

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



**PROVISION OF CONSULTANCY SERVICES FOR CARRYING-OUT
ENVIRONMENTAL AND SOCIAL DUE DILIGENCE FOR INITIAL
URBAN INFRASTRUCTURE INVESTMENTS IN UBUNGO
MUNICIPALITY - PREPARATION OF DMDP PHASE 2**

REVISED ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

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ABBREVIATIONS AND ACRONYMS

AIDS : Acquired Immunodeficiency Syndrome
 BRT : Bus Rapid Transport
 CBD : Central Business District
 CBOs : Community Based Organisations
 C-ESMP : Contractor's ESMP
 DAWASA : Dar Es Salaam Water and Sewerage Authority
 DOE-VPO : Division of Environment in the Vice President's Office
 HSEO : Health, Safety and Environmental Officer
 EIA : Environmental Impact Assessment
 EMA : Environmental Management Act
 EMOs : Environmental Management Officers
 ESGH&S : Environmental, Social, Gender, Health and Safety
 ESIA : Environmental and Social Impact Assessment
 ESMP : Environmental and Social Management Plan
 ESU : Environmental and Social Unit
 GBV : Gender-Based Violence
 GN : Government Notice
 GOT : Government of the United Republic of Tanzania
 GRM : Grievances Redress Mechanism
 GRP : Grievance Redress Plan
 HIV : Human Immunodeficiency Virus
 OHSMP : Occupational Health and Safety Management Plan
 IBRD : International Bank for Reconstruction and Development
 IDA : International Development Association
 LAA : Local Assessment Area
 LGAs : Local Government Authorities
 LHS : Left Hand Side
 MCDOS : Municipal Community Development Officers
 MoW : Ministry of Works
 NEMC : National Environment Management Council
 NEP : National Environmental Policy
 NGOs : Non-Governmental Organisations
 OR-TAMISEMI : Ofisi ya Rais – Tawala za Mikoa na Serikali za Mitaa
 PAPs : Project Affected Personnel
 PDA : Project Development Area

P-ESMP: Project ESMP
 PM₁₀ : Particulate Matter with diameters that are generally 10 micrometres and smaller.
 PM_{2.5} : Particulate Matter with diameters that are generally 2.5 micrometres and small
 RAP : Resettlement Action Plan
 RHS : Right Hand Side
 SEU : Safety and Environment Unit
 SGO : Social / Gender Officer
 SH : Sexual Harassment
 STIs : Sexually Transmitted Infections
 TARURA : Tanzania National Roads Agency
 TMA : Tanzania Meteorological Authority
 TARURA : Tanzania Rural and Urban Roads Agency
 TFS : Tanzania Forest Services
 TFV : Ten Percent Fines Value
 TOR : Terms of Reference
 TPDF : Tanzania Peoples Defence Force
 UNECE : United Nations Economic Commission for Europe
 UMC : Ubungo Municipal Council
 VECs : Valued Environmental Components
 WB : World Bank
 WHO : World Health Organisation

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EXECUTIVE SUMMARY**1.0 PROJECT INFORMATION****1.1 Project Title**

Environmental and Social Impact Assessment (ESIA) for the Proposed Construction of Urban Roads (32.07) to Bitumen and Concrete Standards under Initial Works of Dar es Salaam Metropolitan Development Project (DMDP) Phase 2 in Ubungo Municipality in Dar es Salaam City.

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2.0 PROJECT DESCRIPTION

The project entails construction of several roads amounting to 32.07 km in different locations within Ubungo Municipality under the Dar es Salaam Metropolitan Development Project Phase 2 (DMDP 2). These roads will be upgraded to bitumen and concrete standards whose impacts will be to reduce travelling time and saves cost in terms of fuel and maintenances of vehicles. Besides, this upgrading will save a lot of money that are currently spent through periodic maintenances. It is also anticipated that the upgraded roads will reduce diseases related to respiratory system that caused by dust emission to individuals located along the unpaved roads.

The proposed project involves upgrading of the following urban roads which have been put into four (4) implementation packages: -

Package	Name of Subproject Road	Length (Km)	Existing Road Right of Way (m)	Cost (in Million US\$)
1	Msumi Road	9.83	15 to 22	5.84
	Sub Total	9.83		5.84
2	Goba Wakorea Road	7.76	12 to 18	4.19
	Hondogo - Shija Road	4.16	9 to 20	2.67
	Sub Total	11.92		6.86
3	Posta Matembe	0.82	7 to 13	0.79
	Sheikh Bofu	1.13	7 to 13	1.18
	Msikitini	0.37	8 to 12	0.41
	Sinza KKKT	0.27	8 to 12	0.33

Package	Name of Subproject Road	Length (Km)	Existing Road Right of Way (m)	Cost (in Million US\$)
	Segesera	0.77	8 to 13	0.89
	Juma Ikangaa	0.97	8 to 13	1.02
	Ubungu NHC	0.60	7 to 12	0.60
	Sub Total	4.93		5.22
4	Tip Top	0.28	12 to 15	0.44
	Midizini Road	0.99	11 to 15	0.79
	Binti Kayenga	1.27	12 to 15	0.98
	Namnani Road	0.66	8 to 12	0.48
	Mbegani Road	0.28	7.5 to 12	0.33
	Mikindani Road	0.45	8 to 10	0.47
	Shule Road	0.28	7 to 9	0.28
	Chimwaga Road	0.34	7 to 10	0.68
	Lion Road	0.84	12 to 15	0.97
	Sub Total	5.39		5.42
TOTAL		32.07		23.34

The DMDP 2 subproject roads will be implemented jointly by PO-RALG/OR-TAMISEMI, Ubungu Municipal Council (UMC) and Tanzania Rural and Urban Roads Agency (TARURA), whereby OR-TAMISEMI is responsible for procuring implementation Contractors and supervision of Service Consultants for each works package. UMC is the project developer responsible for ESIA including land acquisition and resettlement issues, while TARURA is the operator of DMDP 2 subproject roads responsible for maintenance of constructed infrastructures.

The project will be co-financed by the World Bank Group (IBRD/IDA) and the Government of the United Republic of Tanzania through OR-TAMISEMI. The estimated construction cost of the proposed upgrading of 32.07Km of DMDP 2 subproject roads in Ubungu Municipality is US\$ 23.34 Million or TZS 57.18 Billion.

The construction period is estimated to be 2 years. After construction period, the DMDP 2 subproject roads will be operated by TARURA for an estimated period of 20 years. Thereafter, the DMDP 2 subproject roads will have to undergo new construction or major rehabilitation and/or expansion depending on the future urban transport demand.

3.0 DESCRIPTION OF THE PROJECT ENVIRONMENT

The roads under initial works of DMDP 2 are located at Mbezi, Goba, Kibamba, Sinza, Ubungu, Manzese and Mabibo Wards in Ubungu Municipality in Dar es Salaam City. The project roads traverse through built up environment with middle- and low-income urban settlements. Some business premises include shops, kiosks, restaurants and hotels are found along the DMDP 2 subproject roads. The proposed project roads are also passing along institutional facilities including kindergarten, primary and secondary schools, dispensaries, health centres, hospitals, colleges and religious buildings.

A total number of 116 housing structures will be affected during implementation of initial works of DMDP 2 project due to requirement for expansion of construction corridors where the roads observed to have narrow width. However, 7,245m² of land will be acquired during expansion of road construction corridors under DMDP 2. It has been determined that UMC will pay compensation to affected properties due to implementation of DMDP 2 subproject roads whose amount is TZS 668,219,000.00.

Few ornament trees mostly Jamaican cherry are found along the proposed road construction corridors. Birds (Indian Crows) are the most common fauna species exist along the DMDP 2 subproject roads. Corridors of the proposed roads are greatly occupied by electric poles, water supply pipes, sewerage system and telecommunication cables such that relocation of utilities will form a fundamental part of project implementation.

4.0 STAKEHOLDER CONSULTATION AND THEIR INVOLVEMENT

4.1 Identified Stakeholders

The following are the identified stakeholders during the ESIA study:

SN	Stakeholders	Categorization
1.	President's office, Regional Administration and Local Government (PO-RALG)	Interested Party
2.	Tanzania Rural and Urban Roads Agency (TARURA)	Interested Party
3.	The World Bank	Interested Party
4.	Division of Environment in the Vice President's Office (DOE-VPO)	Interested Party
5.	National Environment Management Council (NEMC)	Interested Party
6.	Tanzania National Roads Agency (TANROADS)	Interested Party
7.	Dar es salaam City Council (DCC)	Interested Party
8.	Ubungo Municipal Council (UMC)	Interested Party
9.	Ward Development Committee (WDCs)	Interested Party
11.	Mtaa Development committee (MDCs)	Interested Party
12.	Tanzania Electricity Supply Company Limited (TANESCO)	Affected Party
14.	Telecommunication Companies (TTCL, Vodacom, Airtel)	Affected Party
15.	Dar es Salaam Water and Sewerage Authority (DAWASA)	Affected Party
16.	Commuter Transport Operators	Affected Party
17.	Business operators along the DMDP 2 Subproject Road Corridors	Affected Party
18.	Local Communities along the DMDP 2 Subproject Road Corridors	Affected Party

4.2 Results of Stakeholder Consultations

In general, the stakeholders appreciate that the project will be economically beneficial and will stimulate economic development and investment opportunities in the project area. Notwithstanding the mentioned benefits, the stakeholders raised some issues / concerns regarding the DMDP 2 subproject roads. The negative concern raised by stakeholder at community level is extent of fairness regarding compensation of affected land and properties where the DMDP 2 subproject roads seem to have narrow corridor.

4.3 Consultation with Stakeholder Representatives

The consultation with stakeholder representatives indicates the affected parties were more concerned on the impacts of the project on land use and public service infrastructure/utilities. The interested parties have also made some recommendations to be considered by the project proponent during implementation phase. The raised issues/concerns and recommendations made by both affected and interested parties will be taken into consideration and incorporated into the project design, whenever feasible.

5.0 IDENTIFIED IMPACTS AND /MITIGATION MEASURES

The findings indicate that the project will have both beneficial (positive) and adverse (negative) impacts. However, the beneficial impacts are expected to be long term and will occur after construction or during operational phase. In order to maximize the project benefits the enhancement measures for the identified positive impacts have been outlined in the report.

The following are the identified beneficial impacts of the proposed upgrading of DMDP 2 subproject roads in Ubungu Municipality:

- Reduced emission of dust, air pollutants and greenhouse gas.
- Increased urban mobility and stimulation of economic growth.
- Employment creation and economic improvement of households.
- Increased revenue collection by UMC and Central Government.
- Creation of employment and income generation opportunities
- Reduced transportation costs and Improved Access to Social Services.
- Reduced risk of traffic accidents and improved environmental quality.
- Increased comfortability of road users.
- Controlling of flooding.
- Responding to climate change effects associated with raise in temperature and increased precipitation.
- Creation of aesthetic environment due to implementation of urban greening concept

The identified negative impacts will be short-term and will occur mainly during construction phase. The mitigation measures for the identified negative impacts have already been outlined in the report and elaborated in the corresponding ESMP schedule. The following are the identified negative impacts: -

- Land acquisition and demolition of some housing structures and facilities at Msumi, Goba Wakorea, Hondogo – Shija, Binti Kayenga, Posta Matembe, Sheikh Bofu, Msikitini, Sinza KKKT, Namnani, Mbegani, Mikindani, Chimwaga and Ubungu NHC Roads.
- Relocation of petty traders (Machinga) at Midizini Road
- Disruption of public utilities such as water supply, electricity and sewerage system.
- Vegetation clearance at some sections of the selected Roads.
- Air pollution due to dust and fumes emission from construction activities.
- Noise nuisance and vibration during construction.
- Generation of wastes during construction and operation phases of the DMDP 2 subproject roads.
- Disruption of traffic flow in busy and highly populated areas.
- Increased risk of occurrence of traffic accidents due to construction activities.
- Increased HIV/AIDS prevalence due to interaction between construction workers and local community members.
- Increased emergent of GBV/SEA and SH cases due to influx of job seekers into the project area.
- Risk of damaging nearby graves at Msumi and Tiptop Road
- Risk of damaging underground archaeological artefacts due to excavation at the roads and materials extraction sites

6.0 CONSIDERED ALTERNATIVES

Three (3) alternatives have been considered in this study based on technical, economic, environmental, and social point of view as highlighted below: -

- **No Project Alternative VS Project Alternative:** During construction period the No Project Alternative was found to have less environmental effects/impacts than the Project Alternative. However, on the long-term the Project Alternative was found to have more socio-economic and environmental benefits than the “No Project Alternative”. Therefore, the “Project Alternative” should be selected and “No Project Alternative” should be rejected.
- **Labour-Intensive Construction Method VS Machine-Intensive Methods:** The “Labour-Intensive Construction Method” was found to be favourable than “Machine-Intensive Construction Method”. However, due to the nature of the project the labour-intensive method has been found to have some limitations, and therefore the

combination of the two methods should be considered. However, during construction more emphasis will be given on the labour-intensive method in order to promote employment of the local people. For example, excavation of storm water drainages, relocation of utilities, etc.

- **Asphalt Pavement VS Concrete Pavement Alternatives:** The comparison was made between the asphalt pavement and concrete pavement based on their disadvantages and disadvantages. It was not easy to derive a conclusion on which pavement type is the most preferable. However, based on the topography and flood occurrence of the project area, the concrete pavement was opted for Sinza and Ubungo NHC Roads while asphalt pavement alternative was preferred for other Roads.

7.0 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

The purpose of ESMP is to ensure that the project is being implemented with minimum adverse environmental and social impacts. The ESMP focuses on avoidance or mitigation of potential impacts associated with the project related activities and enhancement of project benefits. It specifies mitigation and institutional measures to be taken during construction and operation phases, to eliminate any adverse environmental and social impacts, offset them or reduce them to acceptable levels.

In order to be effective, the ESMP has specified roles and responsibilities of various stakeholders during implementation. The identified stakeholders include the President's Office -Regional Administration and Local Government (PO-RALG), Tanzania Rural and Urban Roads Agency (TARURA), Ubungo Municipal Council (UMC), Wards and Area ("Mitaa") Development Committees, as well as Local NGOs/CBOs dealing with project related environmental and social aspects in the project area.

The successful implementation of ESMP also requires financial commitment. In this regard, cost estimates for implementation of mitigation measures have been taken into consideration. Therefore, the cost of implementation of environmental and social mitigation measures has been estimated to be TZS 1,633,240,900.00. Principally, large part of the mitigation measures will be implemented by Contractor during construction phase whose costs are included in the Bill of Quantities for Bidding Document. Ubungo Municipal Council will be responsible to compensation to the affected parties whose cost amounts to TZS. 668,219,000.00.

8.0 RESOURCE EVALUATION OR COST BENEFIT ANALYSIS

8.1 Project Benefits and Costs

The project has been found to have short and long-term benefits which outweigh the project costs that estimated to be TZS 58,813,240,900.00. The following are the short-term and long-term benefits:

- **Short-term Benefits**
 - Creation of temporary employment due to recruitment of construction workers.
 - Increased income generation opportunities to the local people due to increased demand for food and other items from construction workers.
- **Long-term Benefits**
 - Increased urban mobility and stimulation of economic growth.
 - Employment creation and economic improvement of households.
 - Increased revenue collection by UMC and Central Government.
 - Creation of employment and income generation opportunities
 - Reduced transportation costs and Improved Access to Social Services.
 - Reduced risk of traffic accidents and improved environmental quality.
 - Increased comfortability of road users.
 - Controlling of flooding.

-
- Responding to climate change effects associated with raise in temperature and increased precipitation.
 - Creation of aesthetic environment due to implementation of urban greening concept.

8.2 Overall Benefit Analysis

The environmental and social costs included direct and indirect ones, which made the total environmental and costs for this project to be TZS 1,633,240,900.00 and the total project costs to be TZS 58,813,240,900.00 after including the overall environmental costs. When compared with total project costs (TZS 58,813,240,900.00), the overall environmental and social costs (TZS 1,633,240,900.00) is only 2.8% of the total project costs. It can be concluded that the environmental costs are significantly low and can be tolerated for this project.

9.0 DEMOBILIZATION PLAN

The demobilization plan will involve site rehabilitation and restoration of disturbed areas due to construction activities. It is the responsibility of the Contractor to undertake rehabilitation and restoration works to ensure that the environmental value of the project site is maintained for the present and future generations.

The purpose of site rehabilitation is to ensure that all disturbed areas caused by construction activities are restored, leaving a stable environment that is conducive to the establishment of landscapes characteristic to the area.

The rehabilitation and restoration works will be done in accordance with the approved Contractor's Environmental and Social Management Plan (C-ESMP). Those areas that require rehabilitation and restoration works include the borrow pits; quarry pits; materials storage yard; workshop area, cement/asphalt batch plant area; soil/spoil materials dumping site; and camp site.

During demobilization phase all work areas, campsite/offices, workshops /garages, and other temporary installations will be cleaned up and the site will be restored. These includes removal of temporary barricades and buildings, equipment, surplus materials, pieces of wood, pieces of bricks or any other material that was not in the area before construction works.

The site will be cleared of overburden resulting from construction works. Natural drainages will be restored and damaged areas will be rehabilitated to make them compatible with the surrounding landscape. Permanent installations will be restored / repaired to their initial state. The compacted soils will be scarified to at least 15 cm deep to loosen it in order to facilitate vegetation growth.

Monitoring will be carried out by the Supervision Consultant's Environmental Expert to ensure the activities specified in the contract are being adhered to by the Contractor. During monitoring the Supervision Consultant's Environmental Expert will undertake assessment of the site conditions and recommend the restoration / rehabilitation requirements for implementation by the Contractor. Emphasis will be placed on the continuity between site characteristics and the adjacent landscapes.

10.0 CONCLUSION AND RECOMMENDATIONS

10.1 Conclusion

In general, the project has been found to have short-term and long-term environmental and socio-economic benefits to the local community and the nation. The short-term socio-economic benefits include creation of temporary employment and increased income generation opportunities to the local people. It is expected that during construction some local people, especially women will get an opportunity to increase their income by selling food items

to the construction workers. These benefits will be enhanced by providing clean and safe water supply and sanitary facilities to enable the food vendors sell their food in hygienic environment, hence preventing transmission of hygiene related diseases like cholera to the construction workers.

The long-term socio-economic benefits include: -

- Increased urban mobility and stimulation of economic growth.
- Employment creation and economic improvement of households.
- Increased revenue collection by UMC and Central Government.
- Creation of employment and income generation opportunities
- Reduced transportation costs and Improved Access to Social Services.
- Reduced risk of traffic accidents and improved environmental quality.
- Increased comfortability of road users.
- Controlling of flooding.
- Responding to climate change effects associated with raise in temperature and increased precipitation.
- Creation of aesthetic environment due to implementation of urban greening concept

Most of the identified negative impacts are short-term with low significance and mainly occur during construction phase. Moreover, the mitigation measures have been proposed for the identified negative impacts. The cost estimates for the planned mitigation measures have been incorporated into the Bill of Quantities (BOQ) of Tender/Bidding Documents.

10.2 Recommendations

The project has been found to have long-term environmental and socio-economic benefits. Identified adverse (negative) impacts are temporary and short-term as they occur during construction phase. In addition, the cost/benefit analysis has found that the project to be highly beneficial and economically viable. It is therefore, recommended that the project should be implemented immediately to avoid increased construction costs due to increasing inflation rate.

In order to ensure the successful implementation and sustainability of the project, the ESIA study team provides the following recommendations:

- Considering the climate change factor during the design and construction phase to ensure the long-term durability of the road pavement and associated bridge structures. In this case, TARURA in collaboration with TMA should carry out monitoring of climate change indicators such as temperature, precipitation, pressure, wind speed and direction. This will enable the design and construction of road infrastructure to take climate change indicators into consideration.
- Collaborating with Local Government Authorities (LGAs) to relocate small business operators before commencement of the construction works. The smooth way is for TARURA and Ubungo MC to make consultation with representatives of the likely affected small business operators to identify the relocation sites.
- Promoting awareness and education campaign among the road users on the importance of using pedestrian walkways to minimize risk of traffic accidents due to interaction between pedestrians and vehicles. This can be reinforced by installation of written signboard in Kiswahili, English and Sign Language at strategic locations. The use of pedestrian walkways must be emphasized in the road safety campaigns and TARURA must allocate budget for road safety campaigns. This can be done during the national road safety campaigns (“wiki ya nenda kwa Usalama barabarani”).
- Promoting awareness and education campaign among the small business operators to avoid encroachment into the road pavements. This should also be integrated into the national road safety campaigns.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

The Government of United Republic Tanzania through President's Office – Regional Administration and Local Government (PO-RALG) is implementing the first batch of a pipeline of investments in Ubungo Municipality under the World Bank-financed Phase 2 of the Dar es Salaam Metropolitan Development Project (DMDP Phase 2 or DMDP 2). DMDP was designed as a series of projects to support long term development of the Dar es Salaam Metropolitan (Dar Metro) region.

The recent closed DMDP Phase 1 (DMDP 1) was first in the series which aimed at addressing urgent infrastructure demands for basic services, urban mobility and flood attenuation in the Dar Metro region. DMDP 1 has also delivered transformational improvements at the neighbourhood level, though there are significant infrastructure backlogs remain which hinder Dar es Salaam's ability to meet the demands of liveable and economically productive metropolitan area. On the other hand, and despite of implementation of DMDP 1, Dar es Salaam Road network has large gaps and the City is still having one of the lowest urban road densities in the world, whereas majority of the Dar Metro area has less than 0.5km/km².

1.2 Need and Justification for the Project

Dar es salaam City is one of the fast-growing cities in economic and population wise in Africa, ranked to 85th in the world and 12th in Africa¹. The growth of the City goes in line with the need of the infrastructure development such as roads, drainage systems and street lightings. Increase of the built-up area also contributes to increase in stormwater runoff that results into flooding. The government is aware of that and has been beautifying the city and solve floods problems through construction of various infrastructure under DMDP 1 and, now intends to do the same through DMDP 2.

Growth of the City need improved roads that enable individuals to move from homes to the working/business areas, schools, industrial areas and etc. to meet daily needs, getting education and increase per capital income of the nation. Presence of upgraded street roads that are accessible throughout the year are not only for beautifying the city, but also helps to reduce soil erosion since the roads are implemented in-line with lined drainage systems that convey water direct to the discharge areas.

Upgrading of the roads to bitumen standard reduces travelling time and saves cost in terms of fuel and maintenances of vehicles. On the other hand, upgrading of the roads saves a lot of money that used for periodic maintenances. Nonetheless, upgrading of the roads contributes in reduction of diseases related to respiratory system that caused by dust emission to individuals located along the unpaved roads.

During implementation of DMDP 1, road network was increased from 20% to 30% leaving over 1,500km of roads unpaved and in poor condition with lack of drainage and lighting. Although primary drainage network was improved through DMDP 1, but over 50% of existing drainage network is still in poor condition and floods affect large area of Dar es Salaam City.

For the purpose of extending road and drainage networks of the Dar es Salaam City while solving the flood related problems, the Government of Tanzania together with World Bank come out with DMDP 2 project. DMDP 2 starts from where DMDP 1 had ended, and actual is a continuation of infrastructure development project in the Dar es Salaam City.

¹ <https://www.thecitizen.co.tz/tanzania/news/business/dar-es-salaam-ranked-85th-richest-city-globally-12th-in-africa-4204846>

DMDP 2 will scale up priority infrastructure including City's roads and drainage network through combination of engineering and nature-based solutions in restoring of natural drains, reduction in soil erosion and sedimentation, increasing green cover and improving infiltration rate before storm water enters drains. During implementation of DMDP 1, the effects of climate change, particularly flooding, become increasingly, significant threat to Dar es Salaam urban infrastructure and population. Furthermore, DMDP 2 will address observed gaps in previous urban infrastructure development project by responding to increased hazards and risks from climate change and urban densification.

1.3 Project Costs and Source of Funding

According to preliminary design report produced by the Consultant, the overall construction costs for implementing initial works of the DMDP 2 Subproject Roads in Ubungu Municipality are estimated to be United States Dollars (US\$) 23.34 million equivalent to Tanzania Shillings (TZS) 57.18 Billion² (**Table 1-1**). This project is co-financed by the World Bank and the Government of United Republic of Tanzania through PO-RALG.

