAHIHI	TAREHE
1	LEAH Z. Ateirik	MED	MED	065010800	<i>[Signature]</i>	31/12/2021
2	TERLA A. MBARUKO		MED	0765249372	<i>[Signature]</i>	31/12/2021
3						
4						
5						
6						
7						
8						
9						
10						

*[Stamp: KESHA MTENDAJI KATA KATA YA MJI MPA]*

MRADI WA USHINDANI KATIKA UBORESHAJI WA MIUNDOMBINU KWENYE MUJI YA TANZANIA  
(TACTIC)

UPEMBUZI YAKINIFU, USANIFU, TATHMINI ZA ATHARI KWA MAINGIRA NA JAMII, UANDAAJI WA CHARAMA ZA MRADI NA UANDAAJI WA ZABUNI KWA AJILI YA UBORESHAJI WA MIUNDOMBINU  
KATIKA HALMASHAURI ZA MANISPAA ZA  
MOROGORO, SONGEA, SUMBAWANGA NA MBEYA (TACTIC KANDA N°: 3)

MAHUDHURIO KWA AJILI YA: MIKUTANO, USHAURI NA MAHOJIANO

HALMASHAURI YA MANISPAA/JILI: MOROGORO MSHAURI: NORPLAN

MTAA/KATA: MAFISA

N°	JINA	TAASISI	WADHIFA	SIMU N°:	SAHIHI	TAREHE
1	JOEL A. KIJOME	MMC	DIWANI	071897370	<i>[Signature]</i>	01/01/2022
2	MWAZABU R. HAJJANI	MMC	WEO	0715681377	<i>[Signature]</i>	01/01/2022
3	JASMEEN MASSENGI	MMC	SWO	0655505150	<i>[Signature]</i>	01/01/2022
4	AMASHA NTEMKEKE	MMC	MEO	0785210073	<i>[Signature]</i>	01/01/2022
5	SAID Y. DAUD	MMC	MWENYEKITI	0684197251	<i>[Signature]</i>	01/01/2022
6	HENRY BANZI	MMC	MWENYEKITI	0712426345	<i>[Signature]</i>	01/01/2022
7	MOHAMED MUSTAFA	MMC	MWENYEKITI	0716535555	<i>[Signature]</i>	01/01/2022
8	MUNIRI S. S. S. S.	MMC	MJUMBE	071666607	<i>[Signature]</i>	01/01/2022
9	PILI A. MOMBOKA	MMC	MEO	0716892689	<i>[Signature]</i>	01/01/2022
10						

**FISA MTEMDAJI**  
01/01/2022  
MANIPA MBEYA

MRADI WA USHINDANI KATIKA UBOSHHAJI WA MIUNDOMBINU KWENYE MUJI YA TANZANIA  
(TACTIC)

UPEMBUZI YAKINIFU, USANIFU, TATHMINI ZA ATHARI KWA MAINGIRA NA JAMII, UANDAAJI WA CHARAMA ZA MRADI NA UANDAAJI WA ZABUNI KWA AJILI YA UBOSHHAJI WA MIUNDOMBINU  
KATIKA HALMASHAURI ZA MANISPAA ZA  
MOROGORO, SONCEA, SUMBAWANGA NA MBEYA (TACTIC KANDA Na: 3)

MAHUDHURIO KWA AJILI YA: MIKUTANO, USHAURI NA MAHOJIANO

HALMASHAURI YA MANISPAA/JILI: MOROGORO MSHAURI:..... NORPLAN

MPAA/KATA: MAFUA

Na	JINA	TAASISI	WADHIFA	SIMU Na:	SAHIHI	TAREHE
1	SANTIELI FABIANO		Mwapaichi	0654329960		01/01/2022
2	SAMUEL SAIDI CHAPA			0718132542		01/01/2022
3	MUSIATA N. MWAKATIRA			069923007		01/01/2022
4	IBRAHIM ISA KIFAMBILE	TICL	Kundi	0739533111		01/01/2022
5	MELSON JOHN		Mwapaichi	0658836230		01/01/2022
6	KIRUMARI M Juma	MICULIMA		0719393003		01/01/2022
7	ERICK AMANI	M/Eni BODABODA	M/Eni BODABODA	071992812		01/01/2022
8	ISHA SULUWAN			0714223022		01/01/2022
9	GUSTAV KIGAMALU			0786 119435		01/01/2022
10	MKUDA LEO			0712162692		01/01/2022

**AFISA WA ENDAJI**  
17/12/2021  
MO 3013 MOROGORO

MRADI WA USHINDANI KATIKA UBOSHHAJI WA MIUNDOMBINU KWENYE MUJI YA TANZANIA  
(TACTIC)

UPEMBUZI YAKINIFU, USANIFU, TATHMINI ZA ATHARI KWA MAINGIRA NA JAMII, UANDAAJI WA CHARAMA ZA MRADI NA UANDAAJI WA ZABUNI KWA AJILI YA UBOSHHAJI WA MIUNDOMBINU  
KATIKA HALMASHAURI ZA MANISPAA ZA  
MOROGORO, SONCEA, SUMBAWANGA NA MBEYA (TACTIC KANDA Na: 3)

MAHUDHURIO KWA AJILI YA: MIKUTANO, USHAURI NA MAHOJIANO

HALMASHAURI YA MANISPAA/JILI: MOROGORO MSHAURI:..... NORPLAN

MPAA/KATA: KIWERO

Na	JINA	TAASISI	WADHIFA	SIMU Na:	SAHIHI	TAREHE
1	Abel Msando (mb)	DC-MOROGORO		0767533433		30/12/21
2	Ally H. Machelo	MD-MOROGORO		0715 486390		—
3	MANGALI HAULE	DC-MOROGORO		0768663399		—
4	Eng. Moko M. N. TARURA	AGDM		0114111681		—
5	LUBELEJE J	MESO-MC		078396496		—
6	ENEDY MWANAKASWE	MCDO-MMC		0765404505		—
7	JOSEPH MPOZU	NORPLAN	Consultant (Gen)	065370000		—
8	Eng. Mawoge Kapera	NORPLAN	—	0753773370		—



MRADI WA USHINDANI KATIKA UBORESHAJI WA MIUNDOMBINU KWENYE MUJI YA TANZANIA  
(TACTIC)

UPEMBUZI YAKINIFU, USANIFU, TATHMINI ZA ATHARI KWA MAINGIRA NA JAMILI, UANDAAJI WA GHARAMA ZA MRADI NA UANDAAJI WA ZABUNI KWA AJILI YA UBORESHAJI WA MIUNDOMBINU  
KATIKA HALMASHAURI ZA MANISPAA ZA  
MOROGORO, SONGEA, SUMBAWANGA NA MBEYA (TACTIC KANDA Na: 3)

MAHUDHURIO KWA AJILI YA: MIKUTANO, USHAURI NA MAHOJIANO

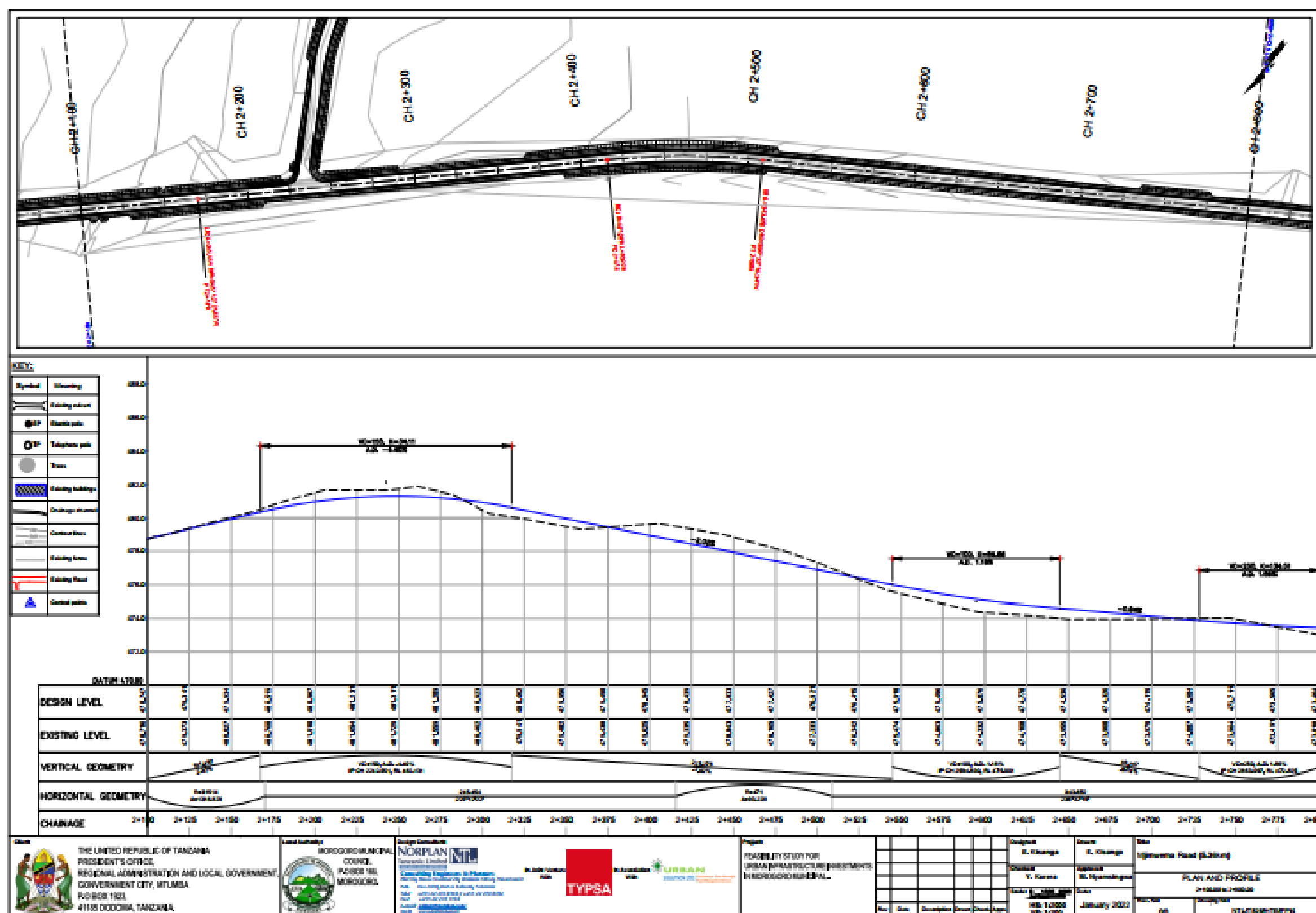
HALMASHAURI YA MANISPAA/JUJ: MOROGORO MSHAURI: NORPLAN

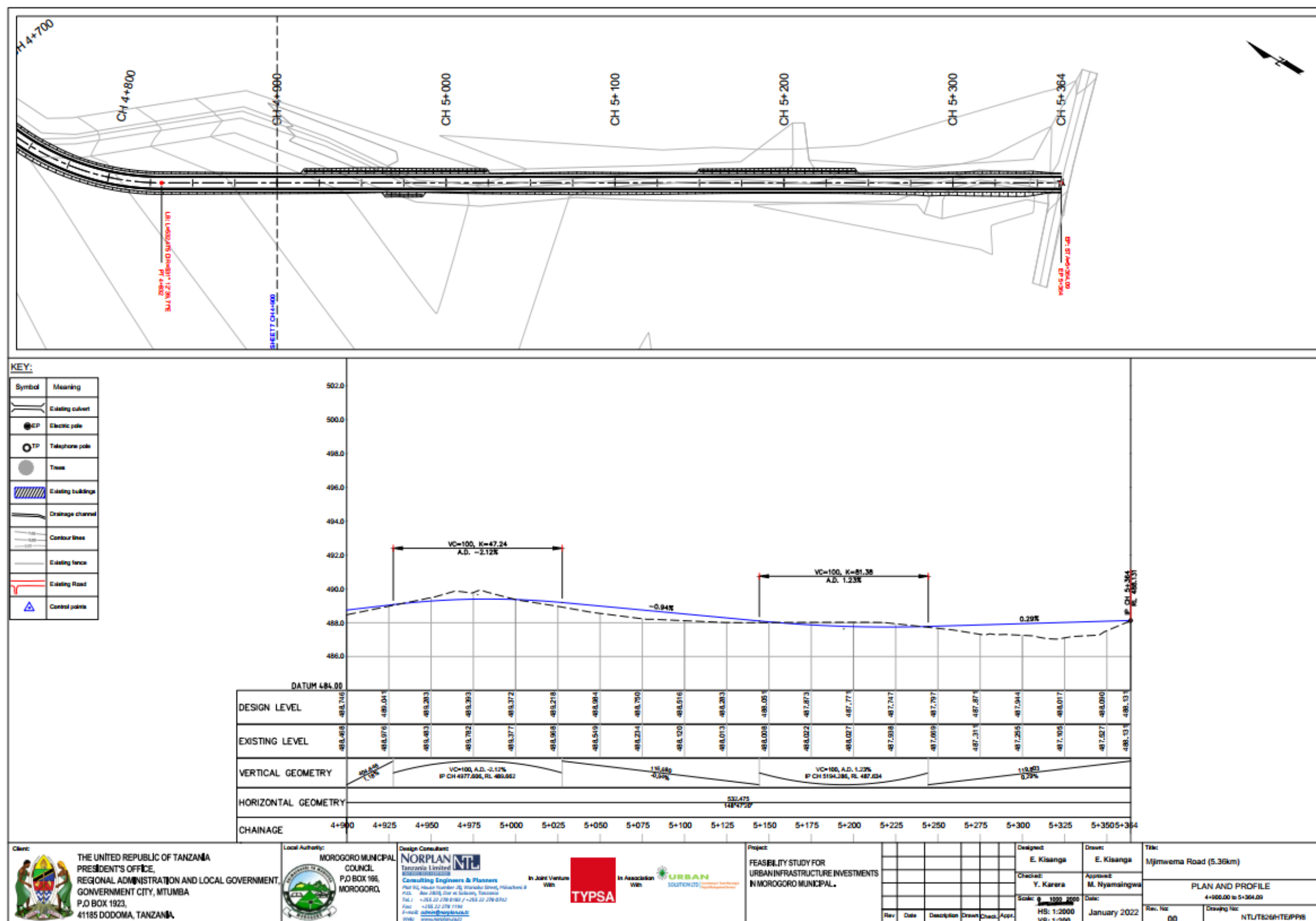
MTAA/KATA: KIHONDA

N°	JINA	TAASISI	WADHIFA	SIMU Na:	SAHIHI	TAREHE
1	ZAINABU ALI		Mwembe	0699874820		31/12/2021
2	AIDA MAKI		Mwembe	076765305	Nyali	31/12/2021
3	OMPARI KHATIBU		Mwembe	0782858209		31/12/2021
4	ESTER		MJUMBE	0688471048	Has	31/12/2021
5	CHRISTINA MCHWENGO		"	065251829	Mgweni	31-12-21
6	MWANUUA I ZUREKI		"	-	18/12/2021	31-12-21
7	IMELUSI GWA KILUWA		"	0753590592	Kamal	31-12/2021
8	LUCY MSASU		Ka	074648300	den	31-12-21
9	MARIAM A. MDOE		"	0713596447	Am...	31-12-21
10	FATUMA SHABANI		"	0912-218108	Am...	31-12-2021