Table 1-1: Cost Estimates for Initial Works of DMDP 2 Subproject Roads in Ubungu Municipality

Package	Name of Subproject Road	Length (Km)	Existing Road Right of Way (m)	Cost (in Million US\$)
1	Msumi Road	9.83	15 to 22	5.84
	Sub Total	9.83		5.84
2	Goba Wakorea Road	7.76	12 to 18	4.19
	Hondogo - Shija Road	4.16	9 to 20	2.67
	Sub Total	11.92		6.86
3	Posta Matembe	0.82	7 to 13	0.79
	Sheikh Bofu	1.13	7 to 13	1.18
	Msikitini	0.37	8 to 12	0.41
	Sinza KKKT	0.27	8 to 12	0.33
	Segesera	0.77	8 to 13	0.89
	Juma Ikangaa	0.97	8 to 13	1.02
	Ubungu NHC	0.60	7 to 12	0.60
	Sub Total	4.93		5.22
4	Tip Top	0.28	12 to 15	0.44
	Midizini Road	0.99	11 to 15	0.79
	Binti Kayenga	1.27	12 to 15	0.98
	Namnani Road	0.66	8 to 12	0.48
	Mbegani Road	0.28	7.5 to 12	0.33
	Mikindani Road	0.45	8 to 10	0.47
	Shule Road	0.28	7 to 9	0.28
	Chimwaga Road	0.34	7 to 10	0.68
	Lion Road	0.84	12 to 15	0.97
	Sub Total	5.39		5.42
TOTAL		32.07		23.34

Source: Preliminary Design Report by Consultant (December, 2023)

² One US\$ was exchanged at TZS 2,450.00 in December 2023

1.4 Rationale of Selected Roads under DMDP 2

The process of selecting roads for DMDP 2 investment was carried by participating DLAs based on the following criteria: -

- Linkage with Dar es Salaam Bus Rapid Transit (BRT) infrastructure;
- Connectivity with Metropolitan/Regional/Trunk Roads
- Access to Community Social Services
- Linkage with DMDP 1 investments
- Addressing Flood Challenge/Climate Resilience
- Central Business District (CBD) or Community Upgrading

With regard to above prioritization list for project infrastructure development under DMDP 2, 19 roads with total length of 32.07 in Ubungu Municipality have been selected for construction in packages 1 and 2 as shown in **Table 1-1** above.

1.5 Project Life Span

The project implementation period is estimated to be 2 years, whereby 12 months is for the construction works, while 12 months is for the defect liability period. After construction period, the DMDP 2 investments will be operated for an estimated economic life of 20 years. Thereafter, the roads and side drains will have to undergo major rehabilitation and/or expansion depending on the future transport demand.

1.6 Purpose and Scope of the Assignment

The purpose of this assignment is to conduct detailed Environmental and Social Impact Assessment (ESIA), development of the Environmental and Social Management Plan (ESMP), Occupational Health and Safety Management Plan (OHSMP), Environmental and Social Monitoring Plan (ESMoP) and Resettlement Action Plan (RAP) for construction of urban roads under DMDP 2 investments in Ubungu Municipality in Dar es Salaam. RAP has been presented in separate content of this ESIA report.

According to the Terms of Reference of Consultancy Services Contract, the ESIA study has to be carried out in accordance with the requirements of the applicable National legislations and the World Bank's Environmental and Social Framework (ESF). The applicable National legislations include the Environmental Management Act Cap 191; Environmental Impact Assessment and Audit Regulations (2005); and Environmental Management (Environmental Impact Assessment Impact and Audit) (Amendment) Regulations (2018).

As per World Bank's ESF, there are ten (10) Environmental and Social Standards (ESSs)³ that must be complied with project. These include: -

- ESS 1: Assessment and Management of Environmental and Social Risks and Impacts
- ESS 2: Labour and Working Conditions
- ESS 3: Resource Efficiency and Pollution Prevention and Management
- ESS 4: Community Health and Safety
- ESS 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement
- ESS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources
- ESS 7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities
- ESS 8: Cultural Heritage
- ESS 9: Financial Intermediaries

³ The World Bank Environmental and Social Framework (2017). International Bank for Reconstruction and Development/ The World Bank

-
- ESS 10: Stakeholder Engagement and Information Disclosure

1.7 Nature and Category of the Project

The project involves upgrading of the Dar Metro roads to bitumen (asphalt concrete) and rigid concrete pavement standards with side drains and planned to be implemented in highly congested urban area with many residential, commercial and institutional developments and is likely to affect good number people such residents, school children, petty traders, small business operators, daladala operators, bajaji/bodaboda operators and the community in general. Therefore, the site should be considered to be **Very Sensitive** in accordance with ESMF definition of site sensitivity. Therefore, by considering that the DMDP 2 sub-project roads in Ubungo Municipality are in Grade I risk level due to likelihood of floods in some roads and involvement of land acquisition of more than 10 persons. As per ESMF the sub-project in Grade I with substantial Environmental and Social Risks requires preparation of ESIA and ESMP to inform project design, assessing impacts and providing cost effective mitigation measures.

On the other hand, according to the FIRST SCHEDULE of the Environment Management (Environmental Impact Assessment and Audit) (Amendment) Regulations (2018), the project with **Substantial** impacts is considered to be **Type A**, which requires mandatory undertaking of ESIA study. With reference to Regulation 8(1) of the Environment Management (Environmental Impact Assessment Impact and Audit) (Amendment) Regulations (2018), preparation of ESIA report will start by online filling of Registration Form No. 4 and submission of Scoping Report to the National Environment Management Council (NEMC).

1.8 ESIA Requirements

According to Regulation 8(1), an application for environmental impact assessment certificate shall be made by submitting to the Council (NEMC) a Scoping Report in the format set out in the Third Schedule to the Environment Management (Environmental Impact Assessment and Audit Regulations) (Amendment) Regulations (2018).

The FOURTH SCHEDULE (Made under Regulation 15) to the Environmental Impact Assessment and Audit Regulations GN No. 349 of 2005 outlines the ESIA stages. The first stage is project registration by submitting a Scoping Report and Registration Form No. 4 to the National Environment Management Council (NEMC). Preparation of the Scoping Report is complete for submission to NEMC.

1.9 Objective and Scope of ESIA Study

The overall objective of ESIA is to identify potential environmental and social impacts (both positive and negative) associated with upgrading of the roads under initial works of DMDP 2 investments, and thereafter propose appropriate enhancement and mitigation measures for positive and negative impacts, respectively.

The intention is to ensure that the upgrading of DMDP 2 subproject roads are not only technically feasible and economically viable but also environmentally friendly and socially acceptable. The detailed scope of work for conducting ESIA study is outlined below: -

- To provide a description of the proposed roads under initial works of DMDP 2 investments;
- To provide a description of the affected environment;
- To describe legislative, policies, institutional framework relevant to the project implementation;
- To undertake public/stakeholder consultation;
- To analyse alternatives of the proposed construction of roads under Initial Works of DMDP 2 investments;

- To identify, analyse and assess potential impacts of the proposed upgrading of roads under initial works of DMDP 2 investments;
- To propose impact mitigation measures for the identified potential negative impacts;
- To prepare Resettlement Action Plan (RAP) for the project affected persons;
- To prepare the Environmental and Social Management Plan (ESMP) and the monitoring plan;
- To undertake resource evaluation or cost benefit analysis; and
- To prepare the ESIA report for review and approval by the Council and World Bank.

1.10 ESIA Study Approach and Methodology

1.10.1 The Approach

1.10.1.1 Scoping of the Assessment

The study approach involved scoping of the environmental assessment by selecting relevant Valued Environmental Components (VECs). Valued Environmental Components are defined as broad components of the biophysical and human environments that, if altered by the project, would be of concern to regulatory agencies, resource managers, scientists, stakeholders, and/or the general public.

The approach also involved defining the assessment boundaries in terms of spatial, temporal, administrative and technical boundaries; and establishing the baselines conditions. This was followed by assessment of project related environmental effects/impacts and assessment of cumulative effects/impacts based on the determined significance criteria.

1.10.1.2 Definition of Assessment Boundaries

The assessment boundaries include spatial, temporal, administrative, and technical boundaries. These are defined as follows:

- **Spatial boundaries** are referred to as the Project Development Area (PDA), the Local Assessment Area (LAA), and the Regional Assessment Area (RAA).
- **Temporal boundaries** include the various phases of a Project, which can be identified as: Construction; Demobilization; Operation; and Decommissioning. Phase. However, the Decommissioning phase is not considered because the roads are not expected to be decommissioned, instead they will be undergoing improvement/rehabilitation depending on the future requirements.
- **Administrative boundaries** include specific aspects of national legislative or regulatory requirements; standards, objectives, or guidelines, policy objectives; as well as regional planning initiatives that are relevant to the assessment of the Project's environmental effects on the VECs.
- **Technical boundaries** are the technical limitations or considerations for the evaluation of potential environmental effects of the Project, and may include limitations in scientific and social information, data analyses, and data interpretation, or uncertainties in the assessment.

1.10.1.3 Establishment of the Baseline Conditions

Existing (baseline) environmental and social conditions were established for each VEC. These include those environmental and social risks/effects that may have been or may be caused by other past or present projects or activities that have been or are being carried out.

The description of existing baseline conditions for each VEC include:

- the status and characteristics of the VEC within its defined spatial and temporal boundaries for the assessment;
- information from past research conducted in the region;
- traditional and ecological knowledge (if applicable or available); and
- knowledge gained from the collection of baseline data through literature review, qualitative and quantitative analyses, and field work carried out as part of the ESIA.

1.10.1.4 Assessment of Project-Related Environmental and Social Risks/Effects

The assessment covered descriptions of how the environmental and social risk/effect will occur or how the project will interact with the environment, the mitigation and environmental/social protection measures proposed to reduce or eliminate the environmental and social risk/effect, and the characterization of the residual environmental effects of the project. The focus was on residual environmental effects, i.e., the environmental effects that remain after planned mitigation has been applied. All mandatory factors were assessed for all phases of the Project (i.e., Construction, Operation, and Demobilization Phases), as well as, for Accidents, Malfunctions and Unplanned Events. The assessment also considered the effects of the environment on the project.

1.10.1.4 Assessment of Cumulative Environmental and Social Risks/Effects

Cumulative environmental and social risks/effects of the project were identified in consideration of other past, present or reasonably foreseeable future projects or activities that have been or will be carried out, for all phases of the Project (i.e., Construction, Operation, and Demobilization Phase). A screening of potential interactions was done to determine if an assessment of cumulative environmental and social risks/effects is required (i.e., there is potential for substantive interaction) for that specific project-related environmental/social risk/effect that overlaps with those of other projects or activities that have been or will be carried out. The residual cumulative environmental and social risks/effects of the project in combination with other projects or activities that have been or will be carried out were then evaluated, including the contribution of the project to those cumulative environmental/social risks/effects (as applicable).

1.10.1.5 Determination of Significance

The significance of project-related and cumulative environmental and social risks/effects, were determined, in consideration of the significance criteria. The significance determination for project-related environmental and social risks/effects is based on significance criteria that reflect a variety of considerations based on direction, magnitude, geographic extent, duration, frequency, reversibility, and ecological/socioeconomic context) and other relevant considerations.

Where the environmental and social risks/effects are determined to be significant, there is further consideration of the likelihood of occurrence of that significant environmental/social risk/effect, based on past experience and the professional judgment of the ESIA Study Team.

1.10.2 Methodology

1.10.2.1 Baseline Data Collection

The baseline data collection involved conducting biophysical and socio-economic baseline surveys by Environmental Experts and Sociologists, respectively. The baseline surveys involved collection of both primary data through field work and secondary data through reviews of relevant documents from various sources, including internet websites.

Biophysical surveys involved recording of any significant features and land use along the road corridors with a width about 7-9m. Socio-economic survey involved interviews with relevant stakeholders. Whenever necessary, during the survey some photographs were also being taken for illustrations.

1.10.2.2 Measurement of Ambient Air Quality, Gases Emission, Noise Level and Vibrations

(a) Field Sampling

Different sampling points were established based on the local standards (TBS) as stipulated in TZS837 and 845:2005 and the Environmental Management (Air Quality Standard) Regulations, 2007. Furthermore, for each sampling point at least three (3) measurement readings were recorded and the average value was calculated to determine current levels of

suspended particulate matters, ambient gases emission, noise level and vibrations of the proposed DMDP 2 sub-project road construction sites. The study was conducted between 3rd and 5th July 2023 during day time. Depending on physical and socio-economic environment, field measurements were taken at the starting, mid, end, road intersecting and busy points of the sub-project roads **(See Figures 1-1, 1-2, 1-3 and 1-4)**.

(b) Measurement of Suspended Particulate Matter Concentration

Suspended particulate matter (dust) concentration was measured by using BLATN BR – WP6930S smart series instrument. This device is a real-time air quality monitoring instrument which use high-precision sensor and translate the pollutant concentration in the air directly into intuitive data to provide air quality monitoring information.

The advanced core technology adopts high precision import sensor, the sensor drift error is the lowest in the industry, through the patented algorithm can eventually accurately distinguish virus-level particulate matter. SMART series can detect a variety of pollutants, including PM_{2.5} and PM₁₀. The instrument uses light scattering measuring method in a range of 0-999µg/m³ and resolution of 1.0µg/m³ for PM_{2.5} and PM₁₀.

(c) Measurement of Ambient Gaseous

Ambient gaseous were measured by using two devices of BH-4S Portable Multi-Gas Detectors. The first set of BH-4S Portable Multi-Gas Detector device measures concentration of Ozone: O₃ (in ppm⁴); NO (in ppm); Sulphur dioxide SO₂ (in ppm); and Carbon dioxide: CO₂ (in % by Volume of air).

The second set of Portable Multi-Gas Detector device measures concentration of Oxygen: O₂ (in % by Volume of air); Methane: CH₄ (in % Level); Hydrogen Sulphide: H₂S (in ppm) and Carbon monoxide: CO (in ppm). Both of the devices use natural diffusion sampling method and high-sensitivity sensor. The equipment accuracy is less than or equal to ±5%, response time is less than or equal to 30s. The devices have Light-Emitting-Diode (LED), audio and vibration alert for gas leakage, fault and low voltage. BH-4S Portable Multi-Gas Detectors can work in the temperature between of -20°C to around 50°C for toxic gases, and between -40°C and around 70°C for Ex, with relative humidity of less than 95%.

(d) Measurement of Noise Level and Vibration

Noise level was measured by using BT-8820 Sound Level Meter which have A & C weighting network selection of measuring range from 30 to 130dB. The instrument has high speed (FAST)/Low speed (SLOW) response rate selection, max/min value, data Hold, auto range, Backlight and good anti-interference performance. The ground vibrations were measured using handheld Smart Sensor AS63A Digital Vibration Meter with Liquid-Crystal Display (LCD) Screen. The device recorded ground vibrations in m/s².

(e) Data Analysis

The data collected under each measured parameter were compiled and analyzed with MS Excel by computing average, maximum and minimum values of the readings. Interpretation of the data utilized Tanzania and WHO standards.

⁴ 1ppm is equal to 1mg/m³

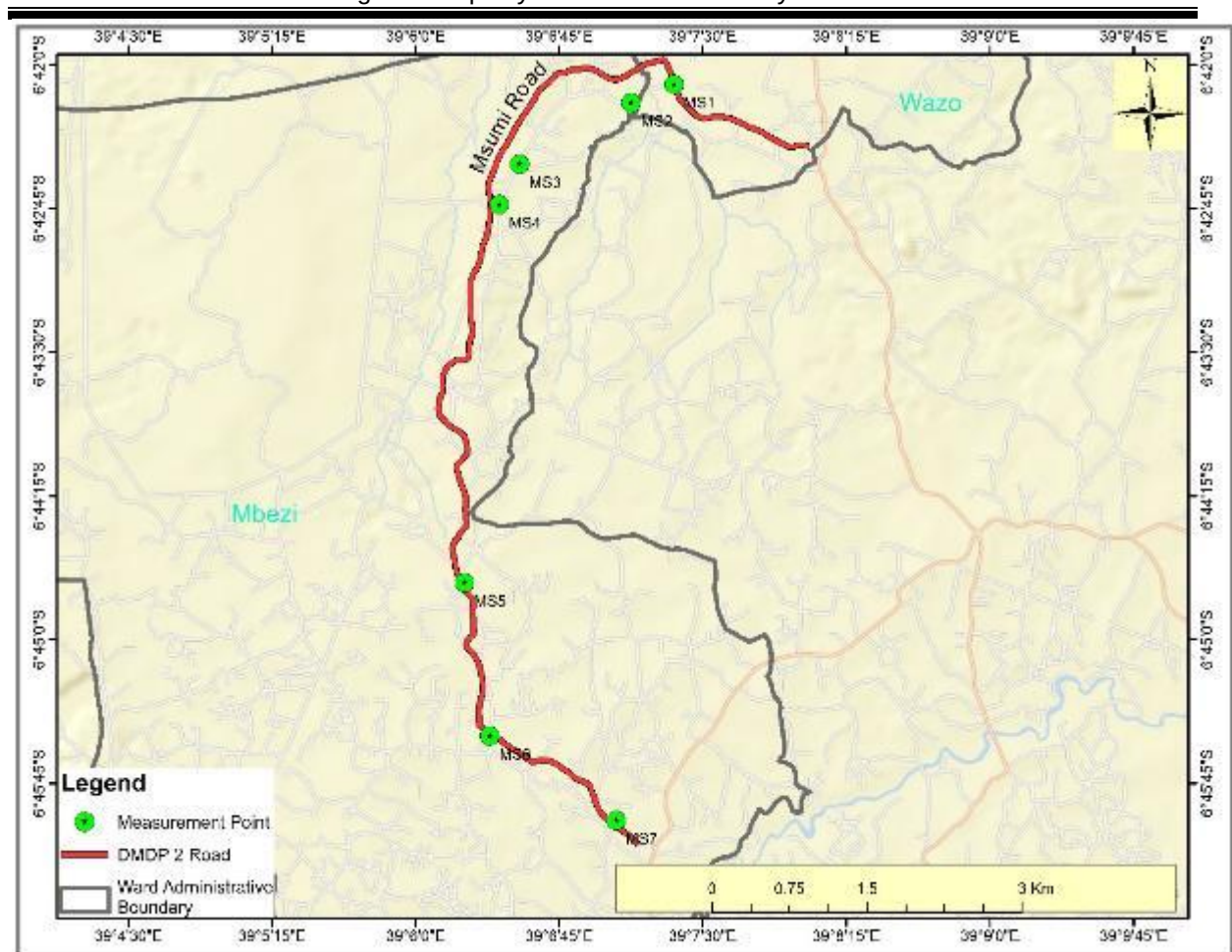


Figure 1-1: Air Quality, Gases Emission, Noise and Vibration Level Sampling Locations at Msumi Road

Source: (Field Survey, December 2023)

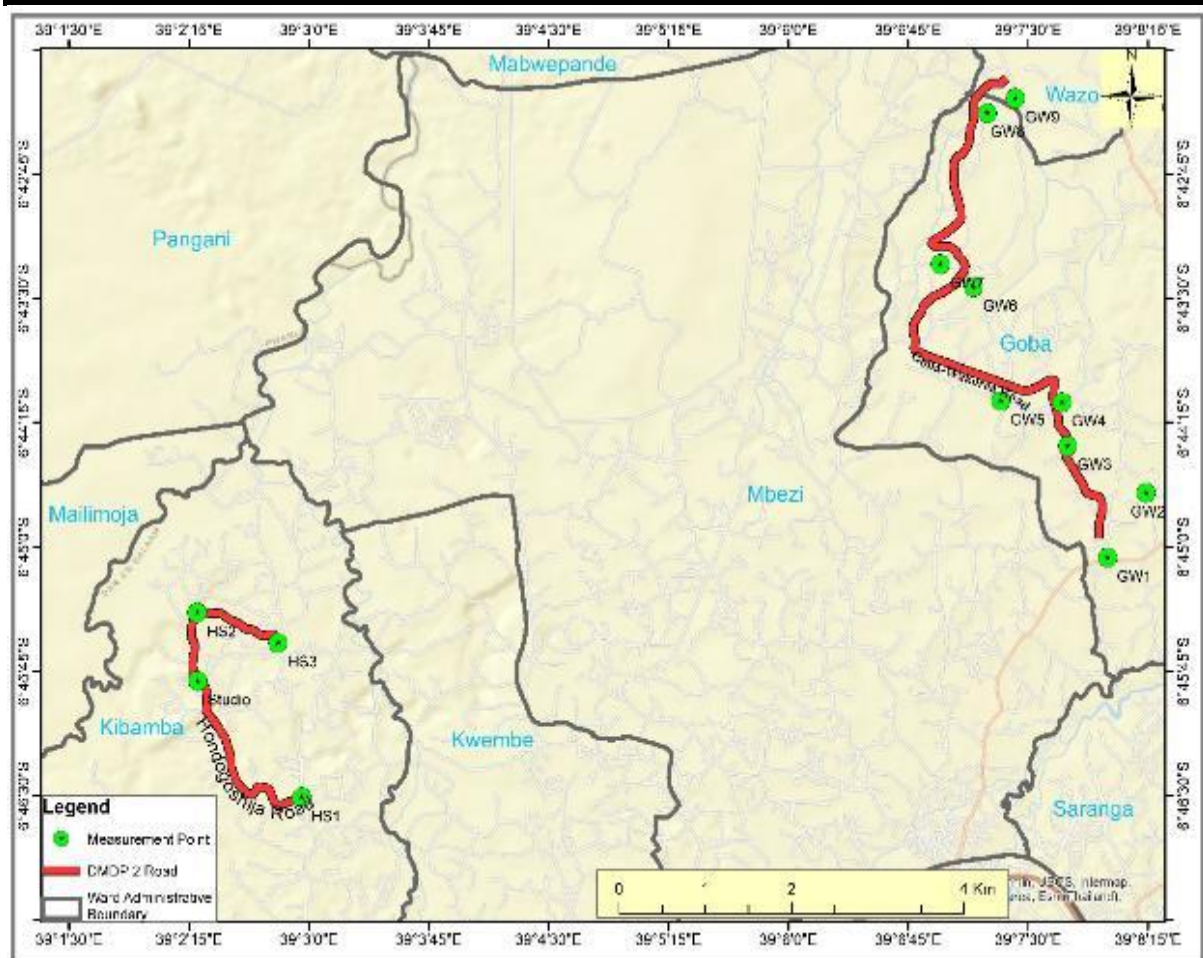


Figure 1-2: Air Quality, Gases Emission, Noise and Vibration Level Sampling Locations at Goba – Wakorea and Hondogo Shija Roads

Source: (Field Survey, December 2023)

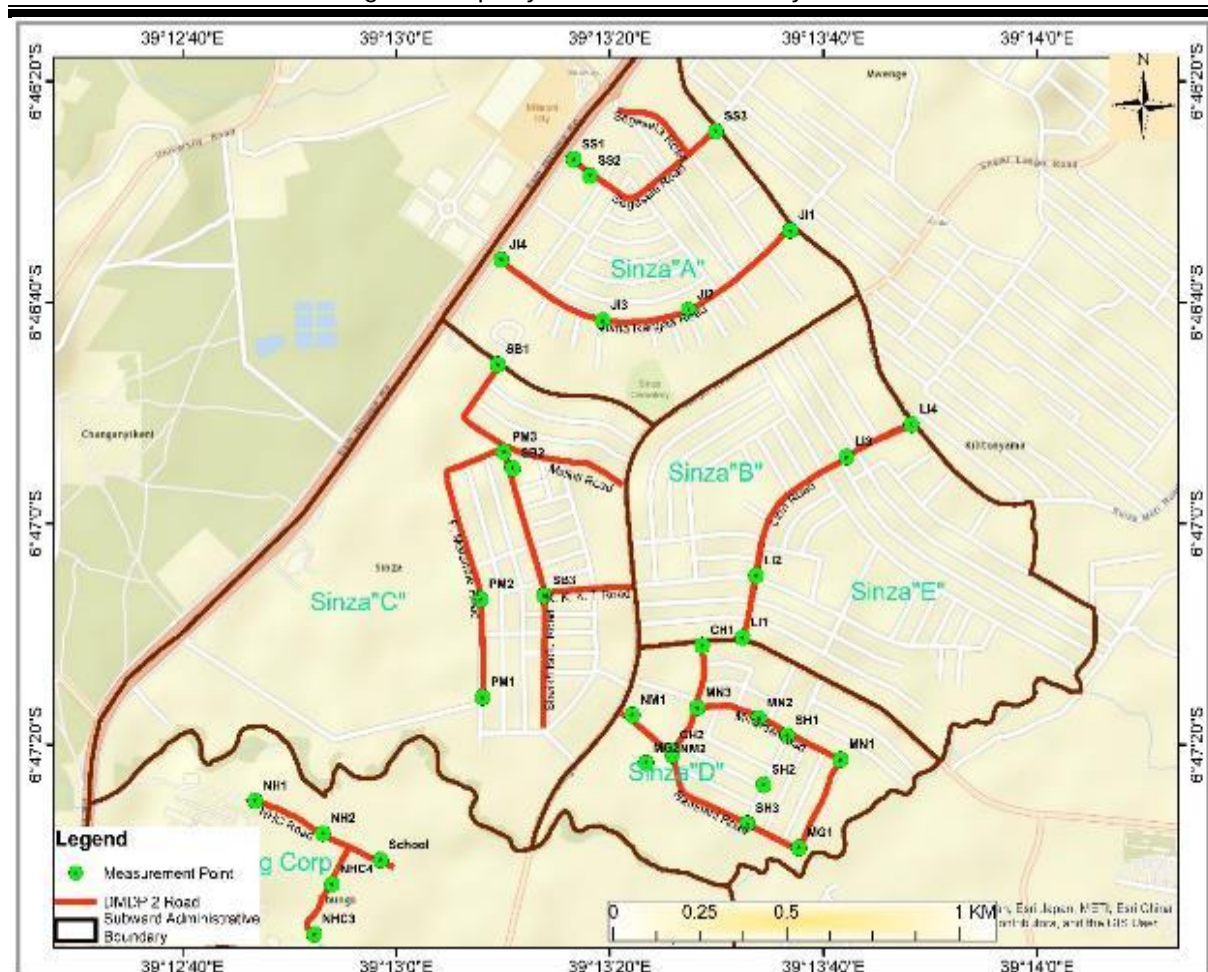


Figure 1-3: Air Quality, Gases Emission, Noise and Vibration Level Sampling Locations at Sinza and Ubungu NHC Roads