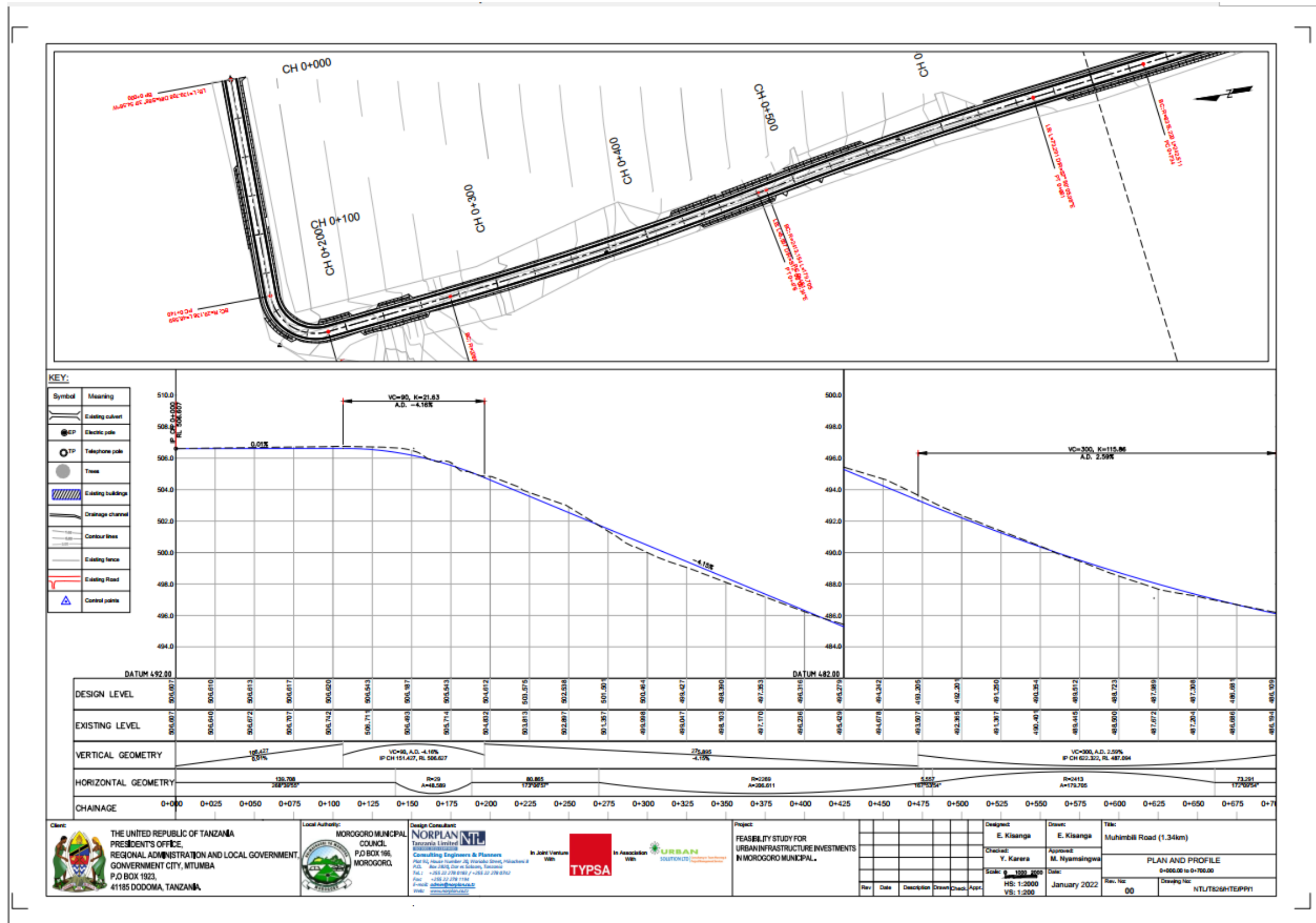


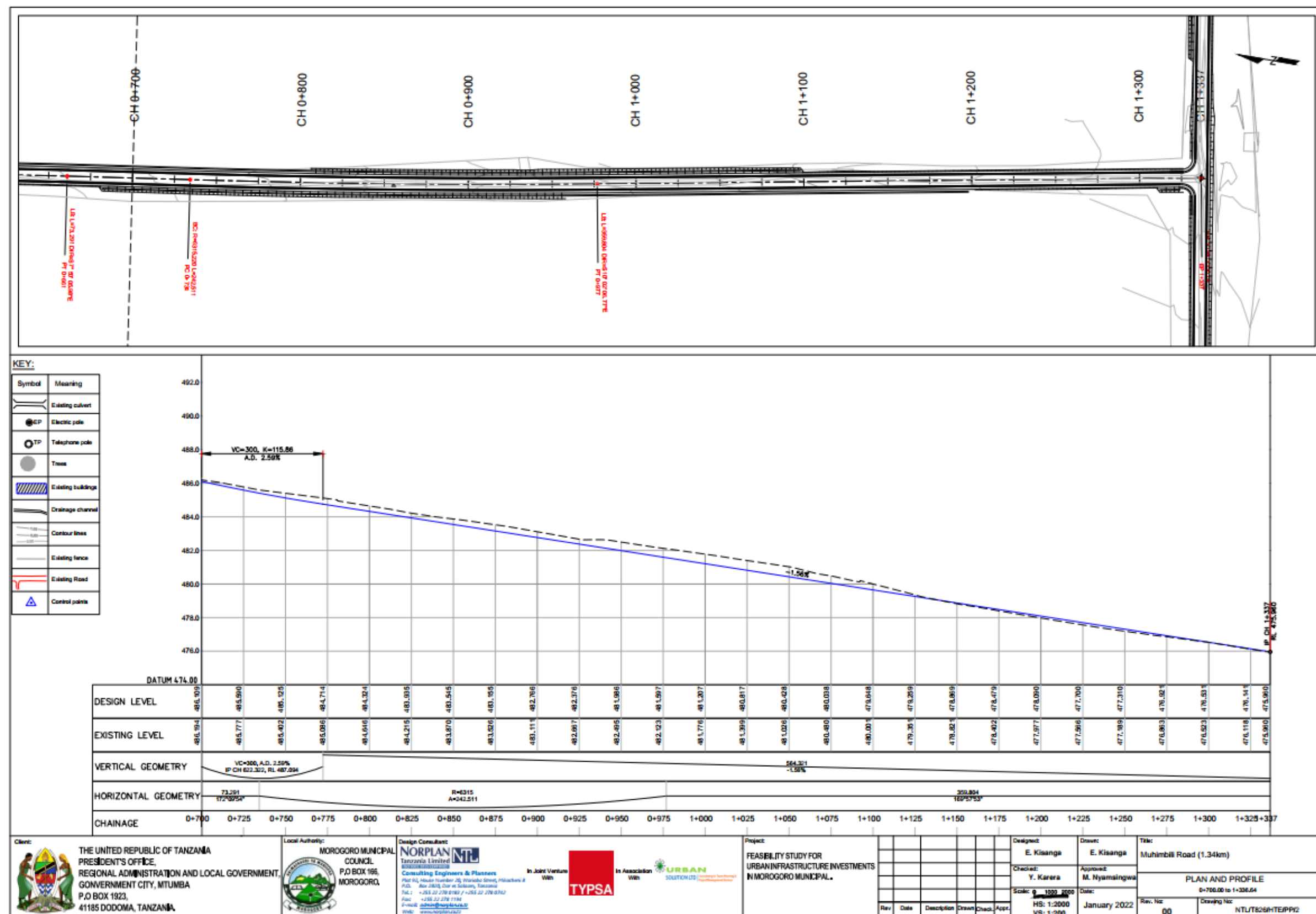




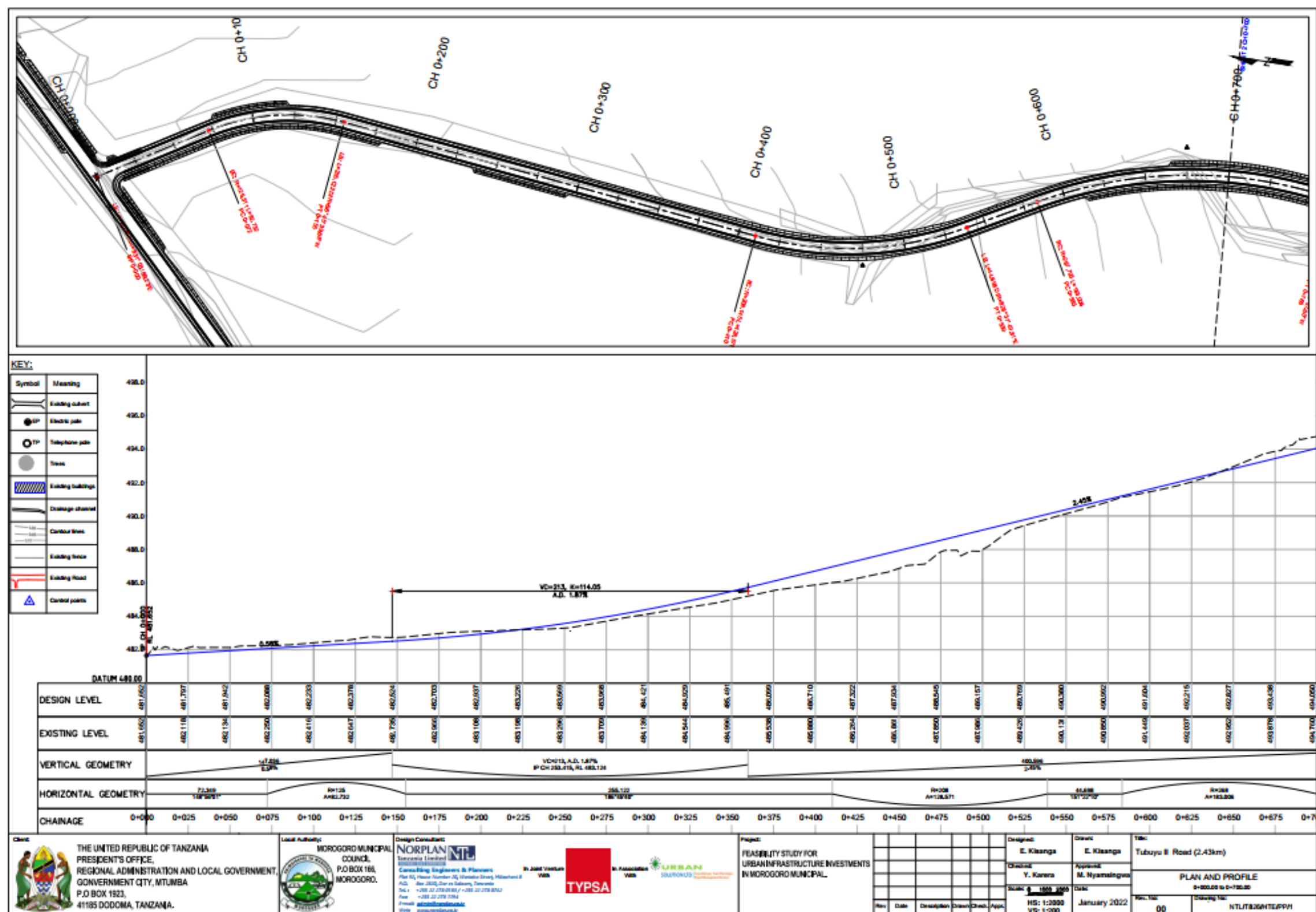


## APPENDIX V :MUHIMBILI ROAD

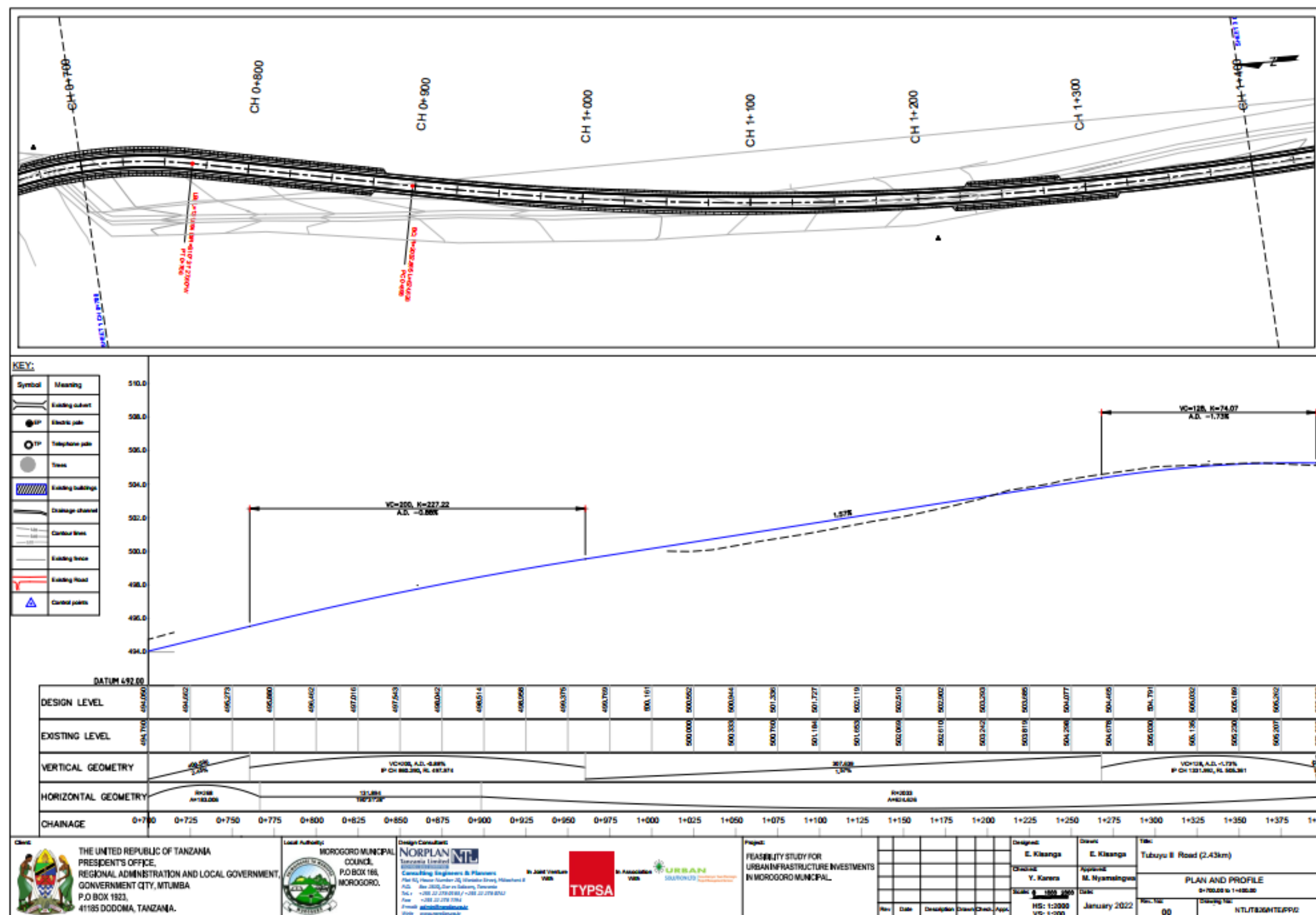


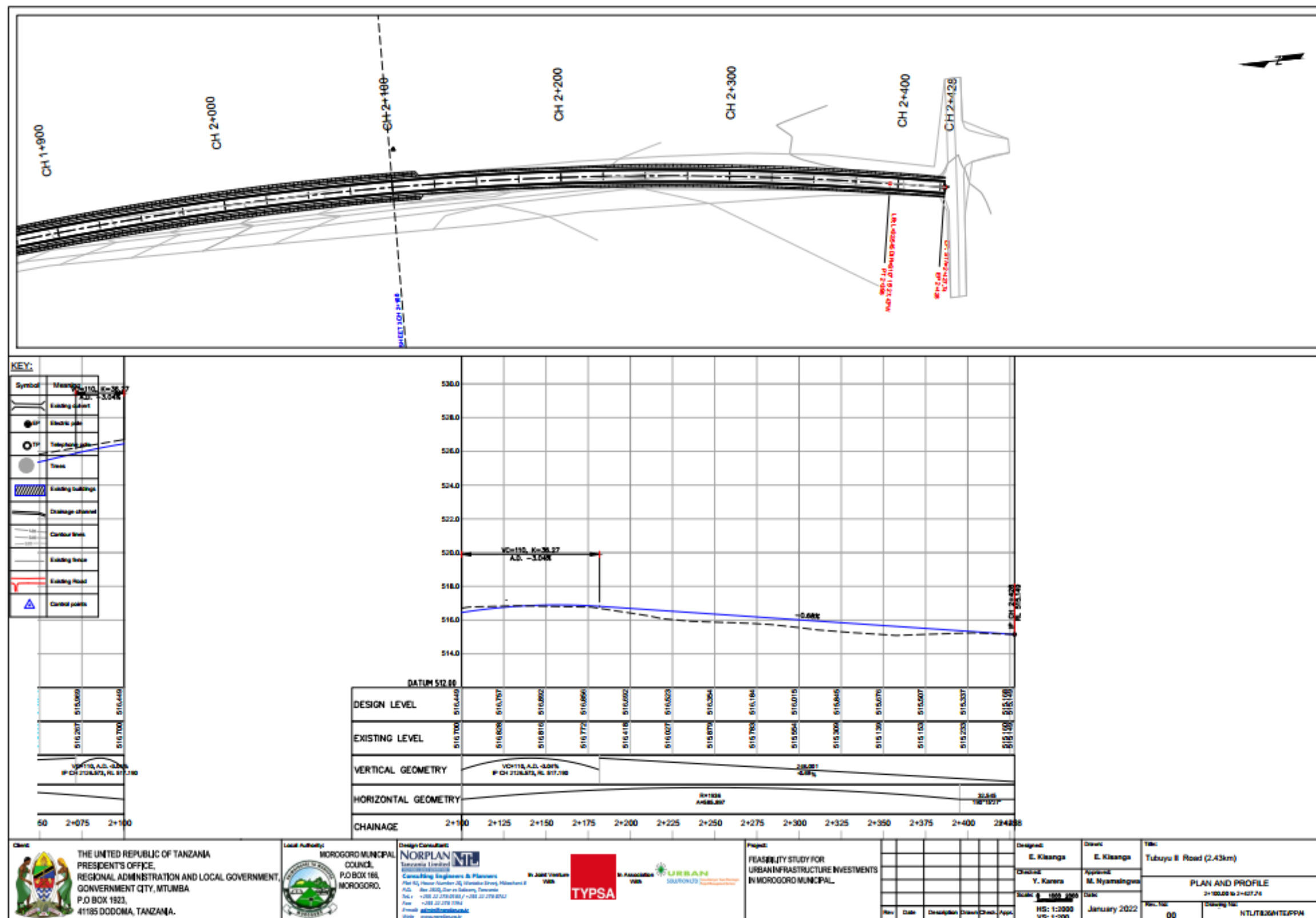


## APPENDIX VI:TUBUYU II ROAD

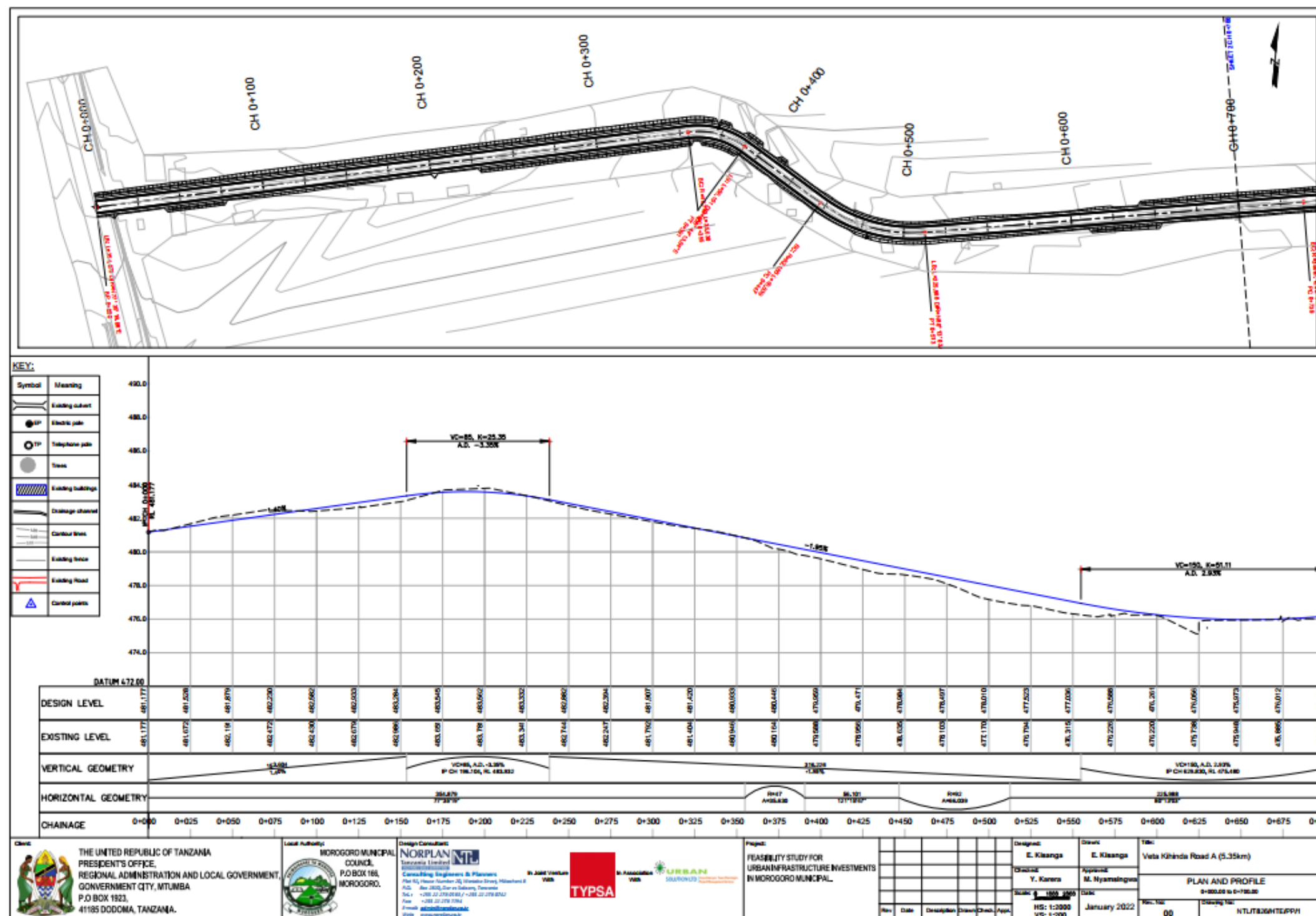


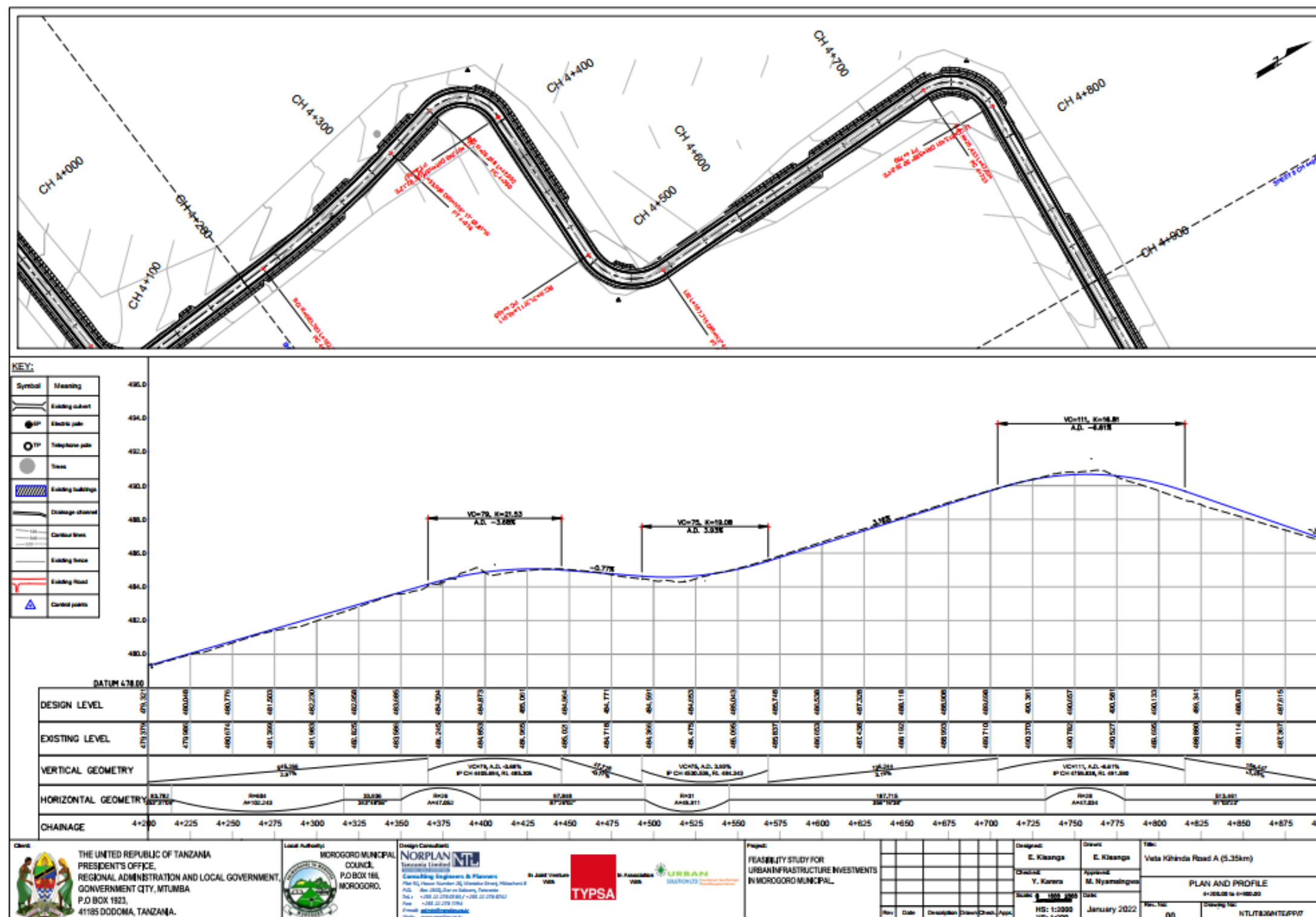




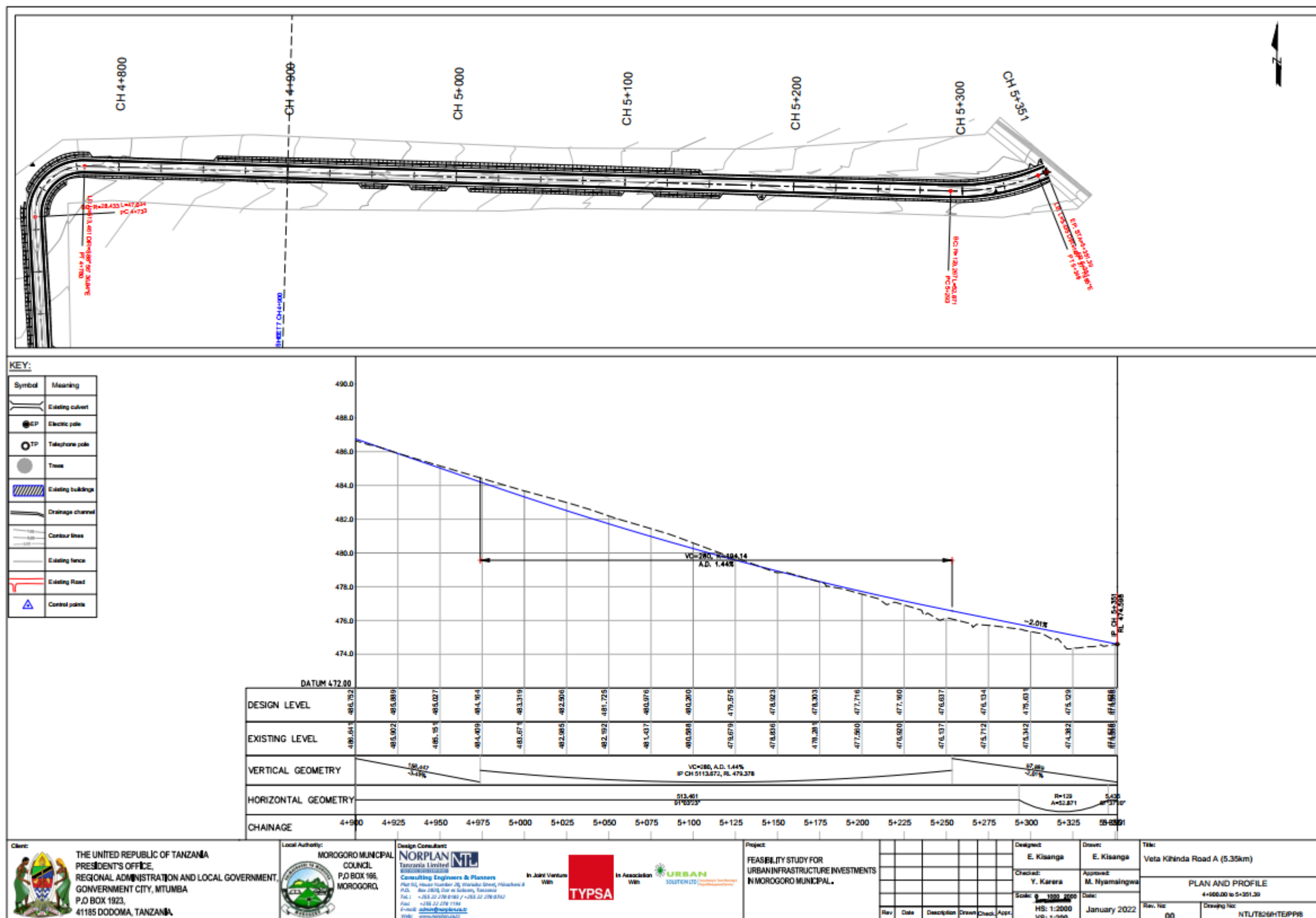


## APPENDIX VII :VETA KIHONDA ROAD

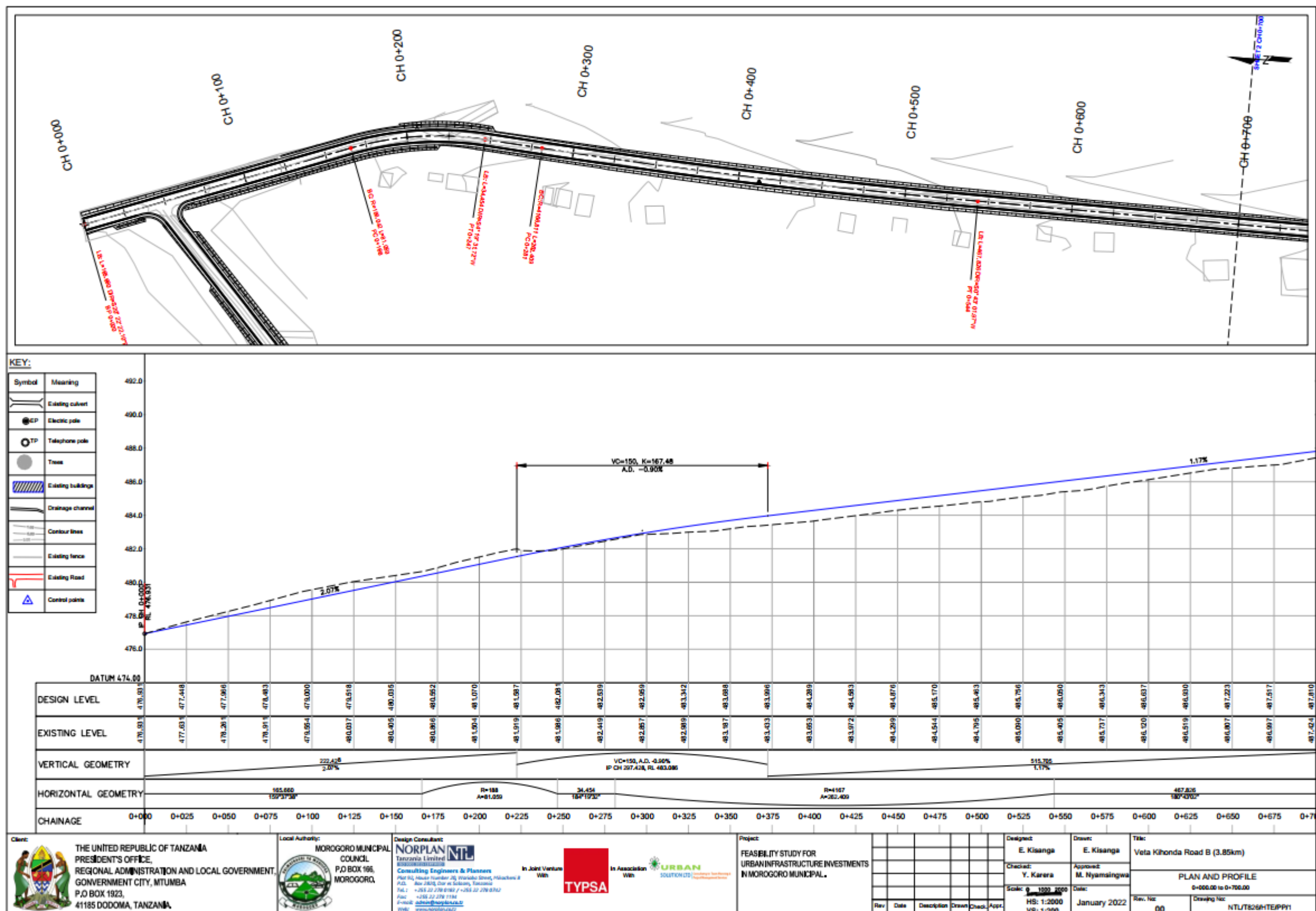


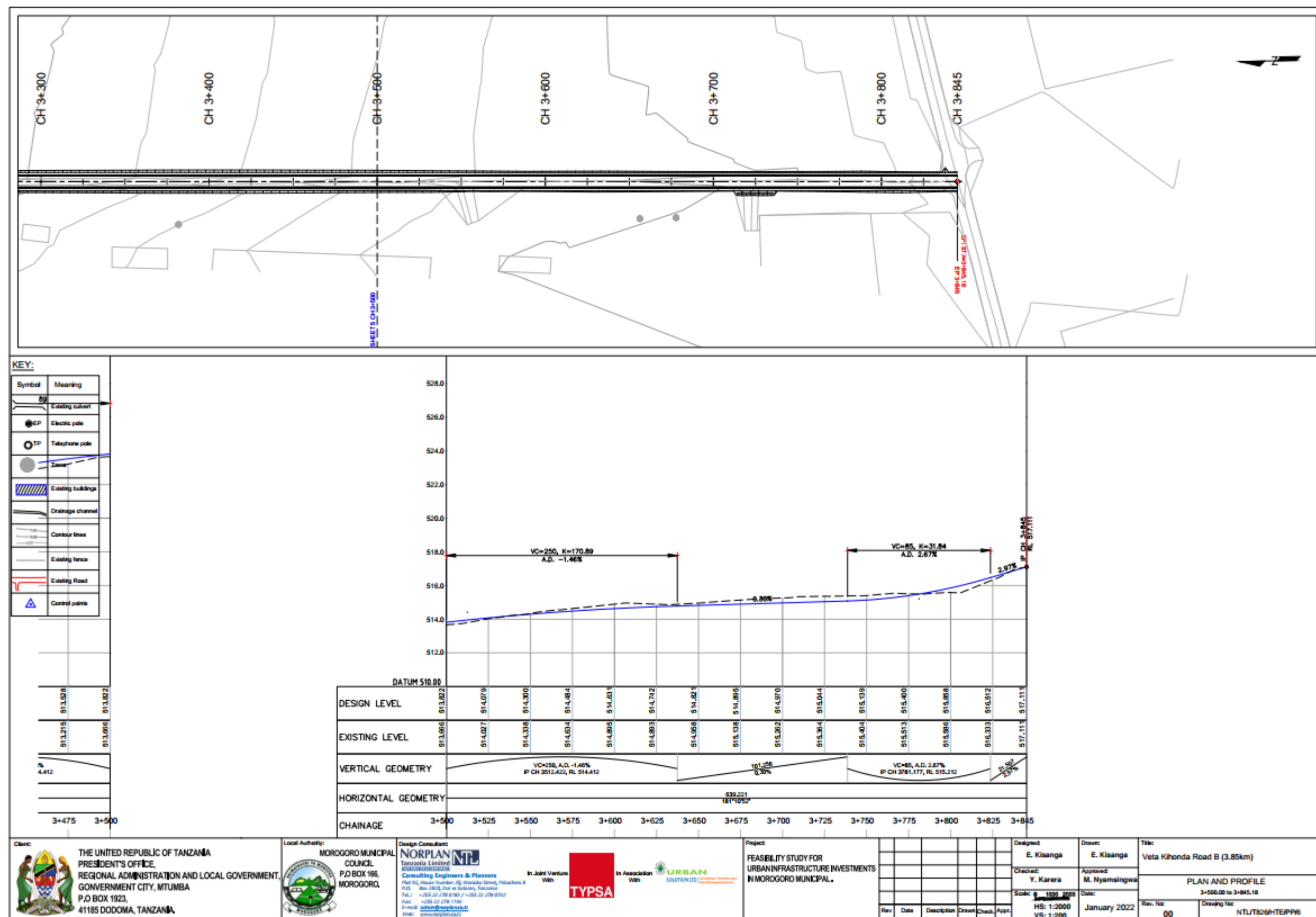












## **Appendix VIII;**

- **Environmental and Social Management Plan**
- **1.1 Specific environmental and Social Management Plan**

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 environmentally friendly. The implementation steps will involve the PO-RALG, Contractor, the Resident Engineer, Morogoro Municipal Council, some utilities provide such as MORUWASA and TANESCO, TTCL, TELECOMMUNICATION COMPANY and the local communities at large. Table 1.1 provide the ESMP for the proposed, Environmental & Social Management Plan for the Urban Roads & Drainage Systems in Morogoro Municipal Council

**Environmental & Social Management Plan for Proposed Upgrading of Urban Roads & Drainage Systems in Morogoro  
Municipal Council**

Phases	Impact	Mitigation Ref	Proposed mitigation measures	Responsibility/ institution	Linked mitigation	Mitigation cost/(USD)
Mobilization & Construction Phase	Climate	M1.1	<ul style="list-style-type: none"> <li>Lower-carbon transport systems—The design should consider walking and cycling infrastructure, and upgrade the road to bitumen standard to become more attractive for users and minimize travel time and distance</li> </ul>	Contractor		BOQ BILL 6000: STRUCTURES
	Air Pollution	M2.1	<ul style="list-style-type: none"> <li>Water should be sprinkled (3-4 times a day) to suppress dust especially in the dry season not only where the works are on-going but in all the affected roads, especially at city centers road sections (i.e.</li> </ul>	Contractor		BOQ SECTION 8300: EQUIPMENT
		M2.2	<ul style="list-style-type: none"> <li>Dust generating activities must be slowed down in days of strong wind</li> </ul>	Contractor		2,155.17
		M2.3	<ul style="list-style-type: none"> <li>Truck dumpers carrying dusty construction materials from Quarry and borrow pit sites must be covered with straps</li> </ul>	Contractor		431.03
		M2.4	<ul style="list-style-type: none"> <li>Vehicles and construction machinery must be properly maintained and to comply with Tanzanian emission standards</li> </ul>	Contractor		12,931.03
		M2.5	<ul style="list-style-type: none"> <li>Fewer trucks with maximum loading capacity should be used for transportation of construction materials</li> </ul>	Contractor		862.07
		M2.6	<ul style="list-style-type: none"> <li>Speed of vehicles should be controlled to reduce dust by use of speed calming devices e.g. rumble strips/humps, barricading</li> </ul>	Contractor		8,620.69

Phases	Impact	Mitigation Ref	Proposed mitigation measures	Responsibility/ institution	Linked mitigation	Mitigation cost/(USD)
	Noise and vibration	M3.1	<ul style="list-style-type: none"> <li>To reduce the risk from noise and vibration to residential areas near the established construction corridor</li> </ul>	Contractor		4,310.34
		M3.2	<ul style="list-style-type: none"> <li>The vehicles that are excessively noisy due to poor engine adjustment or damage of noise abatement equipment shall not be operated until corrective measures have been taken.</li> </ul>	Contractor		2,155.17
		M3.3	<ul style="list-style-type: none"> <li>The workers should be provided with ear protective devices (earmuffs and/or earplugs).</li> </ul>	Contractor		21,551.72
		M3.4	<ul style="list-style-type: none"> <li>In cases where the noisy work has to go on at night or during a longer period than one day in a place, a noise shield will be erected around the working area, eg barricading to nearby schools such as Kihonda primary school</li> </ul>	Contractor		5172.41
		M3.5	<ul style="list-style-type: none"> <li>Evidenced damaged buildings near the proposed construction corridor as a result of operations must be repaired or compensation paid if damage from vibration occurs</li> </ul>	Morogoro Municipal Council/ Contractor		2,155.17
		M3.6	<ul style="list-style-type: none"> <li>Before construction work is initiated, the houses nearby the area where the construction activities will take place must be photo registered for later documentation of any damages, which the work may have caused.</li> </ul>	Morogoro Municipal Council/ Contractor	M3.5	M3.5
		M3.7	<ul style="list-style-type: none"> <li>Drilling should be carried out with sharp drill bits to reduce noise</li> </ul>	Contractor		6,465.52
		M3.8	<ul style="list-style-type: none"> <li>Periodical monitoring of noise and vibrations should be conducted</li> </ul>	Contractor		7,758.62



Phases	Impact	Mitigation Ref	Proposed mitigation measures	Responsibility/ institution	Linked mitigation	Mitigation cost/(USD)
	Soil erosion	M4.1	<ul style="list-style-type: none"> <li>Areas that are prone to erosion must be left undisturbed and undeveloped if possible</li> </ul>	Morogoro Municipal Council/ Contractor		2,155.17
		M4.2	<ul style="list-style-type: none"> <li>Entrance and exits points for runoff must be protected from erosion and equipped with sediment control devices.</li> </ul>	Contractor		4,310.34
		M4.3	<ul style="list-style-type: none"> <li>Minimize the extent of the disturbed area and the duration of exposure and stabilize disturbed areas as soon as possible</li> </ul>	Contractor		2,155.17
		M4.4	<ul style="list-style-type: none"> <li>The use of heavy equipment and techniques that will result in excessive soil disturbances or compaction of soils must be minimized</li> </ul>	Contractor		431.03
		M4.5	<ul style="list-style-type: none"> <li>The drainage and runoff controls must be established before starting the site clearance and earthworks. The existing vegetation must be retained as much as possible.</li> </ul>	Morogoro Municipal Council/ Contractor		6,465.52
		M4.6	<ul style="list-style-type: none"> <li>The most effective erosion control devices must be implemented: i)temporary seedings; ii)temporary mulching; iii)temporary or permanent erosion control blankets; v) permanent vegetative buffer strips</li> </ul>	Morogoro Municipal Council/ Contractor		2,155.17
	Impact on Soil Structure/Topography	M5.1	<ul style="list-style-type: none"> <li>Ground disturbance must be limited to only the areas necessary for project-related construction activities</li> </ul>	Morogoro Municipal Council/ Contractor		431.03
		M5.2	<ul style="list-style-type: none"> <li>During earthmoving activities, topsoil must be reused wherever practicable and stockpiled for later application during reclamation of disturbed areas</li> </ul>	Contractor		2,586.21
		M5.3	<ul style="list-style-type: none"> <li>Appropriate erosion control measures must be employed to minimize the potential for erosion of soil stockpiles until they are removed and the area is restored</li> </ul>	Contractor		862.07

Phases	Impact	Mitigation Ref	Proposed mitigation measures	Responsibility/ institution	Linked mitigation	Mitigation cost/(USD)
		M5.4	<ul style="list-style-type: none"> <li>Disturbed areas must be restored as soon as practicable after construction ends along a particular stretch of road and the goal of restoration shall be the rapid and permanent reestablishment of native ground cover on disturbed areas to prevent soil erosion</li> </ul>	Contractor		6,465.52
	Impact on Groundwater	M6.1	<ul style="list-style-type: none"> <li>The proper handling and storage of lubricants, solvents must be organized as well proper usage of construction equipment</li> </ul>	Contractor		2,155.17
		M6.2	<ul style="list-style-type: none"> <li>The storage of substances that are harmful to soils and waters (e.g. fuels for construction machinery) on the construction site should be minimized. All hazardous substances products either to be used or waste, shall be stored in adequate places, to prevent any soil, surface water or groundwater contamination</li> </ul>	Contractor		4,310.34
		M6.3	<ul style="list-style-type: none"> <li>Vehicles and construction machinery must be subject to regular maintenance so as to reduce leakages of lubricants, motor oil and fuel</li> </ul>	Contractor		19,396.55
		M6.4	<ul style="list-style-type: none"> <li>Ngerengere river at Veta Kihonda Tungi road must be protected and constructed to restore its original flow of water and access to the community, Veta Kihonda Tungi road at a chainage of 6+100 upto 6+500</li> </ul>	Morogoro Municipal Council/ Contractor/ Ministry of water		12,931.03
		M6.5	<ul style="list-style-type: none"> <li>Prior notification and alternative for other domestic water(Drilling of water well) shall be provided prior to construction phase,</li> </ul>	Morogoro Municipal Council/ Contractor		2,586.21

Phases	Impact	Mitigation Ref	Proposed mitigation measures	Responsibility/ institution	Linked mitigation	Mitigation cost/(USD)
	Impact on vegetation	M7.1	<ul style="list-style-type: none"> <li>The surface for carrying out the clearance of vegetation must be limited to the strip of land within 30m width of the construction corridor</li> </ul>	Contractor/Morogoro Municipal/Ministry of Natural resources/		2,155.17
		M7.2	<ul style="list-style-type: none"> <li>The cutting of trees within the construction corridor must only be done with the required permits in compliance with the applicable regulations and all the necessary permits must be obtained prior to the clearance of vegetation.</li> </ul>	Contractor /Morogoro Municipal/Ministry of Natural resources/		431.03
		M7.3	<ul style="list-style-type: none"> <li>Non operational areas must be restored to a state as close to the original conditions as possible through reinstatement activities, using native plant species from the surrounding areas</li> </ul>	Contractor/ Morogoro Municipal/Ministry of Natural resources/		2,155.17
	Visual impact	M8.1	<ul style="list-style-type: none"> <li>Watercourses and banks underneath constructed bridges, as well as in the abutment areas.</li> </ul>	Contractor		2,155.17
		M8.1	<ul style="list-style-type: none"> <li>Aesthetic integration of the structural parts of project's structures using construction materials with colors and textures that blend well with those of the surrounding landscape</li> </ul>	Contractor		BOQ SECTION 9200: MATERIALS
		M8.2	<ul style="list-style-type: none"> <li>Control clearing on the area in the construction limits and quick vegetation upon completion of construction</li> </ul>	Contractor		1,724.14

Phases	Impact	Mitigation Ref	Proposed mitigation measures	Responsibility/ institution	Linked mitigation	Mitigation cost/(USD)
	Employment opportunities and Source of Income	M8.3	<ul style="list-style-type: none"> <li>All the exposed areas should be planted with grass once construction activities are complete. This should be undertaken in phases; grassing activities should be undertaken on a section-by-section basis to bind the loose soils together preventing accelerated rates of soil erosion.</li> </ul>	Contractor		4,310.34
		M9.1	<ul style="list-style-type: none"> <li>Sensitization of communities on the existing work opportunities in the project</li> </ul>	Morogoro Municipal Council/ Contractor		4,741.38
		M9.2	<ul style="list-style-type: none"> <li>Training in entrepreneurship skills</li> </ul>	Morogoro Municipal Council/ Contractor		2,155.17
		M9.3	<ul style="list-style-type: none"> <li>Affirmative action in employment to provide women with an opportunity to earn cash income</li> </ul>	Morogoro Municipal Council/ Contractor		6,465.52
		M9.4	<ul style="list-style-type: none"> <li>Promote labour-based construction works to employ unskilled</li> </ul>	Morogoro Municipal Council/ Contractor		3,017.24
		M9.5	<ul style="list-style-type: none"> <li>Advertise the jobs locally to attract skilled labour resident to the areas</li> </ul>	Morogoro Municipal Council/ Contractor		431.03
	Solid Waste Generation of (Including	M10.1	<ul style="list-style-type: none"> <li>Any other top soil remaining should be stored and used in landscaping for grassing and tree planting</li> </ul>	Contractor		6.47
		M10.2	<ul style="list-style-type: none"> <li>Waste will have to be sorted into degradable and non-degradable eg metals etc</li> </ul>	Contractor		2,155.17

Phases	Impact	Mitigation Ref	Proposed mitigation measures	Responsibility/ institution	Linked mitigation	Mitigation cost/(USD)
	spoil material, Overburden and Stripped Vegetation)	M10.3	<ul style="list-style-type: none"> <li>Waste management hierarchy (3 or 4Rs – reduce, reuse, recycle (and recover) which is an acceptable guide for prioritizing waste management practices should be considered</li> </ul>	Contractor	M10.2	M10.2
	Land and water pollutions from poor construction waste management	M11.1	<ul style="list-style-type: none"> <li>The project proponent and Contractor shall make sure that they establish good and efficient solid waste disposal and collection system within the premises by contracting to the licensed and experience waste management contractor</li> </ul>	Contractor		6,465.52
		M11.2	<ul style="list-style-type: none"> <li>Use of durable, long- lasting materials that will not need to be replaced as often, thereby reducing the amount of construction waste generating over time;</li> </ul>	Contractor		6,465.52
		M11.3	<ul style="list-style-type: none"> <li>Provision of facilities for proper handling and storage of construction materials to reduce the amount of waste caused by damage or exposure to the elements;</li> </ul>	Contractor		
		M11.4	<ul style="list-style-type: none"> <li>Purchase of perishable construction materials such as paints incrementally to ensure reduced spoilage of un used materials</li> </ul>	Contractor		
		M.11.5	<ul style="list-style-type: none"> <li>Use of building materials that have minimal packaging to avoid the generation of excessive packaging waste</li> </ul>	Contractor		
		M11.6	<ul style="list-style-type: none"> <li>Use of construction materials containing recycled content when possible and in accordance with accepted standards</li> </ul>	Contractor		
		M11.7	<ul style="list-style-type: none"> <li>Wastes which will be inadvertently dumped in unauthorized locations will be removed immediately and disposed at an approved site</li> </ul>	Contractor		2,241.38



Phases	Impact	Mitigation Ref	Proposed mitigation measures	Responsibility/ institution	Linked mitigation	Mitigation cost/(USD)
		M11.8	<ul style="list-style-type: none"> <li>The contractor shall have adequate facilities for handling the construction waste. A large Skip Bucket shall be provided at the campsite;</li> </ul>	Contractor		2,155.17
		M11.9	<ul style="list-style-type: none"> <li>The skip bucket shall be collected and disposed to dumpsite</li> </ul>	Contractor		
	Influx of People into the Area	M12.1	<ul style="list-style-type: none"> <li>Local labour should be given priority for employment, as this will solve many of the problems associated with influx of people.</li> </ul>	Contractor/Morogoro Municipal Council		BOQ SECTION 9100: LABOUR
		M12.2	<ul style="list-style-type: none"> <li>There should be sensitization of the workers in cultural values and norms of the area.</li> </ul>	Contractor/Morogoro Municipal Council	M9.1	M9.1
		M12.3	<ul style="list-style-type: none"> <li>The project should plan for additional infrastructure to cater for increased population for example, water sanitation and health facilities.</li> </ul>	Contractor/Morogoro Municipal Council		15,086.21
		M12.4	<ul style="list-style-type: none"> <li>The Project in partnership with the City Environment Offices, and the local people should embark on a tree re-plantation program</li> </ul>	Contractor/Morogoro Municipal Council		2,155.17
		M12.5	<ul style="list-style-type: none"> <li>There is need to strengthen local authorities so that they are in position to handle the increased cases of indiscipline and conflict</li> </ul>	Contractor/Morogoro Municipal Council		5,172.41
		M12.6	<ul style="list-style-type: none"> <li>Local authorities shall need to be strengthened in order to deal with the increased cases of indiscipline brought about by the increased population influx, and any disputes that are likely to ensue;</li> </ul>	PO-RALG , Morogoro Municipal	M12.5	M12.5
		M12.7	<ul style="list-style-type: none"> <li>Project should set up internal controls and security systems for its materials</li> </ul>	Contractor		

Phases	Impact	Mitigation Ref	Proposed mitigation measures	Responsibility/ institution	Linked mitigation	Mitigation cost/(USD)
	Increased Risk of Diseases	M13.1	<ul style="list-style-type: none"> <li>The project should work closely with respective government departments, local NGOs, and/or faith based organizations, and local communities involved in Covid-19, HIV and reproductive health</li> </ul>	Contractor/Morogoro Municipal Council		6,465.52
		M13.2	<ul style="list-style-type: none"> <li>Mega awareness campaigns on Covid-19, HIV/AIDS and other STDS should periodically be organized</li> </ul>	Contractor/Morogoro Municipal Council /Ministry of Health		13,793.10
		M13.3	<ul style="list-style-type: none"> <li>Counselling and testing services to the workers and community members should constantly be made available</li> </ul>	Contractor/Morogoro Municipal Council /Ministry of Health		
		M13.4	<ul style="list-style-type: none"> <li>There is need for continuous sensitization of the workers and community members about Covid-19, HIV/AIDS and other STDs</li> </ul>	Contractor/Morogoro Municipal Council /Ministry of Health/		
	Health and Safety	M14.1	<ul style="list-style-type: none"> <li>Regular maintenance of equipment, engines and electrical installations; maintaining clean and tidy workplace, providing guard rails, signals and lighting; providing work site rules, safe working procedures and allocating appropriate places to carry out the work</li> </ul>	Contractor/Morogoro Municipal Council /OSHA		15,086.21
		M14.2	<ul style="list-style-type: none"> <li>Contractor should locate stores to reduce risks to workers on site and arrangements for the safe use, handling, storage, transport and disposal of articles and substances are made before work starts to the satisfaction of the engineer.</li> </ul>	Contractor/OSHA		2,155.17

Phases	Impact	Mitigation Ref	Proposed mitigation measures	Responsibility/ institution	Linked mitigation	Mitigation cost/(USD)
		M14.3	<ul style="list-style-type: none"> <li>The Contractor should provide relevant protective clothing and safe equipment to all staff and labour engaged on the Works sites to the satisfaction of the engineer. These will include; high visibility vests, protective boots, gloves, masks, protective footwear and hard hats.</li> </ul>	Contractor/ OSHA		19,396.55
		M14.4	<ul style="list-style-type: none"> <li>The Contractor should designate a full time Safety Officer qualified to handle the specific tasks.</li> </ul>	Contractor/ /OSHA		10,344.83
		M14.5	<ul style="list-style-type: none"> <li>All employees shall be trained in how to ensure their own safety and reduce risks at work site</li> </ul>	Contractor/ /OSHA /OSHA		2,586.21
		M14.6	<ul style="list-style-type: none"> <li>Contractor should provide and maintain access to all work places in the condition that will reduce risks</li> </ul>	Contractor/ /OSHA /OSHA		2,155.17
		M14,7	<ul style="list-style-type: none"> <li>Contractor should provide adequate waterborne sanitation, and refuse collection and disposal complying with the laws of Tanzania or By-laws</li> </ul>	Contractor/ /OSHA /OSHA		12,931.03
		M14.8	<ul style="list-style-type: none"> <li>Latrines and other sanitary arrangements should be put in place where work is in progress</li> </ul>	Contractor		15,086.21
		M14.9	<ul style="list-style-type: none"> <li>Contractor shall comply with Government regulations in case of epidemic outbreaks.</li> </ul>	Contractor		N/A
		M14.10	<ul style="list-style-type: none"> <li>The Contractor should manage the risk of spreading of contagious diseases</li> </ul>	Contractor	M13.2	M13.2
		M14.11	<ul style="list-style-type: none"> <li>Contractor shall reduce occupational health hazards</li> </ul>	Contractor		2,155.17
		M14.12	<ul style="list-style-type: none"> <li>Ensure full stocks of anti-malaria in the project clinic</li> </ul>	Contractor		2,155.17
		M14.13	<ul style="list-style-type: none"> <li>Provision of treated mosquito nets to workers</li> </ul>	Contractor		2,155.17

Phases	Impact	Mitigation Ref	Proposed mitigation measures	Responsibility/ institution	Linked mitigation	Mitigation cost/(USD)
	Gender Based Violence (GBV)	M15.1	<ul style="list-style-type: none"> <li>The contractor will implement provisions that ensure that gender-based violence at the community level is not triggered by the Project, including: effective and on-going community engagement and consultation, particularly with women and girls in villages and learning institutions in the project area</li> </ul>	Contractor		862.07
		M15.2				
		M15.3	<ul style="list-style-type: none"> <li>Review and ensure that specific project components that are known to heighten GBV risk at the community level, e.g. compensation schemes; employment schemes for women; etc. are managed and implemented in a manner that will safeguard against violence against women</li> </ul>	Contractor		2,155.17
		M15.4	<ul style="list-style-type: none"> <li>Specific plan for mitigating these known risks, e.g. sensitization around gender-equitable approaches to compensation and employment; etc</li> </ul>	Contractor		3,448.28
		M15.5	<ul style="list-style-type: none"> <li>The contractor will ensure adequate referral mechanisms are in place if a case of GBV at the community level is reported related to project implementation.</li> </ul>	Contractor		2,155.17
	Child Labour	M16.1	<ul style="list-style-type: none"> <li>The developer and contractor should ensure no employment to persons under 18years of age</li> </ul>	Contractor		N/A
		M16.2	<ul style="list-style-type: none"> <li>Labor inspectors should enforce the labor law on any violations during construction and all violations be treated as criminal offenses.</li> </ul>	Contractor		862.07
		M16.3	<ul style="list-style-type: none"> <li>Awareness to the public on minimum age for employment and labour rights should be conducted</li> </ul>	Contractor		862.07
		M16.4	<ul style="list-style-type: none"> <li>Parents and project communities should ensure children's access to basic services i.e. food, shelter, education, health, sanitation and hygiene</li> </ul>	PO RALG/ Morogoro Municipal		

Phases	Impact	Mitigation Ref	Proposed mitigation measures	Responsibility/ institution	Linked mitigation	Mitigation cost/(USD)
	Loss of Properties and Possible Resettlement	M17.1	<ul style="list-style-type: none"> <li>Grievance handling and resolving land-related disputes</li> </ul>	Morogoro Municipal /Contractor		2,586.21
Operation Phase	Improved Economy	M18.1	<ul style="list-style-type: none"> <li>Enhancement of positive impacts: Periodic and routine maintenance of the road and its facility should be properly streamlined</li> </ul>	PO-RALG/ Morogoro Municipal council		
	Diseases eruptions and nuisance from mismanagement of liquid waste	M18.2	<ul style="list-style-type: none"> <li>Cleaner production shall be practiced with emphasize on good housekeeping and storage;</li> </ul>	PO-RALG/ Morogoro Municipal council		
		M18.3	<ul style="list-style-type: none"> <li>Domestic waste shall be controlled in well-engineered method at campsite</li> </ul>	PO-RALG/ Morogoro Municipal council		M11.7
	Land and surface water pollutions due to mismanagement of solid waste	M19.1	<ul style="list-style-type: none"> <li>Waste bins shall be placed at appropriate locations around the project premises;</li> </ul>	PO-RALG/ Morogoro Municipal council		
		M19.2	<ul style="list-style-type: none"> <li>Domestic solid wastes will be segregated using clearly marked bins and disposed off appropriately.</li> </ul>	PO-RALG/ Morogoro Municipal council		
		M19.3	<ul style="list-style-type: none"> <li>Waste segregation shall be exercised at the site to ensure that materials such as metals, plastics, glass, food wastes, etc. are separated for ease of reuse, recycling or disposal</li> </ul>	PO-RALG/ Morogoro Municipal council		862.07
		M19.4	<ul style="list-style-type: none"> <li>Waste storage and collection points shall be designated and waste will be removed at appropriate intervals to avoid accumulation at the site</li> </ul>	PO-RALG/ Morogoro Municipal council		8,620.69



Phases	Impact	Mitigation Ref	Proposed mitigation measures	Responsibility/ institution	Linked mitigation	Mitigation cost/(USD)
		M19.5	<ul style="list-style-type: none"> <li>Notices which aim at sensitizing people about proper waste management shall be posted at appropriate locations around the project premises;</li> </ul>	PO-RALG/ Morogoro Municipal council		431.03
		M19.6	<ul style="list-style-type: none"> <li>All the refuse collected from the proposed project site shall be disposed in Mafisa dump site</li> </ul>	PO-RALG/ Morogoro Municipal council		862.07
	Increased pressure on social services and utilities	M20.1	<ul style="list-style-type: none"> <li>Alternative measures like use of solar power, be explored and implemented if found feasible. For instance, use of energy savers bulbs shall be given high priority</li> </ul>	PO-RALG/ Morogoro Municipal council		BOQ, BILL 8000: STREET LIGHTING
	Traffic Accidents	M21.1	<ul style="list-style-type: none"> <li>Signs and symbols shall be established at all potential black spots on the access roads</li> </ul>	Contractor		BOQ BILL 5000: ANCILLARY ROADWORKS
		M21.2	<ul style="list-style-type: none"> <li>Awareness and education shall be provided to drivers and the general public</li> </ul>	Contractor		2,155.17
		M21.3	<ul style="list-style-type: none"> <li>Establishment of appropriate and understandable signage</li> </ul>	Contractor		BOQ BILL 5000: ANCILLARY ROADWORKS

Phases	Impact	Mitigation Ref	Proposed mitigation measures	Responsibility/ institution	Linked mitigation	Mitigation cost/(USD)
		M21.4	<ul style="list-style-type: none"> <li>Construction of rail guard should be constructed to house that are in corner and slope for example at chainage of 5+700,5+363 Veta Kihonda Tungi road and Tubuyu Road 1+200</li> </ul>	Contractor		12,931.03
	Health and Safety impacts	M22.1	<ul style="list-style-type: none"> <li>The proponent shall observe safety measures</li> </ul>	PO-RALG/ Morogoro Municipal council		2,155.17
		M22.2	<ul style="list-style-type: none"> <li>Procedures to follow and precautions to be taken by workers in case of emergency shall be displayed in the project area;</li> </ul>	PO-RALG/ Morogoro Municipal council		862.07
		M22.3	<ul style="list-style-type: none"> <li>All workers shall be educated about the fire hazards and non-hazards accident, methods and precautionary measures against occurring of that case</li> </ul>	PO-RALG/ Morogoro Municipal council		2,155.17
		M22.4	<ul style="list-style-type: none"> <li>The proponent shall develop emergencies preparedness in case of any accident</li> </ul>	PO-RALG/ Morogoro Municipal council		1,293.10
		M22.5	<ul style="list-style-type: none"> <li>Programmes Training shall be conducted to workers to provide education and awareness to workers;</li> </ul>	PO-RALG/ Morogoro Municipal council		1,508.62
	Climate Change Risks	M23.1	<ul style="list-style-type: none"> <li>Adaptation strategies for floods and reduce impacts on bridges</li> </ul>	PO-RALG/ Morogoro Municipal council		
		M23.2	<ul style="list-style-type: none"> <li>Protect bridges from damages caused by flooding by strengthening the bridge piers and foundations, or by increasing the hydraulic capacity of the bridge by raising the bridge deck</li> </ul>	Contractor		

Phases	Impact	Mitigation Ref	Proposed mitigation measures	Responsibility/ institution	Linked mitigation	Mitigation cost/(USD)
		M23.3	<ul style="list-style-type: none"> <li>Minimize the occurrence of flooding or reduce its magnitude by increasing infiltration within the catchment area draining through the bridge structure, or diverting high flows to drainage systems with a higher drainage capacity</li> </ul>	Contractor/ PO-RALG/ Morogoro Municipal council		19,396.55
		M23.4	<ul style="list-style-type: none"> <li>Use paving materials that are more resistant to expansion in extreme heat conditions</li> </ul>	Contractor		
		M23.5	<ul style="list-style-type: none"> <li>Build small-scale bridges with heat resistant materials or use coating</li> </ul>	Contractor		
		M23.6	<ul style="list-style-type: none"> <li>Adaptation strategies to reduce impacts on road</li> </ul>	Contractor		
		M23.7	<ul style="list-style-type: none"> <li>Raising Road Level is one solution to adapt to climate change events, especially flooding. The road surface level will be raised to an elevation higher than expected flood level to reduce risk of road damage and to prevent an inaccessible road during flood event.</li> </ul>	Contractor		
		M23.8	<ul style="list-style-type: none"> <li>Side slope should be adjusted from 1:2 to 1:3 or flatter to prevent flood damage and erosion from road surface runoff</li> </ul>	Contractor		BOQ BILL 3000: EARTHWORKS AND PAVEMENT LAYERS OF GRAVEL OR CRUSHED STONE

Phases	Impact	Mitigation Ref	Proposed mitigation measures	Responsibility/ institution	Linked mitigation	Mitigation cost/(USD)
Decommission phase	Noise pollution and vibration associated with demolition activities	M24.1	<ul style="list-style-type: none"> <li>Use of equipment designed with noise/vibration control elements shall be adopted where necessary</li> </ul>	PO-RALG/ Morogoro Municipal council		
		M24.2	<ul style="list-style-type: none"> <li>Trucks used during demolition exercise on site shall be routed away from noise sensitive areas in the neighborhood, where feasible;</li> </ul>	PO-RALG/ Morogoro Municipal Council & Contractor		1,724.14
		M24.3	<ul style="list-style-type: none"> <li>Idling time for pickup trucks and other small equipment shall be minimized to limited time</li> </ul>	PO-RALG/ Morogoro Municipal Council & Contractor		N/A
		M24.4	<ul style="list-style-type: none"> <li>Use of very noisy equipment shall be limited to day time only</li> </ul>	PO-RALG/ Morogoro Municipal Council & Contractor		N/A
		M24.5	<ul style="list-style-type: none"> <li>All workers operating in noisy areas or operating noisy equipment will be provided with earpieces to protect against extreme noise</li> </ul>	PO-RALG/ Morogoro Municipal Council & Contractor		2,155.17
		M24.6	<ul style="list-style-type: none"> <li>The demolition exercise shall be limited at day time only</li> </ul>	PO-RALG/ Morogoro Municipal Council & Contractor		862.07

Phases	Impact	Mitigation Ref	Proposed mitigation measures	Responsibility/ institution	Linked mitigation	Mitigation cost/(USD)
		M24.7	<ul style="list-style-type: none"> <li>The contractor shall further improve on the existing management of noise generation from equipment and staff to ensure that they comply with Tanzanian legislation at the time of decommissioning</li> </ul>	PO-RALG/ Morogoro Municipal Council & Contractor		
	Unightly conditions due to mismanagement of generated decommissioning on solid waste	M25.1	<ul style="list-style-type: none"> <li>The debris resulting from the demolition shall either be transported by a licensed waste transporter for dumping at an approved site or used as base material for new construction work</li> </ul>	PO-RALG/ Morogoro Municipal Council & Contractor		2,155.17
		M25.2	<ul style="list-style-type: none"> <li>Restoration of the affected land - services in of any open pits and grading the land to its natural contours, then planting appropriate tree species and under cover vegetation to prevent flooding</li> </ul>	PO-RALG/ Morogoro Municipal Council & Contractor		8,620.69
		M25.3	<ul style="list-style-type: none"> <li>All workers on the site shall be required to wear protective clothing while on duty</li> </ul>	PO-RALG/ Morogoro Municipal Council & Contractor		1,293.10
		M25.4	<ul style="list-style-type: none"> <li>The demolition exercise shall be limited at day time only</li> </ul>	PO-RALG/ Morogoro Municipal Council & Contractor		215.52
		M25.5	<ul style="list-style-type: none"> <li>All material which can be reused should be reused</li> </ul>	PO-RALG/ Morogoro Municipal Council & Contractor		
	Air pollution (Dust and exhaust emissions)	M26.1	<ul style="list-style-type: none"> <li>All personnel working on the project shall be trained prior to commencing the demolition exercise on methods for minimizing negative impacts on air quality;</li> </ul>	PO-RALG/ Morogoro Municipal Council & Contractor		862.07



Phases	Impact	Mitigation Ref	Proposed mitigation measures	Responsibility/ institution	Linked mitigation	Mitigation cost/(USD)
		M26.2	<ul style="list-style-type: none"> <li>All active demolition areas shall be watered at least twice a day to reduce dust;</li> </ul>	PO-RALG/ Morogoro Municipal Council & Contractor		2,068.97
		M26.3	<ul style="list-style-type: none"> <li>All trucks hauling demolition debris/wastes shall be covered</li> </ul>	PO-RALG/ Morogoro Municipal Council & Contractor		431.03
		M26.6	<ul style="list-style-type: none"> <li>Careful screening to contain and arrest demolition related dust shall be adopted;</li> </ul>	PO-RALG/ Morogoro Municipal Council & Contractor		
		M26.7	<ul style="list-style-type: none"> <li>Exposed demolition debris of e.g. dust and sand, shall be enclosed, covered, and watered daily before transported to disposal site</li> </ul>	PO-RALG/ Morogoro Municipal Council & Contractor		
	Loss of Employment	M27.1	<ul style="list-style-type: none"> <li>Ensuring that all employees are members of pension fund and the employer should ensure that the fund contributions are made;</li> </ul>	PO-RALG/ Morogoro Municipal Council & Contractor		862.07
		M27.2	<ul style="list-style-type: none"> <li>Preparing the workers for forced retirement by providing skills for self-employment, wise investment</li> </ul>	PO-RALG/ Morogoro Municipal Council & Contractor		
		M27.3	<ul style="list-style-type: none"> <li>Providing relevant skills to workers through on job training to make them marketable after decommission</li> </ul>	PO-RALG/ Morogoro Municipal Council & Contractor		

Phases	Impact	Mitigation Ref	Proposed mitigation measures	Responsibility/ institution	Linked mitigation	Mitigation cost/(USD)
	Workers accidents and hazards during demolition	M28.1	<ul style="list-style-type: none"> <li>All workers shall be sensitized before the exercise begins, on how to control accidents related to the demolition exercise;</li> </ul>	PO-RALG/ Morogoro Municipal Council & Contractor		862.07
		M28.2	<ul style="list-style-type: none"> <li>A comprehensive contingency plan shall be prepared before demolition begins, on accident response</li> </ul>	PO-RALG/ Morogoro Municipal Council & Contractor		215.52
		M28.3	<ul style="list-style-type: none"> <li>Adherence to safety procedures shall be enforced at all stages of the exercise;</li> </ul>	PO-RALG/ Morogoro Municipal Council & Contractor		215.52
		M28.4	<ul style="list-style-type: none"> <li>All workers, pursuant to labor laws, shall be accordingly insured against accidents</li> </ul>	PO-RALG/ Morogoro Municipal Council & Contractor		431.03
		M28.5	<ul style="list-style-type: none"> <li>All workers shall be provided and instructed to wear protective clothing during demolition, including helmets</li> </ul>	PO-RALG/ Morogoro Municipal Council & Contractor		431.03
		M28.6	<ul style="list-style-type: none"> <li>Demolition work shall be limited to daytime only avoid workers accidents due to poor visibility</li> </ul>	PO-RALG/ Morogoro Municipal Council & Contractor		431.03
<b>TOTAL COST FOR ESMP</b>						<b>412,075.09</b>

- **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 EPM and its effectiveness. The monitoring results are also used extensively during the environmental auditing.