Source: (Field Survey, December 2023)

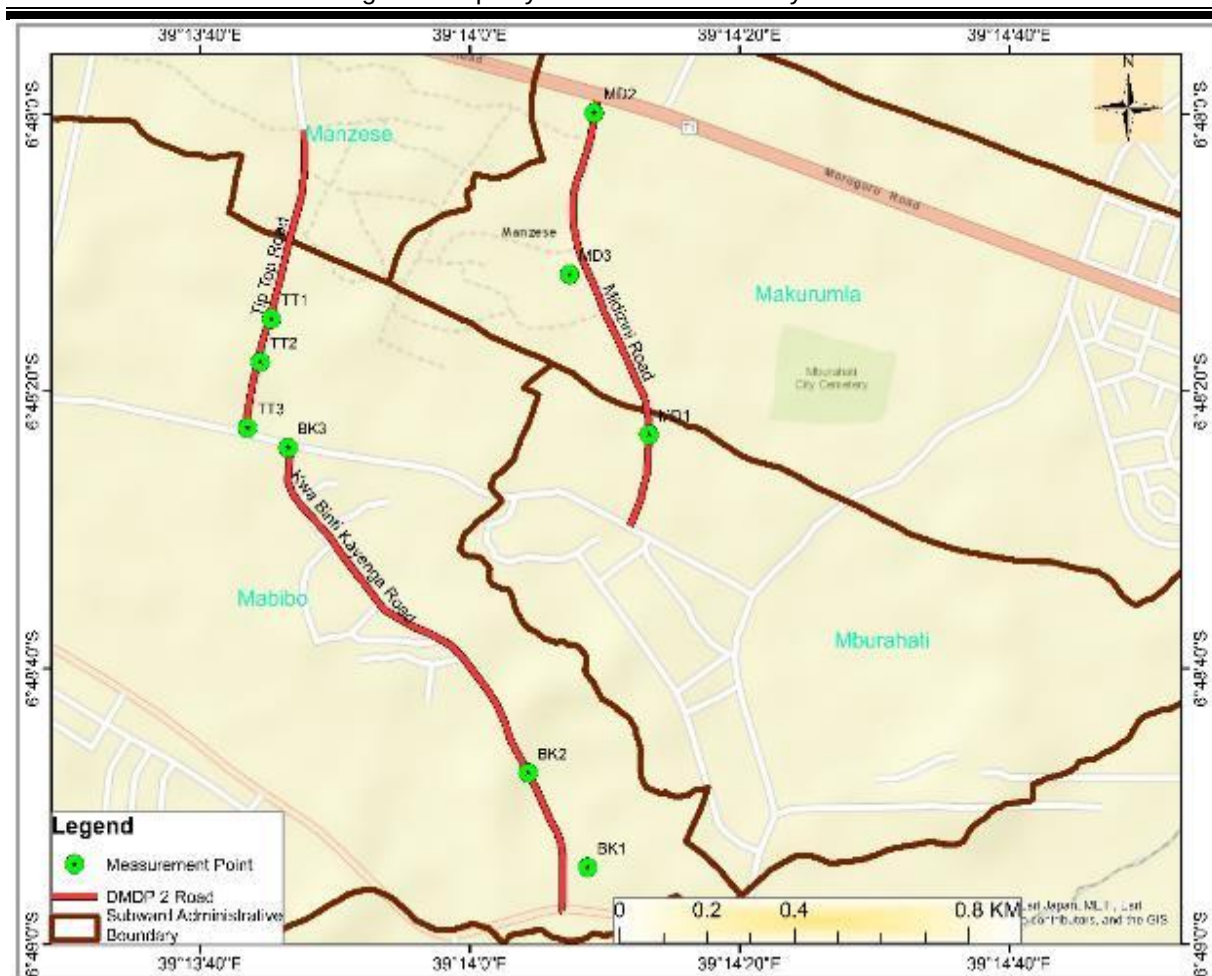


Figure 1-4: Air Quality, Gases Emission, Noise and Vibration Level Sampling Locations at Tiptop, Midizini and Binti Kayenga Roads

Source: (Field Survey, December 2023)

1.10.2.3 Stakeholder Consultations

The term 'stakeholder consultation', in this study means 'consultations with interested parties' or with 'affected parties', whether directly or indirectly, positively, or negatively. The purpose of stakeholder consultation is to obtain their concerns and feedback to improve the project design and help the project proponent to identify and mitigate any potential adverse impacts. The consultation process involved face to face interviews with Ward and Mtaa Government Officials and conducting stakeholder consultation meetings with local community members of the wards/streets ("Mitaa") traversed by the DMDP 2 subproject roads. Before commencement of the consultation meeting the Sociologists appointed two persons among the local community members to take minutes of the consultation meetings. In addition, the interviewed officials and local community members were asked to write their names, signatures, and phone numbers on a special stakeholder consultation form.

1.10.2.4 Identification and Assessment of Impacts

The identification of impacts was based on the interaction between the project related activities and Valued Environmental Component (VECs) for each project phase (i.e., mobilization or pre-construction phase, construction phase, operation phase and demobilization phase).

Identified risks/impacts were then assessed by using Environmental and Social Impact Assessment Matrix. The assessment of risks/impacts helped to determine the significance of impacts by considering the following factors:

-
- **Importance** of Risks/Impacts – whether important to national/International interest, national/regional interest, areas immediately outside local conditions, or important only to local conditions (site specific).
 - **Magnitude** of Risks/Impacts – whether Positive/Negative (Major, Moderate, Minor) or No change.
 - **Duration** of Risks/Impacts –whether Permanent or Temporary.
 - **Reversibility** of Risks/Impacts – whether Reversible or Irreversible.
 - **Cumulative** Risks/Impacts – whether Cumulative or Not Cumulative.

Assessment of risks/impacts also took into consideration existing by-laws, national and international environmental standards, legislation, treaties, and conventions that may affect the significance of identified impacts.

These techniques were used in order to have a logical and systematic way of identifying, analysing, and assessing environmental and social risks/impacts. The techniques also allowed qualitative assessment to be quantitatively recorded and therefore make the assessment of risks/impacts become more objective.

1.10.2.5 Analysis of Alternatives

Analysis of alternatives took into consideration the “No Action” or “No Project” Alternative to demonstrate environmental and social conditions without the project. The analysis of alternatives also considered the following:

- Construction Method Alternatives
- Alternative Pavement Structures
- Alternative Road Alignments

Multi-criteria Analysis Method was used for comparison of alternatives, based on technical, economic (techno-economic), environmental and social criteria. The focus was on environmental and social impacts, technical feasibility, and economic viability.

The intention was to select those alternatives with less adverse environmental and social risks/impacts; technically suitable under the local conditions; and with less investment and operational costs.

1.10.2.6 Formulation of Mitigation Measures

This involved formulation of general and specific mitigation, contingency and compensation measures that are technically and economically feasible to avoid or minimize potentially significant adverse environmental and social effects. In formulating mitigation measures, emphasis has been given on how the mitigation measures will help to reduce the environmental risks/impacts. In most case emphasis has been on avoidance and amelioration⁵ rather than compensation or resettlement of people.

1.10.2.7 Preparation of ESMP and Monitoring Plan

The Environmental and Social Management Plans (ESMP) has been prepared to describe how project activities might impact on the environment in which it occurs and set out clear commitments on how those impacts will be avoided, minimised, and managed so that they are environmentally acceptable. The ESMP specifies institutional roles and responsibilities for implementation at each project phase and provides cost estimates for implementation of mitigation measures.

⁵According to dictionary definition, “**Ameliorate**” means to make it better or become better, more tolerable (bearable), or more satisfactory.

The monitoring plan has been prepared to verify the predictions of the EIA and/or the effectiveness of mitigation. The monitoring plan has been described in sufficient detail to allow Independent judgment as to the likelihood that it will deliver the type, quantity and quality of information required to reliably verify predicted environmental effects (or absence of them), and to confirm both the EIA predictions and/or the effectiveness of mitigation measures.

1.11 Report Format

The preparation of this ESIA report has been carried out in accordance with the requirements of Sub-regulation 18(1), 18(2) and 18(3) of the Environmental Impact Assessment and Audit Regulations (2005). The report is divided into two main parts, whereby Part I is Executive Summary and Part II is the Main Text. The main text is comprised of 13 Chapters, whereas Chapter 1 is Introduction, followed by Project Background and Description in Chapter 2.

Chapter 3 deals with Policy, Legal and Institutional Framework, followed by Description of Environmental and Social Baseline Conditions in Chapter 4.

The Stakeholder Consultations and Public Participation is provided in Chapter 5, which is followed by Assessment of Impacts and Analysis of Alternatives in Chapter 6 and 7 respectively. In Chapter 8, the report outlines Mitigation and Enhancement Measures, followed by Chapter 9 which outlines the Environmental and Social Management Plan (ESMP); which is immediately followed by Environmental and Social Monitoring Plan (ESMoP) in Chapter 10.

The report provides Resources Evaluation and Demobilization Plan in Chapter 11 and Chapter 12, respectively. Finally, the report ends up with Conclusion and Recommendations in Chapter 13, which is followed by References and Appendices.

CHAPTER TWO

2.0 PROJECT DESCRIPTION

2.1 Location

The proposed roads for Initial Works of DMDP 2 investment are located at Kibamba, Mbezi, Goba, Ubungo, Sinza, Manzeze and Mabibo Wards in Ubungu Municipality within the Dar es Salaam City. The map showing the location of project wards in Ubungu Municipality is provided in **Figure 2-1**. **Figures 2-2, 2-3 and 2-4** shows baseline maps of all selected roads under Initial Works of DMDP 2 investment in Ubungu Municipality.

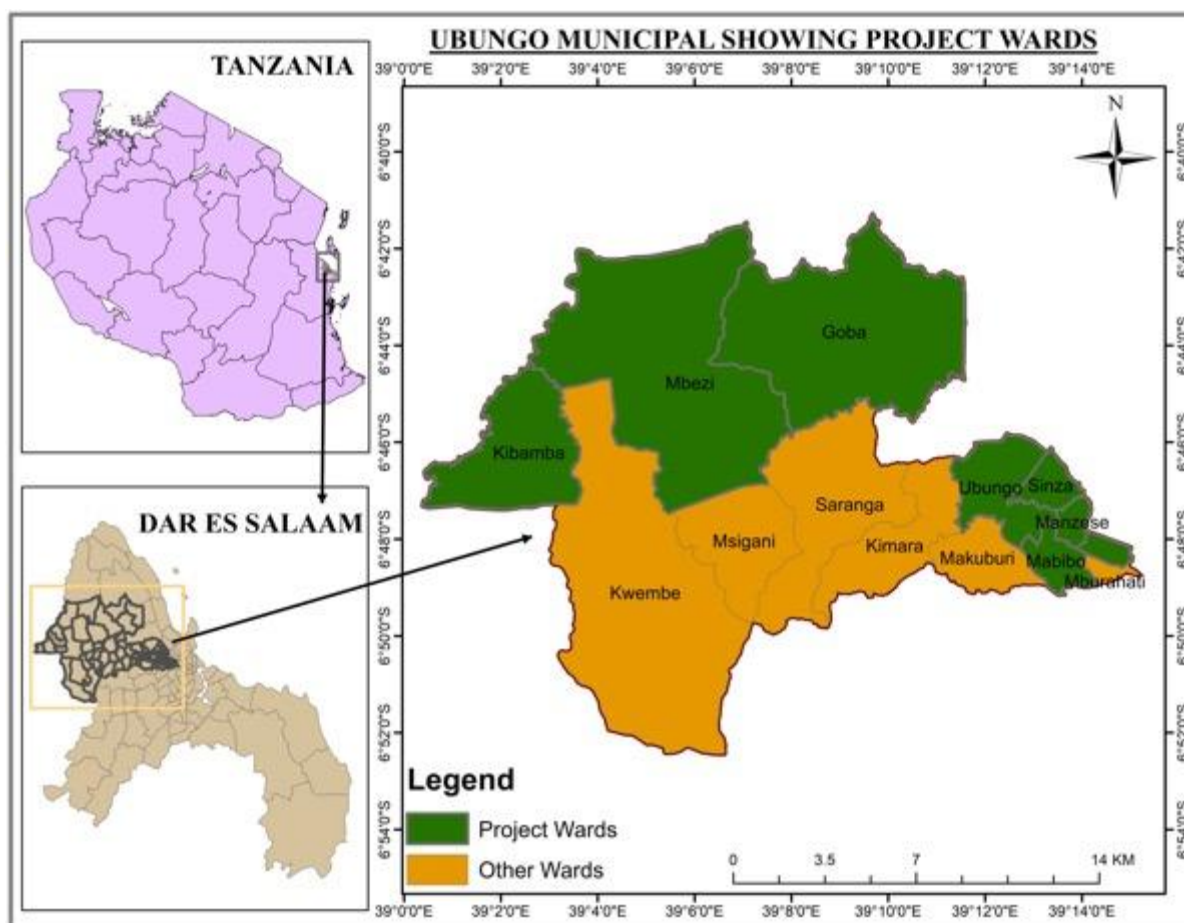


Figure 2-1: Location of Proposed Project Wards in Ubungu Municipality

Source: (After National Bureau of Statistics, January 2024)

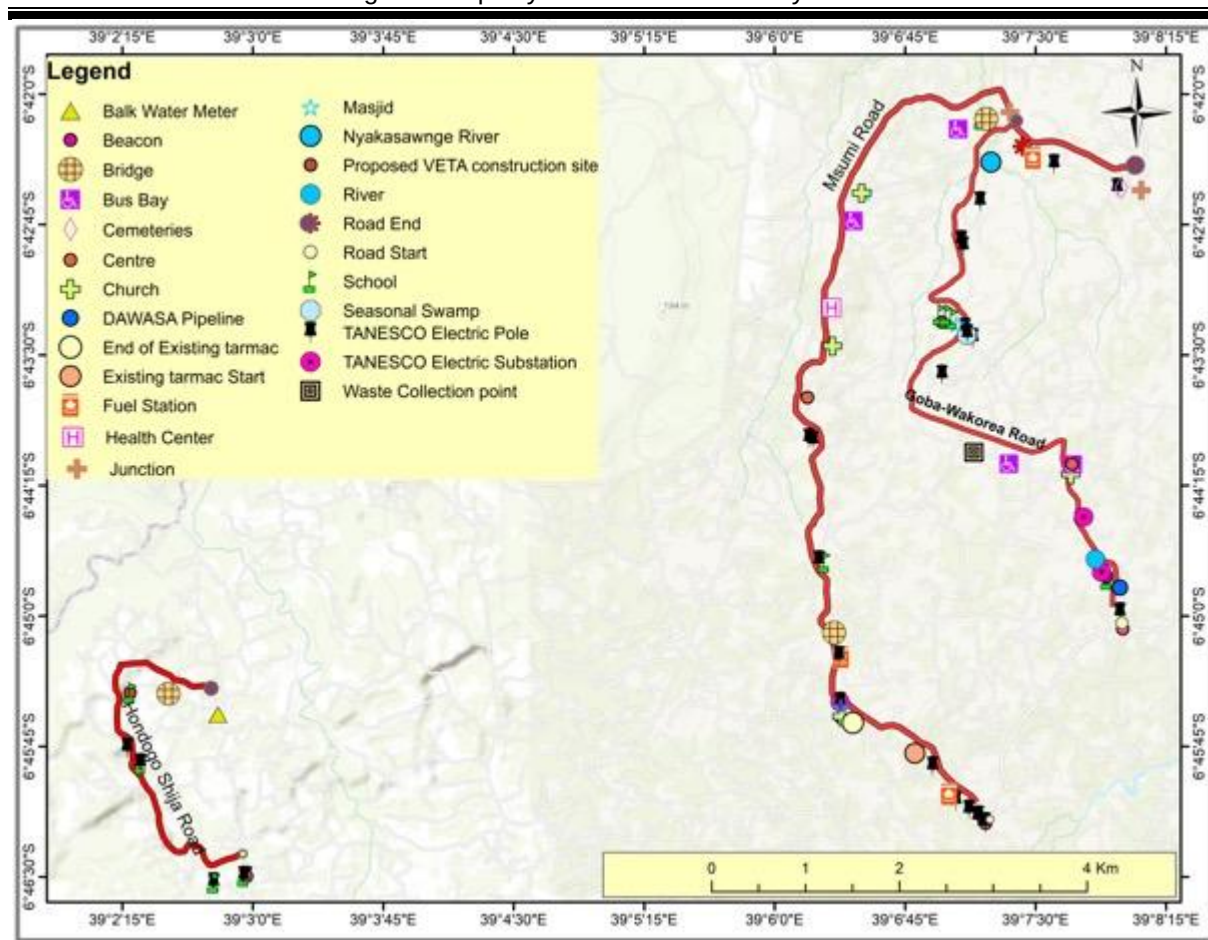


Figure 2-2: Baseline Map of Proposed Goba - Wakorea, Msumi and Hondogo Shija Roads

Source: (Field Survey, December 2023)

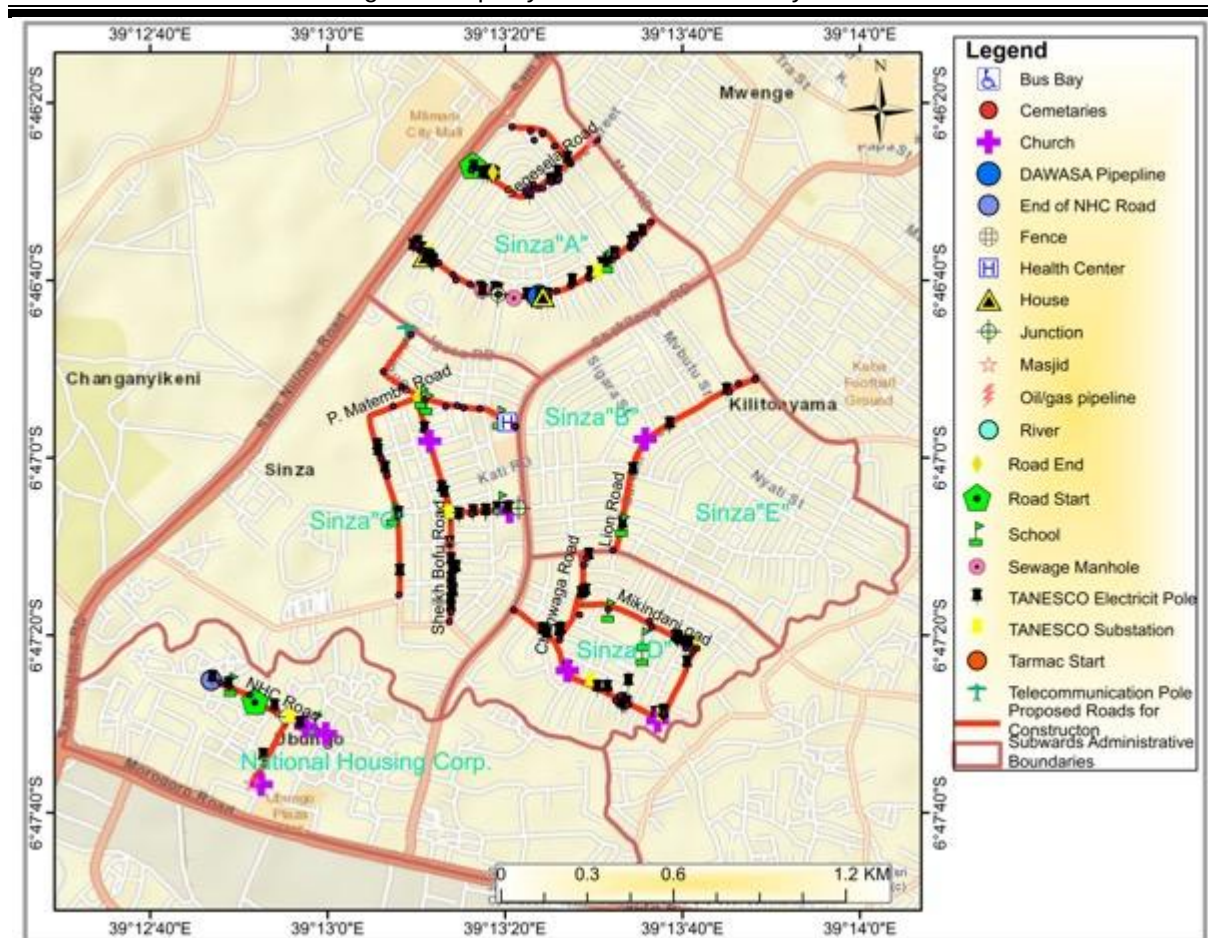


Figure 2-3: Baseline Map of Proposed Sinza and Ubungo NHC Roads

Source: Source: (Field Survey, December 2023)

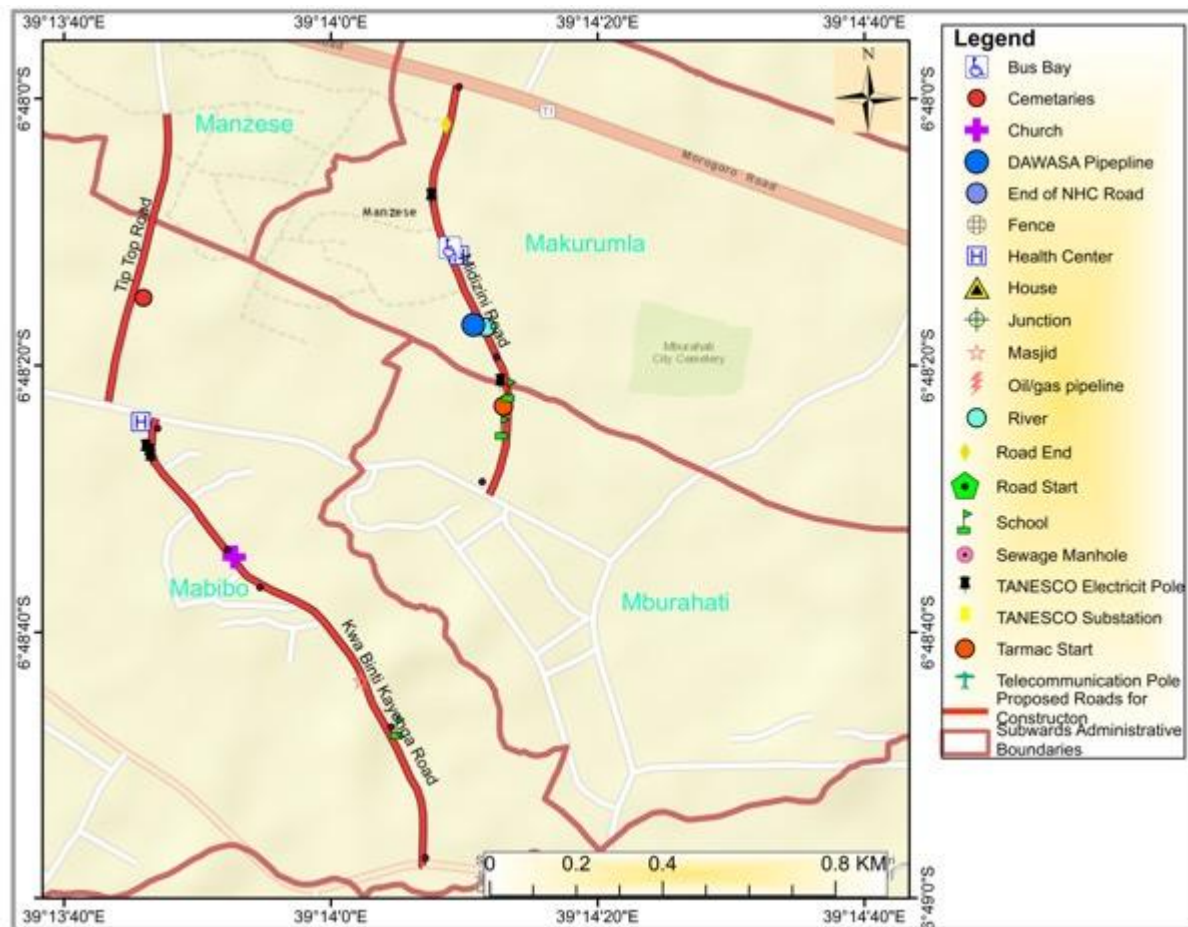


Figure 2-4: Baseline Map of Proposed Tiptop, Midizini and Binti Kayenga Roads

Source: Source: (Field Survey, December 2023)

2.2 Project Boundaries

2.2.1 Spatial Boundaries

The spatial boundaries of the project environment have been divided into Project Development Area (PDA), Local Assessment Area (LAA), and Regional Assessment Area (RAA). The spatial boundaries of the project environment are illustrated in **Figure 2-5**.