The Tanzanian EIA 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 1.2). The ESMP also assigns responsibilities for monitoring activities. However, the divisional/ward/village environmental committees and municipal environmental committee will participate in the long-term daily monitoring of the project 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 1.2: Environmental and Social Monitoring Plan for Upgrading of Urban Roads and Drainage Systems in Morogoro Municipal**

Potential Impact	Parameter to Monitor	Monitoring Area	Monitoring Frequency	Measurement Unit	Target standard	Responsibility	Estimated Costs (USD)
Climate	Temperature	Project area	weekly	Centigrade	N/A	Contractor/ Morogoro Municipal	1,810.34
Air Pollution	Dust	Project site	weekly	µg/m <sup>3</sup>	<0.01 TZS 845:2005 Air Quality ± Specification	Contractor/ Morogoro Municipal	1,810.34
Noise Pollution & Vibration	Noise level	Project area. City center	Weekly	dBA	TZS 845:2005, TZS 983:2007, TZS 932:2006	Contractor/ Morogoro Municipal	1,810.34
Soil Pollution	pH	Storage Areas/Project Site	Monthly	ppm	5.5-7	Contractor/ Morogoro Municipal	1,724.14
Surface Water Pollution	Turbidity ,pH, Oil, Grease, COD, BOD, DO	100m Upstream & Downstream where the road crosses	Monthly	mg/L	TZS 789:2003- Drinking (potable) water - Specification	Contractor/ Morogoro Municipal	5,172.41
Impact on Groundwater	Turbidity, pH, Oil, Grease, COD, BOD, DO	100m Upstream & Downstream where the road crosses	Quarterly	mg/L	TZS 789:2003- Drinking (potable) water - Specification	Contractor/ Morogoro Municipal	3,448.28
Impact on vegetation Coverage	Area	Construction Corridor	Quarterly during construction	M <sup>2</sup>	N/A	Contractor/ Morogoro Municipal	3,448.28
Impact on Landscape	Land use	Project area	Annual	Acres	N/A	Contractor/ Morogoro Municipal	2,586.21

Potential Impact	Parameter to Monitor	Monitoring Area	Monitoring Frequency	Measurement Unit	Target standard	Responsibility	Estimated Costs (USD)
Land Acquisition & Resettlement	Rate of compensation for land and properties GRM grievances	Project area	Once before construction	Valuation Report	N/A	Contractor/ Morogoro Municipal	-
Employment opportunities and Source of Income	Life style	Project area	Bi Annually	Nos	N/A	Contractor/ Morogoro Municipal	-
Solid Waste Generation of (Including spoil material, Overburden and Stripped Vegetation)	Quantities generated	Project site	Weekly	M3	N/A	Contractor/ Morogoro Municipal	10,775.86
Contamination and disruption of water source/s(Rivers near the site)	Turbidity, TDS, Nitrates Oil, Grease, color	Project area	Monthly	NTU, mg/L, Hazen	N/A	Morogoro Municipal/Contractor / Ministry of Water & Irrigation	4,310.34
Influx of People into the Area	Increased number of people, Crimes incidences, Supply of Social services	Project Area	Once every six months	Numbers	N/A	Contractor/ Morogoro Municipal	431.03
Increased Risk of Diseases	Number of affected individuals &	Project Area	Once every six months	Numbers	Zero incidence	Contractor/ Morogoro Municipal	862.07

Potential Impact	Parameter to Monitor	Monitoring Area	Monitoring Frequency	Measurement Unit	Target standard	Responsibility	Estimated Costs (USD)
(HIV), Covid-19	Awareness Campaigns						
Health and Safety	Provisional of PPEs & Training	Project area	Bi Annually	Number of employees	N/A	Morogoro Municipal/Contractor /OSHA	1,293.10
Traffic & Road Impacts	Road Accidents & Road signs	Project area	Quarterly	Number of Accidents & Road Signs	Zero Incidence	Traffic Police/City Councils	862.07
Improved Economy	Increased economic activities	Regional area	Annually	Regional GDP	N/A	Contractor/Morogoro Municipal	862.07
Land and surface water pollutions due to mismanagement of solid waste	Facilities for disposal of solid wastes	Project area	monthly	Visual	TZS 789:2003-Drinking (potable) water - Specification	Contractor/Morogoro Municipal	1,293.10
Occupational Health & Safety Impacts	Adhere to safety regulations PPEs/sanitation & accommodation facilities	Project site	Quarterly	Quality of PPEs/Accommodation facilities and Safety Measures Provided	N/A	Contractor/Municipal & City Health Departments/OSHA	3,017.24
Loss of Employment	Pension Fund remittance	Project area		Number of employees registered with fund	N/A	Contractor/Morogoro Municipal	862.07
<b>TOTAL</b>							<b>46,379.31</b>





- **Implementation of the ESMP**

To facilitate effective implementation of the EMPs, the Morogoro Municipal Technical Support Team will:

- (a) establish an Environmental and Social Unit (ESU) responsible for ensuring the timely implementation of the EMP, 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 ESU in performing these tasks.

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

- 

- **1.4 Role and Responsibilities during EMP Implementation**

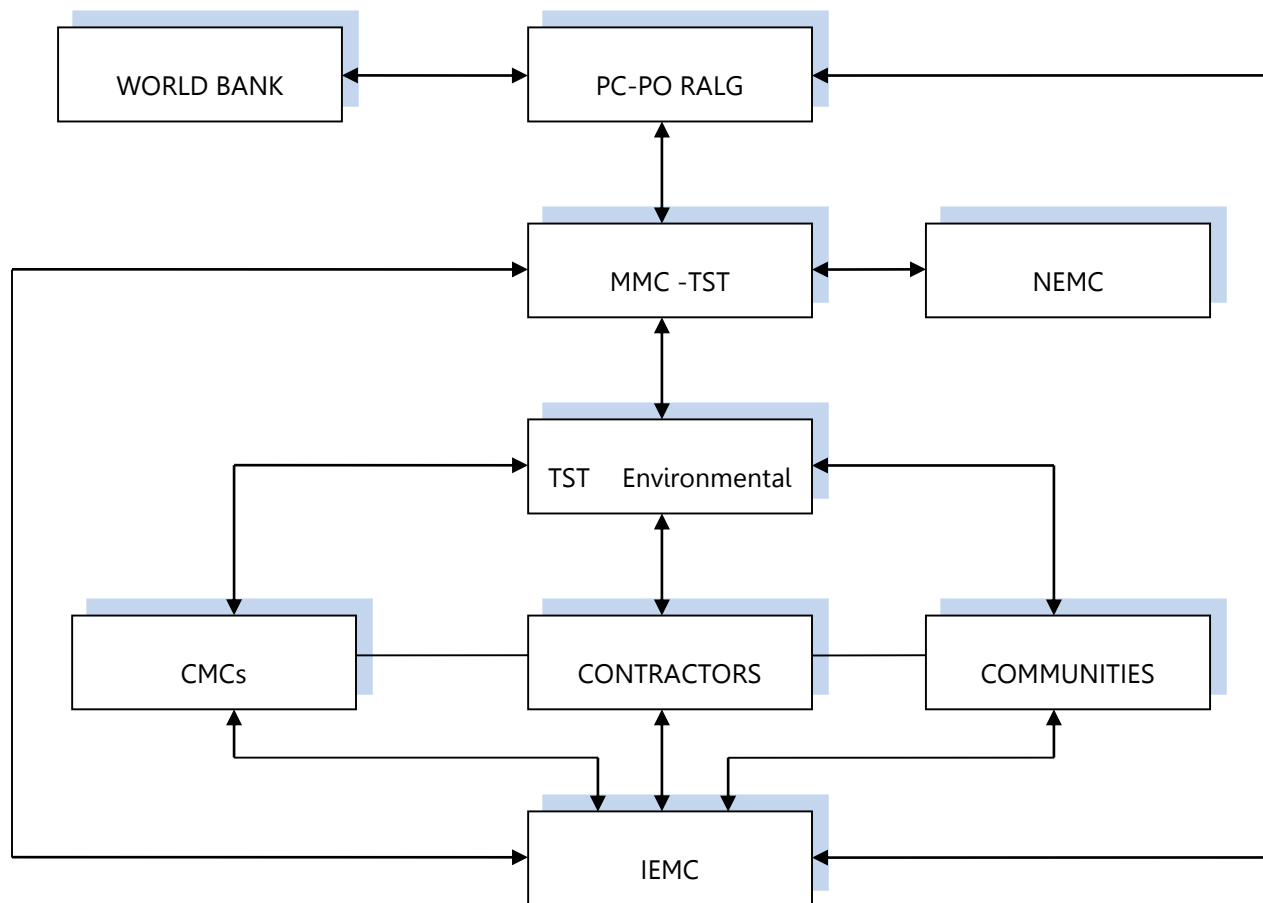
The Project Coordinator in the Prime Minister's Office-Regional Administration and Local Government (PC-PO RALG) will be responsible for the overall monitoring and quality assurance of the Project. While Morogoro Municipal through Technical Support Team (TST) shall be responsible for EMP implementation, the Project (PC-PO RALG) will have a quality assurance and monitoring role including all safeguards aspects. Morogoro Municipal will submit all safeguards progress and monitoring reports to the (PC-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 Morogoro Municipal. The IEMC's costs are therefore part of the PO RALG budget, and do not form part of the EMP implementation costs. The figure and subsequent table below summarize the roles and responsibilities of the key parties and their relationships with regard to the implementation of the EMP.

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 ESU/TST for implementing supervision and monitoring, and (ii) reporting on the implementation through periodic monitoring

reports. The relationship, roles and responsibilities of the ESU, TST, CSC, and IEMC are outlined in Figure 1.1 and Table 1.3.



• *Figure 1.1: Environmental Management Organization Chart*

• **Table 1.3: Role and Responsibilities of Key Parties for EMP Implementation**

Organ	Roles and Responsibilities
Morogoro Municipal -TST/ ESUs	-Responsible for implementing the EMP during the detailed design and construction stages. EMP implementation during operation stage is the responsibility of the Morogoro Municipal. MOROGORO MUNICIPAL-TST will set up an Environmental and Social Unit (ESU) to ensure timely and effective implementation of the EMP, 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 comply with the EMP; this means they contain the requirements and site-specific EMPs.

Organ	Roles and Responsibilities
	<ul style="list-style-type: none"> <li>– Responsible for communicating with relevant local, regional and national departments; and with the agencies responsible for implementing and supervising EMP, especially with the National Environmental Management Council (NEMC), and with the concerned wards/Sub-wards during planning, monitoring, management and operation.</li> <li>– 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.</li> <li>– To ensure effective monitoring and timely implementation of the EMP, Morogoro Municipal -TST/ESUs will hire national environmental consultants to assist them with carrying out and monitoring the EMP implementation.</li> <li>– In the course of supervising and monitoring the contractors' performance, Morogoro Municipal -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 EMPs; 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).</li> <li>– Coordinate closely with relevant bodies for water supply (MORUWASA), environmental sanitation, and solid waste collection, to monitor their operation and maintenance activities during project implementation.</li> </ul>
Construction Supervision Consultant (CSC)	<ul style="list-style-type: none"> <li>-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:</li> <li>– Assist IEMC to establish, collect and provide information essential environmental indicators, on-site and for the construction works.</li> <li>– Ensure that all work comply with the approved EMPs, as set out in documents for environmental impact mitigation and monitoring.</li> <li>– 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.</li> <li>– Prepare action plans and/or propose urgent solutions to cope with environmental problems, emergency situations and damage that occurred during construction</li> </ul>

Organ	Roles and Responsibilities
	<ul style="list-style-type: none"> <li>– Recommend to Morogoro Municipal -TSTs to suspend partially or completely construction work if labor safety and environmental protection requirements of the contract are not being complied with.</li> <li>– 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.</li> </ul>
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 Morogoro Municipal/TST.</p> <ul style="list-style-type: none"> <li>– Construction contractors are responsible for carrying out environmental impact mitigation measures and for complying with the approved EMP when implementing construction contracts. When preparing the "Contractors EMP", the contractor will study the project's approved EIA report and propose a construction method that includes environmental mitigation and monitoring measures that are in line with the approved EMP.</li> <li>– Contractor's EMP will be submitted to Morogoro Municipal -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.</li> <li>– During the construction work, the construction contractors will be closely supervised by Morogoro Municipal -TST, CSC, IEMC, environmental authorities and the local community for their compliance with the EMP.</li> </ul>
Independent Environmental Monitoring Consultant (IEMC)	<p>The IEMC will be responsible for assisting the Morogoro Municipal,TST with the EMP 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 Morogoro Municipal -TST and World Bank supervision staff, the IEMC will be responsible for quarterly checking, and for supporting the Morogoro Municipal -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 Morogoro Municipal -TST/ESU staff, including field engineers and/or consultants (CSC), in supervising the EMP 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>

Organ	Roles and Responsibilities
	– Ensuring that the approved EMP 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 Morogoro Municipal -TSTs on improvements needed to meet the safeguard requirements.
	– Reporting periodically (every 3 months) to the MOROGORO MUNICIPAL-TSTs on actual EMP performance during project implementation.
	– Establishing standard procedures, methods and forms to assist the MOROGORO MUNICIPAL-TSTs and CSC to assess contractors’ progress in implementing the required impact mitigation and monitoring measures.
	– Assisting the MOROGORO MUNICIPAL-TSTs’ environmental staff to review and check that relevant environmental sections (based on the EMP) have been included in the bid packages and construction contract documents to ensure compliance with environmental policies and impact mitigation and monitoring requirements.
	– Measuring, taking samples and monitoring periodically the key environmental parameters, i.e. once every 3 months.
	– Assistance with the preparation of documents and implementation of training programs in environmental monitoring and supervision for contractors, CSC and relevant staff of the MOROGORO MUNICIPAL-TST (environmental staff and coordinators of contract packages).
	– Via MOROGORO MUNICIPAL-TST, discussing with relevant enterprises, as necessary, to find suitable solutions for unexpected risks relating to environmental sanitation.



## APPENDIX VIII: SOIL AND GEOTECHNICAL REPORT



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



TANZANIA CITIES TRANSFORMING INFRASTRUCTURE AND  
COMPETITIVENESS (TACTIC) PROJECT

IDA CREDIT NO. ....

TENDER NO. ....

**Package 1: Upgrading of Muhimbili, Tubuyu II, Mjimwema,  
Barakuda and Kihonda-VETA-Tungi Roads and Construction of  
Storm Water Drainage Systems in Flood Prone Areas (Anti-  
Malaria and Kikundi Drains) in Morogoro Municipality.**

### BIDDING DOCUMENTS: Volume 5

Volume 5	Soil and Materials Reports (For Information Only)
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November 2022



- 3-point CBR tests (4-days soak)

The tests listed in Table 3-1 below, have been carried out on the subgrade materials at NORPLAN (T) LTD Materials testing laboratory in Dar es Salaam region.

**Table 3-1, List of tests carried out on subgrade materials**

Test Description	CML Reference	International Standard
Liquid Limit	CML 1.2	BS 1377:Part 2:1990
Plastic Limit & Plasticity Index	CML 1.3	BS 1377:Part 2:1990
Linear Shrinkage	CML 1.4	BS 1377:Part 2:1990
Particle Size Distribution (Wet Sieving)	CML 1.7	BS 1377:Part 2:1990
Compaction (BS Heavy)	CML 1.9	BS 1377:Part 4:1990
3-point CBR (tested after 4 days soaking)	CML 1.11	BS 1377:Part 4:1990 & TMH1:meth.A8:1986

The following section 3.3 provides summaries of the results obtained. Laboratory test results for alignment soils are presented in APPENDIX A of this report.

### 3.3 Findings of Investigations of the Alignment Soils

The summaries of laboratory test results for each road section is presented separately. On the other hand, the analysis of alignment soil laboratory test results will be done separately.

#### 3.3.1 Alignment Samples

Alignment subgrade soil types as evidenced by laboratory test results was dominated by CLAYEY SOILS, SILTY or CLAYEY GRAVEL and SAND.

The occurrence of the different subgrade soil types for each project road are as shown in Table 3-2 below.

**Table 3-2, Test results of subgrade characteristics along the project roads**

Chainage	Side	LL	PL	PI	Swell (%)	Class	90% CBR (%)	GM
<b>MJIMWEMA ROAD (5.3Km)</b>								
0+000	RHS	31.70	14.72	16.98	0.09	A-6	5.25	0.76
0+800	LHS	47.29	18.77	28.52	0.57	A-7-6	3.05	0.47
0+1600	RHS	30.40	15.12	15.28	0.14	A-6	4.68	0.32



<i>Chainage</i>	<i>Side</i>	<i>LL</i>	<i>PL</i>	<i>PI</i>	<i>Swell (%)</i>	<i>Class</i>	<i>90% CBR (%)</i>	<i>GM</i>
2+400	LHS	45.40	20.44	24.96	0.57	A-7-6	3.12	0.98
3+000	RHS	30.73	15.01	15.72	0.00	A-2-6	12.40	2.04
3+800	LHS	32.90	16.72	16.18	0.02	A-2-6	7.56	1.37
4+500	RHS	33.66	16.51	17.15	0.07	A-6	4.38	0.51
5+000	LHS	31.64	14.64	17.00	0.13	A-6	3.04	0.57
<b>TUBUYU II ROAD (2.4Km)</b>								
0+020	LHS	47.00	24.00	23.00	0.03	A-7-6	4.24	0.34
0+800	RHS	46.70	24.40	22.30	0.00	A-7-6	3.63	0.28
1+600	RHS	40.70	18.90	21.90	0.13	A-7-6	3.18	0.77
2+300	LHS	27.70	16.30	11.40	0.01	A-2-6	3.16	1.75
<b>KIHONDA – VETA – TUNGI ROAD (10.7Km)</b>								
0+050	RHS	27.00	13.60	13.40	0.00	A-2-6	17.05	1.71
1+000	LHS	35.00	17.60	17.40	0.02	A-6	10.05	0.65
2+000	RHS	30.50	15.50	15.00	0.00	A-6	8.42	1.19
3+000	LHS	38.00	18.30	19.70	0.06	A-6	3.15	0.80
4+000	RHS	38.50	17.40	21.10	0.00	A-6	6.42	0.70
4+800	LHS	37.50	19.80	17.70	0.00	A-6	6.80	1.03
5+500	LHS	38.90	18.90	20.00	0.02	A-6	8.84	0.74
5+800	RHS	43.90	22.20	21.70	0.12	A-7-6	3.11	0.51
6+200	LHS	45.30	19.30	26.00	0.03	A-7-6	3.01	0.63
6+400	RHS	39.90	19.00	20.90	0.03	A-6	3.22	0.53
7+000	RHS	36.60	20.80	15.80	0.02	A-6	7.09	0.46
8+000	LHS	34.00	17.80	16.20	0.06	A-6	9.64	0.46
9+000	RHS	34.80	21.70	13.10	0.02	A-6	10.10	0.55
10+000	LHS	38.90	22.00	16.90	0.13	A-6	3.20	0.25
10+700	LHS	37.00	20.00	17.00	0.01	A-6	6.35	0.27
<b>BARAKUDA – MAPANDE ROAD (0.66Km)</b>								
0+100	C/L	36.70	18.50	18.00	0.16	A-6	3.90	0.58
0+250	C/L	35.00	14.70	20.30	0.02	A-6	4.14	0.71
0+350	C/L	31.70	18.30	13.40	0.11	A-6	5.47	0.84
0+650	C/L	30.40	18.30	12.10	0.09	A-6	5.55	0.89
<b>MUHIMBILI ROAD (1.2Km)</b>								
0+000	LHS	31.00	15.70	15.30	0.00	A-2-6	7.91	1.20
0+600	RHS	30.40	15.00	15.40	0.06	A-2-6	6.78	0.90
1+200	LHS	37.50	23.20	14.30	0.00	A-2-6	19.33	1.65



### 3.3.2 Analysis of Test Results

The soils were found to exhibit predominantly low to medium plasticity with plasticity indices ranging between 10.30 and 28.52 %. All subgrades have PI less or equal to 28.52%.

The subgrade soils have been classified in accordance with AASHTO soil classification system. From Figure 3-1, it can be seen that the existing soils are dominated by A-6 (Clayey soils), A-7-6 (Clayey soils) and A-2-6 (Silty or Clayey Gravel and Sand).

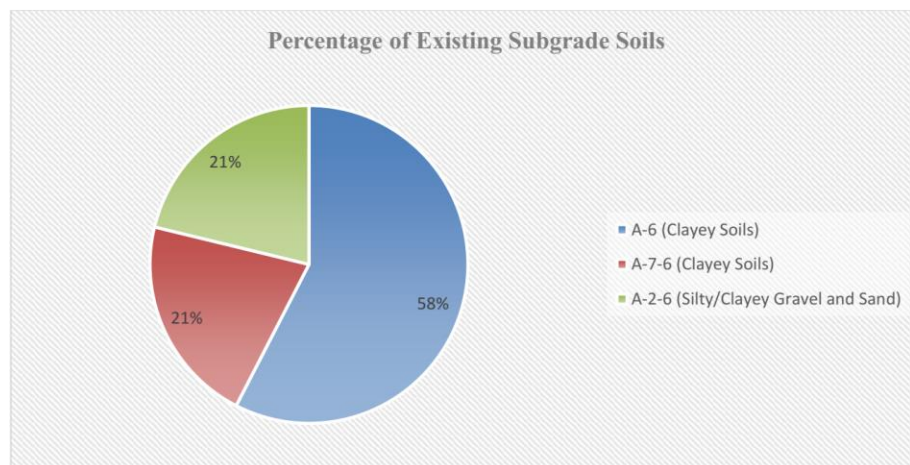


Figure 3-1, Percentage of each soil type on the Existing Subgrade along the project roads

In terms of quality of subgrade, it can be seen that existing subgrade soils consists of A-2-6(Silty or Clayey Gravel and Sand)-21.0%, A-6 (Clayey Soils)-58.0% and A-7-6 (Clayey soils)-21.0%.

Generally, the quality of the subgrade soils is low, most of the project roads had more fine subgrade soils than granular soils along their alignments. As indicated in figure 3-1 above, more than 80% of subgrade soils along all project roads in Morogoro Municipality are Clayey soils of low to medium plasticity indices.

On the other hand, the quality of the subgrade soils in terms of CBR is low. More than 70% of the subgrade soils have CBR 90% MDD less than 7%. The plots of CBR 90% MDD for each project road are presented in figure 3-2(a) and 3-2(b) below.

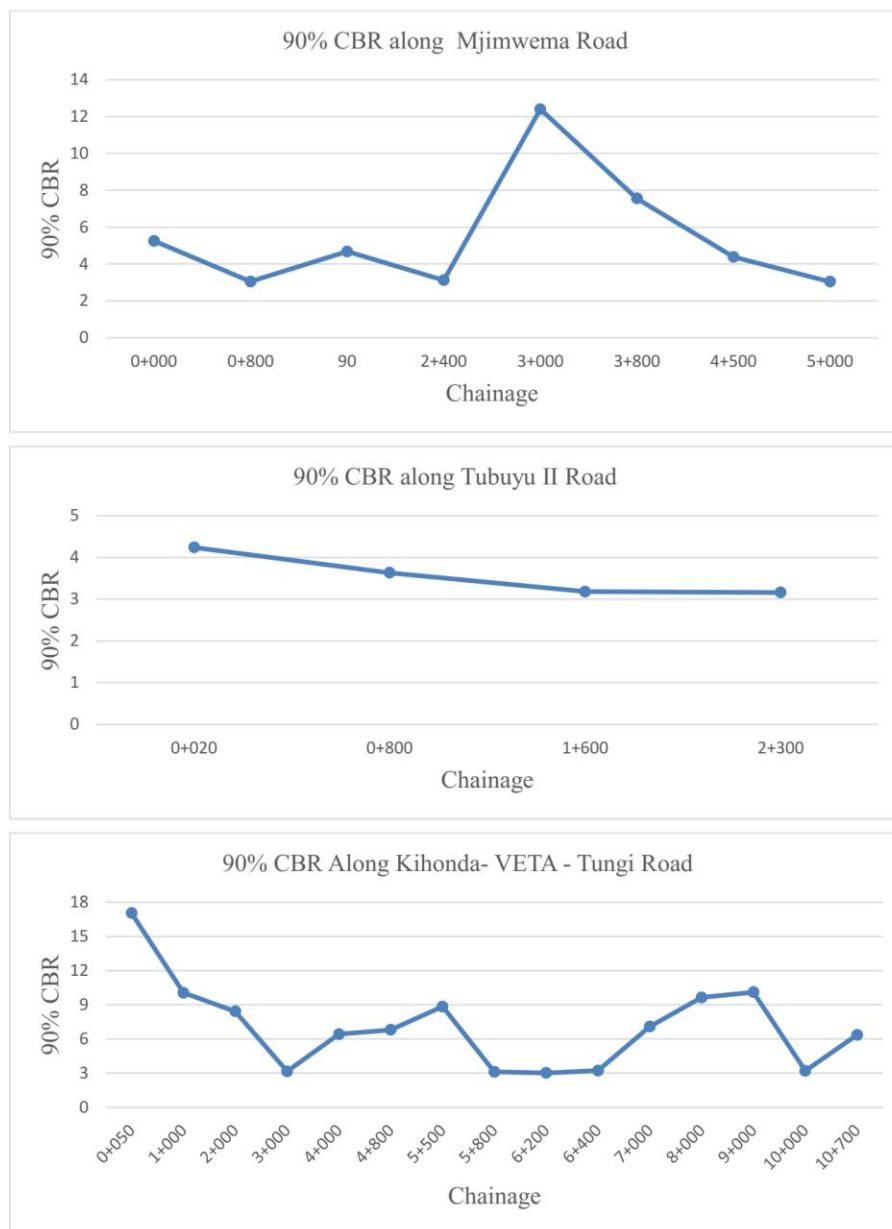


Figure 3-2(a) -CBR on the Existing Subgrade along the Project Roads

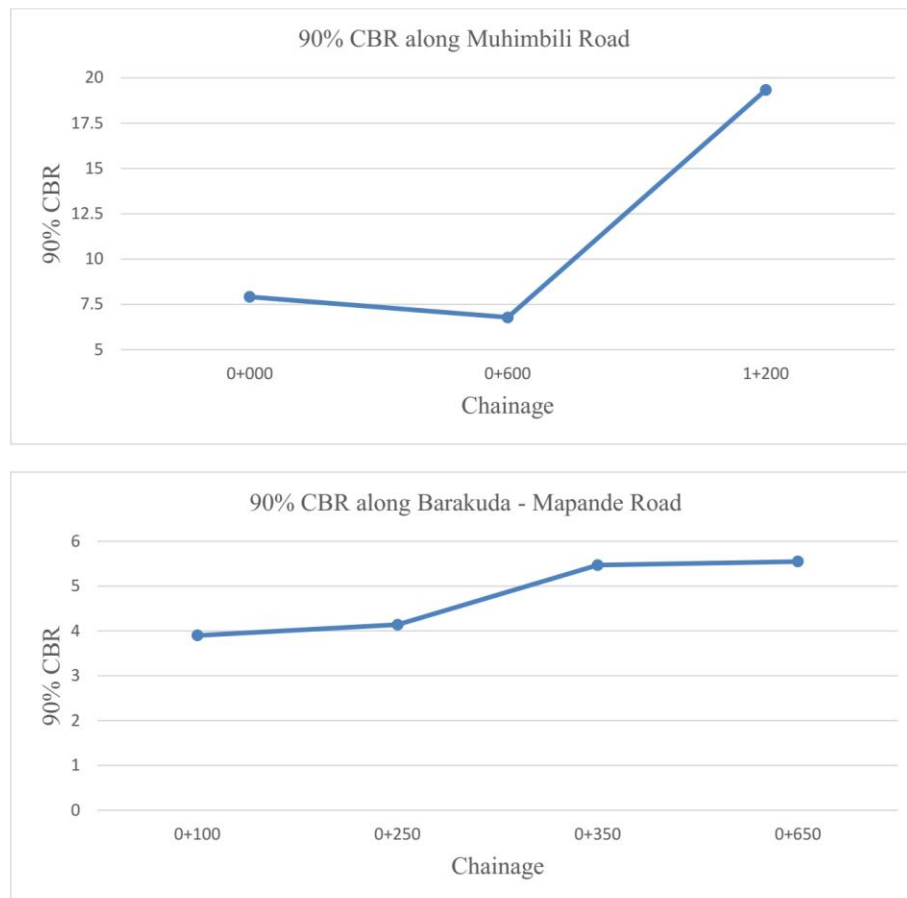


Figure 3-3(b) -CBR on the Existing Subgrade along the Project Roads

### 3.3.3 Homogeneous Sections

Homogeneous sections for each project road were determined using the “CUSUMs” method as stipulated in the AASHTO and Tanzanian ministry of works’ Pavement and Materials Design Manual-1999. The CUSUMs method of determination homogenous sections is summarized in table 3-3 for each road. Figure 3-3 presents the CUSUM values plotted against changes for each project road.