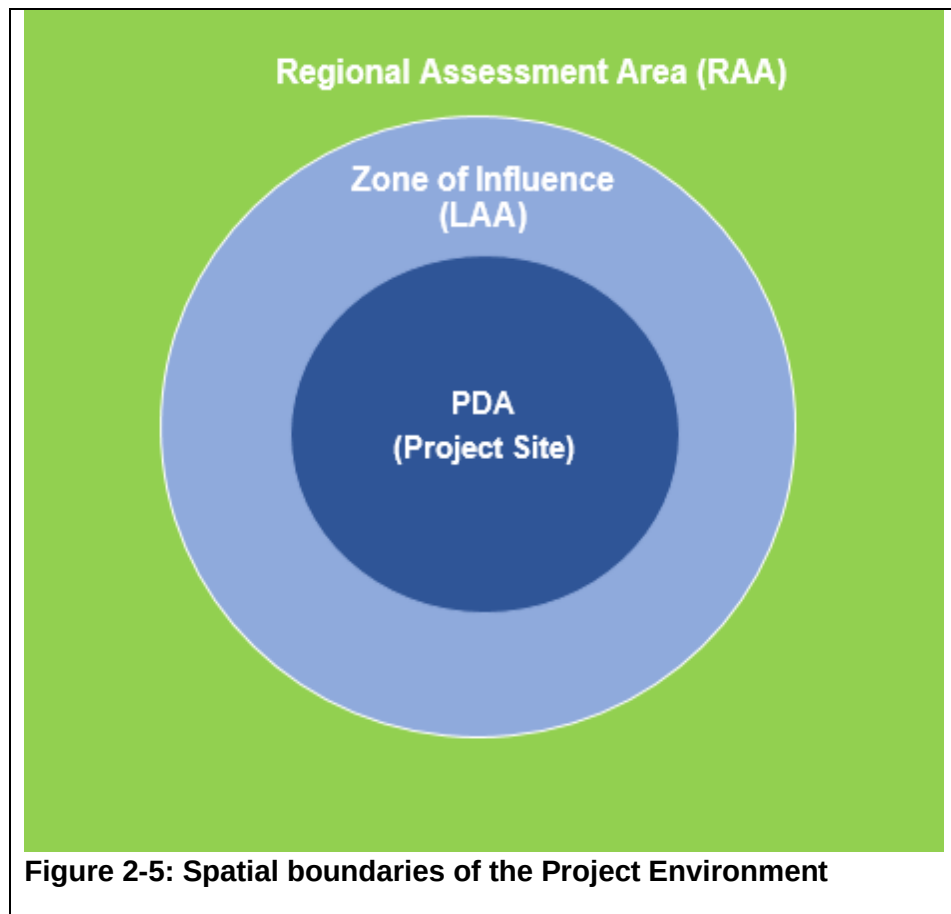


Figure 2-5: Spatial boundaries of the Project Environment

2.2.1.1 Project Development Area (PDA)

The Project Development Area (PDA) is the most basic and immediate area of the Project. The PDA is limited to the anticipated area of the physical disturbance associated with the Construction and Operation of the Project. For this Project, the PDA consists of the areas occupied by road corridors and drainage structures. The total area to be occupied by the road corridors and drainage structure is estimated to be 288,630 square metre (i.e. average road construction corridor width of 9m is multiplied by total road length of 32.07Km).

2.2.1.2 Local Assessment Area (LAA)

The Local Assessment Area (LAA) is the maximum area within which Project-related environmental effects can be predicted or measured with a reasonable degree of accuracy and confidence. The LAA is commonly referred to as the “Zone of Influence” of the Project and may include areas that could experience Project environmental effects that arise beyond the area of physical disturbance by the Project.

The LAA includes the PDA and any adjacent areas to the road section, where Project-related environmental effects may reasonably be expected to occur. The definition of LAA varies from one VEC to another, depending on the local conditions, biological characteristics, socio-economic factors, cultural values, and other factors. The LAA covers seven (7) wards under

initial phase of DMDP 2 investments in Ubungo Municipality namely: Kibamba, Mbezi, Goba, Ubungo, Sinza, Manzese and Mabibo.

2.2.1.3 Regional Assessment Area

The Regional Assessment Area (RAA) is the area within which the Project's environmental effects may overlap or accumulate with the environmental effects of other projects or activities that have been or will be carried out such that cumulative environmental effects may potentially occur. The RAA are defined for each VEC depending on the physical and biological conditions and the type of and location of other past, present, or reasonably foreseeable projects or activities that have been or will be carried out. Generally, the RAA covers all wards of Ubungo Municipality.

2.2.2 Temporal Boundaries

The temporal boundaries of the project refer to timing and duration of Project. The temporal boundaries of the project consist of the durations for mobilization, construction, and demobilisation phases of the project. In addition, the temporal boundaries are the design periods of the road pavement and its associated cross drainages structures.

The following table gives temporal boundaries of the project during mobilization, construction, and demobilisation phases:

Table 2-1: Temporal Boundaries of DMDP 2 Investments in Ubungo Municipality

Activities	Duration
Feasibility and Detailed Engineering Design	6 months
Construction phase:	2 Years
Operation phase:	20 years for Asphalt and Concrete Pavements ⁶

The Decommissioning Phase of the project is not expected to occur so long as the need for DMDP 2 investments continues. Instead, the upgraded roads and drainage structures will continue to be undergoing regular maintenance and improvement depending on the future requirements.

2.2.3 Institutional Boundaries

Institutional boundaries for the project refer to various institutions, government agencies, and local government authorities that are relevant to the project implementation. The following are the relevant institutions for implementation of this project:

- Ministry of Works (MoW)
- Dar es Salaam Regional Administrative Secretariat
- Tanzania National Roads Agency (TANROADS)
- Tanzania Rural and Urban Roads Agency (TARURA)
- Dar Es Salaam Rapid Transit Agency (DART Agency)
- Division of Environment (VPO-DOE)
- National Environment Management Council (NEMC)
- Tanzania Electric Supply Company Limited (TANESCO)
- Dar es Salaam Water Supply and Sanitation Authority (DAWASA)
- Wards / Mitaa Level
- Ward and Mtaa Development Committees

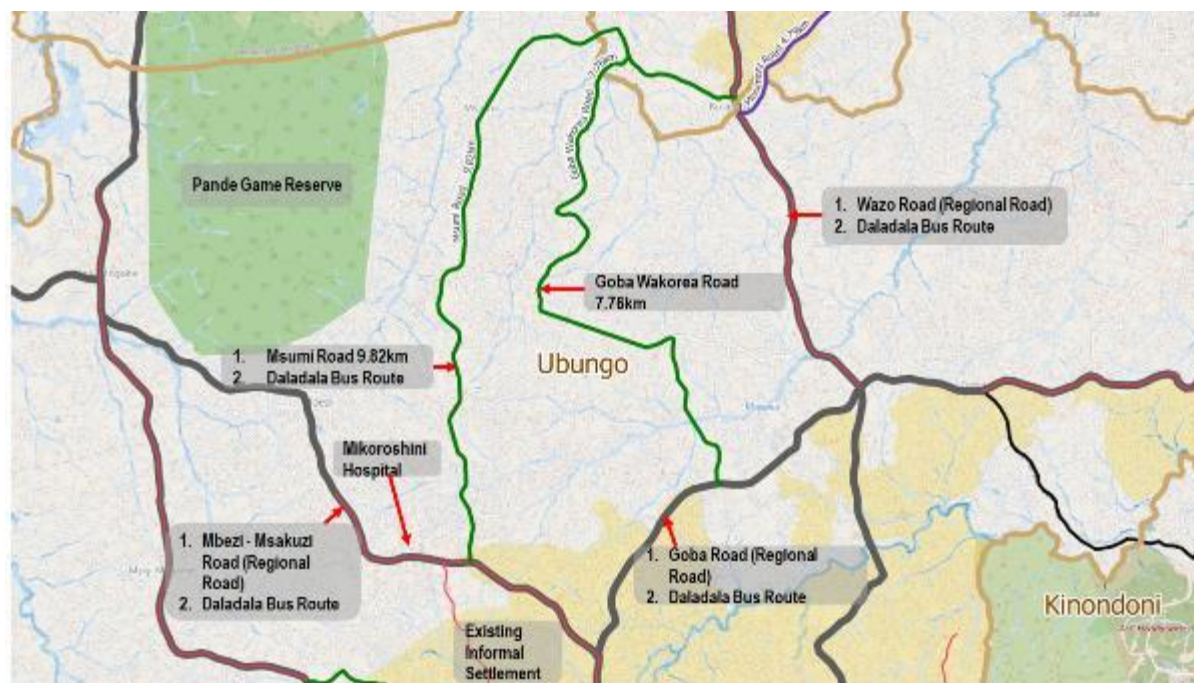
⁶ THE IMPLICATIONS OF CLIMATE CHANGE ON ROAD INFRASTRUCTURE PLANNING, DESIGN AND MANAGEMENT
By Paul Youman, GHD. <https://www.coastalconference.com/2007/papers2007/Paul%20Youman.pdf>

2.3 Profiles of the Roads under Initial Works of DMDP 2 Investment

The total length of roads under initial works of DMDP 2 investments in Ubungo Municipality is 32.07. The profiles of the selected roads are presented in tabular form hereunder:

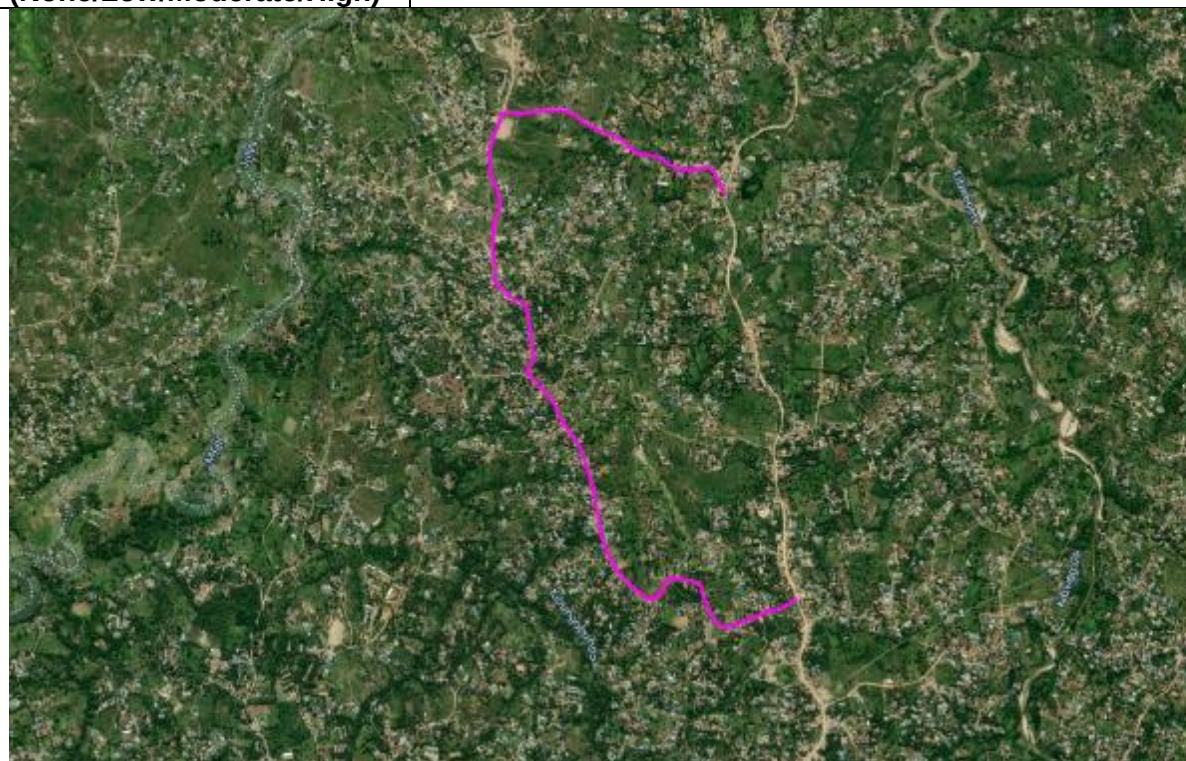
Subproject Profile - 1

Subproject Name		Msumi & Goba-Wakorea Roads		DLA: Ubungo MC
Road Condition		Poor		
Rationale for upgrading		- Msumi road connects to existing regional roads (Msakuzi & Madale roads) while Goba- Wakorea road connects to Goba Road. - The roads have public transportation (Daladala & Bajaji) - There are various education and religious facilities and business centres. - The roads are in Mbezi & Goba wards which have population of 143,803 and 140,572 respectively. - The roads connect Ubungo and Kinondoni Districts.		
Segment		S1	S2	Total
Location	From	Mbezi Makabe Junction	Goba	
	To	Msumi	Wakorea	
Length (km)		9.83	7.76	17.59
Width of Right of Way (m)		15 to 22	12 to 18	
Estimated Cost (US\$ million)		5.8	4.19	9.99
Resettlement Impact (None/Low/Moderate/High)		Low	Low	



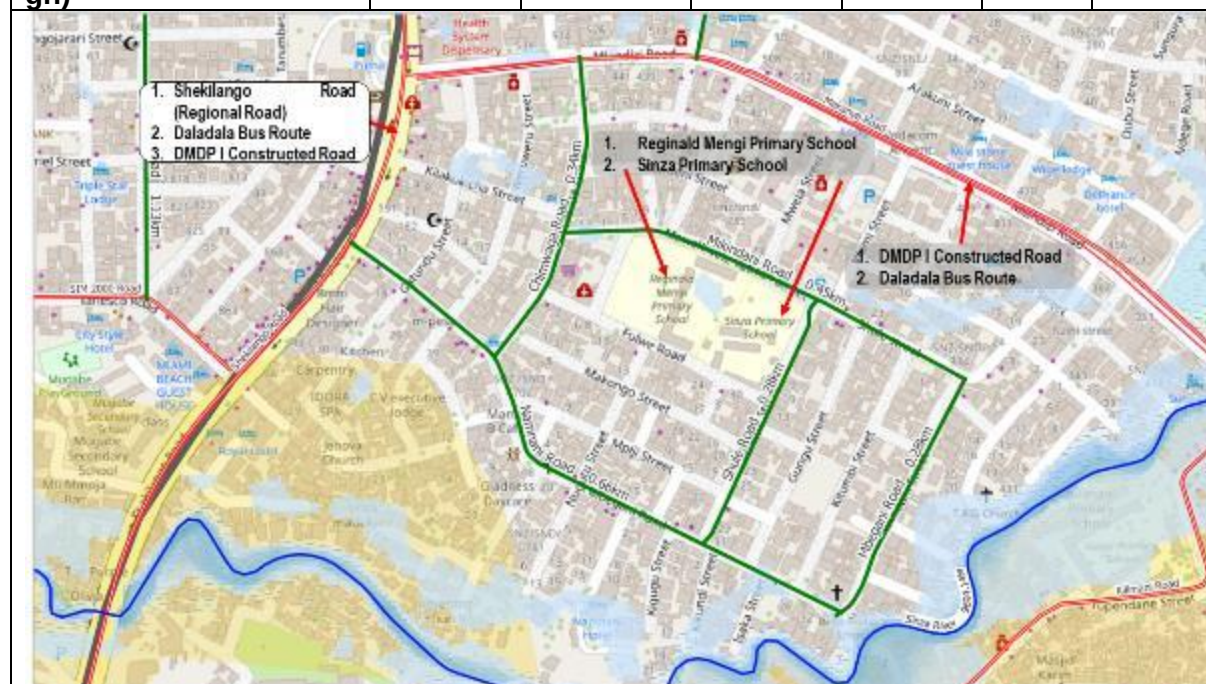
Subproject Profile - 2

Subproject Name		<i>Hondogo Shija Road</i>	<i>DLA: Ubungo DC</i>
Road Condition		<i>Fair</i>	
Rationale for upgrading		• <i>The road connects to a regional road (Kibwegere road)</i> • <i>It has various education and religious facilities and business centres.</i> • <i>The road is in Kibamba ward which has a population of 43,191</i>	
Segment		<i>S1</i>	Total
Location	From	<i>Kibwegere</i>	
	To	<i>Mama mzungu</i>	
Length (km)		<i>4.16</i>	<i>4.16</i>
Width of Right of Way (m)		<i>9 to 20</i>	
Estimated Cost (US\$ million)		<i>2.67</i>	
Resettlement Impact (None/Low/Moderate/High)		<i>Low</i>	



Subproject Profile - 3

Subproject Name		Sinza “D” Roads			DLA: Ubungo MC		
Road Condition		Poor					
Rationale for upgrading		• The road connects to DMDP 1 facilities (Mlandizi and Shekilango roads). • Daladala are plying at nearby Mlandizi and Shekilango Roads • There are various social services; business centres and government offices • Sinza “D” is a flood prone area. • The roads are in Sinza ward which has a population of 31,396.					
Segment		S1	S2	S3	S4	S5	Total
Location	From	Namnani	Chimwaga	Mikindani	Mbegani	Shule	
	To						
Length (km)		0.66	0.34	0.45	0.28	0.28	2.01
Width of Right of Way (m)		8 to 12	7 to 10	8 to 10	7.5 to 12	7 to 9	
Estimated Cost (US\$ million)							
Resettlement Impact (None/Low/Moderate/High)		Moderate	Low	Low	Low	None	



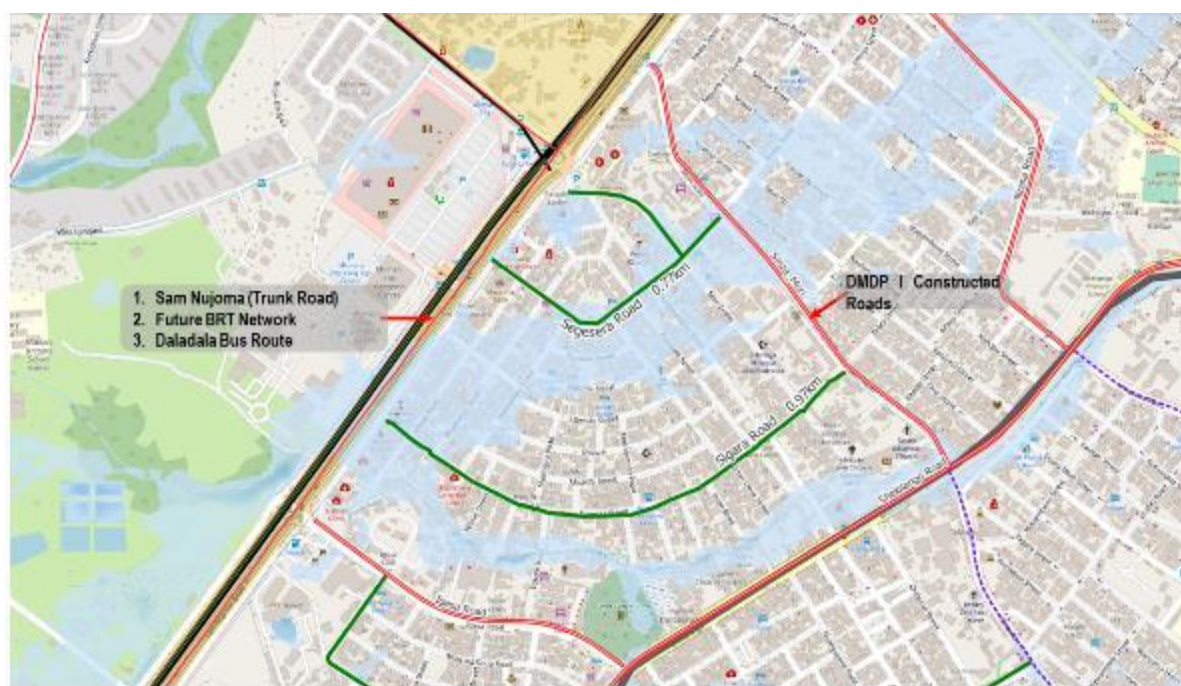
Subproject Profile - 4

Subproject Name		Sinza “B”, “C” and “E” Roads			DLA: Ubungo MC		
Road Condition		Poor					
Rationale for upgrading		• The roads connect to DMDP 1 facilities (Simu 2000, Shekilango and Igesa Roads). • Sinza “B”; “C” and “D” are flood prone areas. • There are educational (Law School) and religious services. • The roads have various business centres and government offices. • The roads are in Sinza ward which has a population of 31,396.					
Segment		S1	S2	S3	S4	S4	Total
Location	From	Lion	Sheikh Bofu	Posta	Msikitini	Sinza KKKT	
	To			Matembe			
Length (km)		0.84	1.13	0.82	0.37	0.27	3.43
Width of Right of Way (m)		12 to 15	7 to 13	7 to 13	8 to 12	8 to 12	
Estimated Cost (US\$ million)							
Resettlement Impact (None/Low/Moderate/High)		None	Moderate	Moderate	Low	Low	



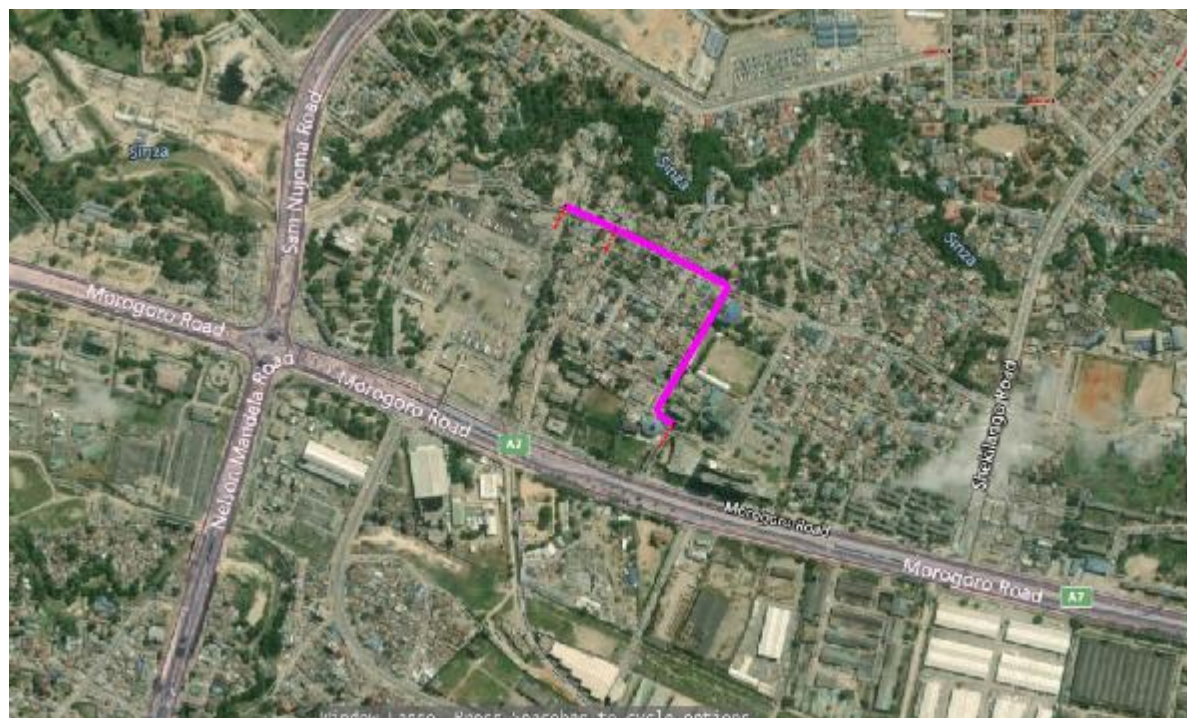
Subproject Profile - 5

Subproject Name		Sinza "A" Roads		DLA: Ubungu MC
Road Condition		Poor		
Rationale for upgrading		- The roads connect to DMDP 1 facility (Sinza Mori road) - The roads connect to proposed BRT (Sam Nujoma Road) - There are various social services and business centres. - Sinza "A" is a flood prone area, - The roads are in Sinza ward which has a population of 31,396.		
Segment		S1	S2	Total
Location	From	Segesera	Juma Ikangaa	
	To			
Length (km)		0.77	0.97	1.74
Width of Right of Way (m)		8 to 13	8 to 13	
Estimated Cost (US\$ million)				
Resettlement Impact (None/Low/Moderate/High)		Moderate	Moderate	

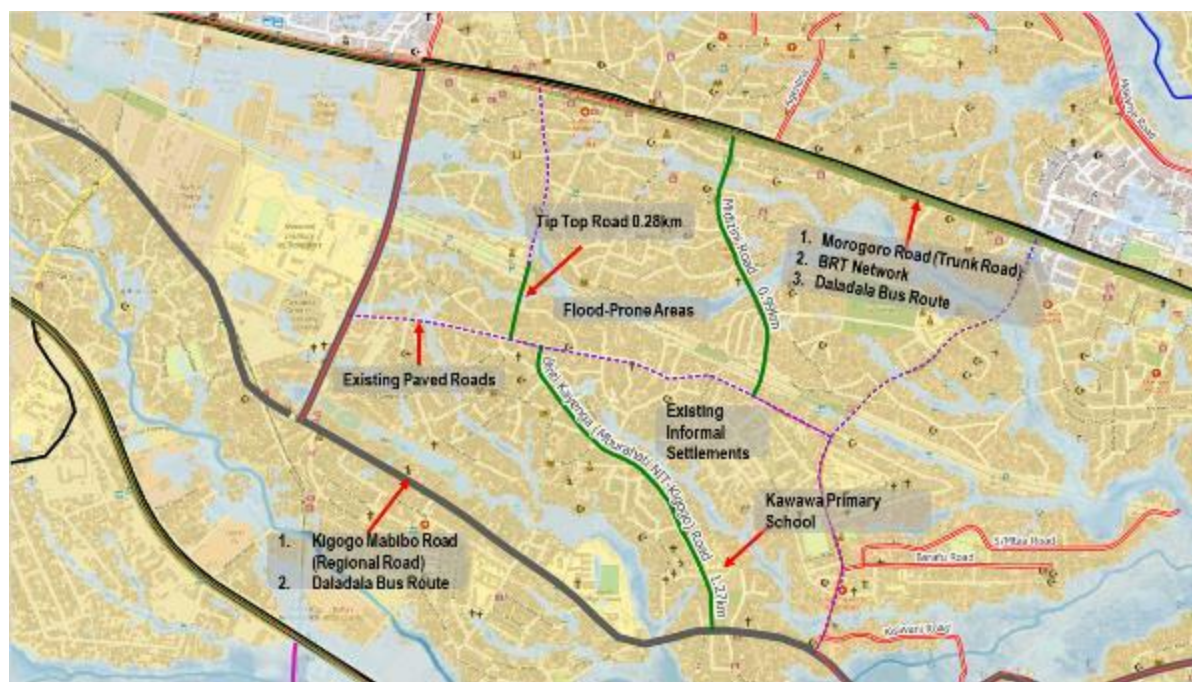


Subproject Profile - 6

Subproject Name		<i>Ubungo NHC Road</i>	DLA: <i>Ubungo MC</i>
Road Condition		<i>Poor</i>	
Rationale for upgrading		<i>The road connects to BRT.</i> <i>It has various social services, business centres and government offices and it is in flood prone area,</i> <i>The road is in Ubungo ward which has a population of 31,396.</i>	
Segment		S1	Total
Location	From	<i>Ubungo NHC</i>	
	To		
Length (km)		<i>0.6</i>	0.6
Width of Right of Way (m)		<i>7 to 12</i>	
Estimated Cost (US\$ million)			
Resettlement Impact (None/Low/Moderate/High)		<i>Low</i>	



Subproject Name		<i>Manzese Roads</i>		DLA: <i>Ubungu MC</i>	
Road Condition		<i>Poor</i>			
Rationale for upgrading		• <i>They connect with to DMDP 1 facility (Mabibo NIT-Mburahati road)</i> • <i>The roads connect to Kigogo Road (regional) and BRT route (Morogoro Road).</i> • <i>There are various education and religious facilities and business centres.</i> • <i>The roads are at Manzese and Mabibo wards which have population of 62,251 and 74,887 respectively.</i>			
Segment		S1	S2	S3	Total
Location	From	<i>Tip Top</i>	<i>Midizini</i>	<i>Binti Kayenga</i>	
	To				
Length (km)		<i>0.28</i>	<i>0.99</i>	<i>1.27</i>	2.54
Width of Right of Way (m)		<i>12 to 15</i>	<i>11 to 15</i>	<i>12 to 15</i>	
Estimated Cost (US\$ million)					
Resettlement Impact (None/Low/Moderate/High)		<i>None</i>	<i>None</i>	<i>Low</i>	



2.4 Existing Situation along Initial DMDP 2 Subproject Roads

2.4.1 Msumi Road (9.83km)

a) Location and Connectivity

The proposed Msumi road is located at Makabe Mtaa in Mbezi Ward in Ubungo Municipality in Dar es Salaam. The road starts at T junction with existing Goba - Mbezi Lois Tarmac Road (Njia Panda Makabe/Goba) with Latitude 6°46'11" S and Longitude 39°7'12" E (**Figure 2-6**). The road ends at Madale area where it meets Madale tarmac road which was upgraded during implementation of DMDP Phase -1 project (**Figure 2-7**). Msumi road provides accessibility to the communities of Msumi, Mbezi, Madale, Goba and Bunju neighbourhoods. The road passes along residential, commercial and institutional developments.



Figure 2-6: Start of Msumi Road at Junction of Njia Panda Makabe/Goba

Source: Field Survey by the Consultant (June 2023)



Figure 2-7: End of Msumi Road at Junction of Njia Panda Makabe/Goba

Source: Field Survey by the Consultant (June 2023)

b) Topography and Adjacent Land Uses

The road traverse through undulating topography, whereby it characterized by winds and rolls throughout the entire road stretch. The highest altitude is 162.8m (m.a.s.l.) while the lowest 69.4m (m.a.s.l.).

Residential, commercial and institutions premises are the dominant land uses along the project road (**Figures 2-8 to 2-13**). Three (3) mosques, three (3) churches, one (1) secondary school, one (1) kindergarten day care school, one (1) health facility and three (2) refuelling stations form potential land uses along the proposed project road. A grave yard is found at Km 9 + 600 LHS beyond the construction corridor (**Figure 2-10**). In some areas, there are vegetation cover composed of grasses, mangoes, neem and coconut trees.

Msumi is a flood risk and erosion prone area that receiving fast flowing storm water from highlands of Mabwepande forest. Two seasonal streams are crossing the proposed Msumi road (**Figure 2-11**). Upgrading of the road to bitumen standard together with improvement of drainage structure will attenuate flood and erosion risks. There is also a Daladala route plying between Mbezi-Magufuli Stand and Msumi area via Mbezi-Makabe-Goba (**Figures 2-12 & 2-13**).



Figure 2-8: Residential Houses at Km 0 + 100 of the Proposed Msumi Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-9: A Mosque at Km 2 + 120 LHS of the Proposed Msumi Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-10: Msumi Lutheran Church at Km 2 + 000 LHS of the Proposed Msumi Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-11: A Health Facility (Midlan Health Center) found at Km 6 + 700 LHS of the Proposed Msumi Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-12: Makabe Secondary School Located at Km 4 + 700 RHS of the Proposed Msumi Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-13: Refuelling Station found at Km 8 + 600 RHS of the Proposed Msumi Road
Source: Field Survey by the Consultant (June 2023)



Figure 2-14: Grave Yard at Km 9+600 LHS, but not within Construction Corridor of Msumi Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-14: Seasonal River at Km 7+ 700 LHS of the Proposed Msumi Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-15: Daladala Bus Captured Plying between Msumi and Magufuli Bus Stand

Source: Field Survey by the Consultant (June 2023)



Figure 2-16: Daladala Bus Stand Located at Km 7+ 700 RHS of the Proposed Msumi Road

Source: Field Survey by the Consultant (June 2023)

c) Infrastructure/utilities

Electrical power lines, underground telecommunication cables and water supply pipelines are public service utilities that are found along the proposed Msumi Road. During a survey period in June 2023, it was observed that a total of sixteen (16) electrical poles bearing 33kV power distribution lines fall with road construction corridor (**Figure 2-17**). However, between Km 2 + 000 to Km 3+400 there are marker posts to indicate existence underground telecommunication cable of Vodacom Tanzania PLC (**Figure 2-18**). Fewer marker posts for water supply system were encountered during a survey period. A map showing existing environmental and social baseline features along Msumi Road is presented in **Figure 2-19**.

These infrastructure/utilities are likely to be affected during construction; hence the need for relocation before commencement of the construction works. In addition, there will be a need for provision of service ducts for passage of crossing infrastructure/utilities.



Figure 2-17: Electrical Power Line within Road Construction Corridor at Km 3 + 100 LHS of the Proposed Msumi Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-18: A Concrete Marker Post for Telecommunication Cable found at Km 2 + 065 LHS of the Proposed Msumi Road

Source: Field Survey by the Consultant (June 2023)

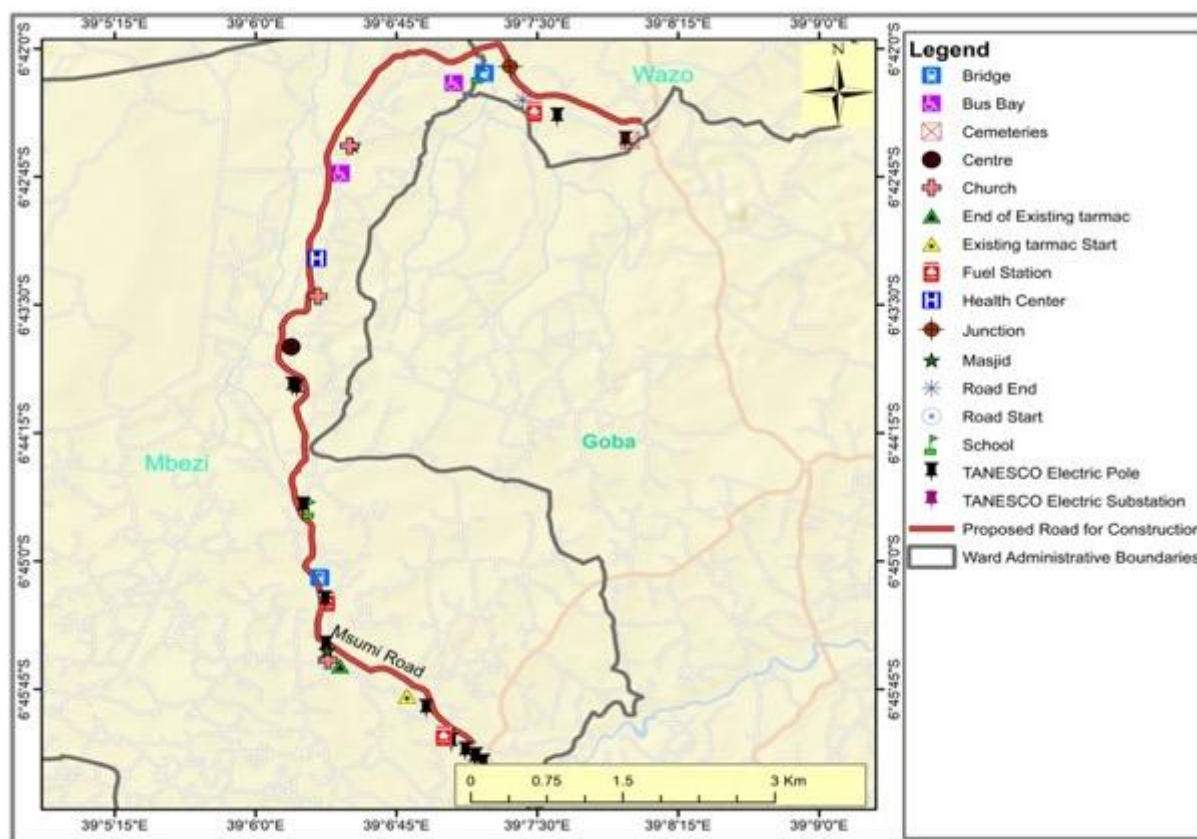


Figure 2-19: Baseline Map for Existing Environmental and Social Features along Msumi Road

2.4.2 Goba - Wakorea Road (7.76km)

a) Location and Connectivity

The proposed Goba-Wakorea road is located at Tegeta "A" Mtaa at Goba Ward in Ubungu Municipality in Dar es Salaam. The road starts at T junction with existing Goba - Mbezi Lois Tarmac Road (Njia Panda Tegeta A) with Latitude 6°45'5" S and Longitude 39°8'0" E (**Figure 2-20**). The road ends at Nyakasangwe area where it meets Msumi road which is under Package 2- Lot 1 of DMDP 2 investment in Ubungu Municipality. Goba-Wakorea road provides accessibility to the communities of Tegeta A, Msumi, Mbezi, Madale, Goba and Bunju. The road passes along residential, commercial and institutional developments.



Figure 2-20: Start of Goba -Wakorea Road at Junction of Tegeta A/Goba Road

Source: Field Survey by the Consultant (June 2023)

b) Topography and Adjacent Land Uses

The road traverse through undulating topography, whereby it characterized by winds and rolls throughout the entire road stretch with average elevation of 127m (m.a.s.l). The highest altitude is 148m (m.a.s.l.) while the lowest 98m (m.a.s.l) at crossing point of Msumi Seasonal River (**Figure 2-21**).



Figure 2-21: Msumi Seasonal River at Km 7+300 of Tegeta A/Goba-Wakorea Road

Source: Field Survey by the Consultant (June 2023)

Residential, commercial and institutions premises are the dominant land uses along the project road. The road has two major business centres, Kwa Bedui (Km 1+800) and Kwa Madawa (Km 2+600). One (1) mosque, one (1) church, one (1) primary school, one (1) secondary school, two (2) nursery schools, one (1) health facility and one (1) refuelling station form potential land uses along the proposed project road (**Figures 2-22 to 2-30**). Msumi

seasonal river is crossing the road twice, at Km 0+900 and nearly at the end points of road (**Figure 2-31**). A seasonal swamp is found at Km 4 + 900 LHS beyond the construction corridor (**Figure 2-32**). In some section of proposed road there are vegetation cover composed of shrubs, grasses, mangoes, African tick, neem and coconut trees (**Figure 2-33**).

The road has high mixed traffic volume composed of pedestrians, vehicles, boda-boda and Bajaj. Being busy unpaved road, there is problem of potholes almost at the entire road length. Inadequate provision of storm water management structure impedes sustainable use of this road (**Figure 2-34**). There is daladala route plying between Madale and Mbezi Lois via Tegeta "A".



Figure 2-22: A Business Centre "Kwa Bedui" at Km 1 + 800 of the Goba-Wakorea Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-23: A Business Centre "Kwa Madawa" at Km 2 + 600 of the Goba-Wakorea Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-24: A Mosque at Km 5+ 100 LHS, beyond the Construction Corridor of the Proposed Goba-Wakorea Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-25: PCEA Church at Km 1 + 800 LHS of the Proposed Goba-Wakorea Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-26: Peasant Day Care Kindergarten School Located at Km 0 + 400 LHS of the Proposed Goba-Wakorea Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-27: Goba Mpakani Nursery School Located at Km 5+ 100 RHS of the Proposed Goba-Wakorea Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-28: Goba Mpakani Primary School Located at Km 5+ 400 RHS of the Proposed Goba-Wakorea Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-29: Goba Mpakani Secondary School Located at Km 5+ 400 RHS of the Proposed Goba-Wakorea Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-30: Refuelling Station found at Km 1 + 900 LHS of the Proposed Goba-Wakorea Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-31: Msumi River Crossing the Road at Km 0 + 900

Source: Field Survey by the Consultant (June 2023)



Figure 2-32: Seasonal Swamp at Km 4+925 LHS, but not within Construction Corridor of Goba-Wakorea Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-33: Electric Pole at Vegetation Cover at Km 0 + 100 of Proposed Goba-Wakorea Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-34: View of Goba – Wakorea Road at Km 2+350 Side Drains/Ponding Problem

Source: Field Survey by the Consultant (June 2023)

c) Infrastructure/Utilities

Electrical power lines, underground telecommunication cables and water supply pipelines are public service utilities that are found along the proposed Goba-Wakorea Road. During a survey period in June 2023, it was observed that a total of fifteen (15) electrical poles and two (2) substations bearing 33kV power distribution lines fall within road construction corridor (**Figure 2-35**). However, there are concrete marker posts to indicate existence of underground DAWSA water supply system and telecommunication cable of Vodacom Tanzania PLC (**Figures 2-36 & 2-37**). A map showing existing environmental and social baseline features along Goba-Wakorea Road is presented in **Figure 2-38**.

These infrastructure/utilities are likely to be affected during construction; hence the need for relocation before commencement of the construction works. In addition, there will be a need for provision of service ducts for passage of crossing infrastructure/utilities.



Figure 2-35: Electrical Power Line within Road Construction Corridor at Km 0 + 300 LHS of the Proposed Goba-Wakorea Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-36: Water Supply Infrastructure within Road Construction Corridor at Km 0 + 500 LHS of the Proposed Goba-Wakorea Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-37: A Concrete Marker Post for Telecommunication Cable found at Km 2 + 100 LHS of the Proposed Goba-Wakorea Road

Source: Field Survey by the Consultant (June 2023)

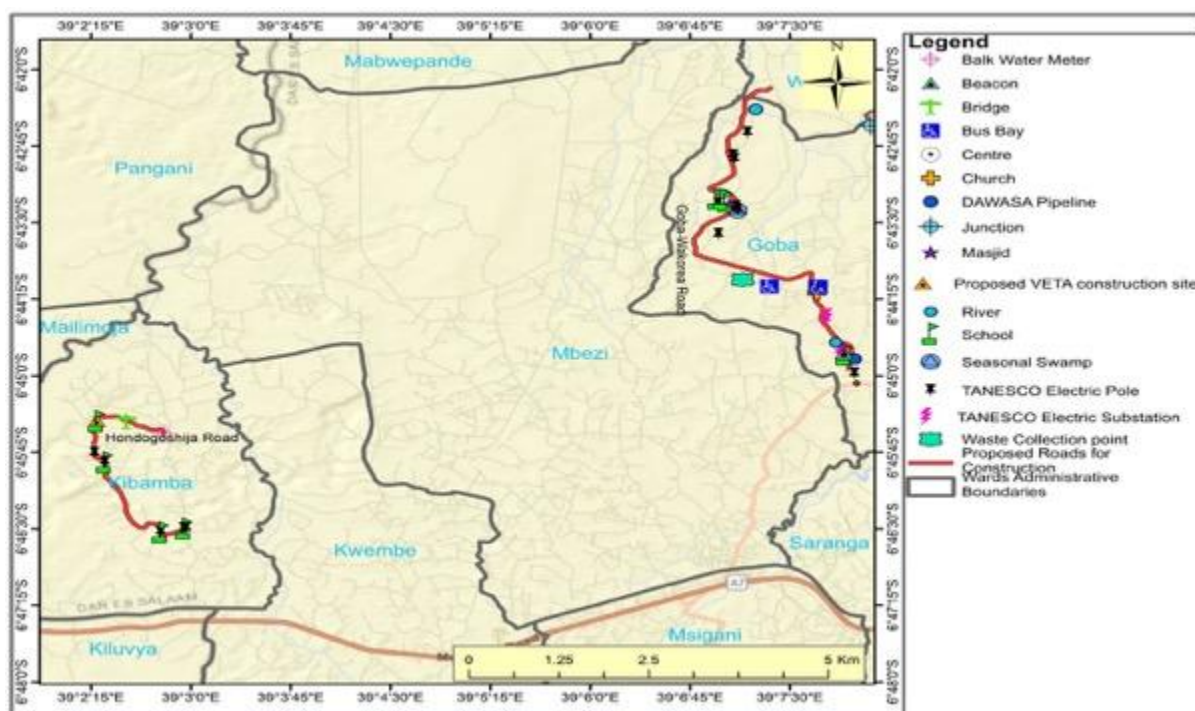


Figure 2-38: Baseline Map for Existing Environmental and Social Features along Goba-Wakorea and Hondogo Shija Roads

2.4.3 Hondogo Shija Road (4.16km)

a) Location and Connectivity

The proposed Hondogo Shija road is located at Hondogo and Kibwegere Mitaa at Kibamba Ward in Ubungu Municipality in Dar es Salaam. The road starts at T junction with existing Kibamba Shule Tarmac Road (Njia Panda Kibwegere) with Latitude 6°46'30" S and Longitude 39°2'58" E (**Figure 2-39**). The road ends at Bwawani area where it meets again Kibamba Shule road which connects to Morogoro Highway. Hondogo Shija road provides accessibility to the communities of Hondogo, Kibwegere, Kibamba and Pangani (Kibaha District). The road passes along residential area with few commercial and institutional developments.



Figure 2-39: Start of Hondogo Shija Road at Junction of Kibamba Shule Road, Wall on LHS is the Rehabilitation Centre for Victims of Trafficking Girls

Source: Field Survey by the Consultant (June 2023)

b) Topography

The road traverse through undulating topography, whereby it characterized by winds and rolls is some sections with average elevation of 89.9m (m.a.s.l). The highest altitude is 113.9m (m.a.s.l.) while the lowest 64.8m (m.a.s.l) at crossing point of Kibwegere Seasonal River (Figure 2-40).



Figure 2-40: One of Lowest Point of Hondogo Shija Road: Kibwegere Seasonal River at Km 3+400

Source: Field Survey by the Consultant (June 2023)

c) Adjacent Land Uses and Land Cover

Area around the proposed project road is mainly composed of residential building with number of undeveloped plots. Few commercial and institutions premises are found along the project road which comprised of one (1) nursery school, one (1) pre-and-primary school, one (1) one (1) secondary school, one (1) education centre and a VETA building which is still under construction (Figures 2-41 to 2-44). Kibwegere seasonal river crosses the proposed subproject road at Km 3+400 (Figure 2-45).

In some section of proposed road there are vegetation cover composed of shrubs, grasses and matured planted trees. The road has low traffic volume that composed of pedestrians, vehicles, boda-boda and bajaji. There is no daladala route plying between the neighbourhoods of subproject road (Figure 2-46).



Figure 2-41: UB Memorial Kindergarten School at Km 2+000 RHS of Hondogo Shija Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-42: Pisho Education Centre at Km 2+100 RHS of Hondogo Shija Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-43: Kibweheri Secondary School found at Km 3 + 000 LHS of the Proposed Hondogo Shija Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-44: VETA Buildings under Construction at Km 2 + 970 RHS of the Proposed Hondogo Shija Road

Source: Field Survey by the Consultant (December 2023)



Figure 2-45: Kibwegere River Crossing at Km 3+400 RHS of Hondogo Shija Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-46: Traffic Condition and Vegetation Characteristic of Hondogo Shija Road, Photo Take at Km 0+600

Source: Field Survey by the Consultant (June 2023)

d) Infrastructure/Utilities

Electrical power lines, underground telecommunication cables and water supply pipelines are public service utilities that are found along the proposed Hondogo Shija Road. During a survey period in June 2023, it was observed that a total of six (6) electrical poles and one (1) substation bearing 33kV power distribution lines fall with road construction corridor (**Figure 2-47**). A manhole of DAWASA bulk water meter has been found at Km 4 + 160 which provided

evidence that there is water supply pipeline along the proposed project road (**Figure 2-48**). Furthermore, there are red coloured concrete marker posts that indicate existence of underground telecommunication cable of Vodacom Tanzania PLC (**Figure 2-49**). A map showing existing environmental and social baseline features along Hondogo Shija Road is presented in **Figure 2-38** above.