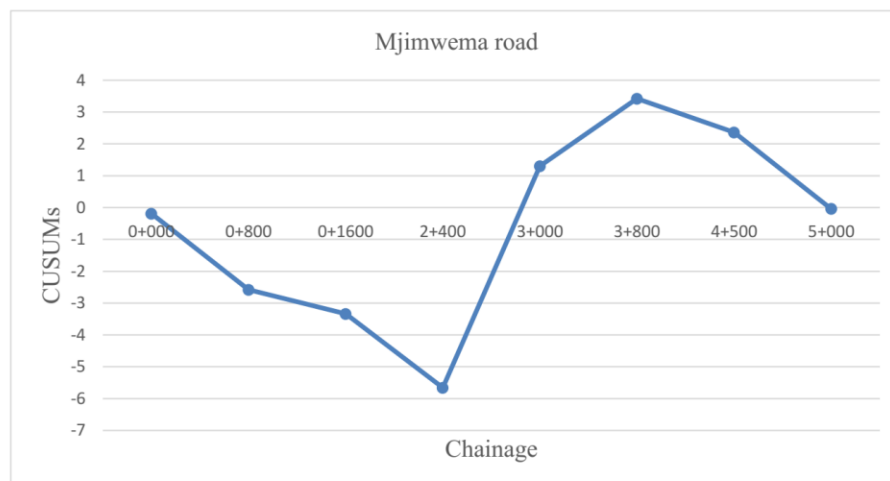
**Table 3-3: Classification for Homogeneous Sections along the Project Roads**

S/N	Chainage	90% CBR%=B	Difference from Average=C(B-A)	CUSUMs (Accumulated Values of C)
<b>Mjimwema road</b>				
1	0+000	5.25	-0.19	-0.19
2	0+800	3.05	-2.39	-2.58
3	1+600	4.68	-0.76	-3.34
4	2+400	3.12	-2.32	-5.66
5	3+000	12.40	6.96	1.30
6	3+800	7.56	2.12	3.42
7	4+500	4.38	-1.06	2.36
8	5+000	3.04	-2.40	-0.04
Average of CBR = A= 5.44				
<b>Tubuyu II road</b>				
1	0+020	4.24	0.69	0.69
2	0+800	3.63	0.08	0.77
3	1+600	3.18	-0.37	0.40
4	2+300	3.16	-0.39	0.01
Average of CBR = A= 3.55				
<b>Kihonda – VETA – Tungi road</b>				
1	0+050	17.05	9.95	9.95
2	1+000	10.05	2.95	12.90
3	2+000	8.42	1.32	14.22
4	3+000	3.15	-3.95	10.27
5	4+000	6.42	-0.68	9.59
6	4+800	6.80	-0.30	9.29
7	5+500	8.84	1.74	11.03
8	5+800	3.11	-3.99	7.04
9	6+200	3.01	-4.09	2.95
10	6+400	3.22	-3.88	-0.93
11	7+000	7.09	-0.01	-0.94
12	8+000	9.64	2.54	1.60
13	9+000	10.10	3.00	4.60
14	10+000	3.20	-3.90	0.70
15	10+700	6.35	-0.78	-0.08
Average of CBR = A= 7.10				
<b>Muhimbili road</b>				
1	0+000	7.91	-3.43	-3.43
2	0+600	6.78	-4.56	-7.99
3	1+200	19.33	7.99	0.00



S/N	Chainage	90% CBR%=B	Difference from Average=C(B-A)	CUSUMs (Accumulated Values of C)
Average of CBR = A= 11.34				
<b>Barakuda - Mapande road</b>				
1	0+100	3.90	-0.86	-0.86
2	0+250	4.14	-0.62	-1.48
3	0+350	5.47	0.71	-0.77
4	0+650	5.55	0.79	0.02
Average of CBR = A= 4.76				

**CUSUMS Vs Chainages along project roads for determination of homogenous sections**



**Figure 3-3(a), Homogeneous Sections along the Project Roads**



**CUSUMS Vs Chainages along project roads for determination of homogenous sections**

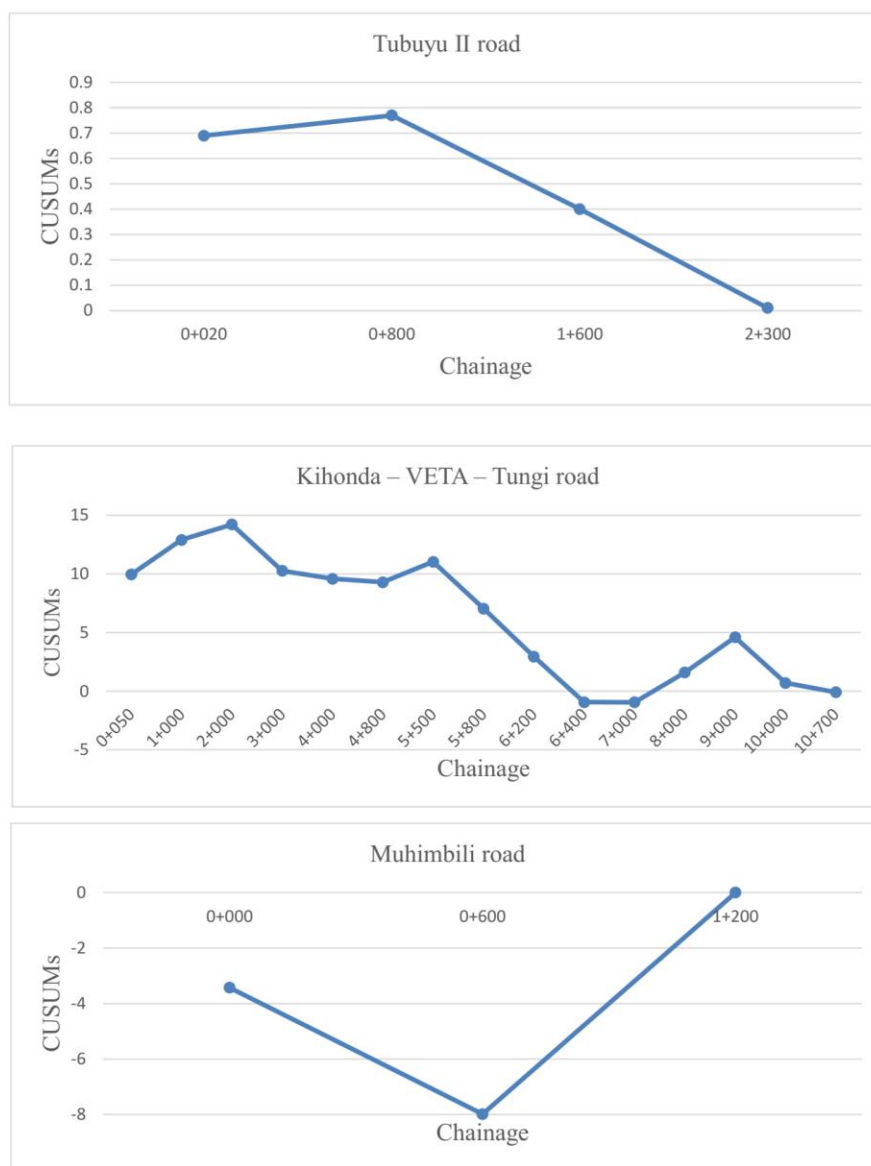
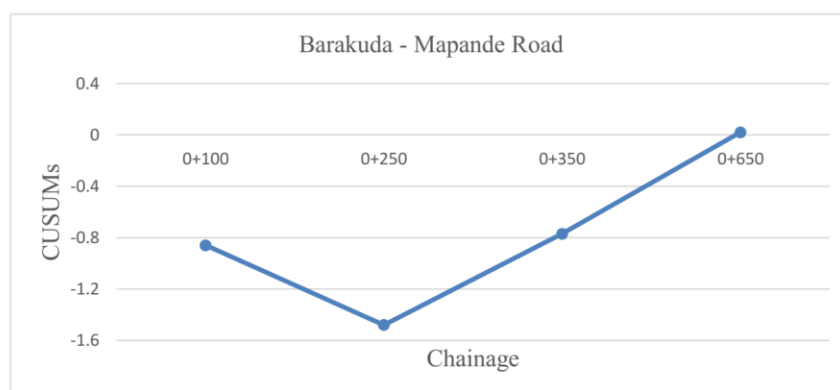


Figure 3-3(b), Homogeneous Sections along the Project Roads



### CUSUMS Vs Chainages along project roads for determination of homogenous sections



**Figure 3-3(c), Homogeneous Sections along the Project Roads**

Analysis of the results plotted in figures 3-3(a) to 3-3(c) above shows that the project roads can be grouped into several homogeneous sections as indicated in Table 3-4 below with various design CBR values. Homogeneous section plots and computations are presented in APPENDIX I of this report.

Table 3-4, Summary of Homogeneous Sections based on Laboratory CBR Results

Road Name	Chainage		Road Length (km)	Homogeneous 90%-ile Design CBR (%)	Subgrade Class
	From	To			
Mjimwema	0+000	2+400	2.40	3.0	S3
	2+400	3+800	1.40	4.0	S3
	3+800	5+300	1.50	3.0	S3
Tubuyu II	0+000	2+400	2.40	3.0	S3
Kihonda – VETA - Tungi	0+000	2+000	2.00	9.0	S7
	2+000	5+500	3.50	5.0	S3
	5+500	7+000	0.90	3.0	S3
	7+000	9+000	2.60	8.0	S7
	9+000	10+700	1.70	4.0	S3
Muhimbili	0+000	1+200	1.20	7.0	S7



Road Name	Chainage		Road	Homogeneous	Subgrade
	From	To	Length (km)	90%-ile Design CBR (%)	Class
Barakuda – Mapande	0+000	0+660	0.66	4.0	S3

In terms of subgrade strength parameters, several homogeneous sections were finally identified as summarized in table 3-4 above. Two project roads; Muhimbili and Barakuda - Mapande have one homogenous section each. For the remaining three project roads, each has several homogenous sections as indicated in table 3-4 above. An appraisal of identified homogeneous sections for each project road is given below.

#### 3.3.3.1 Mjimwema road

Mjimwema road has three homogenous sections. The first homogenous section starts at Km 0+000 to Km 2+400, the second homogenous section starts at Km 2+400 to Km 3+800 and the third homogenous section is from Km 3+800 to Km 5+300.

Subgrade materials along the first homogenous section were found to comprise of CLAY soils only. The bearing strengths (CBR at 90% MDD) along this road ranged from 3.05 % to 5.25%. The design CBR 90%-ile for the first homogenous section is 3.0%. The subgrade material along this section can be classified as subgrade class S3, with 4-days soak design CBR (Table 5.4: Pavement and Materials Design Manual, MoWTC - 1999).

Subgrade materials along the second homogenous section were found to comprise of mainly SILTY/CLAY GRAVEL and SAND soils. Clay soils occasionally occur along this section. The bearing strengths (CBR at 90% MDD) along this section ranged from 3.12 % to 12.40%. The design CBR 90%-ile for the second homogenous section is 4.0%. The subgrade material along this section can be classified as subgrade class S3, with 4-days soak design CBR (Table 5.4: Pavement and Materials Design Manual, MoWTC - 1999).

Subgrade materials along the third and final homogenous section for Mjimwema road were found to comprise of mainly CLAY soils, silty/clay gravel and sand soils occasionally occur along this section. The bearing strengths (CBR at 90% MDD) along this section ranged from 3.04 % to 7.56%. The design CBR 90%-ile for the third homogenous section is 3.0%. The



subgrade material along this section can be classified as subgrade class S3, with 4-days soak design CBR (Table 5.4: Pavement and Materials Design Manual, MoWTC - 1999).

According to minimum CBR requirement specified in the design manual, the subgrade materials along Mjimwema road requires two or more improved subgrade layers for both three homogenous sections.

#### 3.3.3.2 Tubuyu II Road

Tubuyu II road has only one homogenous section. Subgrade materials along Tubuyu II road were found to comprise of mainly CLAY soils, silty/clay gravel and sand soils occasionally occur along this section. The bearing strengths (CBR at 90% MDD) along this road ranged from 3.16 % to 4.24%.

The design CBR 90%-ile for Tubuyu II road is 3.0%. The subgrade material along this road can be classified as subgrade class S3, with 4-days soak design CBR (Table 5.4: Pavement and Materials Design Manual, MoWTC - 1999).

According to minimum CBR requirement specified in the design manual, the subgrade materials along Tubuyu II road requires two or more improved subgrade layers .

#### 3.3.3.3 Kihonda – VETA - Tungi Road

Kihonda – VETA - Tungi road has five homogenous sections. The first homogenous section starts at Km 0+000 to Km 2+000, the second homogenous section starts at Km 2+000 to Km 5+500, the third homogenous section is from Km 5+500 to Km 7+000, the fourth homogenous section is from Km 7+000 to 9+000 and the fifth homogenous section is from Km 9+000 to Km 10+700.

Subgrade materials along the first homogenous section were found to comprise mainly of CLAY soils , clay/silty gravel and sand soils occasionally occur along this section. The bearing strengths (CBR at 90% MDD) along this road ranged from 8.42 % to 17.05%. The design CBR 90%-ile for the first homogenous section is 9.0%. The subgrade material along the first homogenous section can be classified as subgrade class S7, with 4-days soak design CBR (Table 5.4: Pavement and Materials Design Manual, MoWTC - 1999).





Subgrade materials along the second homogenous section were found to comprise of only CLAYEY soils. The bearing strengths (CBR at 90% MDD) along this section ranged from 3.15 % to 8.84%. The design CBR 90%-ile for the second homogenous section is 5.0%. The subgrade material along this section can be classified as subgrade class S3, with 4-days soak design CBR (Table 5.4: Pavement and Materials Design Manual, MoWTC - 1999).

Subgrade materials along the third homogenous section were found to comprise of only CLAYEY soils. The bearing strengths (CBR at 90% MDD) along this section ranged from 3.01 % to 8.84%. The design CBR 90%-ile for the third homogenous section is 3.0%. The subgrade material along this section can be classified as subgrade class S3, with 4-days soak design CBR (Table 5.4: Pavement and Materials Design Manual, MoWTC - 1999).

Subgrade materials along the fourth homogenous section were found to comprise of only CLAYEY soils. The bearing strengths (CBR at 90% MDD) along this section ranged from 7.09 % to 10.10%. The design CBR 90%-ile for the fourth homogenous section is 8.0%. The subgrade material along this section can be classified as subgrade class S7, with 4-days soak design CBR (Table 5.4: Pavement and Materials Design Manual, MoWTC - 1999).

Subgrade materials along the fifth and final homogenous section for Kihonda – VETA – Tungi road were found to comprise of only CLAYEY soils. The bearing strengths (CBR at 90% MDD) along this section ranged from 3.20 % to 10.10%. The design CBR 90%-ile for this homogenous section is 4.0%. The subgrade material along this section can be classified as subgrade class S3, with 4-days soak design CBR (Table 5.4: Pavement and Materials Design Manual, MoWTC - 1999).

According to minimum CBR requirement specified in the design manual, the subgrade materials along Kihonda – VETA – Tungi road requires two or more improved subgrade layers for the second, third and fifth homogenous sections. On the other hand, subgrade materials along the first and fourth homogenous sections requires one or more improved subgrade layers.

#### 3.3.3.4 Muhimbili road



Muhimbili road has one homogenous section. Subgrade materials along Muhimbili road were found to comprise of only SILTY/CLAYEY GRAVEL and SAND Soils. The bearing strengths for this road ranged from 6.78 % to 19.33%.

The design CBR 90%-ile for this road is 7.0%. The subgrade material in this section can be classified as subgrade class S7, with 4-days soak design CBR (Table 5.4: Pavement and Materials Design Manual, MoWTC - 1999).

According to minimum CBR requirement specified in the design manual, the subgrade requires one or more improved subgrade layers.

#### 3.3.3.5 Barakuda – Mapande Road

Subgrade materials along Barakuda - Mapande road were found to comprise of only CLAY soils. The bearing strengths (CBR at 90% MDD) along this road ranged from 3.90 % to 5.55%.

The design CBR 90%-ile for Barakuda - Mapande road is 4.0%. The subgrade material along this road can be classified as subgrade class S3, with 4-days soak design CBR (Table 5.4: Pavement and Materials Design Manual, MoWTC - 1999).

According to minimum CBR requirement specified in the design manual, the subgrade materials along Barakuda - Mapande road requires two or more improved subgrade layers.

#### 3.3.4 Design of improved subgrade layers

Based on the design CBR for the existing subgrade along the alignment, the following layers shall be provided to bring the CBR of the existing subgrade materials to a minimum of 15% before placement of pavement layers. Table 3-5 below shows layers required for each homogenous section subgrade class identified along all project roads in Morogoro Municipality;



**Table 3-5, Improvement of Subgrade**

Road Name	Road Length (Km)	Subgrade Class	Improved subgrade Layers
Mjimwema	2.40	S3	Two or more improved subgrade layers
	1.40	S3	Two or more improved subgrade layers
	1.50	S3	Two or more improved subgrade layers
Tubuyu II	2.40	S3	Two or more improved subgrade layers
Kihonda – VETA - Tungi	2.00	S7	One or more improved subgrade layers
	3.50	S3	Two or more improved subgrade layers
	0.90	S3	Two or more improved subgrade layers
	2.60	S7	One or more improved subgrade layers
	1.70	S3	Two or more improved subgrade layers
Muhimbili	1.20	S7	One or more improved subgrade layers
Barakuda – Mapande	0.66	S3	Two or more improved subgrade layers

### 3.4 Road Sections with High Water Table

Only Barakuda – Mapande road were found to exhibit high water table at two test pit locations. The chainages of the trial pits which exhibited high water table were at Km 0+100 and at Km 0+350. The depth of water table was recorded 0.6m above existing ground levels for both trial pits. One trial pit at Km 0+250 were not found to exhibit high water table, but there were signs of it, this will be required to be monitored closely during constructions especially during rainy seasons.

Field investigations were conducted during dry season (June - July). For Other remaining project roads/sections, no trial pit was encountered to exhibit high water table during site



investigations. But this may not be the case for all remaining roads during rainy seasons, therefore monitoring will be required during construction especially during rainy seasons.

In order for the proposed pavement to perform properly within the design depth, during construction after site clearing and grubbing in discretion of the Engineer, one or combination of the following solutions should be adopted as follows;

- introduction of special drainage measures such as perforated pipes with permeable filter materials and geotextile fabrics, and or;
- the use of geo-grids and geotextile.

### **3.5 Expansive Soils**

As evidenced by test results on alignment soil samples collected along all project roads and based on the results and analysis presented in table 3-2 and 3-5, there is no project road/section with expansive soils. Based on this fact, there is no project road/section which requires special treatment for pavement foundation.



## **4. Materials Investigations**

### **4.1 Introduction**

Natural gravels for selected layers and fill, and densely graded crushed stone base material will be required for the new pavement. The granular materials for pavement layers; both subbase and base course layers has to satisfy strength, durability, grading and atterberg limits requirements. For this project, the C1 subbase layer will require gravels of at least G20 quality material (with modified requirements).

Materials investigations have been carried out along the project road within economic haulage distance. The investigations include sources of natural granular material (borrow pits), sources of hard rock to be used for base material, surface treatment and concrete works (quarries). Also, sources of sand for concrete works and water for construction were also investigated.

### **4.2 Fill Materials**

It is recommended that the materials to be used for fill (of G3 class) or better for layers more than 300mm below the formation level, the fill material should be compacted to 90% BS-Heavy.

### **4.3 Gravel Sources**

#### **4.3.1 General Summary and Utilization**

Three (3) gravel material sources in Morogoro Municipality which are within economic haulage distances were visited, and all gravel sources were investigated during preliminary investigation phase for their suitability and estimation of available quantities. Trial pits were excavated at each borrow pit to a depth of approximately 2.0m or to a hard stratum within the 2.0m depth. Visual assessment of the materials encountered was made and representative samples were taken for laboratory testing. The thickness of overburden and gravel seam was measured.

The following laboratory tests were performed on representative samples taken:

- Sieve Analysis
- Liquid limit LL
- Plastic limit PL





- Moisture Density Relationship
- 3 - Point CBR Test

A summary of laboratory test results on representative samples is presented in table 4-1 below.

**Table 4-1, Laboratory Test Results on Representative Samples**

BP No.	B/Pit Name	LL	LS	PI	PL	AASHTO class	GM	SWELL	CBR (95%)
1	Pangawe	NP	3.50	NP	NP	A-2-4	1.98	0.00	22.65
2	Lugala	38.90	10.71	18.54	20.36	A-2-6	2.43	0.00	26.59
3	Mzumbe	37.10	9.14	18.39	18.71	A-2-6	1.90	0.02	21.22

From the test results of the representative samples taken for laboratory testing, the quality of materials can be summarized as follows:

- Two (2) borrow pits have gravel with CBR greater than 20.0%.
- One (1) borrow pit has gravel with CBR greater than 25.0%

Regarding the test results above, all three potential sources for granular materials have been recommended for the construction of the fill or improved subgrade and pavement layers. A summary of laboratory test results for gravel sources is shown in Appendix B.

Appraisal of the natural gravel borrow pits investigated is outlined below.

#### **01. Pangawe borrow pit**

This is an existing borrow pit located in Pangawe village, about 13.0km from Morogoro Municipality. Overburden materials are silty soils. The borrow pit is accessible and currently used to maintain the existing project roads as well as for construction of ongoing road projects and for other different fill purposes in Morogoro Municipality.

Suitable gravel materials are found from a depth of 0.2/0.4m to over 4m seen on hill cut face with an approximate quantity of over 2800m<sup>3</sup>.

The source has the following properties; liquid limit of NP, linear shrinkage of 3.5%, plasticity index of NP, grading modulus of 1.42, CBR% swell of 0.00, material's 4-days soaked CBR was 22.65% at 95% MDD.





The material can be classified as G20 quality material. The material from this borrow pit can be used for construction of fill or improved subgrade as well as pavement layers.

## **02. Lugala borrow pit**

This is an existing borrow pit located in Lugala village, about 8.0km from Morogoro Municipality. Overburden materials are silty soils. The borrow pit is accessible and currently used to maintain the existing project roads as well as for construction of ongoing road projects and for other different fill purposes in Morogoro Municipality.

Suitable gravel materials are found from a depth of 0.2 m to over 3.5m seen on hill cut face with an approximate quantity of over 300,000m<sup>3</sup>.

The source has the following properties; liquid limit of 38.90%, linear shrinkage of 10.71%, plasticity index of 18.54.00%, grading modulus of 2.43, CBR% swell of 0.00, material's 4-days soaked CBR was 26.59% at 95% MDD.

The material can be classified as G25 quality material. The material from this borrow pit can be used for construction of fill, improved subgrade and pavement layers.

## **03. Mzumbe borrow pit**

This is an existing borrow pit located near Mzumbe University, about 13.0km from Morogoro town center. Overburden materials are silty soils. The borrow pit is accessible and currently used to maintain the existing project roads as well as for construction of ongoing road projects and for other different fill purposes in Morogoro Municipality.

Suitable gravel materials are found from a depth of 0.2 - 0.4 m to over 3.5m seen on hill cut face with an approximate quantity of over 350,000m<sup>3</sup>.

The source has the following properties; liquid limit of 37.10%, linear shrinkage of 9.14%, plasticity index of 18.39%, grading modulus of 1.90, CBR% swell of 0.02, material's 4-days soaked CBR was 21.22% at 95% MDD.

The material can be classified as G20 quality material. The material from this borrow pit can be used for construction of fill, improved subgrade and pavement layers.

## **4.4 Borrow Pit Quantities and Utilization**



The following paragraphs contain information of the natural gravel sources that may be available for the project. Although probable, the information provided have to be regarded as a summary of assumptions and verification testing will be necessary at the time of construction.

During construction, the following will be required:

- Confirm by means of onsite testing compliance of the in-situ materials in-between the indicated (tested) test pit positions.
- Identification and distinguishing within the borrow pit area between specific sourcing areas (of different quality).
- Borrowing and stockpiling operations have to be performed diligently. Unsuitable (overburden) material has to be avoided and only gravel that has been tested and that complies with requirements may be used.

#### **4.5 Excavated Materials from Cut Sections**

The excavated materials on the cut sections can be used for various constructions works. According to alignment laboratory test results, there are suitable subgrade materials which can be used for fill layers.

The materials have various properties; however, at this stage, the materials have been assessed for common fill that shows CBR % swell of  $< 2$  and materials 4-days soaked CBR of more than 3% at 90% MDD. Tentatively, the material can be classified as G3 quality material, which can be used for construction of fill. During construction, the excavated materials should be stockpiled, retested and classified properly.

#### **4.6 Hardstone Sources**

##### **4.6.1 General**

Hard stone material will be required for production of aggregate for concrete works, production of base course pavement layer, and production of bituminous surfacing pavement layer. Hard stone samples from the proposed quarry sites were taken for laboratory testing. The following test have been carried out at NORPLAN (T) LTD material testing laboratory in Dar es Salaam.

- Loss Angeles Abrasion
- Aggregate strength – 10% fines value (TFV), dry



- Aggregate strength – 10% fines value (TFV), wet
- Aggregate Crushing Value (ACV)
- Sodium Sulphate Soundness
- Bitumen Affinity
- Aggregates Impact Value
- Soluble salts Contents
- Water absorption

Laboratory test results for rock source are summarized in Appendix C.

#### 01. Melela Mlandizi Quarry

This is an existing hard stone source/quarry located in Melela Mlandizi village, about 40.0 km from Morogoro Municipality. Currently the quarry is fully operational and used for different constructional purposes within Morogoro Municipal Council.

It is estimated that the source can yield more than 350,000m<sup>3</sup> of crushed aggregates. Samples taken from this source were tested for suitability in bituminous surfacing and concrete works that shows the following results.

• TFV (Dry)	157.5 kN
• TFV (Wet)	127.9 kN
• ACV	23.25%
• Aggregate Impact Value	23.40%
• Apparent specific gravity	2.775%
• Water absorption	0.43%
• Saturated surface dry specific gravity	2.754%
• Bulk Specific Gravity	2.743

TFV<sub>dry</sub> is 157.5KN > 110KN, the ratio of TFV (wet) to TFV (dry) is 80.0% > 75%, water absorption is 0.43% < 2.0%. According to PMDM and Standard Specification for Road Works (SSRW-2000), the aggregates from this source meet the required properties for base course pavement layer, asphalt works and concrete works.

#### 02. Lugoba - Kerai Quarry



This is existing and among the many quarries in Lugoba, the distance from Lugoba to Morogoro Municipality is approximately 120km. Lugoba sources can be a backup in case of any unforeseen circumstances to the production of Melela Mlandizi quarry during construction. Currently the Lugoba quarry sources are fully operational and are used in different construction purposes in Coast region, Dar es Salaam and parts of Morogoro near to Coast region.

Samples taken from this source were tested for suitability in bituminous surfacing and concrete works that gave the following results.

• TFV (Dry)	258.8 kN
• TFV (Wet)	231.5 kN
• ACV	17.37%
• Aggregate Impact Value	15.0%
• Apparent specific gravity	2.783%
• Water absorption	0.246%
• Saturated surface dry specific gravity	2.771%
• Bulk specific gravity	2.764%

TFV is  $258.8 > 110\text{KN}$ , the ratio of TFV (wet) to TFV (dry) is  $90.0\% > 75\%$ , water absorption is  $0.246\% < 2.0\%$ . According to PMDM and Standard Specification for Road Works (SSRW-2000), the aggregates from this source meet the required properties for base course pavement layer, asphalt works and concrete works.

## 5.7 Sand Sources

### 5.7.1 General

Sources of sand were investigated by sampling and performing sieve analysis to ascertain their suitability. The grading of these sources, in comparison with grading envelope specified in BS 822 (1983) shall form the basis for recommending the use of these sources for concrete works. Summary of laboratory tests results for sand sources is shown in Appendix D. During site investigations, only one reliable source was identified and representative sample was taken for laboratory testing.

#### 01. Mlapakolo River sand





This is an existing and the only reliable sand pit source located in Mlapakolo river, near Lugala borrow pit around 7.0 km from Morogoro town. The source is easily accessed and is currently utilized in different ongoing projects within Morogoro Municipality. The material is light brown which is medium to coarse SAND.

A representative sample taken from this source was tested for particle size distribution to ascertain its suitability for usage in concrete works. The grading of this source falls within the grading template specified in BS 822 (1983) and therefore recommended for use for concrete works. A summary of other laboratory test results is as follows;

- Bulk specific gravity.....2.667%
- Saturated surface dry specific gravity.....2.704%
- Apparent specific gravity..... 2.772%
- Water absorption..... 1.421%
- Sand equivalent .....98.0%
- Organic content.....0.44%

## 5.8 Water Sources

### 5.8.1 General

There are various permanent and seasonal rivers including water ponds that provide reliable sources of water for construction works especially during rain seasons. During site investigations, one reliable permanent water sources was identified. Representative samples were taken for laboratory testing. The laboratory water test was done in accordance to standard methods for the examination of water samples ASTM C 1602 and APHA et al., 1992.

The following tests have been carried out at University of Dar es Salaam water testing laboratory in Dar es Salaam.

- PH
- Total Alkalinity (mg/l as  $\text{CaCO}_3$ )
- Chlorides (mg/l)
- Electrical conductivity ( $\mu\text{S}/\text{Cm}$ )



- Total Dissolved Solids (mg/l)
- Total Hardness (mg/l as CaCO<sub>3</sub>)
- Sulphate (mg/l)
- Magnesium (mg/l)
- Calcium (mg/l)
- Ammonium (mg/l)
- Bicarbonates (mg/l as CaCO<sub>3</sub>)

Laboratory test results for water sources is shown in Appendix E.

#### Water Source - 1 (Ngerengere River)

Ngerengere river discharges water throughout the year and passes through different places in Morogoro town. Currently, water from this river is used for domestic and construction purposes in Morogoro town. Ngerengere river can be easily being accessed at many locations within Morogoro Municipality. Evaluation of water quality from this source was carried out and the results are as summarized below.

**Table 4-4, Summary of Water Results from Ngerengere River**

S/No.	Parameters	Unit	Value	Specification for Concreting: Degree of Aggressiveness			
				DIN 4030			AASHTO
				Slight	Severe	Very Severe	Recommended
1	pH	-	7.41	6.5-5.5	5.5-4.5	<4.5	4.5-8.5
2	Electrical Conductivity	μS/Cm	456	N.M	N.M	N.M	N.M
3	Total Dissolved Solids	mg/l	230	N.M	N.M	N.M	N.M
4	Total Hardness	mg/l	95.0	N.M	N.M	N.M	N.M
5	Total Alkalinity	mg/l	85.0	N.M	N.M	N.M	N.M
6	Sulphates	mg/l	45.50	200-600	600-300	>3000	<1000
7	Chloride	mg/l	52.10	300-600	600-300	>3000	<500
8	Calcium	mg/l	18.40	N.M	N.M	N.M	N.M
9	Magnesium	mg/l	16.50	300-1000	1000-3000	>3000	N.M
10	Ammonium	mg/l	1.52	15-30	30-60	>60	N.M





According to limits set by DIN 4030, AASHTO and Tanzanian standards for various uses, the water source is suitable for drinking and construction works.



## **5. Geotechnical Investigation**

### **5.1 Introduction**

Geotechnical Investigation for Kihonda Mini Bus Stand was a component of the project for Feasibility Study, Urban Design, Detailed Engineering Design, Environmental and Social Due Diligence, Preparation of Cost Estimates and Bidding Documents for Urban Infrastructure Investments for Morogoro, Songea, Sumbawanga and Mbeya Councils (TACTIC ZONE 3). The scope of the assignment also involved the architectural and structural design of Kihonda Mini Bus Stand in Morogoro Municipality.