These infrastructure/utilities are likely to be affected during construction; hence the need for relocation before commencement of the construction works. In addition, there will be a need for provision of service ducts for passage of crossing infrastructure/utilities.



Figure 2-47: A Concrete Marker Post for Telecommunication Cable found at Km 0 + 600 RHS of the Proposed Hondogo Shija Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-48: A Concrete Marker Post for Telecommunication Cable found at Km 0 + 600 RHS of the Proposed Hondogo Shija Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-49: A Concrete Marker Post for Telecommunication Cable found at Km 0 + 600 RHS of the Proposed Hondogo Shija Road

Source: Field Survey by the Consultant (June 2023)

2.4.4 Posta - Matembe Road (0.82km)

a) Location and Connectivity

The proposed Posta-Matembe Road is located at Sinza “C” Mtaa at Sinza Ward in Ubungo Municipality in Dar es Salaam. The road starts at a roundabout of existing Simu 2000 tarmac road (Latitude 6°47’15” S and Longitude 39°13’8” E) which was upgraded during DMDP 1 implementation.



Figure 2-50: Entrance Gate of the Law School of Tanzania found at Km 0+200 LHS

Source: Field Survey by the Consultant (June 2023)

Mawasiliano/Simu 2000 daladala bus stand is found on the left-hand side at the starting point of the proposed Posta Matembe Road. From the starting point, the proposed subproject road extends eastwards along residential, commercial and institutional premises including Law School of Tanzania (**Figure 2-50**) and turns right after approximately 500m where it meets Sheikh Bofu road at the end (**Figure 2-51**).



Figure 2-51: End Point of Posta Matembe Road, where it Meets Sheikh Bofu Road

Source: Field Survey by the Consultant (June 2023)

b) Topography and Adjacent Land Uses

The road traverses through relative flat-low land with average elevation of 21.3m (m.a.s.l.). The highest altitude is 22.2m (m.a.s.l.) while the lowest 20.1m (m.a.s.l.) at the end of the road. Due to being a low flat land, the proposed project road is frequently affected by rains and normally has pot-holes/water ponds during wet season.

Residential, commercial and institutions premises are the dominant land uses along the project road. The road has been observed to have narrow corridor which will trigger into land acquisition and demolition of 8 house fences (**Figure 2-52**). Of the major important, the fence of Law School of Tanzania is found within proposed road construction corridor that will also be demolished. Few trees are found within construction corridor mainly composed with Jamaican Cherry and Mangos.

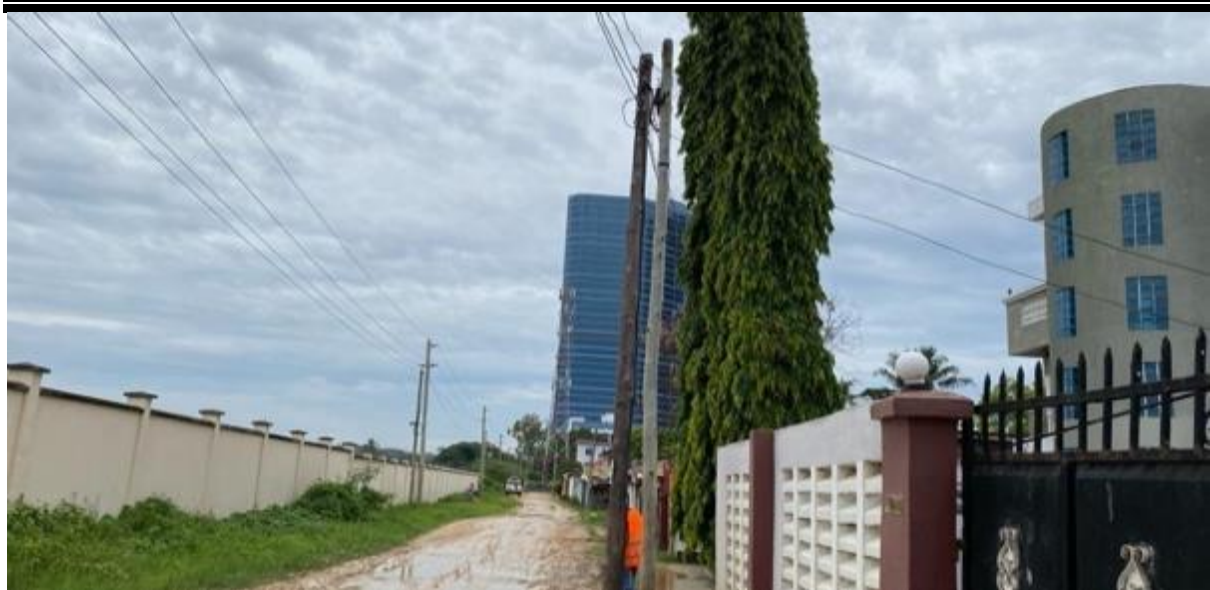


Figure 2-52: Narrow Corridor at Law School of Tanzania, a fence to be demolished

Source: Field Survey by the Consultant (June 2023)

c) Infrastructure/Utilities

Electrical power lines and underground water supply pipelines are public service utilities that found along the proposed Posta Matembe Road. During a survey period in June 2023, it was observed that a total of five (5) electrical poles with power supply service lines fall within road construction corridor (**Figure 2-52 above**). However, there is a possibility of existence of sewer lines following a knowledge almost whole Sinza ward has sewerage system.

2.4.5 Sheikh Bofu Road (1.13km)

a) Location and Connectivity

The proposed Sheikh Bofu road is located at Sinza “C” Mtaa at Sinza Ward in Ubungu Municipality in Dar es Salaam. The road starts at T-junction of existing Igesa tarmac road (Latitude 6°46’46” S and Longitude 39°13’9” E) which was upgraded during DMDP 1 implementation (**Figure 2-53**). Sheikh Bofu road ends at T-junction of existing Simu 2000 tarmac road (**Figure 2-54**). Sheikh Bofu road forms intersections with Msikitini Road (at Km 0 + 190), Posta Matembe Road (at Km 0 + 190) and Sinza KKKT Road (at Km 0+700) which are under the same proposal for initial works of DMDP 2 investments in Ubungu Municipality.



Figure 2-53: Starting Point of Proposed Sheikh Bofu Road, at T-Junction with Igesa Road**Source:** Field Survey by the Consultant (June 2023)**Figure 2-54:** End Point of Sheikh Bofu Road, where it Meets Simu 2000 Road**Source:** Field Survey by the Consultant (June 2023)**b) Topography and Adjacent Land Uses**

The road traverses through relative flat land with average elevation of 19.2m (m.a.s.l.). The highest altitude is 20.9m (m.a.s.l.) while the lowest is 18.3m (m.a.s.l.) at Km 0+600. Due to being a low flat land, the proposed project road is frequently affected by rains and normally has standing water during wet season (**Figure 2-55**).

**Figure 2-55:** Standing Water and Sewer Manhole at Sheikh Bofu Road, Photo Taken at Km 0+200**Source:** Field Survey by the Consultant (June 2023)

Residential, commercial and institutions premises are the dominant land uses along the project road. One (1) Mosque, one (1) Church and One (1) Nursery School have been found along the proposed Sheikh Bofu Road (**Figures 2-56 and 2-57**). The road has been observed to have narrow corridor which will trigger into land acquisition and demolition of 8 house fences (**Figure 2-58**). Jamaican Cherry trees are the common plant species found along some sections of proposed Sheikh Bofu Road (**Figure 2-59**).



Figure 2-56: Masjid and Madrasa found at Km 0+800RHS of Sheikh Bofu Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-57: Victory Church at Km 0+400 of Sheikh Bofu Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-58: Narrow Corridor at Km 0+400 of Sheikh Bofu Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-59: Jamaican Cherry Plants found along Boundary Fence of Grace Nursery School at Km 0+200 of Sheikh Bofu Road

Source: Field Survey by the Consultant (June 2023)

c) Infrastructure/Utilities

Electrical power lines, underground telecommunication cable, sewerage system and water supply pipelines are public service utilities that found along the proposed Sheikh Bofu Road (**Figures 2-60, 2-61 and 2-62**). During a survey period in June 2023, it was observed that a total of fourteen (14) electrical poles and one substation with 33kV power lines fall within road construction corridor.



Figure 2-60: 13kV Electric Power Substation at 0+700 RHS of Sheikh Bofu Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-61: Newly Constructed Sewerage System Manhole at Km 0 + 100 Sheikh Bofu Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-62: Concrete Marker Post of Airtel Communication Cable Km 0+000 LHS, Sheikh Bofu Road

Source: Field Survey by the Consultant (June 2023)

2.4.6 Msikitini Road (0.37km)

a) Location and Connectivity

The proposed Msikitini road is located at Sinza “C” Mtaa at Sinza Ward in Ubungu Municipality in Dar es Salaam. The road starts at an intersection point with Sheikh Bofu road (Latitude 6°46’53” S and Longitude 39°13’10” E) which is also under DMDP 2 implementation (**Figure 2-63**). Msikitini road ends at T-junction of existing Shekilango tarmac road (**Figure 2-64**). Shekilango road was upgraded during implementation of DMDP 1.



Figure 2-63: Starting Point of Proposed Msikitini Road, at intersection with Sheikh Bofu Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-64: End of Msikitini Road, a T-Junction with Shekilango Road

Source: Field Survey by the Consultant (June 2023)

b) Topography and Adjacent Land Uses

The road traverses through relative flat-low land with average elevation of 16.7m (m.a.s.l.). The highest altitude is 18.5m (m.a.s.l.) at Km 0+000, while the lowest elevation is 14.6m (m.a.s.l.) which is found at the end of the road. Residential, commercial and institutions premises are the dominant land uses along the project road. One (1) Mosque, two (2) Nursery Schools and One (1) Health Care Facility are found along the proposed Msikitini Road (**Figures 2-65, and 2-66**). The road has been observed to have narrow corridor at Km 0+140 which will trigger into land acquisition and demolition of 2 house fences (**Figure 2-67**). Jamaican Cherry trees are found on the right-hand side of starting point of the road.



Figure 2-65: Lugman Islamic Centre found at Km 0+300 RHS of Msikitini Road**Source:** Field Survey by the Consultant (June 2023)**Figure 2-66:** Grace Nursery and Primary School at Km 0+070 RHS of Msikitini Road**Source:** Field Survey by the Consultant (June 2023)**Figure 2-67:** Narrow Corridor at Km 0+140 of Msikitini Road

Source: Field Survey by the Consultant (June 2023)

c) Infrastructure/Utilities

Sewerage system is the major public service utility that found along the proposed Msikitini Road (**Figure 2-68**). During a survey period in June 2023, it was observed that a total of eight (8) sewer manholes fall within the road construction corridor.



Figure 2-68: Newly Constructed Sewerage System Manhole at Km 0 + 070 of Msikitini Road

Source: Field Survey by the Consultant (June 2023)

2.4.7 Sinza KKKT Road (0.27km)

a) Location and Connectivity

The proposed Sinza KKKT road is located at Sinza “C” Mtaa at Sinza Ward in Ubungo Municipality in Dar es Salaam. The road starts at an intersection point with Sheikh Bofu road (Latitude 6°47’6” S and Longitude 39°13’13” E) which is also under DMDP 2 implementation (**Figure 2-69**). Sinza KKKT road ends at T-junction of existing Shekilango tarmac road (**Figure 2-70**).



Figure 2-69: Starting Point of Proposed Sinza KKKT Road, at intersection with Sheikh Bofu Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-70: End of Sinza KKKT Road, a T-Junction with Shekilango Road

Source: Field Survey by the Consultant (June 2023)

b) Topography and Adjacent Land Uses

The road traverses through relative flat-low land with average elevation of 16.8m (m.a.s.l.). The highest altitude is 18.8m (m.a.s.l.) at Km 0+100, while the lowest elevation is 14.5m (m.a.s.l.) which is found at the beginning of the road.

Residential, commercial and institutions premises are the dominant land uses along the project road. One (1) Church, one (1) Secondary Schools, one (1) Hotel and several

commercial facilities comprised of shops, restaurants and bars are found along the proposed Sinza KKKT Road (**Figures 2-71, 2-72, 2-73 and 2-74**). The road has been observed to have narrow corridor at Km 0+100 which will trigger into land acquisition. Senna siamea, Neem and Indian almond trees are found on the right-hand side, nearly at the mid-point of the road (**Figure 2-75**).



Figure 2-71: KKKT Church found at Km 0+100 RHS of Sinza KKKT Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-72: Sinza Tower Secondary School found at Km 0+120 RHS of Sinza KKKT Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-73: Hotel Building found at Km 0+070 RHS of Sinza KKKT Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-74: One of the Shops found at Sinza KKKT Road, Photo Taken at Km 0+270 LHS

Source: Field Survey by the Consultant (June 2023)

c) Infrastructure/Utilities

Electric poles are the only visible public service utilities that found along the proposed Sinza KKKT Road (**Figure 2-75**). During a survey period in June 2023, it was observed that a total of six (6) electric poles with 33kV power lines are found within road construction corridor, thus the need for relocation. On the other hand, despite of non-visibility of water supply and sewerage lines, there is a fact these infrastructures are laid underground based on knowledge that almost whole Sinza ward is covered with water supply and sewerage systems.



Figure 2-76: Some Plant Species and 33kV Electric Power Line found at Entirely Length of Sinza KKKT Road

Source: Field Survey by the Consultant (June 2023)

2.4.8 Segesera Road (0.77km)

a) Location and Connectivity

The proposed Segesera road is located at Sinza “A” Mtaa at Sinza Ward in Ubungu Municipality in Dar es Salaam. The road starts at T-junction of Sam Nujoma road, (Latitude 6°46’28” S and Longitude 39°13’19” E) opposite to Mlimani City Shopping Mall (**Figure 2-77**). Segesera road ends at T-junction of existing Sinza Mori tarmac road (**Figure 2-78**). Sinza Mori was upgraded during implementation of DMDP 1. The proposed upgrading of Segesera road will easy traffic flow between Shekilango and Sam Nujoma Roads via Sinza Mori and/or Segesera Road.



Figure 2-77: Starting Point of Segesera Road, at T-Junction with Sum Nujoma Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-78: End of Segesera Road, a T-Junction with Sinza Mori Road

Source: Field Survey by the Consultant (June 2023)

b) Topography and Adjacent Land Uses

The road traverses through relative flat-low land with average elevation of 131m (m.a.s.l.). The highest altitude is 139.4m (m.a.s.l.) at Km 0+000 (starting point), while the lowest elevation is 125.8m (m.a.s.l.) which is found at Km 0+170 of the road. Some section of the proposed Segesera Road has stagnant water caused by high water table and absence of free-falling storm water drainage system (**Figure 2-79**).



Figure 2-79: Water Ponding Problem at Segesera Road, Photo Taken at 0+300

Source: Field Survey by the Consultant (June 2023)

Residential, commercial and institutional premises are the dominant land uses along the project road. Several residential-commercial facilities are found along the proposed Segesera Road. The road has been observed to have narrow corridor almost at the entire length of 770m which will trigger into land acquisition and partial-demolition of 10 housing structures (**Figure 2-80**). Ashok, Thorn, Neem, Jamaican Cherry and Palm trees are found at some sections of the proposed Segesera road (**Figures 2-81, 2-82 & 2-83**).



Figure 2-81: One of the Houses whose Fence will be Demolished, Photo Taken at Km 0+260 LHS of Segesera Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-82: Thorn and Jamaican Cherry Plants found at 0+170 of Segesera Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-83: Ashok and Neem Trees found at 0+130 LHS of Segesera Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-84: Palm Trees found at 0+300 of the Proposed Segesera Road

Source: Field Survey by the Consultant (June 2023)

c) Infrastructure/Utilities

Electrical power lines, underground telecommunication cable, sewerage system and water supply pipelines are public service utilities that found along the proposed Segesera Road (**Figures 2-85, 2-86 and 2-87**). During a survey period in June 2023, it was observed that a total of eight (8) electrical poles and ten (10) manholes of sewerage system fall within road construction corridor.



Figure 2-85: Electric Poles found at Km 0+090 of Segesera Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-86: A Manhole for Halotel Telecommunication Cable at Km 0+050 LHS of Segesera Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-87: Manholes for Sewerage System at Km 0+210 RHS of Segesera Road

Source: Field Survey by the Consultant (June 2023)

2.4.9 Juma Ikangaa Road (0.97km)

a) Location and Connectivity

The proposed Juma Ikangaa road is located at Sinza "A" Mtaa at Sinza Ward in Ubungo Municipality in Dar es Salaam. The road starts at T-junction of Sam Nujoma road, (Latitude 6°46'36" S and Longitude 39°13'10" E) opposite to Mlimani City Shopping Mall (**Figure 2-88**). Juma Ikangaa road ends at T-junction of existing Sinza Mori tarmac road (**Figure 2-89**). The proposed upgrading of Juma Ikangaa road will also ease traffic flow between Shekilango and Sam Nujoma Roads via Sinza Mori and/or Juma Ikangaa Roads.



Figure 2-88: Starting Point of Juma Ikangaa Road, at T-Junction with Sum Nujoma Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-89: End of Juma Ikangaa Road, a T-Junction with Sinza Mori Road

Source: Field Survey by the Consultant (June 2023)

b) Topography and Adjacent Land Uses

The road traverses through relative flat-low land with average elevation of 14.9m (m.a.s.l.). The highest altitude is 16.8m (m.a.s.l.) at Km 0+000 (starting point), while the lowest elevation is 11.4m (m.a.s.l.) which was found at Km 0+800, towards end of the road.

Residential, commercial and institutional premises are the dominant land uses along the project road. One (1) nursery school and several residential-commercial facilities are found along the proposed Segesera Road (**Figure 2-90**). The road has been observed to have narrow corridor at some sections which will trigger into land acquisition and partial-demolition of 39 housing structures (**Figure 2-91**). Palm trees are found at some sections of the proposed Segesera road within construction corridor (**Figure 2-92**).



Figure 2-90: Happy Tot Day Care Nursery School found at Km 0+700 RHS of Juma Ikangaa Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-91: One of the Houses which will be Partially Demolished, Photo Taken at Km 0+580 LHS of Juma Ikangaa Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-92: Palm Trees and Houses found within Construction Corridor at 0+115 of Juma Ikangaa Road

Source: Field Survey by the Consultant (June 2023)

c) Infrastructure/Utilities

Electrical power lines, sewerage system and water supply pipelines are public service utilities that found along the proposed Juma Ikangaa Road (**Figures 2-93 and 2-94**). During a survey period in June 2023, it was observed that a total of sixteen (16) electrical poles, one power substation and eight (8) manholes of sewerage system fall within road construction corridor. Thus, there will be relocation of public utilities before commencement of road construction works.



Figure 2-93: Electric Poles found at Km 0+070 of Juma Ikangaa Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-94: One of Sewer Manholes found at Km 0+800 of Juma Ikangaa Road

Source: Field Survey by the Consultant (June 2023)

2.4.10 Namnani Road (0.66km)

a) Location and Connectivity

The proposed Namnani road is located at Sinza “D” Mtaa at Sinza Ward in Ubungo Municipality in Dar es Salaam. The road starts at T-Junction with Shekilango road (Latitude 6°47’17” S and Longitude 39°13’21” E) at Madukani neighbourhood (**Figure 2-95**). Namnani road ends at an intersection with Mbegani road (**Figure 2-96**). Mbegani road is in the same proposal for initial works of DMDP 2 investments in Ubungo Municipality.



Figure 2-95: Starting Point of Proposed Namnani Road, at intersection with Shekilango Road
Source: Field Survey by the Consultant (June 2023)



Figure 2-96: End of Namnani Road, form Intersection with Mbegani Road
Source: Field Survey by the Consultant (June 2023)

b) Topography and Adjacent Land Uses

The road traverses through relative flat-low land with average elevation of 23.8m (m.a.s.l.). The highest altitude is 31.1m (m.a.s.l.) at Km 0+000, while the lowest elevation is 16.0m (m.a.s.l.) which found at the end of the road.

Residential, commercial and institutions premises are the dominant land uses along the project road. Two (2) Churches, one (1) orphanage centre, one (1) Journalism school and several commercial facilities comprised of shops, restaurants and kiosks are found along the proposed Namnani Road (**Figures 2-97, 2-98 and 2-99**). The road has been observed to have

narrow corridor at some sections which will trigger into land acquisition and partial demolition of 13 housing structures (**Figure 2-100**).



Figure 2-97: The Big Fire Ufunuo Sinza Church found at Km 0+300 RHS of Namnani Road
Source: Field Survey by the Consultant (June 2023)



Figure 2-98: Ijango Zaidi Orphanage Centre found at Km 0+200 RHS of Namnani Road
Source: Field Survey by the Consultant (June 2023)



Figure 2-99: Shops and Traffic Condition at Km 0+000 of Namnani Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-100: One of the Houses to be Demolished at Namnani Road, Photo Taken at Km 0+250 LHS

Source: Field Survey by the Consultant (June 2023)

c) Infrastructure/Utilities

Electrical power lines and water supply pipelines are public service utilities that found along the proposed Namnani Road. During a survey period in June 2023, it was observed that fourteen (14) electrical poles and one (1) substation with power lines fall within road construction corridor (**Figure 2-101**).

On the other hand, despite of non-visibility of water supply and sewerage lines, there is a fact these infrastructures are laid underground based on knowledge that almost whole Sinza ward is covered with water supply and sewerage systems.



Figure 2-101: 33kV Electric Power Substation found at Km 0+350 LHS of Namnani Road

Source: Field Survey by the Consultant (June 2023)

2.4.11 Mbegani Road (0.28km)

a) Location and Connectivity

The proposed Mbegani road is located at Sinza “D” Mtaa at Sinza Ward in Ubungu Municipality in Dar es Salaam. The road starts at an intersection with Namnani road, (Latitude 6°47’29” S and Longitude 39°13’43” E), the latter is in the same DMDP 2 investments proposal (**Figure 2-102**). Mbegani road ends at intersection with Mikindani road (**Figure 2-103**) which is also in the same DMDP 2 proposal.



Figure 2-102: Starting Point of Mbegani Road, at Intersection with Namnani Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-103: End of Mbegani Road, forms an Intersection with Mikindani Road

Source: Field Survey by the Consultant (June 2023)

b) Topography and Adjacent Land Use

The road traverses through relative flat-low land with average elevation of 11.4m (m.a.s.l.). The highest altitude is 17.3m (m.a.s.l.) at Km 0+280 (end point), while the lowest elevation is 10.1m (m.a.s.l.) which was found at Km 0+130 of the road (nearly at the mid).

Residential and institutional premises are the dominant land uses along the project road. One (1) church is found at Km 0+000 LHS of the proposed Mbegani Road. The road has been observed to have a narrow corridor almost at the entire length of 280m which will trigger into land acquisition and partial-demolition of 8 housing structures including a church (**Figure 2-104**). Thorn and Jamaican Cherry and Palm trees are found at some sections of the proposed Mbegani road (**Figure 2-105**).



Figure 2-104: One of the Houses whose Fence will be Demolished, Photo Taken at Km 0+100 LHS of Mbegani Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-105: Vegetation Feature along Mbegani Road, Photo Taken at Km 0+140

Source: Field Survey by the Consultant (June 2023)

c) Infrastructure/Utilities

Electrical power lines and water supply pipelines are public service utilities that found along the proposed Namnani Road. During a survey period in June 2023, it was observed that six (6) electrical poles and two (2) substation with power lines fall within road construction corridor (**Figure 2-106**). Despite of non-visibility of water supply and sewerage lines, there is a fact these infrastructures are laid underground based on knowledge that almost whole Sinza ward is covered with water supply and sewerage systems.



Figure 2-106: Electric Power Substation found at Km 0+280 RHS of Mbegani Road

Source: Field Survey by the Consultant (June 2023)

2.4.12 Mikindani Road (0.45km)

a) Location and Connectivity

The proposed Mikindani road is located at Sinza “D” Mtaa at Sinza Ward in Ubungo Municipality in Dar es Salaam. The road starts at an intersection with Mbegani road, (Latitude 6°47’21” S and Longitude 39°13’42” E), and ends up at the T-junction with Chimwaga Road

(Figures 2-107 & 2-108). Both Mbegani and Chimwaga roads are in the same DMDP 2 investments proposal in Ubungu Municipality.