This report summarizes the findings and observations obtained from the field and laboratory testing. The site work also involved Excavation of Trial Pits to 3m depth from the ground surface or refusal, profiling and sampling and performing Dynamic Probing Super Heavy (DPSH) Test. The field investigations were carried out in June to July 2022 in accordance with the British Standard Specifications (BS 5930:1999+A2:2010: Code of Practice for Site Investigation) and ISO 22476-2:2005 Field testing — Part 2: Dynamic probing.

The collected soil samples from trial pits were sent to Norplan Soil Mechanics Laboratory for testing. The tests included Classification tests (particle size distribution analysis, atterberg limits, linear shrinkage), shear strength tests and chemical tests for soil samples. The laboratory testing was carried out in accordance to BS 1377:1990.

This report also provides details of the tests carried out, their analysis and foundation recommendations.

### **5.2 Objectives**



The main objectives of the ground investigation were to determine the probable sub surface conditions such as stratification, denseness or hardness of the strata and position of groundwater.

### **5.3 The Site Geology**

#### **5.3.1 Site location**

The site is located in Morogoro Municipality. Location of Trial Pits and DPSH Points is given in the form of coordinates in Table 5-1.

#### **5.3.2 Geological Outline**

The Geology of Morogoro Region is believed to be comprised of Usagaran belt in the western direction and Neoarchean rocks with Neoproterozoic overprints (Mozambique belt) in the eastern direction. The southern direction is of Triassic upper carbonaceous (karoo) sedimentary rocks including permian coals.

### **5.4 Applicable standards**

The followings standards are applied:

- BS 5930:1999 + A 2: 2010: Code of practice for site investigations
- ISO 22476-2:2005: Field testing — Part 2: Dynamic probing.
- BS 1377:1990; Method of test for soils civil engineering Purposes

### **5.5 Field Investigation**

The scope of work included test pit excavations to depths of 3.0m below the ground level or refusal and performing Dynamic Probing Super Heavy (DPSH) Tests.

The actual locations of investigation points were done using handheld GPS and the coordinates indicated in the layouts in Appendix 1. The coordinates for DPSH and test pit locations are presented in



Table 5-1 below.

**Table 5-1, Investigation Points Coordinates for Kihonda Mini Bus Stand site**

Point ID	Depth below GL (m)	Coordinates (m) in WGS 84	
		Eastings	Northings
TP 1	2.7	352392.0	9252933.0
TP 2	2.8	352437.0	9252916.0
TP 3	2.4	352478.0	9252908.0
TP 4	2.5	352373.0	9252831.0
DPSH 1	6.2	352398.0	9252918.0
DPSH 2	4.4	352471.0	9252918.0
DPSH 3	3.2	352434.0	9252972.0

#### 5.5.1 Test Pits

Four (4) Trial pits were dug at the proposed Kihonda Mini Bus stand site. Each Trial pit was dug to 3.0m depth below the existing ground level or refusal by manual labours.

Generally, for each test pit the following was carried out;

- Profile description of subsoil layers,
- Taking a coloured picture of the profile
- Taking a representative sample of the existing subgrade layer for subsequent laboratory testing,
- Recording level of ground water table in case encountered.

Selected trial pits photos at the proposed Kihonda mini bus stand are presented below;



*Figure 5-1 –Selected trial Pit (TP 3 & TP 4) photos at the proposed Kihonda mini bus stand.*

#### **5.5.2 Dynamic Probing Super Heavy (DPSH) Test**

DPSH test is useful for continuous assessment of subsurface strata throughout the depth of investigation. The test involved driving a disposable cone into the ground using a 63.5kg hammer falling through 76cm height. The blow counts were recorded for each 20cm advance into the ground according to ISO 22476-2:2005 Field testing — Part 2: Dynamic probing. Selected site photos for DPSH at Kihonda mini bus site are presented in figure 5.2 below, the Depth Vs Blow counts plots for each DPSH Test are presented in section 5.6.2 below.





*Figure 5-2 –Selected DPSH photo at proposed Kihonda Mini Bus Stand*

## 5.6 Investigation Results

### 5.6.1 Subsurface Conditions

This section briefly describes the subsoil strata encountered at site. The detailed soil conditions are described in logs presented in Appendix G. Test pits encountered the following general succession of strata presented below.

#### 5.6.1.1 Borehole Profiles

**a) Kihonda Mini Bus Terminal - Pit 1**

0.00 – 0.25m	Dry, dark grey silty SAND with grain roots
0.25 – 2.70m	Dry, greyish brown, Sandy CLAY of low plasticity

**b) Kihonda Mini Bus Terminal - Pit 2**

0.00 – 0.20m	Dry, dark grey silty SAND with grain roots
0.20 – 1.40m	Dry, reddish brown, Sandy CLAY of low plasticity
1.40 – 2.80m	Dry, reddish brown, Clayey Gravelly SAND of low plasticity

**c) Kihonda Mini Bus Terminal - Pit 3**

0.00 – 0.20m	Dry, brownish grey Silty SAND with grain roots
0.20 – 1.60m	Dry, brownish grey, Sandy CLAY of low plasticity
1.60 – 2.40m	Dry Greyish white, poorly graded Silty Gravelly SAND





**d) Kihonda Mini Bus Terminal - Pit 4**

0.00 – 0.20m Dry, dark Clayey SAND with grain roots

0.20 – 2.50m Dry, dark reddish, Clayey SAND of low plasticity

**5.6.2 Dynamic Probing Super Heavy (DPSH) Test**

The Charts of Depth Vs Blow counts for each Dynamic Probing Super Heavy (DPSH) for the proposed construction of Kihonda Mini Bus Stand in Morogoro municipality are presented below.

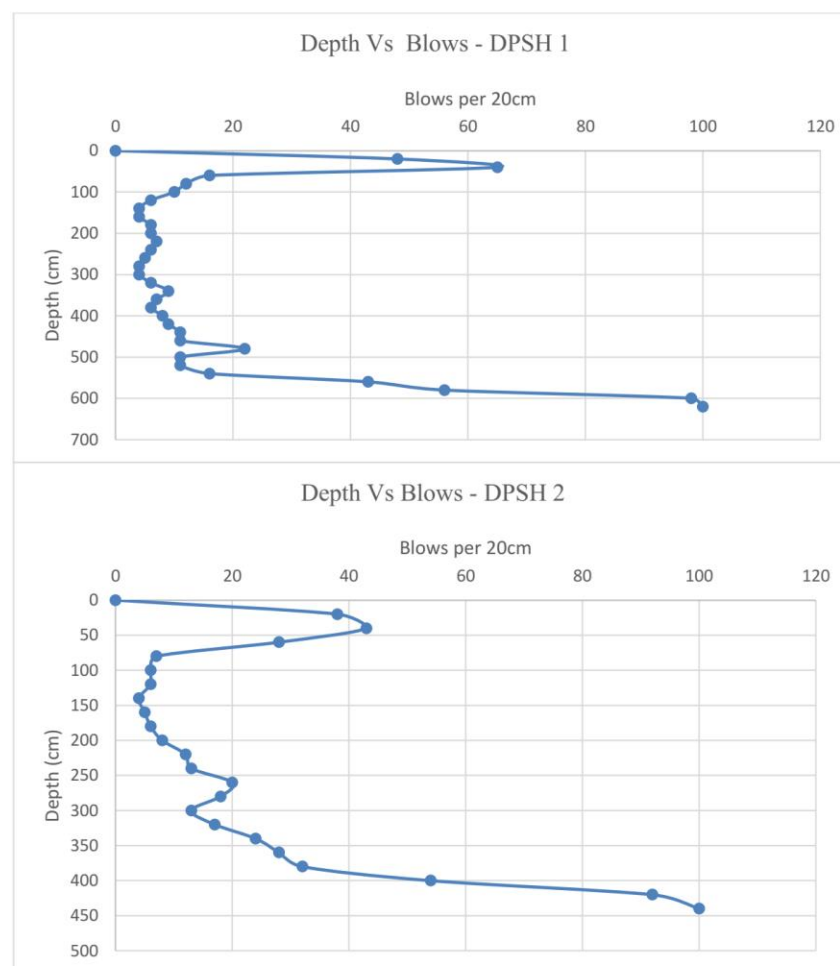


Figure 5-3 (a) –DPSH 1 & 2 Depth Vs Blow Count for Kihonda mini bus stand site

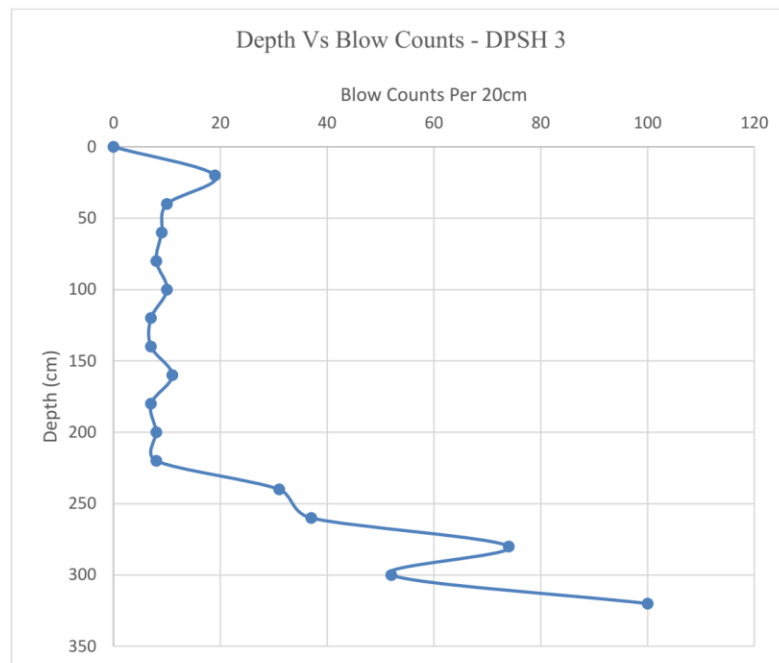


Figure 5-3 (b) –DPSH 3 Depth Vs Blow Count for Kihonda mini bus stand site

### 5.6.3 Groundwater Observation

During the subsurface investigation, ground water table was not encountered across all locations.

### 5.7 Laboratory Test results

Laboratory tests were carried out in accordance with the British Standard Specifications (BS1377:1990). The tests carried out include: -

- Particle size distribution analysis
- Shear strength tests
- Chemical Tests on water samples

The discussion on the Laboratory test results is referring to the results presented in Appendix I of this report.



**a) Sieve analysis**

The particle size distribution indicates that the site soils are distributed across the sites as following;

**Kihonda Mini Bus Stand** indicated approximately equal distribution of Sandy Clay & Clayey/Gravelly Sand soils.

**b) Atterberg limits**

Proposed Kihonda mini bus stand indicated a PI of 11.4 – 17.5%. This indicate low plasticity properties. One sample indicated non plastic property. The soil from this site indicate good drainage properties.

**c) Shear Strength test**

Direct shear test results for the proposed Kihonda Mini bus stand are summarized in the table 5-2.

**Table 5-2, Summary of Direct Shear Test Results for proposed Kihonda Mini Bus stand**

Soil Type	Cohesion (kN/m <sup>2</sup> )	Angle of Friction (Deg)
Sandy Clay	34 - 39	27 - 30
Clayey Sand	44	28
Silty Gravelly Sand	0	39
Clayey Gravelly Sand	43	34

**d) Chemical Test**

The chemical Tests for Soil samples from Kihonda Mini bus stand are as summarized in table 5-3 below.



**Table 5-3, Summary of chemical tests on soil samples**

Trial Pit ID	Sample Depth (m)	Chloride Content (mg/kg)	Sulphate Content (mg/kg)	pH
TP 1	0.25 – 2.70	19	15	6.35
TP 4	0.20 – 2.50	12	9.2	6.03

According to BS 8500-1:2015+A2:2019 and DIN 4030, these values are non-aggressive. Therefore, no further recommendations are necessary for concrete cover to the reinforcement and ordinary Portland cement can be used in the construction under the site conditions.

### 5.8 Soil Parameters

The soil parameters have been assigned based on description of the strength in soil profile, index property test results, empirical relationships with DPSH test results, and on laboratory test results.

Based on the field and laboratory testing carried out during the investigations, the following design parameters are assigned to different strata as summarized in the following table:

**Table 5-2, Soil Parameters**

Soil Type	Unit Weight (kN/m <sup>3</sup> )	Cohesion (kN/m <sup>2</sup> )	Angle of Friction (Deg)
Sandy Clay	18	34	27
Gravelly Sand	18.5	0	34
Clayey Sand	18.5	0	28

### 5.9 Allowable Soil Pressure

The allowable bearing pressure is a function of both soil properties, type and depth of particular foundation. Bearing Capacity Has been checked using both DPSH Blow counts and



Laboratory test results. In both Cases Meyerhof Equations were used to determine bearing capacity.

Meyerhof (1951, 1963) proposed a bearing-capacity equation similar to that of Terzaghi but included a shape factor  $s_q$  with the depth term  $N_q$ . He also included depth factors  $d_i$ , and inclination factors  $i_i$ , for cases where the footing load is inclined from the vertical.

Meyerhof Equation for ultimate bearing capacity (vertical foundation loads) is given below: -

$$q_{ult} = cN_c s_c d_c + \bar{q} N_q s_q d_q + 0.5 \gamma B' N_\gamma s_\gamma d_\gamma \quad \dots\dots\dots \text{(Using Laboratory soil test results)}$$

Where,

$q_{ult}$  = Ultimate bearing capacity (kPa)

$C$  = Cohesion (kPa)

$B'$  = Foundation width (m)

$\bar{q}$  = Effective Overburden pressure at the foundation depth (kPa)

$\gamma$  = Unit weight of soil (kN/m<sup>3</sup>)

$N_c, N_q, N_\gamma$  = Foundation factors

$s_c, s_q, s_\gamma$  = shape factors

$d_c, d_q, d_\gamma$  = Depth factors

The factor of safety of 3 to 5 is usually applied to the obtained ultimate bearing capacity to obtain allowable bearing Capacity.

Meyerhof Equation for the SPT Test allows the allowable bearing capacity of soil to be estimated using Dynamic Probing Super Heavy (DPSH) Test. Meyerhof's Equation for the bearing capacity using SPT Test is indicated below.

$$q_{all} = \left[ \frac{N}{0.08} \right] * \left[ \frac{(B+0.3)}{B} \right]^2 * K_d \quad \text{for: } 0 \leq D \leq B \text{ and } B > 1.2\text{m}$$

Where: -  $q_{all}$  = Allowable bearing pressure for 25mm settlement, kN/m<sup>2</sup>

$$K_d = 1 + 0.33(D/B) \leq 1.33 \text{ [as suggested by Meyerhof (1965)]}$$

$N$  = Design N Value

$B$  = Foundation width, m

$D$  = Foundation depth, m

In this case, DPSH Blow counts have been used as an estimate of allowable bearing capacity



For the case of the water table being within the influence zone of the foundation, a correction should be made by groundwater correction factor  $C_w$ .

For computation of allowable bearing capacity; consideration has been made for shallow pad foundations and the results are indicated in the table below. The values in bracket represent bearing capacity from DPSH Blow counts.

**Table 5-3, Computed Bearing Capacities (kN/m<sup>2</sup>) for pad foundation**

Foundation Depth (m)	Pad Size (m)	Bearing Capacity (kN/m <sup>2</sup> )
2.0	2x2	175 (90)

## **5.10 Conclusion and Recommendations**

### **5.10.1 Conclusions**

As a result of field activities carried out, the analysis of in-situ test results and laboratory soil test results, the following engineering conclusions and recommendations have been made:

- The geotechnical investigation has revealed that the site soils indicated approximately equal distribution of Sandy Clay & Clayey/Gravelly Sand soils. The reader is advised to refer to chapter 5.7 of this report.
- The bearing capacities for the proposed locations are indicated in table 5-5. The bearing capacities from DPSH Test (which represent in situ soil conditions) seem to be significantly low.
- Water Table was not encountered across the sites.
- Sandy Silts/ Sands are collapsible especially when saturated. These soils have been encountered at proposed Kihonda Mini bus stand. It is recommended that the slopes be protected and no entry to the excavation should be allowed without slope protection for excavations beyond the depth of 1.2m
- Dewatering is not anticipated since Ground Water Table was not encountered.
- The excavated materials of non-plastic nature from the sites may be used as a backfill material.

### **5.10.2 Recommendations**





Based on the conclusions made above the following recommendations are proposed during the implementation of the project:

- a) It is recommended that the weak soils be replaced with good gravel materials to an engineered fill of not less than 50cm, well compacted and placed in layers. This improved layer shall lie below the foundation base.

## APPENDIX X: NON TECHNICAL EXECUTIVE SUMMARY

### EXECUTIVE SUMMARY

#### Project Title:

Environmental Impact Assessment for The Proposed Construction of Roads and Drainage System in Morogoro Municipality-Morogoro Region

#### Project Proponent

MOROGORO MUNICIPAL COUNCIL

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#### Project Background

The Government of the United Republic of Tanzania through The President's Office - Regional Administration and Local Development (PO-RALG) has received a credit from the World Bank towards implementing projects-financed Tanzania Cities Transforming Infrastructure and Competitiveness Project (TACTIC), which will be implemented through the President's Office - Regional Administration and Local Development (PO-RALG).

NORPLAN Tanzania Ltd was awarded the contract by PO-RALG to conduct; Feasibility Study, Urban Design, Detailed Engineering Design, Environmental and Social Due Diligence, Preparation of Cost Estimates and Bidding Documents for Urban Infrastructure Investments for Morogoro Municipal Council. Morogoro is among four (4) Municipalities under TACTIC-Zone 3.

Morogoro is a prominent intersection for both road and railway transportation systems for the entire country. The municipality is at the crossroads of two major highways that service the western, eastern, and southern parts of Tanzania, as well as the neighboring countries of Malawi and Zambia. Rapid growth and development have affected the public transportation sector in Morogoro.

The Municipality is faced with roads and drainages' infrastructural challenges that need immediate solution. Through TACTIC project, some of urban roads and drainage channels' subprojects have been selected for upgrading which include: Veta Kihonda Tungi – 11.4km, Muhimbili – 1.2km, Mjimwema 5.4km, Tubuyu II-2.4km, Mapande 0.5km roads and Anti Malaria, Kikundi and Barakuda drainage channels.

Improvement of urban roads under TACTIC goes in line with improvement of drainage channels to facilitate removal of storm water runoffs within the municipality that have the possibility of causing floods in the areas.

#### Subprojects' Specific Objectives

The proposed urban roads' upgrading aims to provide improved, safer roads for all road-users and facilitate economic growth within Morogoro Municipality while drainage channels' improvement aims at alleviating communities from flood hazards.

## **Requirements for an ESIA**

This subproject falls under the list of projects requiring EIA pursuant to the First Schedule made under Regulation 6(1) of the Environmental Impacts Assessment and Audit Regulations, 2005 and Regulation 17 of its amendments of 2018. In terms of the EIA and Audit Regulations, 2005 read together with amendments of 2018. The proposed Upgrading of Roads and Drainage Systems falls under “Type A” projects, Section 9 “TRANSPORT AND INFRASTRUCTURE” which are mandatory to ESIA.

Also, the World Bank requires that all environmental and social risks and impacts of the subproject be addressed as part of the environmental and social assessment conducted in accordance with ESS1 – Assessment and Management of Environmental and Social Risks and Impacts.

## **Estimated Project Cost**

The proposed upgrading of urban infrastructure for roads and drainage systems is estimated to cost approximately 20,443,626,794.60Tshs. This includes the cost for construction, purchasing materials, labour cost and all miscellaneous expenses subjected in the implementation of this subproject, PAPs’ compensation, Environmental and Social Management and Monitoring and related activities.

## **Subprojects’ Location and Accessibility**

Morogoro Municipality is situated 195 Kms. to the West of Dar es Salaam, it is found on the lower slopes of Uluguru Mountains whose peak is about 1,600 feet above sea level. It lies between longitude 37° 40’ East of the Greenwich and latitude 06° 49’ south of the Equator. It is bordered by Morogoro Rural District Council on the East and the Uluguru Mountains on the North as well as Mvomero District Council on the West and Southern part. The proposed sites for roads and drainages fall in ten wards i.e. Mazimbu, Kihonda, Mafisa, Mbuyuni, Sultan Arae, Mji Mkuu, Tungi, Kingo, Mji Mpya and Mwembe Songo Wards.

## **General Description of Drainage Systems**

The storm water drainage channels/systems are characterized with a number of features, some are common though they differ in terms of intensity of similarities from one to another. Most of the channels are unlined /earth channels exception is observed at Kikundi drainage which is mostly stone lined. Most of the channels have become disposal areas for both liquid and solid wastes.

Flowing waters during dry seasons in Anti-Malaria and Kikundi drains are mainly from sanitary uses including sewage. In addition, siltation is one of the key challenges on the performance of the channels.

## **Key Components of the Proposed Roads’ Subprojects**

A summary of the key components of the proposed urban roads’ subprojects are described below. It should be noted at the outset that the exact specifications of the proposed project components have been described in the detailed engineering design phase.: Carriage Way, Shoulders, Pedestrian Walkways, Storm water Drains, Service Roads, Outlet Ditches, Side Ditches, Culverts, T/Y Junctions, Bus Bays, Road Signs and Crossings, Road Side Parking Lots, Road Lights

## **Climate Change Adaptation Strategies**

The proposed roads under TACTIC should be resilient to climate change scenarios. Adaptation measures shall do so by:

- Protecting the road infrastructure from the impacts of climate change and,
- Ensuring that the road infrastructure does not increase the vulnerability of the surrounding area to climate change.

### **Land Acquisition**

Upgrading of proposed roads and drainage systems shall be done within existing routes. The roads are within Municipal Roads' Reserves while drainage systems' way leaves/buffer zone are governed by Water Resource Management Act, 2019. Therefore, the proposed upgrading of urban infrastructure is not expected to be a cause of resettlement of people and properties.

### **Required Permits**

Prior to the approval of the construction and eventual construction of the Project, it is necessary to obtain a number of authorizations and permits from local and central government authorities of Tanzania, related to environmental issues, water abstraction, relocation of public utilities, resettlement.

### **Project Activities**

Planning Phase: During planning phase, different studies for the proposed subproject area were conducted including, Feasibility study, ESIA and RAP, preliminary engineering planning, final engineering planning and construction planning from the planning phase of the project.

Mobilization or Pre-Construction Phase: preparation of the proposed site shall follow by involving clearing of the site, when clearance is over, the site will be ready for receiving actual works.

Construction phase: The major construction activities include; Extraction and transportation of materials (gravel, sand, hard stones, aggregates, water and bitumen), Clearing the right of Right of Way (RoW) while leaving intact the trees which do not interfere with the construction, Formation of the approach roads embankment, establishment of sub-base and base, and road surfacing, Treating of old roads and temporary diversion

Demobilization Phase: Demobilization of temporary structures will be done for proper restoration of the site e.g. removing/spreading top-soils piled along the road, and removal of all temporary structures, Collect and disposer all wastes to the authorized dumpsite at Mafisa.

Operation and Maintenance Phase: The actual usage of the road and drainage system is expected to commence after the construction works. The Morogoro 'TACTIC project zone 3 is under "Municipal Road" category and therefore will be directly managed by TARURA-Morogoro.

### **Policy, Administrative and Legal Frameworks**

The policies, laws, World Bank's Environmental and Social Standards and International Conventions include:

#### **National Policies**

National Environment Policy 1997, National Employment Policy 2008, National Land Policy, 1997, The Construction Industry Policy 2003, National Mineral Policy 2009, Human Settlement Development Policy 2000, National Water Policy 2002, National Forest Policy 1998, National Agriculture Policy 2013, Agriculture and Livestock Policy 1997, National Action Plan to end Violence against Women and Children (2017/18-2021/22), Policy on HIV/AIDS Policy 2001, National Energy Policy 2015, Women and Gender Development Policy 2000

## **Legal Framework**

Environmental Management Act No. 20 of (2004), Cap. 191, Public Health Act of 2008, Land Use Planning Act (2007), The Land Acquisition Act 196 Environmental Management Act (2004), Road Act (2007), Energy and Water Utilities Authority (EWURA) Act (2001), Water Resources Management Act No 11 of (2009), Mining Act 2010, Occupational Health and Safety Act (2003), HIV and AIDS (Prevention and Control) Act No. 28/08 (2008), Local Government Laws (Miscellaneous Amendments), No. 13 (2006), The Village Land Act (1999), (Identifying Considerations for Women), Land Act No. 2/04 (2004) e.t.c.

## **World Bank's Environmental and Social Standards**

World Bank's Environmental and Social Framework and its components [Vision for Sustainable Development, World Bank Environmental and Social Policy for Investment Project Financing, and Environmental and Social Standards].

## **International Conventions**

The International Conventions/Treaties to be reviewed include: Convention on the Elimination of All Forms of Discrimination against Women, Equal Remuneration Convention, 1951 (No. 100), Labour Clauses (Public Contracts) Convention, 1949 (No. 94), Minimum Age Convention, 1973 (No. 138), Minimum Wage-Fixing Machinery Convention, 1928 (No. 26)

## **Biophysical Environment**

### **Temperature and Projection:**

Despite the variation of climatic conditions throughout the year the weather is attractive because of its high altitude. Morogoro experiences average daily temperature of 30°C degrees centigrade with a daily range of about 5°C (degrees centigrade).

Morogoro Municipality is continuing to experience hot weather extremes, currently is experiencing an average of 33.6°C with projected yearly slight increase, in 2040 hot extreme expected to attain 34°C. Highest hot extreme weather is and shall be experienced in the months of April.

Hot extreme is among the climate variable that will contribute to early aging of the bitumen and increase humidity to the atmosphere on the proposed urban roads.

### **Rainfall & Projection:**

The total average annual rainfall ranges between 821mm to 1505mm. Long rains occur between March and May and short rains occur between October and December each year. Despite the variation of climate conditions throughout the year, the climate is attractive due to its high altitude. Morogoro Municipality is experiencing two major rain seasons that include: the long rain season and short rain season.

From the analysis, the Municipality will experience an average of 1320mm rainfall in 2023 with continuous increase up to 1400mm in 2030. In comparison with the reference period of 1979-2005, the month of March, April and May will be experiencing an average rainfall increase.

## **Seismicity**

The earthquake hit Tanzania the Saturday, May 9, 2020 at 02:27 with a magnitude of 4.1. was felt in Morogoro. The epicenter is located at longitude 38.4182 and latitude -8.7248. 226.72 km from Ovalle. It occurred in Selous Game reserve, an average of 85km from Morogoro region boundary.

There is no record of recent seismic activities originating from Morogoro, the region is characterized with weak earthquakes and non-frequent.

Since the project area experiences weak and non-frequent earthquakes, no impact to the proposed infrastructure is expected.

## **Social Economic Environment**

### **Land use**

The upgrading of the project Roads and drainage systems in the Municipality will facilitate and attract development in the nearby areas of the subprojects. Therefore, influx of the people to the project corridor will be inevitable and thus the land use in some areas will be altered to commercial or residential purposes.

### **Population**

According to 2012 Population and Housing Census report, in the year 1988 Morogoro Municipal Council had a total population of 117,601; while in 2002 had a total of 227,921 people and in 2012 the Municipality had a total population of 315,866, of whom 151,170 were male and 164,166 females



Table 4-2. Moreover, it is further estimated that in 2020 the Municipality is estimated to have a total population of 409,565 people.

During the construction phase, the influx of people from various parts of Morogoro and nearby regions will slightly increase pressure on social services.

### **Economic Activities**

Morogoro Municipality is characterized with mixed economy that of agriculture and business. Like other urban settings the Municipality is a Central Business District (CBD) of Morogoro region characterized with agglomeration of off farm activities including business, small scale enterprises, office work, manufacturing industries of primary and secondary level and other domestic activities.

Construction of urban roads will improve economic as will easily facilitate timely transportation people and goods and enhance per capital income.

### **Roads**

The level of roads' passability in the Municipality varies with road types based on standards, about 64.1 km of road are passable throughout the year, while 517.86 km are passable with some difficulties during rainy season.

Proposed upgrading of roads shall increase the length of tarmac road network in town and facilitate transportation services for people and goods.

### **Employment**

Morogoro Municipality has a total of 4,231 permanent employees supporting in providing services to community. Out of the total employees about 3,012 are female and 1,219 males. Some of these staff works at the head office while others in field offices.

The proposed urban infrastructure subproject shall employ an average of 150 people on top of current employment status, however; the employment shall be of short term i.e. construction period.

### **Child labour**

In Morogoro Municipality 5300 (3000 M and 2300 F) children were reported to have been engaged in child labor) children who were engaged in child labour (MOPSAPORG identification report 2015).

Construction activities under TACTIC project will likely attract child labour, as stipulated in Labour and Employment Act of Tanzania, a child above 14years of age can be employed with a condition not to be subjected to hazardous activities.

### **Gender-based violence (GBV)**

Recent GBV incidents with data on child abuse in Morogoro indicates that 155 cases has been reported for the year 2021 which is lower in comparison with Tanga (178) and Mbeya (162) reported respectively.

The proposed subproject shall involve equal opportunities for both male and female. Employment of women in infrastructure project is part of economic empowerment for them, however; this normally create tension to male workers and even violence and harassment e.t.c.

## **Stakeholders Consultations and Public Involvement**

### **Stakeholders Identification**

The main stakeholders for upgrading of proposed urban infrastructure under TACTIC Project in Morogoro Municipality included; Regional Secretariat of Morogoro (RAS-Morogoro Region), TARURA, TANESCO-Morogoro Region, Regional Traffic Office-Morogoro Region, District Commissioner's Offices-;Morogoro District, Morogoro Municipal Council, TTCL-Morogoro Regional Office, Wami/Ruvu Water Basin-Morogoro, MOROWASA, SOKOINE UNIVERSITY OF AGRICULTURE (SUA) and communities in 11 Wards located along the road (road users: bodaboda/bajaj drivers, traders, commuter bus drivers, cattle herders, people with disabilities, school children and teachers, women and children, religious leaders).

### **Public Meetings**

Public meetings were conducted in 10 streets/mitaa from 10 wards located along roads' sections.

The number of participants was 367 for communities' consultations and included local officials, community leaders, women, men, youth, children, the elderly, disabled people, different types of drainage and road users and groups representing community activities. The consultations were led by ESIA consultants with support from Municipal council staff and one member from the design team.

### **Consultative Meetings with Municipal Council, Regional Secretariat and Other Stakeholders**

Consultative meetings at Municipality and regional levels included discussions with districts' Council Management Team (CMT) which comprised of technical staff from all departments and regional officers. Stakeholders' meetings / interviews from other sectors included both managerial and technical staff.

The meeting also included members from: TARURA, TANESCO-Morogoro Region, Regional Traffic Office-Morogoro Region, District Commissioner's Offices, Morogoro Municipal Council, TTCL-Morogoro Regional Office, Wami/Ruvu Water Basin-Morogoro, MOROWASA, SOKOINE UNIVERSITY OF AGRICULTURE (SUA)

### **Summary of Key Findings from Stakeholders Consultation & Public Engagement**

From the engagement activities performed, stakeholders identified a number of issues that they anticipate from the proposed i.e (Veta-Kihonda-Tungi Road, Mjimwema Road, Tubuyu II Road, Baracuda Road) ii. (Kikundi Drainage, Anti Malaria drainage and Baracuda Draiange

These include the following:

- NGOs should provide awareness creation education about HIV/AIDS and GBV in the area
- The roads will reduce travelling costs to the societies and accelerate economic growth

hence will improve social economic condition of the area;

- Realignment of road during design is needed at Veta-Kihonda road to reduce sharp corners
- Poor drainage system as results of heavy floods within the municipal
- The Municipal Council proposed to have storm water master plan
- To widen road alignment that will accommodate trucks, walking by foot and bicycles, parking areas and motorcycle
- The proposed road should have parking areas for vehicles at all business centres along the road;
- Storm water drains at street centers should be covered for safety purposes;
- Road safety signs should be in place throughout;
- Road crossings should be provided at all junctions to; residential areas, schools and other public institutions;
- High transportation costs shall be reduced after road's improvement;
- Road humps should be provided as speed calming measure at residential areas;
- Road signs which show an area designed for bodaboda parking;
- Poor roads' condition contributes to tear and wear of motor vehicles travelling this road;
- Tarmac road is durable and has longer life span to sustain movement trucks loaded with heavy cargo compared to gravel road;
- There should be road safety trainings before and after completion of the construction phase;
- Road signboards to indicate schools' locations;
- Water abstraction points for MOROWASA should not be disturbed by the contractor;
- Service ducts should be included in the design for existing water pipelines and future extensions;
- TANESCO and MORUWASA is ready to cooperate, the project should include related costs in the BoQ.

### **Assessment of Environmental and Social Impacts**

Among the identified potential negative impacts include: Vibration and Noise Pollution , Poor Air Quality due to Emissions and Dust ,Solid and Liquid Waste Generation , Oil, Grease, Fuel spillage , Risk to increased incidences of diseases transmission including HIV/AIDS , Risk to Health and Safety , Soil and Water Pollution , Destruction of River Banks, Resettlement , Construction related Risk and Accidents and Traffic Impacts:, while positive impacts comprise of Employment during Construction ,Change of Land Use, Improved Local Socio-economy ,Improved Government Revenue through collected Taxes and revenues.

Based on the findings, it is evident that development of the proposed subproject shall be impacted by climate change scenarios i.e from extreme temperatures and rainfalls.

### **Mitigation Measures**

The study has proposed various mitigation measures as outlined in chapter seven which includes provision of roads' visibility, safety markings and signs in the design as well as proper road design to withstand climate change scenarios, provision of water drainage structures with capacities to allow free flow of runoff from either side of the roads, safety and health trainings to the workers and communities and fair compensations among others.

### **Summary and Conclusion**

The ESIA team has scrutinized the environmental and social implications of the proposed construction and/or upgrading of urban infrastructure (Roads at Kihonda, Mazimbu, Tungi and Mji Mwema ward and Drainage systems i.e Kikundi I&II and Anti Malaria )in Morogoro municipality, Tanzania.

The ESIA study was conducted to comply with the Environmental Management Act (2004) and was done in accordance with the ESA and Audit Regulations (2005). Stakeholder consultations were conducted during the study to encompass local government authorities, communities in the project neighbourhoods and interested parties. Standard methodologies for impact identification were used including checklist, matrix and professional judgment.

Among the potential negative impacts included Vibration and Noise Pollution , Poor Air Quality due to Emissions and Dust ,Solid and Liquid Waste Generation , Oil, Grease, Fuel spillage , Risk to increased incidences of diseases transmission including HIV/AIDS , Risk to Health and Safety ,Land Scarring at Borrow Sites , Soil and Water Pollution , Destruction of River Banks Vegetation and Aquatic Flora and Fauna , Destruction of Adjacent Land Use and Properties ,Loss of Properties close to the Project Sites , Destruction of Terrestrial Vegetation , Construction related Risk and Accidents and Increased risk of traffic related road accidents:, while positive impacts comprised of Employment during Construction ,Change in the Original Land Use, Scenic and Visual Quality ,Improved Local Socio-economy ,Improved Government Revenue through collected Taxes.

Based on the findings, it is evident that development of the proposed subproject shall be impacted by climate change scenarios i.e from extreme temperatures and rainfalls as described in chapter 2 of this ESIA. The study has proposed various mitigation measures as outlined in chapter seven which includes provision of road's visibility, safety markings and signs in the design as well as proper road design to withstand climate change scenarios, provision of water drainage structures with capacities to allow free flow of runoff from either sides of the roads, safety and health trainings to the workers and communities and fair valuation among others.

However, in order to ensure climate resilience for the proposed urban infrastructure, climate adaptation measures as described in chapter 2 have been incorporated into the designs of both roads and drainage channels.

The study concludes that a number of environmental impacts have been identified and assessed; none of these are considered to be that severe after mitigation as to prevent the further planning, design and construction of the proposed subproject. Thus, the subproject development in the area can be considered suitable subject to the implementation of the mitigation measures as indicated in the Environmental and Social Management Plan.

## **MUHTASARI WA KIUTENDAJI USIYOKUWA NA MAMBO YA KITAALAMU**

### **A. Kichwa cha Mradi:**

Tathmini ya Athari kwa Mazingira kwa Mapendekezo ya Ujenzi wa Barabara na Mifumo ya Mifereji ya Maji katika Manispaa ya Morogoro-Mkoani Morogoro.

### **B. Mtetezi wa Mradi**

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### **C. Usuli wa Mradi**

Serikali ya Jamhuri ya Muungano wa Tanzania kupitia Ofisi ya Rais - Tawala za Mikoa na Maendeleo ya Mitaa (TAMISEMI) imepata mikopo kutoka Benki ya Word katika kutekeleza Mradi wa Kubadilisha Miundombinu na Ushindani wa Miji Tanzania (TACTIC) inayofadhiliwa na Serikali. itatekelezwa kupitia Ofisi ya Rais - Tawala za Mikoa na Maendeleo ya Mitaa (TAMISEMI).

NORPLAN Tanzania Ltd ilipewa zabuni na TAMISEMI kufanya; Upembuzi Yakinifu, Usanifu wa Miji, Usanifu wa Kina wa Uhandisi, Uangalifu wa Kimazingira na Kijamii, Utayarishaji wa Makadirio ya Gharama na Nyaraka za Zabuni za Uwekezaji wa Miundombinu ya Miji kwa Halmashauri ya Manispaa ya Morogoro. Morogoro ni kati ya Manispaa nne (4) chini ya TACTIC-Zone 3.

Morogoro ni makutano maarufu kwa mifumo ya usafiri wa barabara na reli kwa nchi nzima. Manispaa hiyo iko kwenye makutano ya barabara kuu mbili zinazohudumia maeneo ya magharibi, mashariki na kusini mwa Tanzania, pamoja na nchi jirani za Malawi na Zambia. Ukuaji wa kasi na maendeleo yameathiri sekta ya usafiri wa umma mjini Morogoro.

Manispaa inakabiliwa na changamoto za miundombinu ya barabara na mifereji ya maji ambazo zinahitaji ufumbuzi wa haraka. Kupitia mradi wa TACTIC, baadhi ya miradi midogo ya barabara za mijini na mifereji ya maji imechaguliwa kwa ajili ya uboreshaji ambayo ni pamoja na: Veta Kihonda Tungi – 11.4km, Muhimbili – 1.2km, Mjimwema 5.4km, Tubuyu II-2.4km, Mapande 0.5km barabara na Anti Malaria. , Mifereji ya maji ya Kikundi na Barakuda.

Uboreshaji wa barabara za mijini chini ya TACTIC unakwenda sambamba na uboreshaji wa mifereji ya maji ili kuwezesha uondoaji wa maji ya mvua ndani ya manispaa ambayo yana uwezekano wa kusababisha mafuriko katika maeneo hayo.

### **D. Malengo Mahususi ya Miradi Midogo**

Mapendekezo ya uboreshaji wa barabara za mijini yanalenga kutoa barabara zilizoboreshwa na salama kwa watumiaji wote wa barabara na kuwezesha ukuaji wa uchumi ndani ya Manispaa ya Morogoro huku uboreshaji wa mifereji ya maji unalenga kuwaepusha na majanga ya mafuriko.

### **E. Mahitaji ya ESIA**

Mradi huu mdogo upo chini ya orodha ya miradi inayohitaji EIA kwa mujibu wa Jedwali la Kwanza lililofanywa chini ya Kanuni ya 6(1) ya Tathmini na Kanuni za Ukaguzi wa Athari za Mazingira, 2005 na Kanuni ya 17 ya marekebisho yake ya 2018. Kwa mujibu wa EIA na Kanuni za Ukaguzi, 2005 iliyosomwa pamoja na marekebisho ya 2018. Mapendekezo ya Uboreshaji wa Barabara na Mifumo ya Mifereji ya Mifereji iko chini ya miradi ya "Aina A", Kifungu cha 9 "USAFIRI NA MIUNDOBINU" ambayo ni ya lazima kwa ESIA.

Pia, Benki ya Dunia inahitaji kwamba hatari na athari zote za kimazingira na kijamii za mradi mdogo zishughulikiwe kama sehemu ya tathmini ya kimazingira na kijamii iliyofanywa kwa mujibu wa ESS1 - Tathmini na Usimamizi wa Hatari na Athari za Mazingira na Kijamii.

#### **F. Makadirio ya Gharama ya Mradi**

Mapendekezo ya uboreshaji wa miundombinu ya mijini kwa ajili ya barabara na mifumo ya mifereji ya maji yanakadiriwa kugharimu takribani Tshs 20,443,626,794.60. Hii ni pamoja na gharama za ujenzi, ununuzi wa vifaa, gharama za vibarua na gharama nyinginezo zote zilizotumika katika utekelezaji wa mradi huu, fidia ya PAPs, Mazingira na Jamii. Usimamizi na Ufuatiliaji na shughuli zinazohusiana.

#### **G. Mahali na Ufikivu wa Miradi Midogo**

Manispaa ya Morogoro iko kilomita 195. Magharibi mwa Dar es Salaam, inapatikana kwenye miteremko ya chini ya Milima ya Uluguru ambayo kilele chake ni takriban futi 1,600 kutoka usawa wa bahari. Iko kati ya longitudo 37° 40' Mashariki ya Greenwich na latitudo 06° 49' kusini mwa Ikweta. Imepakana na Halmashauri ya Wilaya ya Morogoro Vijijini upande wa Mashariki na Milima ya Uluguru upande wa Kaskazini pamoja na Halmashauri ya Wilaya ya Mvomero upande wa Magharibi na Kusini. Maeneo yaliyopendekezwa kwa ajili ya barabara na mifereji ya maji yanaanguka katika kata kumi .i.e. Mazimbu, Kihonda, Mafisa, Mbuyuni ,Sultan Arae, Mji Mkuu, Tungi, Kingo, Mji Mpya na Kata za Mwembe Songo.

#### **H. Maelezo ya Jumla ya Mifumo ya Mifereji ya maji**

Njia/mifumo ya mifereji ya maji ya dhoruba ina sifa kadhaa, baadhi ni ya kawaida ingawa hutofautiana kulingana na ukubwa wa kufanana kutoka kwa moja hadi nyingine. Nyingi za chaneli hazina mistari/chaneli za dunia isipokuwa huzingatiwa kwenye mifereji ya maji ya Kikundi ambayo mara nyingi huwa na mawe. Njia nyingi zimekuwa sehemu za kutupa taka za kioevu na ngumu.

Maji yanayotiririka wakati wa kiangazi katika mifereji ya Kupambana na Malaria na Kikundi yanatokana zaidi na matumizi ya usafi ikiwa ni pamoja na maji taka. Aidha, udongo wa udongo ni mojawapo ya changamoto kuu katika utendaji wa chaneli.

#### **I. Vipengele Muhimu vya Miradi Midogo ya Barabara Zinazopendekezwa**

Muhtasari wa vipengele muhimu vya miradi midogo ya barabara za mijini iliyopendekezwa imeelezwa hapa chini. Ikumbukwe hapo awali kwamba vipimo halisi vya vipengele vya mradi vilivyopendekezwa vimeelezewa katika awamu ya kina ya usanifu wa uhandisi.: Njia ya Usafirishaji, Mabega, Njia za Watembea kwa miguu, Mifereji ya maji ya Dhoruba, Barabara za Huduma, Mifereji ya Mifereji, Mifereji ya Upande, Culverts, Makutano ya T/Y, Viwanja vya Mabasi, Alama za Barabarani na Vivuko, Maegesho ya Kando ya Barabara, Taa za Barabarani.

#### **J. Mikakati ya Kukabiliana na Mabadiliko ya Tabianchi**

Barabara zinazopendekezwa chini ya TACTIC zinapaswa kustahimili hali za mabadiliko ya tabianchi. Hatua za urekebishaji zitafanya hivyo kwa:



- Kulinda miundombinu ya barabara dhidi ya athari za mabadiliko ya tabianchi na,
- Kuhakikisha kwamba miundombinu ya barabara haiongezi hatari ya maeneo jirani na mabadiliko ya tabianchi.

#### **K. Upatikanaji wa Ardhi**

Uboreshaji wa barabara zinazopendekezwa na mifumo ya mifereji ya maji itafanywa ndani ya njia zilizopo. Barabara ziko ndani ya Hifadhi za Barabara za Manispaa wakati njia za mifereji ya maji zinatawaliwa na Sheria ya Usimamizi wa Rasilimali za Maji, 2019. Kwa hivyo, mapendekezo ya uboreshaji wa miundombinu ya mijini haitarajiwi kuwa sababu ya makazi ya watu na mali.

#### **L. Vibali vinavyohitajika**

Kabla ya kupitishwa kwa ujenzi na hatimaye ujenzi wa Mradi, ni muhimu kupata vibali na vibali kadhaa kutoka kwa mamlaka za serikali za mitaa na serikali kuu ya Tanzania, kuhusiana na masuala ya mazingira, uchukuaji wa maji, uhamisho wa huduma za umma, makazi mapya.

#### **M. Shughuli za Mradi**

Awamu ya Upangaji: Wakati wa awamu ya kupanga, tafiti mbalimbali za eneo la mradi uliopendekezwa zilifanyika ikiwa ni pamoja na, Upembuzi Yakinifu, ESIA na RAP, upangaji wa awali wa uhandisi, upangaji wa mwisho wa uhandisi na upangaji wa ujenzi unaunda awamu ya upangaji wa mradi.

Uhamasishaji au Awamu ya Kabla ya Ujenzi: utayarishaji wa tovuti inayopendekezwa utafuata kwa kuhusisha kusafisha tovuti, wakati kibali kitakapokamilika, tovuti itakuwa tayari kupokea kazi halisi.

Awamu ya ujenzi: Shughuli kuu za ujenzi ni pamoja na; Uchimbaji na usafirishaji wa vifaa (changarawe, mchanga, mawe magumu, aggregates, maji na lami), Kusafisha haki ya Njia (RoW) wakati ukiacha miti isiyoingilia ujenzi, Uundaji wa tuta la barabara za njia, uanzishwaji wa msingi na msingi, na uso wa barabara, Kutibu barabara za zamani na upotoshaji wa muda.

Awamu ya Uhamasishaji: Uondoaji wa miundo ya muda utafanywa kwa urejesho mzuri wa tovuti k.m. kuondoa/kueneza udongo wa juu uliorundikwa kando ya barabara, na uondoaji wa miundo yote ya muda, Kusanya na kutupa taka zote kwenye dampo lililoidhinishwa la Mafisa.

Awamu ya Uendeshaji na Matengenezo: Matumizi halisi ya barabara na mfumo wa mifereji ya maji yanatarajiwa kuanza baada ya kazi za ujenzi. Mradi wa Morogoro 'TACTIC zone 3' upo chini ya kitengo cha "Municipal Road" na hivyo utasimamiwa moja kwa moja na TARURA-Morogoro.

#### **N. Sera, Mifumo ya Utawala na Kisheria**

Sera, sheria, Viwango vya Benki ya Dunia vya Mazingira na Kijamii na Mikataba ya Kimataifa ni pamoja na:

##### **Sera za Kitaifa**

Sera ya Taifa ya Mazingira ya mwaka 2021, Sera ya Taifa ya Ajira 2008, Sera ya Taifa ya Ardhi, 1997, Sera ya Sekta ya Ujenzi ya mwaka 2003, Sera ya Taifa ya Madini ya mwaka 2009, Sera ya Maendeleo ya Makazi ya mwaka 2000, Sera ya Maji ya 2002, Sera ya Taifa ya Misitu ya mwaka 1998, Sera ya Taifa ya Kilimo 2013, Kilimo na Sera ya Mifugo ya mwaka 1997, Mpango Kazi wa Taifa wa kutokomeza Ukatili dhidi ya Wanawake na Watoto (2017/18-

2021/22), Sera ya VVU/UKIMWI ya mwaka 2001, Sera ya Taifa ya Nishati ya 2015, Sera ya Maendeleo ya Wanawake na Jinsia 2000.

### **Mfumo wa Kisheria**

Sheria ya Usimamizi wa Mazingira Na. 20 ya (2004), Sura. 191, Sheria ya Afya ya Umma ya mwaka 2008, Sheria ya Mipango ya Matumizi ya Ardhi (2007), Sheria ya Utwaaji Ardhi 196 Sheria ya Usimamizi wa Mazingira (2004), Sheria ya Barabara (2007), Sheria ya Mamlaka ya Huduma za Nishati na Maji (EWURA) (2001), Usimamizi wa Rasilimali za Maji. Sheria namba 11 ya (2009), Sheria ya Madini ya mwaka 2010, Sheria ya Afya na Usalama Kazini (2003), Sheria ya VVU na UKIMWI (Kinga na Udhibiti) namba 28/08 (2008), Sheria za Serikali za Mitaa (Marekebisha Mbalimbali), Na. (2006), Sheria ya Ardhi ya Kijiji (1999), (Kubainisha Mazingatio kwa Wanawake), Sheria ya Ardhi namba 2/04 (2004) e.t.c.

### **Viwango vya Benki ya Dunia vya Mazingira na Kijamii**

Mfumo wa Mazingira na Jamii wa Benki ya Dunia na vipengele vyake [Dira ya Maendeleo Endelevu, Sera ya Mazingira na Kijamii ya Benki ya Dunia kwa Ufadhili wa Miradi ya Uwekezaji, na Viwango vya Mazingira na Kijamii].

### **Mikataba ya Kimataifa**

Mikataba ya Kimataifa/Mikataba itakayopitiwa upya ni pamoja na: Mkataba wa Kutokomeza Aina Zote za Ubaguzi dhidi ya Wanawake, Mkataba wa Malipo Sawa, 1951 (Na. 100), Mkataba wa Vifungu vya Kazi (Mikataba ya Umma), 1949 (Na. 94), Umri wa Kima cha Chini. Mkataba, 1973 (Na. 138), Mkataba wa Mashine za Kurekebisha Kima cha Chini, 1928 (Na. 26)

### **O. Mazingira ya Kimwili**

#### **Halijoto na Makadirio:**

Licha ya kutofautiana kwa hali ya hewa kwa mwaka mzima hali ya hewa inavutia kwa sababu ya urefu wake wa juu. Morogoro ina wastani wa halijoto ya kila siku ya nyuzi joto 30°C na kiwango cha kila siku cha takriban 50°C (digrii sentigredi).

Manispaa ya Morogoro inaendelea kukumbwa na hali ya joto kali, kwa sasa inakabiliwa na wastani wa 33.6°C na makadirio ya ongezeko kidogo la mwaka, mwaka 2040 joto kali linatarajiwa kufikia 34°C. Hali ya hewa ya joto kali zaidi ni na itashuhudiwa katika miezi ya Aprili.

Hali ya joto kali ni kati ya mabadiliko ya hali ya hewa ambayo yatachangia kuzeeka mapema kwa lami na kuongeza unyevu kwenye anga kwenye barabara zinazopendekezwa za mijini.

#### **Mvua na Makadirio:**

Jumla ya wastani wa mvua kwa mwaka ni kati ya 821mm hadi 1505mm. Mvua ndefu hutokea kati ya Machi na Mei na mvua fupi hutokea kati ya Oktoba na Desemba kila mwaka. Licha ya kutofautiana kwa hali ya hewa kwa mwaka mzima, hali ya hewa inavutia kutokana na urefu wake wa juu. Manispaa ya Morogoro inakabiliwa na misimu miwili ya mvua kubwa ambayo ni pamoja na: msimu wa mvua ndefu na msimu wa mvua mfupi.

Kutokana na uchambuzi huo, Manispaa itapata wastani wa mvua 1320mm mwaka 2023 na kuendelea kuongezeka hadi 1400mm mwaka 2030. Kwa kulinganisha na kipindi cha rejea cha 1979-2005, mwezi wa Machi, Aprili na Mei utakuwa na ongezeko la wastani la mvua. .

### **Kutetemeka**

Tetemeko la ardhi liliikumba Tanzania Jumamosi, Mei 9, 2020 saa 02:27 likiwa na nguvu ya 4.1. alisikika Morogoro. Kitovu hicho kiko katika longitudo 38.4182 na latitudo -8.7248. 226.72 km kutoka Ovalle. Ilitokea katika hifadhi ya Selous, wastani wa kilomita 85 kutoka mpaka wa mkoa wa Morogoro.

Hakuna rekodi ya shughuli za hivi karibuni za mitetemo inayotokea Morogoro, mkoa huo una sifa ya matetemeko dhaifu na yasiyo ya mara kwa mara.

Kwa kuwa eneo la mradi linakumbwa na matetemeko dhaifu na yasiyo ya mara kwa mara, hakuna athari kwa miundombinu inayopendekezwa inayotarajiwa.

### **P. Mazingira ya Kiuchumi ya Kijamii**

#### **Utumizi wa ardhi**

Uboreshaji wa mradi wa Barabara na mifumo ya mifereji ya maji katika Manispaa utarahisisha na kuvutia maendeleo katika maeneo ya karibu ya miradi midogo. Kwa hiyo, utitiri wa wananchi kwenye korido ya mradi hautaepukika na hivyo matumizi ya ardhi katika baadhi ya maeneo yatabadilishwa kuwa ya kibiashara au makazi.

#### **Idadi ya watu**

Kwa mujibu wa taarifa ya Sensa ya Watu na Makazi ya mwaka 2012, katika mwaka 1988 Halmashauri ya Manispaa ya Morogoro ilikuwa na jumla ya wakazi 117,601; wakati mwaka 2002 ilikuwa na jumla ya watu 227,921 na mwaka 2012 Manispaa ilikuwa na jumla ya wakazi 315,866 kati yao wanaume 151,170 na wanawake 164,166. Jedwali 4 2

Aidha, inakadiriwa zaidi kuwa mwaka 2020 Manispaa hiyo inakadiriwa kuwa na jumla ya watu 409,565.

Wakati wa ujenzi huo, utitiri wa watu kutoka maeneo mbalimbali ya Morogoro na mikoa ya jirani utaongeza kidogo shinikizo la huduma za kijamii.

#### **Shughuli za Kiuchumi**

Manispaa ya Morogoro ina sifa ya uchumi mchanganyiko ule wa kilimo na biashara. Kama ilivyo katika mazingira mengine ya mijini, Manispaa ni Wilaya ya Kati ya Biashara (CBD) ya mkoa wa Morogoro yenye shughuli nyingi za mashambani ikiwa ni pamoja na biashara, viwanda vidogo vidogo, kazi za maofisini, viwanda vya kutengeneza bidhaa za msingi na sekondari na shughuli nyingine za ndani.

Ujenzi wa barabara za mijini utaimarika kiuchumi kwani utarahisisha usafirishaji wa watu na bidhaa kwa wakati na kuongeza mapato ya kila mtaji.

#### **Barabara**

Kiwango cha upitishaji wa barabara katika Manispaa kinatofautiana kulingana na aina za barabara kulingana na viwango, takriban kilomita 64.1 za barabara zinapitika kwa mwaka mzima, wakati kilomita 517.86 zinapitika na ugumu fulani wakati wa mvua.

Uboreshaji unaopendekezwa wa barabara utaongeza urefu wa mtandao wa barabara za lami mjini na kurahisisha huduma za usafiri kwa watu na bidhaa.

### **Ajira**

Manispaa ya Morogoro ina jumla ya watumishi wa kudumu 4,231 wanaosaidia katika kutoa huduma kwa jamii. Kati ya wafanyakazi wote wapatao 3,012 ni wanawake na wanaume 1,219. Baadhi ya wafanyakazi hawa wanafanya kazi katika ofisi kuu na wengine katika ofisi za shamba.

Mradi mdogo wa miundombinu ya mijini unaopendekezwa utaajiri wastani wa watu 150 juu ya hali ya sasa ya ajira, hata hivyo; ajira itakuwa ya muda mfupi yaani muda wa ujenzi.

### **Ajira ya watoto**

Katika Manispaa ya Morogoro watoto 5300 (M 3000 na 2300 F) waliripotiwa kujihusisha na utumikishwaji wa watoto) watoto waliojihusisha na utumikishwaji wa watoto (ripoti ya kitambulisho cha MOPSAPORG 2015).

Shughuli za ujenzi chini ya mradi wa TACTIC zinaweza kuvutia ajira ya watoto, kama ilivyoainishwa katika Sheria ya Kazi na Ajira ya Tanzania, mtoto aliye na umri wa zaidi ya miaka 14 anaweza kuajiriwa kwa hali ya kutofanyiwa shughuli hatarishi.

### **Unyanyasaji wa kijinsia (GBV)**

Matukio ya hivi majuzi ya UWAKI pamoja na takwimu za unyanyasaji wa watoto Morogoro yanaonyesha kuwa kesi 155 zimeripotiwa kwa mwaka 2021 ambayo ni ndogo ikilinganishwa na Tanga (178) na Mbeya (162) iliyoripotiwa mtawalia.

Mradi uliopendekezwa utahusisha fursa sawa kwa wanaume na wanawake. Ajira ya wanawake katika mradi wa miundombinu ni sehemu ya uwezeshaji wao kiuchumi, hata hivyo; hii kwa kawaida huleta mvutano kwa wafanyakazi wa kiume na hata vurugu na unyanyasaji n.k.

### **Q. Mashauriano ya Wadau na Ushirikishwaji wa Umma**

#### **Utambulisho wa Wadau**

Wadau wakuu wa uboreshaji wa miundombinu ya miji inayopendekezwa chini ya Mradi wa TACTIC katika Manispaa ya Morogoro ni pamoja na; Sekretarieti ya Mkoa wa Morogoro (RAS-Mkoa wa Morogoro), TARURA, TANESCO-Mkoa wa Morogoro, Ofisi ya Trafiki Mkoa-Mkoa wa Morogoro, Ofisi za Mkuu wa Wilaya-;Wilaya ya Morogoro, Halmashauri ya Manispaa ya Morogoro, TTCL-Ofisi ya Mkoa wa Morogoro, Bonde la Maji la Wami/Ruvu-Morogoro. , MOROWASA, CHUO KIKUU CHA SOKOINE CHA KILIMO (SUA) na jamii katika Kata 11 zilizopo kando ya barabara (watumiaji wa barabara: madereva bodaboda/bajaj, wafanyabiashara, madereva wa mabasi yaendayo haraka, wafugaji wa ng'ombe, watu wenye ulemavu, watoto wa shule na walimu, wanawake na watoto, viongozi wa dini).

#### **Mikutano ya Hadhara**

Mikutano ya hadhara ilifanyika katika mitaa 10/mitaa kutoka wadi 10 zilizo kando ya sehemu za barabara.

Idadi ya washiriki ilikuwa 367 kwa mashauriano ya jumuiya [Angalia Hitilafu! Chanzo cha marejeleo hakijapatikana.] na kilijumuisha viongozi wa mitaa, viongozi wa jamii, wanawake, wanaume, vijana, watoto, wazee, walemavu, aina

tofauti za mifereji ya maji na watumiaji wa barabara na vikundi vinavyowakilisha shughuli za jamii. Mashauriano yaliongozwa na washauri wa ESIA kwa msaada kutoka kwa wafanyikazi wa baraza la Manispaa na mjumbe mmoja kutoka timu ya wabunifu.