Figure 2-107: Starting Point of Mikindani Road, at Intersection with Mbegani Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-108: End of Mikindani Road, a T-Junction with Chimwaga Road

Source: Field Survey by the Consultant (June 2023)

b) Topography and Adjacent Land Uses

The road traverses through relative flat-land with average elevation of 24.2m (m.a.s.l.). The highest altitude is 26.5m (m.a.s.l.) at Km 0+450 (end point), while the lowest elevation is 20.4m (m.a.s.l.) which is found at Km 0+150. Residential, commercial and institutional premises are the dominant land uses along the project road. Two (2) primary schools, one (1) functions hall and several residential facilities are found along the proposed Mikindani Road (**Figures**

2-109 & 2-110). The road has been observed to have narrow corridor at some sections which will trigger into land acquisition and partial-demolition of 8 housing structures (**Figure 2-111**).



Figure 2-109: Shops at Km 0+060 LHS of Mikindani Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-110: Mawela Social Hall at Km 0+250 LHS of Mikindani Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-111: One of the Houses whose Fence will be Partially Demolished, Photo Taken at Km 0+030 LHS of Mikindani Road

Source: Field Survey by the Consultant (June 2023)

c) Infrastructure/Utilities

Electrical power lines, sewerage system and water supply pipelines are public service utilities that found along the proposed Mikindani Road (**Figure 2-112**). During a survey period in June 2023, it was observed that a total of eight (8) electrical poles fall within road construction corridor. Thus, there will be relocation of public utilities before commencement of road construction works.



Figure 2-112: Electric Poles found at Km 0+060 of Mikindani Road

Source: Field Survey by the Consultant (June 2023)

2.4.13 Shule Road (0.6km)

a) Location and Connectivity

The proposed Shule road is located at Sinza “D” Mtaa at Sinza Ward in Ubungo Municipality in Dar es Salaam. The road starts as T-Junction with Namnani (Latitude 6°47'25” S and Longitude 39°13'34” E) which connects to Shekilango Road (**Figure 2-113**). Shule road ends at T-junction with Mikindani road next to Mawela Social Hall (**Figure 2-114**).



Figure 2-113: Starting Point of Shule Road, forms T-Junction with Namnani Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-114: End of Shule Road, a T-Junction with Mikindani Road

Source: Field Survey by the Consultant (June 2023)

b) Topography and Adjacent Land Use

The road traverses through relative flat-low land with average elevation of 24.0m (m.a.s.l.). The highest altitude is 25.2m (m.a.s.l.) at Km 0+100 (nearly at the midpoint), while the lowest elevation is 18.1m (m.a.s.l.) which is found at the starting point of the road.

Residential and institutional premises are the dominant land uses along the project road. One primary school, one (1) nursery school and several residential houses are found along the proposed Shule Road (**Figures 2-105 & 2-106**). The road has been observed to have sufficient corridor which will not trigger into land acquisition and demolition of existing housing structures (**Figure 2-107**). Jamaican cherry, Senna siamea, Thorn, Ashok and Indian almond plants are found at some sections of the proposed Shule road within construction corridor (**Figures 2-108 & 2-109**).



Figure 2-105: Sinza Primary School found at Km 0+200 LHS of the Shule Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-106: Smile Montessori Nursery School found at Km 0+100 RHS of the Shule Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-107: A Typical Residential House found at 0+500 LHS along Shule Road
Source: Field Survey by the Consultant (June 2023)



Figure 2-108: Jamaican Cherry and Senna Siamea Plants at Km 0+100 of Shule Spur Road
Source: Field Survey by the Consultant (June 2023)



Figure 2-109: Thorn, Ashok and Indian almond Plants found at Km 0+200 LHS of Shule Road
Source: Field Survey by the Consultant (June 2023)

c) Infrastructure/Utilities

Electrical power line, sewerage system and water supply pipelines are public service utilities that found along the proposed Shule Road. During a survey period in June 2023, it was observed that only one (1) electrical pole is falling within road construction corridor (**Figure 2-110**). However, there is high possibility of existence of underground water supply and sewerage infrastructures within road construction corridor. Thus, there will be relocation of public utilities before commencement of road construction works.



Figure 2-110: An Electric Pole found at Km 0+200 RHS of Shule Road
Source: Field Survey by the Consultant (June 2023)

2.4.14 Chimwaga Road (0.34km)

a) Location and Connectivity

The proposed Chimwaga road is located at Sinza “D” Mtaa at Sinza Ward in Ubungo Municipality in Dar es Salaam. The road starts as T-Junction of Namnani Road (Latitude 6°47'21” S and Longitude 39°13'26” E) which connects to Shekilango Road (**Figure 2-111**). Chimwaga road ends at T-junction with Mlandizi road which was upgraded during implementation of DMDP 1 (**Figure 2-112**).



Figure 2-111: Starting Point of Chimwaga Road, forms T-Junction with Namnani Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-112: End of Chimwaga Road, a T-Junction with Mlandizi Road

Source: Field Survey by the Consultant (June 2023)

b) Topography and Adjacent Land Uses

The road traverses through relative flat-low land with average elevation of 23.0m (m.a.s.l.). The highest altitude is 25.9m (m.a.s.l.) at Km 0+020 (nearly at the starting point), while the lowest elevation is 20.4m (m.a.s.l.) which is found at chainage Km 0+100 of the road.

Residential and commercial premises are the dominant land uses along the project road. The road has been observed to have narrow corridor in some sections which will trigger into land acquisition and demolition of existing three (3) housing structures (**Figure 2-113**). Palm trees are the plant species that are found within the road construction corridor and may likely be cleared out (**Figure 2-114**).



Figure 2-113: One of the Houses found at Km 0+100 LHS whose Fence will be Demolished

Source: Field Survey by the Consultant (June 2023)



Figure 2-114: Palm Trees Likely to be Affected by Project, Photo Taken at Km 0+200 LHS of Chimwaga Road

Source: Field Survey by the Consultant (June 2023)

c) Infrastructure/Utilities

Electrical power line, sewerage system and water supply pipelines are public service utilities that found along the proposed Chimwaga Road. During a survey period in June 2023, it was observed that a total of seven (7) electrical poles with power lines fall within road construction corridor (**Figure 2-115**). Although water supply and sewerage infrastructures are not visible at site, but there is high possibility of existence of underground water supply and sewerage systems within road construction corridor. Thus, there will be relocation of public utilities before commencement of road construction works.



Figure 2-115: Electric Poles at Km 0+020 RHS of Chimwaga Road which are found within Construction Corridor

Source: Field Survey by the Consultant (June 2023)

2.4.15 Lion Road (0.84km)**a) Location and Connectivity**

The proposed Lion road is located at Sinza “B” and Sinza “E” Mitaa at Sinza Ward in Ubungo Municipality in Dar es Salaam. The road starts as T-Junction of Mlandizi Road (Latitude 6°47’10” S and Longitude 39°13’32” E) which connects to Shekilango Road (**Figure 2-116**). Lion road ends at T-junction with Mori road which was upgraded during implementation of DMDP 1 (**Figure 2-117**). Mori Road connects Sinza “B” and Sinza “E” Mitaa to Shekilango Road which has daladala route.

b) Topography and Land Uses

The road traverses through relative flat-low land with average elevation of 34.2m (m.a.s.l.). The highest altitude is 38.9m (m.a.s.l.) at Km 0+000 (the starting point), while the lowest elevation is 30.1m (m.a.s.l.) which found at chainage Km 0+150 of the road.

Residential, commercial and institutional premises are the dominant land uses along the project road. One (1) church, one (1) nursery school and several residential houses are found along the proposed Lion Road (**Figures 2-118 & 2-119**). The road has been observed to have sufficient corridor that will not trigger into land acquisition and demolition of housing structures.

Ashok and African palm trees are the plant species that found within road construction corridor and may likely to be cleared out during project execution (**Figure 2-120**).



Figure 2-116: Starting Point of Lion Road, forms T-Junction with Mlandizi Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-117: End of Lion Road, a T-Junction with Mori Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-118: Power Day Care Nursery School found at Km 0+040 LHS of Lion Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-119: Sinza RC Church found at Km 0+340 LHS of Lion Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-120: African Palm Trees found at Km 0+700 LHS of Lion Road

Source: Field Survey by the Consultant (June 2023)

c) Infrastructure/Utilities

Electrical power line, sewerage system and water supply pipelines are public service utilities that found along the proposed Lion Road. During a survey period in June 2023, it was observed that a total of four (4) electrical poles with power lines and two (2) sewer manholes fall within road construction corridor (**Figures 2-121 and 2-122**). These public service utilities shall be relocated before commencement of road construction works.



Figure 2-121: Electric Poles at Km 0+430 found within Construction Corridor of Lion Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-122: Sewer Manhole found at Km 0+700 within Construction Corridor of Lion Road
Source: Field Survey by the Consultant (June 2023)

2.4.16 Ubungo NHC Road (0.6km)

a) Location and Connectivity

The proposed Ubungo NHC road is located at National Housing Mtaa at Ubungo Ward in Ubungo Municipality in Dar es Salaam. The road starts as an extension of upgraded Ubungo NHC road (Latitude 6°47'30" S and Longitude 39°12'59" E) which connects to Shekilango Road (**Figure 2-123**). Ubungo NHC road ends at T-junction of Ubungo BRT deport road (**Figure 2-124**). There is a spur road of 250m long that will be upgraded concurrent with Ubungo NHC road. The spur road passes along RUBADA building and connects Ubungo NHC road with Morogoro road that has BRT infrastructure (**Figure 2-125**). Thus, the proposed upgrading of Ubungo NHC road and its spur road will easy traffic flow between Shekilango and BRT infrastructures via Ubungo NHC Road.



Figure 2-123: Starting Point of Ubungo NHC Road, an extension with Existing Tarmac Road
Source: Field Survey by the Consultant (June 2023)



Figure 2-124: End of Ubungo NHC Road, a T-Junction with BRT Infrastructures

Source: Field Survey by the Consultant (June 2023)



Figure 2-125: A Spur of Ubungo NHC Road, a Way Towards Morogoro Road BRT Infrastructures

Source: Field Survey by the Consultant (June 2023)

b) Topography and Adjacent Land Uses

The road traverses through relative flat-low land with average elevation of 27.2m (m.a.s.l.). The highest altitude is 36.9m (m.a.s.l.) at Km 0+000 (starting point), while the lowest elevation is 22.5m (m.a.s.l.) which found at the end of the road.

Residential, commercial and institutional premises are the dominant land uses along the project road. One primary school, one secondary school, one (1) nursery school, one (1) mosque, three (3) churches and several residential-commercial facilities are found along the proposed Ubungo NHC Road (**Figures 2-126, 2-127, 2-128, 2-129 & 2-130**). The road has been observed to have narrow corridor at some sections which will trigger into land acquisition and partial-demolition of 4 housing structures (**Figure 2-131**). Neem trees are found at some sections of the proposed Ubungo NHC road within construction corridor (**Figure 2-132**).



Figure 2-126: Ubungo Secondary School found at Km 0+000 RHS of the Ubungo NHC Road
Source: Field Survey by the Consultant (June 2023)



Figure 2-127: Ubungo Primary School found at Km 0+050 RHS of the Ubungo NHC Road
Source: Field Survey by the Consultant (June 2023)



Figure 2-128: Second Home Nursery School found at Km 0+270 RHS of Ubungo NHC Road
Source: Field Survey by the Consultant (June 2023)



Figure 2-129: A Mosque found at Km 0+250 LHS of Ubungo NHC Spur Road
Source: Field Survey by the Consultant (June 2023)



Figure 2-130: A TAG Church found at Km 0+100 LHS of Ubungo Spur NHC Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-131: Narrow Corridor at Km 0+350 LHS of Ubungo NHC Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-132: Neem Trees found within Construction Corridor at 0+120 RHS of Ubungo NHC Road

Source: Field Survey by the Consultant (June 2023)

c) Infrastructure/Utilities

Electrical power lines, sewerage system and water supply pipelines are public service utilities that found along the proposed Ubungo NHC Road (**Figures 2-133**). During a survey period in June 2023, it was observed that a total of five (6) electrical poles and one (1) power substation fall within road construction corridor. There is high possibility of existence of underground water supply and sewerage systems infrastructures within road construction corridor. Thus, there will be relocation of public utilities before commencement of road construction works.



Figure 2-133: Electric Substation found at Km 0+150 of Ubungo NHC Road

Source: Field Survey by the Consultant (June 2023)

2.4.17 Tiptop Road (0.28Km)**a) Location and Connectivity**

The proposed Tiptop road is located at Tupendane Mtaa at Manzese Ward in Ubungo Municipality in Dar es Salaam. The road starts at T-Junction of existing Mabibo - Mburahati tarmac road (Latitude 6°48'15" S and Longitude 39°13'46" E) which was upgraded during DMDP 1 implementation (**Figure 2-134**). The proposed Tiptop is just an extension of existing tarmac road that provides link between Mabibo – Mburahati and Morogoro roads (**Figure 2-135**).



Figure 2-134: Starting Point of Tiptop Road, at T-Junction with Mabibo – Mburahati Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-135: End Point of Tiptop Road, where it Meets Existing Tarmac Road to BRT Infrastructures of Morogoro Road

Source: Field Survey by the Consultant (June 2023)

b) Topography and Adjacent Land Uses

The road traverses through relative flat-low land with average elevation of 14.4m (m.a.s.l.). The highest altitude is 14.6m (m.a.s.l.) at the end of road while the lowest 14.0m (m.a.s.l.) nearly at the mid of the road.

Residential and commercial premises are the dominant land uses along the first section of 160m project road, the rest 120m is TANESCO Way-Leave (**Figures 2-136 and 2-137**). The road has been observed to have sufficient corridor which will not trigger into land acquisition and demolition of properties. A grave yard is found at Km 0+280 LHS, but beyond road construction corridor (**Figure 2-138**).



Figure 2-136: Residential and Commercial Developments along Tiptop Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-137: High Tension 400kV Power Line Crossing Tiptop Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-138: Cemeteries at Km 0+280 LHS of Manzese Road, but not within Road Construction Corridor

Source: Field Survey by the Consultant (June 2023)

c) Infrastructure/Utilities

Despite of high tension TANESCO power line (**Figure 2-137 above**), there is no any other visible utilities at the proposed road construction corridor. However, there is high possibility of existence of underground water supply pipelines within Tiptop Road.

2.4.18 Midizini Road (0.99km)

a) Location and Connectivity

The proposed Midizini road is located at Sisi-kwa-Sisi, Midizini and Kilimahewa Mitaa at Manzese Ward in Ubungo Municipality in Dar es Salaam. The road starts at T-junction of existing Mabibo - Mburahati tarmac road (Latitude 6°48'29" S and Longitude 39°14'9" E) which was upgraded during DMDP 1 implementation (**Figure 2-139**). Midizini road ends at T-junction of Morogoro Road that furnished with BRT infrastructures (**Figure 2-140**). Midizini road has a daladala route which plies between Manzese and Buguruni/Mnazi-Mmoja (Dar CBD) via Kigogo, Msimbazi and Ilala areas (**Figure 2-141**). The first stretch of 120m long of the road has been upgraded to bitumen standard.



Figure 2-139: Starting Point of Midizini Road, at T-Junction with Mabibo Mburahati Road
Source: Field Survey by the Consultant (June 2023)



Figure 2-140: End Point of Midizini Road, where it Meets Morogoro Road with BRT Facilities
Source: Field Survey by the Consultant (June 2023)



Figure 2-141: A daladala Plying Between Manzese and Dar CDB Captured at Midizini Road
Source: Field Survey by the Consultant (June 2023)

b) Topography and Adjacent Land Uses

The road traverses through relative flat-low land with average elevation of 20.4m (m.a.s.l.). The highest altitude is 21.9m (m.a.s.l.) while the lowest is 20.1m (m.a.s.l.) at Km 0+400 where there is China River crossing the road to the east (**Figure 2-142**).



Figure 2-142: China River Crosses Midizini Road at Km 0+400
Source: Field Survey by the Consultant (June 2023)

At the first stretch of 600m, there are residential, commercial and institutions premises along the project road. One (1) Dispensary and Two (2) Nursery Schools have been found along the proposed Midizini Road (**Figures 2-143 and 2-144**). From Km 0+600 up to the end, the road corridor is highly occupied by petty traders (**Figure 2-145**), such that there shall be dislocation

process before commencement of road construction works. Beside occupation by petty traders, the road has been observed to have sufficient narrow corridor which will not trigger into land acquisition and demolition of structures. Jamaican cherry and Indian almond trees are the common plant species found along some sections of proposed Midizini Road (**Figures 2-146 and 2-147**).



Figure 2-143: Al-Irishaad Nursery School found at Km 0+250 LHS of Midizini Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-144: Ekisha Day Care Nursery School at Km 0+230 LHS of Midizini Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-145: Petty Traders (Machinga) Occupy Whole Construction Corridor of Midizini Road, Photo Taken at Km 0+650

Source: Field Survey by the Consultant (June 2023)



Figure 2-146: Jamaican Cherry Plants found along Midizini Road at Km 0+340 RHS

Source: Field Survey by the Consultant (June 2023)



Figure 2-147: Indian Almond Tree at Km 0+590 RHS of Midizini Road

Source: Field Survey by the Consultant (June 2023)

c) Infrastructure/Utilities

Electrical power lines and water supply pipelines are public service utilities that found along the proposed Midizini Road. During a survey period in June 2023, it was observed that three (3) electrical poles with 33kV power lines fall within road construction corridor (**Figure 2-148**). Nonetheless, the proposed project road crosses high tension (400kV) power line at Km 0+100 (**Figure 2-149**). An exposed water supply pipeline was spotted at Km 0+400 while crossing the China River (**Figure 2-150**).



Figure 2-148: 13kV Electric Power Line found at Km 0+400 LHS of Midizini Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-149: High Tension Power Line Crossing the Existing Tarmac Road at Km 0+100

Source: Field Survey by the Consultant (June 2023)



Figure 2-150: Water Supply Pipelines Crosses China River at Km 0+400 LHS of Midizini Road

Source: Field Survey by the Consultant (June 2023)

2.4.19 Binti Kayenga Road (1.27km)

a) Location and Connectivity

The proposed Binti Kayenga road is located at Kanuni, Azimio, Jitegemee and Matokeo Mitaa at Mabibo Ward in Ubungo Municipality in Dar es Salaam. The road starts at T-junction with Mabibo-Mburahati road (Latitude 6°48'24" S and Longitude 39°13'46" E). Mabibo - Mburahati road was upgraded during DMDP 1 implementation. Binti Kayenga road ends at T-junction of existing Kigogo regional road (**Figures 2-151 & 2-152**).



Figure 2-151: Starting Point of Proposed Binti Kayenga Road, at T-Junction with Mabibo-Mburahati Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-152: End of Binti Kayenga Road, a T-Junction with Kigogo Regional Road

Source: Field Survey by the Consultant (June 2023)

b) Topography and Adjacent Land Uses

The road traverses through relative flat-low land with average elevation of 28.9m (m.a.s.l.). The highest altitude is 31.8m (m.a.s.l.) at Km 0+000, while the lowest elevation is 28.0m (m.a.s.l.) which is found at Km 0+100 of the road. Residential, commercial and institutions premises are the dominant land uses along the project road. One (1) Mosque, one (1) Church, one (1) Health Care Facility and two (2) Primary Schools are found along the proposed Binti Kayenga Road (**Figures 2-153, 2-154, 2-155 and 2-156**). The road has been observed to have narrow corridor at Km 0+320 which will trigger into land acquisition and demolition of 2

house fences (**Figure 2-157**). Senna siamea and Jamaican cherry trees are found in some sections of the proposed road (**Figure 2-158**).



Figure 2-153: Mpakani Dispensary found at Km 0+000 RHS of Binti Kayenga Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-154: Residential Houses at Km 0+320 LHS along Binti Kayenga Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-155: Commercial Building found at Km 0+310 RHS of Binti Kayenga Road
Source: Field Survey by the Consultant (June 2023)



Figure 2-156: Compound Fence of Kawawa and Amani Primary Schools at Km 1+000 LHS of Binti Kayenga Road

Source: Field Survey by the Consultant (June 2023)



Figure 2-157: Narrow Corridor at Km 0+320 of Binti Kayenga Road, a House whose Fence will be Demolished

Source: Field Survey by the Consultant (June 2023)



Figure 2-158: Senna Siamea and Jamaican Cherry Plants at Km 0+500 RHS

Source: Field Survey by the Consultant (June 2023)

c) Infrastructure/Utilities

Electrical power lines and water supply pipelines are public service utilities that found along the proposed Binti Kayenga Road. During a survey period in June 2023, it was observed that three (3) electrical poles with power lines fall within road construction corridor (**Figure 2-159**).



Figure 2-159: Electric Pole with Power Distribution Line at Km 0 + 100 LHS of Binti Kayenga Road

Source: Field Survey by the Consultant (June 2023)

2.5 DMDP 2 Subproject Roads Design

2.5.1 Road Classification

In July 2023 the Consultant conducted rapid reconnaissance survey to obtain spot traffic volume for the project roads in Ubungu Municipality. The result of traffic volume counts shows that the Average Annual Daily Traffic (AADT) for Ubungu District ranges from 200 - 400 vehicles per day. Based on AADT value and Roads Geometric Design Manual (RGDM), the proposed DMDP 2 Subproject Roads in Ubungu Municipality have been grouped as "Design Class 5 (DC 5) as shown in **Table 2-2**.

Table 2-2: Roads Design Class for DMDP 2 Subproject Roads in Ubungu Municipality

Road Design Class	AADT (veh/day) in the Design Year	Function Class					Remarks
DC1	>8000	A	B	C	D	E	
DC2	4000-8000						
DC3	1000-4000						
DC4	400-1000	M					
DC5	200-400		M				Adopted
DC6	50-200						
DC7	20-50						
DC8	<20						

Source: Roads Geometric Design Manual (Ministry of Works, 2011)

2.5.2 Dimension of the Roads

Being in Design Class 5 (DC5), the DMDP 2 Subproject Roads in Ubungu Municipality are designed to have 6.5m wide carriage way, 1.0m pedestrian walk on each side (**Table 2-3**). Number of box culverts to be located at valleys and river crossings. Nonetheless, the road profile will be comprised of base course layer (150mm), sub-base layer (200mm), improved sub-grade layer (150 - 200mm) and asphalt concrete surface layer of 20-50mm. The existing road reserve is 30m wide, thus in area where the road corridor is narrow it would be necessary to adjust the cross-section so as to avoid adverse impacts on livelihood of people.