Mikutano ya Mashauriano na Baraza la Manispaa, Sekretarieti ya Mkoa na Wadau Wengine

Mikutano ya mashauriano katika ngazi ya Manispaa na mikoa ilijumuisha majadiliano na Timu ya Usimamizi ya Halmashauri ya wilaya (CMT) ambayo ilijumuisha wafanyakazi wa kiufundi kutoka idara zote na maafisa wa mikoa. Mikutano/mahojiano ya washikadau kutoka sekta zingine yalijumuisha wasimamizi na wafanyikazi wa kiufundi.

Kikao hicho pia kilijumuisha wajumbe kutoka: TARURA, TANESCO-Mkoa wa Morogoro, Ofisi ya Trafiki Mkoa-Mkoa wa Morogoro, Ofisi za Mkuu wa Wilaya, Halmashauri ya Manispaa ya Morogoro, TTCL-Ofisi ya Mkoa wa Morogoro, Bonde la Maji la Wami/Ruvu-Morogoro, MOROWASA, CHUO KIKUU CHA KILIMO SOKOINE (SUA)

### **Muhtasari wa Matokeo Muhimu kutoka kwa Ushauri wa Wadau & Ushirikiano wa Umma**

Kutokana na shughuli za ushirikishwaji zilizofanyika, wadau walibainisha mambo kadhaa wanayotarajia kutoka kwenye mapendekezo ambayo ni (Barabara ya Veta-Kihonda-Tungi, Barabara ya Mjimwema, Barabara ya Tubuyu II, Barabara ya Baracuda) ii. (Mifereji ya maji ya Kikundi, mifereji ya maji ya Kupambana na Malaria na Baracuda Draianje)

#### **Hizi ni pamoja na zifuatazo:**

- Mashirika yasiyo ya kiserikali yanapaswa kutoa elimu ya kujenga uelewa kuhusu VVU/UKIMWI na GBV katika eneo hilo
- Barabara zitapunguza gharama za usafiri kwa jamii na kuharakisha ukuaji wa uchumi
- kwa hivyo itaboresha hali ya uchumi wa kijamii wa eneo hilo;
- Urekebishaji upya wa barabara wakati wa usanifu unahitajika katika barabara ya Veta-Kihonda ili kupunguza kona kali
- Mfumo mbovu wa mifereji ya maji kutokana na mafuriko makubwa ndani ya manispaa
- Halmashauri ya Manispaa ilipendekeza kuwa na mpango mkuu wa maji ya dhoruba
- Kupanua mpangilio wa barabara utakaotosheleza malori, kutembea kwa miguu na baiskeli, sehemu za maegesho na pikipiki.
- Barabara inayopendekezwa iwe na maeneo ya kuegesha magari katika vituo vyote vya biashara kando ya barabara;
- Mifereji ya maji ya dhoruba katika vituo vya barabara inapaswa kufunikwa kwa madhumuni ya usalama;
- Alama za usalama barabarani ziwekwe kote;
- Vivuko vya barabara vinapaswa kutolewa katika makutano yote kwa; maeneo ya makazi, shule na taasisi nyingine za umma;

- Gharama kubwa za usafirishaji zitapunguzwa baada ya uboreshaji wa barabara;
- Vipu vya barabara vinapaswa kutolewa kama hatua ya kupunguza kasi katika maeneo ya makazi;
- Alama za barabarani zinazoonyesha eneo lililoundwa kwa ajili ya maegesho ya bodaboda;
- Ubovu wa barabara huchangia kuzorota na kuchakaa kwa magari yanayosafiri katika barabara hii;
- Barabara ya lami ni ya kudumu na ina muda mrefu wa maisha kuhimili lori za mizigo zinazobeba mizigo mizito ikilinganishwa na barabara ya changarawe;
- Kuwe na mafunzo ya usalama barabarani kabla na baada ya kukamilika kwa awamu ya ujenzi;
- Vibao vya barabara kuashiria maeneo ya shule;
- Vituo vya kuchotea maji vya MOROWASA visisumbuliwe na mkandarasi;
- Njia za kutolea huduma zijumuishwe katika usanifu wa mabomba ya maji yaliyopo na upanuzi wa siku zijazo;
- TANESCO na MORUWASA ziko tayari kutoa ushirikiano, mradi ujumuishe gharama zinazohusiana na BoQ.

## **R. Tathmini ya Athari za Mazingira na Kijamii**

Miongoni mwa athari hasi zinazoweza kutambuliwa ni pamoja na: Mtetemo na Uchafuzi wa Kelele, Ubora duni wa Hewa kwa sababu ya Uzalishaji na Vumbi, Uzalishaji wa Taka Ngumu na Kimiminika, Mafuta, Grisi, Umwagikaji wa mafuta, Hatari ya kuongezeka kwa maambukizi ya magonjwa kama vile VVU/UKIMWI, Hatari kwa Afya. na Usalama, Uchafuzi wa Udongo na Maji, Uharibifu wa Kingo za Mito, Makazi Mapya, Hatari zinazohusiana na Ujenzi na Ajali na Athari za Trafiki.; wakati athari chanya ni pamoja na Ajira wakati wa Ujenzi, Mabadiliko ya Matumizi ya Ardhi, Kuboresha Uchumi wa Kijamii na Kijamii, Uboreshaji wa Mapato ya Serikali kwa njia ya makusanyo. Kodi na mapato.

Kulingana na matokeo, ni dhahiri kwamba uendelezaji wa mradi mdogo unaopendekezwa utaathiriwa na matukio ya mabadiliko ya hali ya hewa yaani kutokana na joto kali na mvua.

## **S. Hatua za Kupunguza**

Utafiti umependekeza hatua mbalimbali za kukabiliana na mabadiliko ya tabianchi kama ilivyoainishwa katika sura ya saba ambayo ni pamoja na kutoa mwonekano wa barabara, alama za usalama na alama katika muundo na usanifu sahihi wa barabara ili kuhimili mabadiliko ya tabia nchi, utoaji wa miundo ya mifereji ya maji yenye uwezo wa kuruhusu mtiririko wa maji bila malipo. ya kukimbia kutoka pande zote za barabara, mafunzo ya usalama na afya kwa wafanyakazi na jamii na fidia ya haki miongoni mwa wengine.

## **T. Muhtasari na Hitimisho**

Timu ya ESIA imekagua athari za kimazingira na kijamii za mapendekezo ya ujenzi na/au uboreshaji wa miundombinu ya mijini (Barabara za Kihonda, Mazimbu, Tungi na kata ya Mji Mwema na mifumo ya Mifereji ya maji yaani Kikundi I&II na Anti Malaria) katika manispaa ya Morogoro, Tanzania.



Utafiti wa ESIA ulifanyika kwa kuzingatia Sheria ya Usimamizi wa Mazingira (2004) na ulifanyika kwa mujibu wa ESA na Kanuni za Ukaguzi (2005). Mashauriano ya wadau yalifanywa wakati wa utafiti ili kujumuisha mamlaka za serikali za mitaa, jamii katika vitongoji vya mradi na wahusika. Mbinu za kawaida za utambuzi wa athari zilitumika ikiwa ni pamoja na orodha ya ukaguzi, matrix na uamuzi wa kitaaluma.

Miongoni mwa athari hasi zinazoweza kujitokeza ni pamoja na Mtetemo na Uchafuzi wa Kelele, Ubora duni wa Hewa kwa sababu ya Uzalishaji na vumbi, Uzalishaji wa Taka Ngumu na Kimiminika, Mafuta, Grisi, Umwagikaji wa Mafuta, Hatari ya kuongezeka kwa maambukizi ya magonjwa kama vile VVU/UKIMWI, Hatari kwa Afya na Usalama, Uharibifu wa Ardhi kwenye Maeneo ya Kukopa, Uchafuzi wa Udongo na Maji, Uharibifu wa Uoto wa Kingo za Mito na Mimea na Wanyama wa Majini, Uharibifu wa Matumizi ya Ardhi na Mali Zilizokaribiana, Upotevu wa Mali zilizo karibu na Maeneo ya Mradi, Uharibifu wa Mimea ya Ardhi, Hatari na Ajali zinazohusiana na Ujenzi na Kuongezeka kwa hatari ya ajali za barabarani zinazohusiana na trafiki, huku athari chanya zikijumuisha

Ajira wakati wa Ujenzi, Mabadiliko ya Matumizi Asilia ya Ardhi, Mandhari na Ubora wa Kuonekana, Kuboresha Uchumi wa Kijamii, Kuboresha Mapato ya Serikali kupitia Kodi zilizokusanywa.

Kulingana na matokeo, ni dhahiri kwamba uendelezaji wa mradi mdogo unaopendekezwa utaathiriwa na matukio ya mabadiliko ya hali ya hewa yaani kutokana na joto kali na mvua kama ilivyoelezwa katika sura ya 2 ya ESIA hii. Utafiti umependekeza hatua mbalimbali za kukabiliana na mabadiliko ya tabianchi kama ilivyoainishwa katika sura ya saba ambayo ni pamoja na kuweka mwonekano wa barabara, alama za usalama na alama katika muundo na usanifu sahihi wa barabara ili kuhimili mabadiliko ya tabia nchi, utoaji wa miundo ya mifereji ya maji yenye uwezo wa kuruhusu mtiririko wa maji bila malipo. kukimbia kutoka pande zote za barabara, mafunzo ya usalama na afya kwa wafanyakazi na jamii na uthamini wa haki miongoni mwa wengine.

Hata hivyo, ili kuhakikisha ustahimilivu wa hali ya hewa kwa miundombinu ya miji inayopendekezwa, hatua za kukabiliana na hali ya hewa kama ilivyoelezwa katika sura ya 2 zimejumuishwa katika miundo ya barabara na mifereji ya maji.

Utafiti unahitimisha kuwa idadi ya athari za kimazingira zimetambuliwa na kutathminiwa; hakuna hata moja kati ya haya ambayo inachukuliwa kuwa kali baada ya kupunguza ili kuzuia upangaji zaidi, usanifu na ujenzi wa mradi mdogo unaopendekezwa. Kwa hivyo, maendeleo ya mradi katika eneo hilo yanaweza kuchukuliwa kuwa yanafaa kwa kuzingatia utekelezaji wa hatua za kupunguza kama ilivyoonyeshwa katika Mpango wa Usimamizi wa Mazingira na Kijamii.

## APPENDIX X: TAC COMMENTS AND RESPONSE TABLE



THE UNITED REPUBLIC OF TANZANIA  
VICE PRESIDENT'S OFFICE  
NATIONAL ENVIRONMENT MANAGEMENT COUNCIL  
(NEMC)



*In reply please quote:*

**Ref: EC/EIA/2022/3857**

21 December 2022

**MOROGORO MUNICIPAL COUNCIL,**  
P.O.Box 166  
**MOROGORO**

**RE: COMMENTS TO IMPROVE THE ENVIRONMENTAL IMPACT AND SOCIAL IMPACT ASSESSMENT STATEMENT (ESIA) REPORT FOR THE PROPOSED UPGRADING OF URBAN ROADS (21.5KM) TO BITUMEN STANDARD AND DRAINAGE SYSTEMS IN MOROGORO MUNICIPAL COUNCIL, MOROGORO REGION**

Reference is made to the above heading.

2. The Council would like to inform you that the ESIA report for the above-mentioned project was reviewed for improvements.
3. The improvements (see the attachment comments) that need to be addressed in the final ESIA report before re-submitting it to NEMC for final scrutiny.
4. Furthermore, you are also required to address all comments raised; provide a comments-response table indicating comments addressed section and page numbers where the comments have been addressed and where the comments have not been addressed indicate the reasons for not doing so and this should be appended in the final report;
5. Please note that you are required to submit three original copies of the final project brief report and an electronic copy on a CD, each accompanied by a separately bound copy of a Non-Technical Executive Summary both in English and Kiswahili versions.
6. Thank you for your continued cooperation.

  
A. N. Sembeka  
**For: Director General**

**Cc: NORPLAN Tanzania Limited, P.O Box 2820, Dar Es Salaam.**

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Head Office, Kambarage Tower, 6<sup>th</sup> Floor, P.O. Box 2724, Dodoma. Phone: +255 262960098, 0713608930,  
Email Address: [nemcdg@nemc.or.tz](mailto:nemcdg@nemc.or.tz) Website: [www.nemc.or.tz](http://www.nemc.or.tz)

**COMMENTS TO IMPROVE THE ENVIRONMENTAL IMPACT AND SOCIAL IMPACT ASSESSMENT STATEMENT (ESIA) REPORT FOR THE PROPOSED UPGRADING OF URBAN ROADS (21.5KM) TO BITUMEN STANDARD AND DRAINAGE SYSTEMS IN MOROGORO MUNICIPAL COUNCIL, MOROGORO REGION**

**Specific comments**

1. The document has no page numbers. Insert the page numbers.
2. Delete all irrelevant or unnecessary information throughout the document, e.g. DSM Metropolitan Development Project, feasibility study for... Morogoro, Mbeya, Sumbawanga..., etc (all appear on cover page),
3. Cover Page, Layout and content should follow the requirements of Regulations
  - i. Include the word "Submission Date" before date of submission; and
  - ii. NEMC's email address is missing. Introduce the new address and improve format of the cover page;
  - iii. On cover page and in executive summary be clear on who is the developer for this project (i.e the one whom ESIA certificate will be addressed to.);
4. Layout and content on cover page should follow the requirements of Regulation 18 of the Environmental Management (Environmental Impact Assessment and Audit) (Amendment) Regulations, 2018; (Project Title, authorizing institution (NEMC), developer and lead consultant (other associates such as TYPASA, Urban Solutions Ltd, can be acknowledged inside the report and no need to include them in footer note)
5. Declaration is not signed by the registered environmental Audit and Experts contrary to Regulation 52(4) of G.N No. 349 of 2005 as amended by G.N No. 474 of 2018. Also it is advised that, all registered EA and Audit Experts must provide their registration particulars when signing their respective reports for easy of reference
6. Acknowledgement should be from the developer of the project (the one whom ESIA certificate will be issued/addressed
7. Ensure that the Non-Technical Executive Summary is provided in both Kiswahili and English as per requirement of **Regulation 19 (2) of the Environmental Impact Assessment and Audit Regulations, 2005 as amended 2018**; In chapter 2 describe on how far from the project are the bridge connecting SGR station and River Ngerengere.
8. In Chapter 1
  - i. In the report state briefly on the source of design criteria that helped in designing;
  - ii. provide details on when the ESIA study was conducted;
  - iii. Provide the number of spaces that will be available for shops, stores, Mini supermarkets, washrooms etc;
  - iv. For project location: Provide a map, Morogoro administrative map, and zoom down to show exactly the project locations of the bus stand.
9. In chapter 2,
  - a. Provide a declaration that the project site is not within or near the sensitive ecosystem/areas (e.g., water bodies, protected areas, schools, public utilities;
  - b. provide information regarding permits for sources of quarry, borrow and sand;
  - c. In section 2.3, describe the existing storm water management along the roads e.g., are all roads lined with storm water drainages? What is the status/quality of such drainages, etc.;

- d. In section 2.4, indicate total length for the drainages to be constructed and or rehabilitated;
  - e. In section 2.7 include also information about space/land required for storm water drainages and indicate whether there will be any affected residential houses or not
10. In Chapter 3 Policy, Laws and Regulations must cited correctly, when they incorrectly cited its implication is non-citation of the particular Policy, Law or Regulation.
- i. "The Environment Impact Assessment and Audit Regulations G.N No. 349 of 2005 as amended by G.N No. 474 of 2018 and not in isolation should be added in chapter three.
  - ii. Do not combine The Local Government Laws as the two Act regulates different aspects regardless the content for some areas are the same. So they should be analyzed separately. The proper citations should be The local Government (Urban Authorities) Act, 1982 and The Local Government (District Authorities) Act, 1982. These Laws has been cited on the preamble only but not at the entire document. For this project, the proper citation is The local Government (Urban Authorities) Act, 1982 and not The Local Governments Laws act as it is cited as page 42 item 3.5.5.
  - iii. At page 46 item 3.5.13, the citation of The Workers Compensation Act should be cited properly.
  - iv. Do not combine Principal and Subsidiary Legislations in one part, Principal Legislation is Superior to Subsidiary Legislation regardless of the matter it regulates. So they should be analyzed separately starting with Principal Legislations.
  - v. The report Should be accompanied by Non-technical Executive Summary in both Kiswahili and English language as per requirement of Regulation 19 (2) of the Environmental Impact Assessment and Audit Regulations, 2005 as amended 2018;
  - vi. Connect the cited Laws with the proposed project. Try to outline clearly how that Law connects with such project.
  - vii. Should contain all contents required in preparation of environmental impact statement as provided under regulation 18 (2) of the Environmental Impact Assessment and Audit) Regulations, 2005 as amended 2018;

#### Missing Laws, Policy and Regulation

- a. Construction of industry policy, 2002
- b. The National Construction Policy 2003
- c. National economic empowerment policy 2004
- d. The Engineers Registration Act, 1997
- e. The Urban Planning (use group and use classes) Regulation, 2018
- f. The Urban Planning (planning space standards) Regulations, 2018
- g. Energy and Water utilities Regulatory Authority , 2002
- h. The Companies Act, 2019
- i. The Environmental Management (Registration and practice of Environmental Experts) Regulations, 2021
- j. The Environmental Act (fees and charges) Regulations, 2021
- k. The water supply and sanitation Act, 2019.
- l. The Contractor Registration Act, 2003.
- m. The Social Security Regulatory Authority Act, 2015.

11. Chapter 4.0; Baseline Conditions:
  - i. For any condition described, should show/indicate on how the project will positively or negatively impact the environment;
  - ii. section 4.2.5, Ensure that the baseline condition data like climatic data are sourced from the regulatory Authority i.e., Tanzania Meteorological Authority as per TMA Act (2019);
  - iii. In chapter 4, provide summary of findings from topographic survey, geotechnical study (Page 13 shows these studies are supposed to be carried during paperwork planning);
  - iv. Ensure that the devices used to collect data are registered by the Authority and recognized; and
  - v. Show relevance of the climatic condition with the project site, explain how these characteristics affects the existing project.
12. In section 1.1. Include information about TYPASA and Urban Solutions Ltd in relation with NORPLAN Tanzania Ltd
13. For project location: Provide a map, Morogoro administrative map, and zoom down to show exactly the project locations of bus stand.
14. In section 2.5, provide information about plot size, plot ratio, plot coverage, built up area, etc
15. In chapter 2, provide information regarding permits for sources of quarry, borrow and sand, carrying capacity of the bus stand, water demand especially during operation phase, etc
12. In chapter 4, provide summary of findings from topographic survey, geotechnical study and soil study, which are supposed to prior to construction phase.
16. In section 4.2, clarify why the page is cross-marked with the word 'draft'
17. Consult more stakeholders including TANESCO, MORUWASA, Fire and Rescue Force, LATRA-Morogoro, TANROADS-Morogoro, etc and include their comments and signatures in the report
18. In chapter 6, 7 and 8, discuss more possible impacts including population influx, gender based violence, loss of scenic quality, increased traffic congestion, disease outbreak, possibility of contaminating River Ngerengere, etc
19. Abide by the Urban Planning (Planning Space Standards) Regulations, 2018; and append the missing document/certificate/permits

- List of all 70 stakeholders consulted with signatures (as stated in Table 5.2)
- Minutes of meetings organized during consultation
- Title Deed for landownership status
- Emergence preparedness and response plan
- Water abstraction permit from MO-UWASA
- Permits for sources of quarry, borrow and sand
- Geotechnical study summary report
- Soil study summary report
- Construction materials investigation summary report
- Topographic survey study report

**RESPONSE TO COMMENTS TO IMPROVE THE ENVIRONMENTAL IMPACT AND SOCIAL IMPACT ASSESSMENT STATEMENT (ESIA)  
REPORT FOR THE PROPOSED UPGRADING OF URBAN ROADS (21.5KM) TO BITUMEN STANDARD AND DRAINAGE SYSTEMS IN  
MOROGORO MUNICIPAL COUNCIL, MOROGORO REGION**

1.0 PROJECT PARTICULARS				
Project Title:		UPGRADING OF URBAN ROADS TO BITUMEN STANDARD AND DRAINAGE SYSTEMS		
Location:		IN MOROGORO MUNICIPAL COUNCIL, MOROGORO REGION		
Sector:		TRANSPORT AND INFRASTRUCTURE		
Developer:		MOROGORO MUNICIPAL COUNCIL P.O.Box 166 MOROGORO		
Consultant:		NORPLAN Tanzania Limited P.O.Box 2820 Dar Es Salaam		
TAC Meeting:		21th December,2022.		
Specifics Comments				
	Addressed Comments	Response	Section	Page
1	The document has no page numbers. Insert the page numbers.	Inserted	Cover Page	



2	Delete all irrelevant or unnecessary information throughout the document, e.g. DSM Metropolitan Development Project, feasibility study for... Morogoro, Mbeya, Sumbawanga..., etc (all appear on cover page),	Deleted	Cover Page	
3	Cover Page, Layout and content should follow the requirements of Regulations <ul style="list-style-type: none"> <li>• Include the word “Submission Date” before date of submission; and</li> <li>• NEMC’s email address is missing. Introduce the new address and improve format of the cover page;</li> <li>• On cover page and in executive summary be clear on who is the developer for this project (i.e the one whom ESIA certificate will be addressed to.);</li> </ul>	Information Provided	Cover Page	
4	Layout and content on cover page <u>should follow</u> the requirements of Regulation 18 of the Environmental Management (Environmental Impact Assessment and Audit) (Amendment) Regulations, 2018; (Project Title, authorizing institution (NEMC), developer and lead consultant (other associates such as TYPASA, Urban Solutions Ltd, can be acknowledged inside the report and no need to include them in footer note)	Information corrected	Cover Page	
5	Declaration is not signed by the registered environmental Audit and Experts contrary to Regulation 52(4) of G.N No. 349 of 2005 as amended by G.N No. 474 of 2018. Also it is advised that, all registered EA and Audit Experts must provide their registration particulars when signing their respective reports for easy of reference	Signed	Study Team	xix
6	Acknowledgement should be from the developer of the project (the one whom ESIA certificate will be issued/addressed	Information corrected	Acknowledgement	xviii
7	Ensure that the Non-Technical Executive Summary is provided in both Kiswahili and English as per requirement of <b>Regulation 19 (2) of the Environmental Impact Assessment and Audit Regulations, 2005 as amended 2018</b> ;In chapter 2 describe on how far from the project are the bridge connecting SGR station and River Ngerengere.	Information corrected	Attached	
8	In Chapter 1 <ul style="list-style-type: none"> <li>• In the report state briefly on the source of design criteria that helped in designing;</li> <li>• provide details on when the ESIA study was conducted;</li> <li>• Provide the number of spaces that will be available for shops, stores, Mini supermarkets, washrooms etc;</li> </ul>	Addressed	2.7 and 2.8  1.6.3	22-25  4

	<ul style="list-style-type: none"> <li>For project location: Provide a map, Morogoro administrative map, and zoom down to show exactly the</li> <li>project locations of the bus stand.</li> </ul>			
9	<p>In chapter 2,</p> <p><b>a</b> Provide a declaration that the project site is not within or near the sensitive ecosystem/areas (e.g., water bodies, protected areas, schools, public utilities;</p> <p><b>b</b> provide information regarding permits for sources of quarry, borrow and sand;</p> <p><b>c</b> In section 2.3, describe the existing storm water management along the roads e.g., are all roads lined with storm water drainages? What is the status/quality of such drainages, etc.;</p> <ul style="list-style-type: none"> <li>In section 2.4, indicate total length for the drainages to be constructed and or rehabilitated;</li> <li>In section 2.7 include also information about space/land required for storm water drainages and indicate whether there will be any affected residential houses or not</li> </ul>	<p>Provided</p> <p>aggregates shall be sourced from licensed operators as mentioned in chapter 2 and hence no need of permit from the ministry of minerals, for borrow it-the ministry does not issue permits for material sources that can be depleted below 7yrs, most of borrow pits are depleted within a year, same implies for sand sources</p>	<p>2.3</p> <p>Table 2.7</p> <p>2.3</p> <p>Table 2.2</p> <p>2.10</p>	<p>9-19</p> <p>13</p> <p>9-19</p> <p>19</p> <p>26</p>
10	<p>In Chapter 3</p> <ul style="list-style-type: none"> <li>Policy, Laws and Regulations must cited correctly, when they incorrectly cited its implication is non-citation of the particular Policy, Law or Regulation.</li> <li>“The Environment Impact Assessment and Audit Regulations G.N No. 349 of 2005 as amended by G.N No. 474 of 2018 and not in isolation should be added in chapter three.</li> <li>Do not combine The Local Government Laws as the two Act regulates different aspects regardless the content for some areas are the same. So they should be analyzed separately. The proper citations should be The local Government (Urban Authorities) Act, 1982 and The Local Government (District Authorities) Act, 1982. These Laws has been cited on the preamble only but not at the entire document. For this project, the proper citation is The local Government (Urban Authorities) Act, 1982 and not The Local Governments Laws act as it is cited as page 42 item 3.5.5.</li> </ul>	Information provided	Chapter 3	35-70

	<ul style="list-style-type: none"> <li>At page 46 item 3.5.13, the citation of The Workers Compensation Act should be cited properly.</li> <li>Do not combine Principal and Subsidiary Legislations in one part, Principal Legislation is Superior to Subsidiary Legislation regardless of the matter it regulates. So they should be analyzed separately starting with Principal Legislations.</li> <li>The report Should be accompanied by Non-technical Executive Summary in both</li> <li>Kiswahili and English language as per requirement of Regulation 19 (2) of the</li> <li>Environmental Impact Assessment and Audit Regulations, 2005 as amended 2018; Connect the cited Laws with the proposed project. Try to outline clearly how that Law connects with such project.</li> <li>Should contain all contents required in preparation of environmental impact statement as provided under regulation 18 (2) of the Environmental Impact Assessment and Audit) Regulations, 2005 as amended 2018;</li> </ul> <p>Missing Laws, Policy and Regulation</p> <ol style="list-style-type: none"> <li>Construction of industry policy, 2002</li> <li>The National Construction Policy 2003</li> <li>National economic empowerment policy 2004</li> <li>The Engineers Registration Act, 1997</li> <li>The Urban Planning (use group and use classes) Regulation, 2018</li> <li>The Urban Planning (planning space standards) Regulations, 2018</li> <li>Energy and Water utilities Regulatory Authority , 2002</li> <li>The Companies Act, 2019</li> <li>The Environmental Management (Registration and practice of</li> <li>Environmental Experts) Regulations, 2021</li> <li>The Environmental Act (fees and charges) Regulations, 2021</li> <li>The water supply and sanitation Act, 2019.</li> <li>The Contractor Registration Act, 2003.</li> <li>The Social Security Regulatory Authority Act, 2015.</li> </ol>	Added		
11	Chapter 4.0; Baseline Conditions:	Provided	Chapter 3	35-70
			Chapter 4	71-104

	<ul style="list-style-type: none"> <li>For any condition described, should show/indicate on how the project will positively or negatively impact the environment;</li> <li>section 4.2.5, Ensure that the baseline condition data like climatic data are sourced from the regulatory Authority i.e., Tanzania Meteorological Authority as per TMA Act (2019);</li> <li>In chapter 4, provide summary of findings from topographic survey, geotechnical study (Page 13 shows these studies are supposed to be carried during paperwork planning);</li> <li>Ensure that the devices used to collect data are registered by the Authority and recognized; and</li> <li>Show relevance of the climatic condition with the project site, explain how these characteristics affects the existing project.</li> </ul>			
12	In section 1.1. Include information about TYPESA and Urban Solutions Ltd in relation with NORPLAN Tanzania Ltd	Removed		
13	For project location: Provide a map, Morogoro administrative map, and zoom down to show exactly the project locations of bus stand.	-		
14	In section 2.5, provide information about plot size, plot ratio, plot coverage, built up area, etc	-		
15	In chapter 2, provide information regarding permits for sources of quarry, borrow and sand, carrying capacity of the bus stand, water demand especially during operation phase, etc 12. In chapter 4, provide summary of findings from topographic survey, geotechnical study and soil study, which are supposed to prior to construction phase.	Provided	Table 2.7	13
16	section 4.2, clarify why the page is cross-marked with the word 'draft'	Removed		
17	Consult more stakeholders including TANESCO, MORUWASA, Fire and Rescue Force, LATRA-Morogoro, TANROADS-Morogoro, etc and include their comments and signatures in the report	Attached	Appendix iii	207-208
18	In chapter 6, 7 and 8, discuss more possible impacts including population influx, gender based violence, loss of scenic quality, increased traffic congestion, disease outbreak, possibility of contaminating River Ngerengere, etc	Disused	Chapter 6,7 and 8 Table 6.1	122-184

19	<p>Abide by the Urban Planning (Planning Space Standards) Regulations, 2018; and append the missing document/certificate/permits</p> <ul style="list-style-type: none"> <li>• List of all 70 stakeholders consulted with signatures (as stated in Table 5.2)</li> <li>• Minutes of meetings organized during consultation</li> <li>• Title Deed for landownership status</li> <li>• Emergence preparedness and response plan</li> <li>• Water abstraction permit from MO-UWASA</li> <li>• Permits for sources of quarry, borrow and sand</li> <li>• Geotechnical study summary report</li> <li>• Soil study summary report</li> <li>• Construction materials investigation summary report</li> <li>• Topographic survey study report</li> </ul>	<p>Attached</p> <p>Shall be applied by responsible contractor before commencement</p>	Appendix	204-334
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