Table 2-3: Roads Design Class for DMDP 2 Subproject Roads in Ubungu Municipality

Design Class	Surface	Road reserve width [m]	Roadway width [m]	Carriageway			Shoulder width [m]	Median width [m]
DC5	Paved	30	8.5	Width (m)	Lane (m)	Number of Lanes	2x1.0	-
				6.5	3.25	2		

Source: After Roads Geometric Design Manual (Ministry of Works, 2011)

2.5.3 Typical Cross Sections

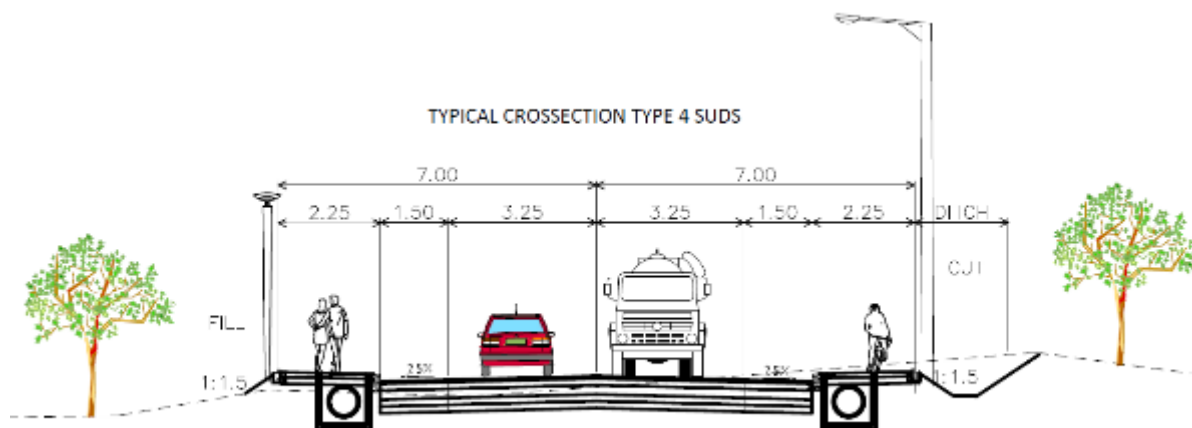
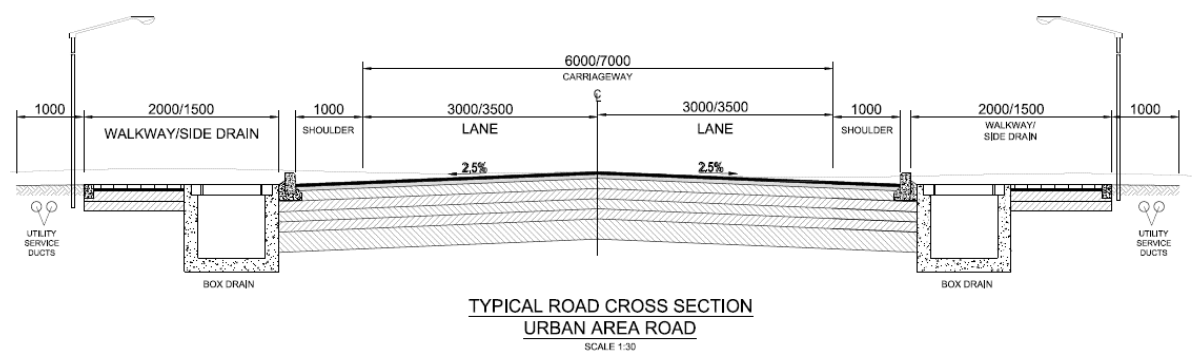
The purpose of the assignment is to upgrade the roads to bitumen standards and combined with the above road classification, the project roads are certainly classified as Design Class 5 as per obtained AADT value. Thus, in accordance with Roads Geometric Design Manual and site condition, the adopted minimum design criteria for the road are as follows: -

- Surface : Asphalt Concrete
- Normal camber : 2.5%
- Road width : 8.5m
- Carriageway width : 6.5m
- Lane width : 3.25m
- Shoulder width : 1.0m

- No of lanes : 2
- Side drain, each side : 1.0m, 0.5 deep with 1:1 slope

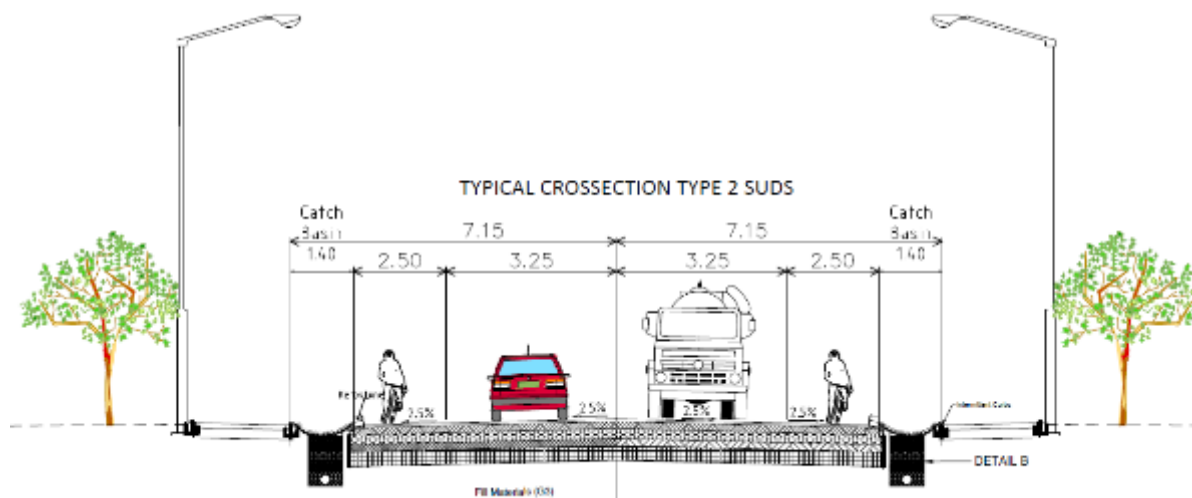
The following typical road cross sections are proposed for DMDP 2 Subproject Roads in Ubungu Municipality with consideration of RGDM, site physical conditions and need for promoting concepts for urban greening and sustainable drainage solutions (**Figure 2-160**).

Proposed road cross section which has wider corridor in urban area



Adopted to Msumi and Lion Roads

Proposed road cross section which has narrow corridor in urban area



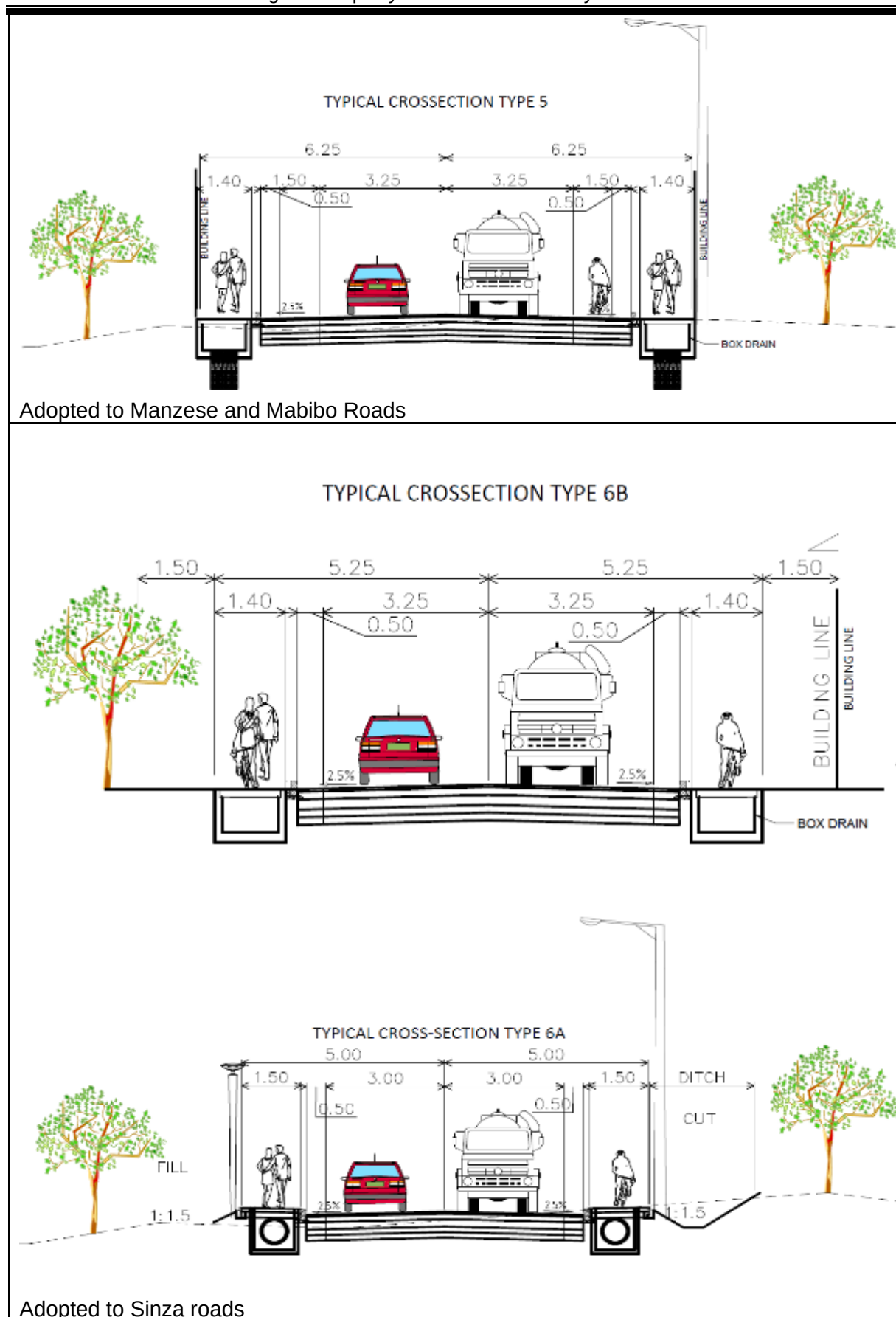


Figure 2-160: Typical Road Cross Sections for Ubungo DMDP 2 Subproject Roads

Source: Preliminary Design Report (September, 2023)

2.5.4 Design Speed

The road sections are classified as Design Class 5 roads, a typical desirable design speed for urban roads of this nature is 50 km/h in flat terrain. The desirable and minimum design speeds related to the design class versus type of terrain, are provide in **Table 2-4**.

Table 2-4: Design Speed for DMDP 2 Subproject Roads in Ubungo Municipality

Design Class	Carriageway Width	Recommended design speed (km/hr)			Minimum design speed (km/hr)		
		Flat to rolling	Rolling to hilly	Mountainous	Flat and rolling	Rolling to hilly	Mountainous
DC 5	2 x 3.25	50	30	30	30	30	30

Source: After Roads Geometric Design Manual (Ministry of Works, 2011)

2.5.5 Horizontal Alignment

The horizontal alignment of the project roads was designed to the standards adopted in the Road Geometric Design Manual with the following recommended design criteria for tangents and circular curves shown **Table 2-5**.

Table 2-5: Design Criteria Adopted for DMDP 2 Subproject Roads in Ubungo Municipality

Element	Criteria
Length of Straight Section	2km Maximum
Minimum Length of Circular curve where deflection angle is > 5	150m
Minimum Length of Circular curve where deflection Angle is < 5	200m
Desirable maximum length of circular curve	800m
Absolute maximum length of curve	1000m

Source: After Roads Geometric Design Manual (Ministry of Works, 2011)

Based on the recommended design speeds of 50km/hr and 30km/hr respectively the following minimum radii have been provided for DMDP 2 Subproject Roads.

Table 2-6: Calculated Curve Radii for DMDP 2 Subproject Roads in Ubungo Municipality

Design Speed km/hr	Minimum Radii of Curves (m)	
	Desirable	Absolute (Calculated), $e_{max}=0.06$
30	100	90
50	300	252

Source: After Roads Geometric Design Manual (Ministry of Works, 2011)

The horizontal alignment closely follows existing roads alignment. Some deviations have been made to comply with the minimum standard recommended for the selected design speeds. All the curves with radius less than 250m have been redesigned and larger radius curves fitted and some realigned completely except in some areas where the alignment changes were constrained by some physical features.

In order to reduce the frictional forces developed between the vehicles tyres and the road pavement along the curves of radii less than 200m, it was considered necessary to apply different levels of super-elevation rates to cater for the selected design speeds and this has been incorporated in the roads design drawings, in accordance with the provision of design Road Manual.

A maximum super-elevation of 4.0% has been adopted with super-elevations applied to horizontal radii in accordance section 6.3.5 of RGDM, where transition curves have been introduced, the super-elevation run-off has been applied in such a way that it takes place within the colthood to ensure that the values of the rate of change of super-elevation fall within the change recommended above. On the circular curves without clothoids, the super-elevation run-off has been applied in such a way that two thirds take place within the straight and the rest within the curve.

Hairpin curves have been highly avoided in the design of DMDP 2 subproject roads, however, in some sections the proposed road passes through highly congested properties, notably Manzese Roads. In this property congested roads, hairpin curves have been provided with very small radius curves, which will allow vehicles to be able to pass around the curve safely, a minimum radius of 28m have been adopted to ensure safe turning of a single unit truck with the reduced design speed of 30 km/hr in such case the design principle outlined in RGDM section 6.3.10 has been adopted.

2.5.6 Vertical Alignment

Vehicle operations on gradients are complex and depend on a number of factors: severity and length of gradient; level and composition of traffic; and the number of overtaking opportunities on the gradient and in its vicinity. Maximum vertical gradient is therefore an extremely important criterion that greatly affects both the serviceability performance and cost of the road. These performance considerations have formed the basic limiting criteria for gradients used in the design and are shown in **Table 2-7**.

Table 2-7: Maximum Gradients for the Paved Roads

Terrain	Design Speed (km/h)								
	30	50	60	70	80	90	100	110	120
Flat			5	5	4	3.5	3	3	3
Rolling	8	7	6	6	5	4.5			
Hilly/ Mountainous	10	9	8	7	7				

Source: After Roads Geometric Design Manual (Ministry of Works, 2011)

From the above guidelines a maximum grade of 7% to 9% has to be adhering to for flat to hilly areas for a design speed of 50 km/h while for mountainous sections a maximum grade of 10% for a design speed of 30km/h.

The recommended minimum lengths of vertical curves are given in **Table 2-8**. RGDM 2011 recommends that where the length of the curve is longer than 43.5A, special attention should be given to drainage.

Table 2-8: Recommended Length of Vertical Curves for the Paved Roads

Design Speed km/h	K-Values to Satisfy stopping sight distances (m / % of g)		K-Values to satisfy passing sight distances (m / % of g)
	Crest	Sag	
30	3	4	50
40	5	8	86
50	10	12	126
60	18	18	176
70	22	25	246

Source: After Roads Geometric Design Manual (Ministry of Works, 2011)

****Note:** A = Algebraic difference in grade in per cent.

2.5.7 Drainage

The design of drainage structures followed standard road cross sections provided in section 2.5.3 above. Ditches or side drains have been designed for all DMDP 2 Subproject Roads in Ubungu Municipality. Based on the hydraulic calculations, mainly trapezoidal concrete type lined ditches were considered for the design due to the assessed soil stability of an area, discharge capacity calculated by Manning's equation and design to gradient.

Generally, four (4) standard types of side drains have been proposed for DMDP 2 Subproject Roads in Ubungu Municipality (**Figure 2-161**).

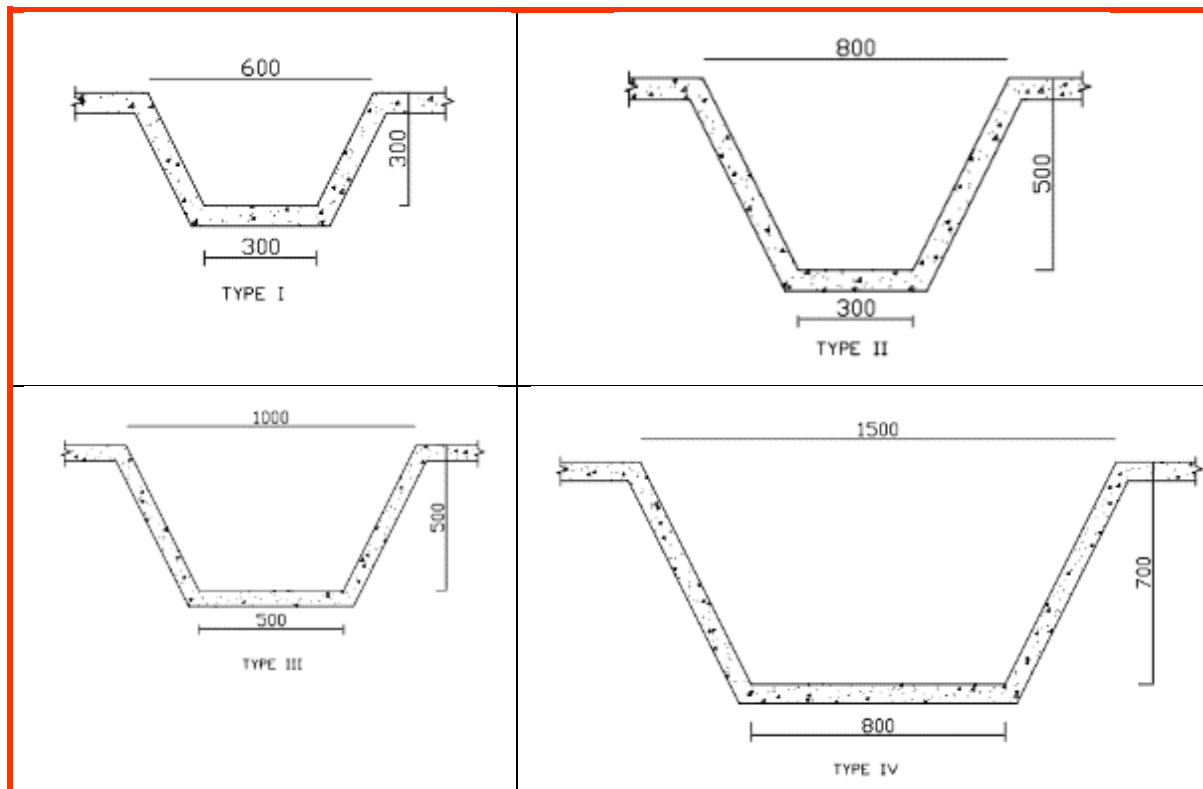


Figure 2-161: Types of Side Drains Provided to Ubungu DMDP 2 Subproject Roads

Source: Preliminary Design Report (September, 2023)

2.5.8 Pedestrian Crossings

The concept designs consider that the traffic speed will be reduced to 30km/h. Based on this assumption; it is proposed using elevated pedestrian crossings instead of having traffic signals on every crossing.

Other reasons for adopting this solution at the pedestrian crossings are:

- Risk of vehicles not respecting traffic light control.
- Risk of pedestrian not respecting traffic light control, and being exposed to conflicts with car in a higher speed than they would be with the elevated crossings.
- Risk of traffic lights being out of operation by lack of electricity or maintenance.
- This pedestrian crossing solution was implemented successfully in DMDP 1 roads. However, it was to be carefully implemented and effective enforcement needs to be provided in order to avoid accidents.

2.5.9 Design of Bus Bays

Bus bays have been provided in all roads with Daladala routes and between the long-distance sections as considered appropriate to provide better access to businesses, social services,

improve drainage, and to minimize encroachment to the through road. The need to minimize conflict between vehicles and non-motorized traffic, and to improve safety, has been carefully considered. Details of designed typical bus bay are provided in **Figure 2-162**.

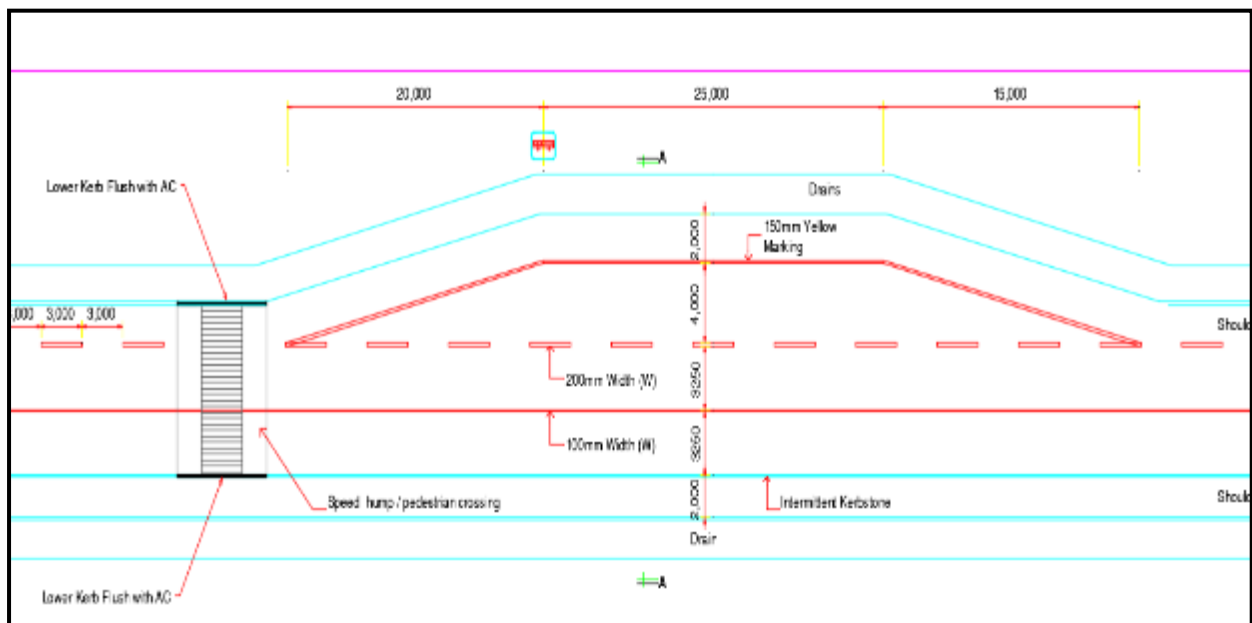


Figure 2-162: Typical Layout Design for the Bus Bay

Source: Preliminary Design Report (July, 2023)

2.5.10 Erosion Control Measures

Erosion and siltation are the major problems in urban roads. The combined effect usually creates a major demand on maintenance, and in some severe instances, the carriageway can become undercut.

Various road construction activities disturb the natural surroundings and modify the drainage and runoff characteristics. For instance, the ground is excavated, surplus material is piled up and left bare, and the slopes as well as the physical properties of the soil are modified. No longer protected by vegetation, the soil is then fully subjected to the two principal agents of erosion: wind and water. Soil that is exposed directly to the elements generally loses the properties necessary for plants to propagate roots, including loss of its organic matter. Water infiltrates less, runoff increases, and the volume, path, and velocity of surface water are modified.

The muddy runoff that enters the water bodies has several harmful effects on the aquatic environment. The increased turbidity allows less light to pass through, which reduces the water body's capacity for primary production. Significant sediment deposits can destroy the benthic organisms and harm aquatic fauna, as well as the habitat (e.g., loss of habitat and food source or reduction in the reproductive success rate due to a silt deposit on the eggs). The suspended sediments can also block the respiratory system of adult fish. A high content of suspended solids can degrade the quality of the water used by the local population and make its use as a recreational object less attractive. Stripped soils are also more vulnerable to wind erosion. Clearing, stump removal, trench digging, and excavating are examples of road construction activities that can increase soil erosion and the silting of water bodies.

Soil erosion and siltation preventive measures are necessary for road construction works, especially at the disturbed areas approaching catchments of rivers, streams and places with sandy non-plastic materials. The following are measures adopted by designers to prevent erosion and siltation progression along the proposed road project.

2.5.10.1 Vegetation Plantation

The project designers suggest stabilization of slopes on the edge of watercourses and construction areas where the layer of arable soil will be removed are most vulnerable to erosion. These surfaces must be protected by applying natural or planted vegetation to increase the soil's resistance to wind and water, as part of a complete erosion-and-sedimentation-protection.

The technique involves landscaping of disturbed sites so that established vegetation creates an effective anti-erosion protection (i.e., it helps ensure that the ground is covered and that the solution is as long-lasting as possible). This also includes techniques to maintain and improve the soil's organic content, structure, and stability (e.g., role of humus) and the soil's resistance to erosion so that ground protection is effective and durable.

2.5.10.2 Construction of Sediment Traps and Filter Berms

Sediment traps and filter berms are two devices generally combined and installed in road ditches and diversion canals. The trap is a cavity dug within the ditch or channel to slow the water run-off and to allow sedimentation. A berm is a temporary gravel ridge or an area of crushed stones, which filters surface water. These devices have been designed to be located near the entrance to culverts to reduce the amount of construction related sediments from entering the water bodies. These devices are especially effective at collecting coarse material (i.e., gravel, sand, and some silt).

Filter berms will be installed across the ditch with sufficient height to allow the water to flow through. The material will have a gauge of 70–20 and not more than 5 % fine matters should pass through an 80- μ g sieve. Sediment traps and filter berms require frequent maintenance to ensure maximum effectiveness. When the sediment trap is 50% filled, the trapped sediments must be removed and, as necessary, the filtering material must be cleaned or replaced. To limit the movement of sediments, a filter berm and a sediment trap shall be built in the ditches draining the operating area at the very start of the construction work.

2.5.10.3 Lowering of Embankment Slopes

It has been ruled out that the steeper the embankment slope, the faster the speed of rainwater runoff down the slope and the more severe its eroding effect. Furthermore, the natural angle of repose of sand is around 30° (1 in 1.7) so it is considered that 1 in 1.5 slopes as recommended in the Road Geometric Design Manual (2011) for embankments higher than 3m to be about adequate for erosion control.

2.5.10.4 Construction of Drainage Control Kerbs

The design has specified the use of drainage control kerbs on the low side of super elevated sections of road where the embankment height is greater than 3m. Water is channelled along the face of the kerb into concrete/masonry chutes taking the water away down the embankment slope. A small energy dissipater is to be constructed at the bottom of each chute to prevent scour.

2.5.10.5 Embankment Pitching

Pitching of embankment slopes greater than 1m at bus bays has been recommended where there will be a large amount of pedestrian traffic. Gabions benches have been proposed in this project where the embankment height exceeds 4 meters.

2.5.10.6 Grassing

It is considered most important that grass will be regenerated on embankment slopes. Vetiver grass species have been specified to be planted on embankment slopes to add slope stability.

2.5.10.7 Construction of Lined Drains

All sections along the proposed project roads with steep grades will be provided with lined ditches. Lining will consist of grouted stone pitched sides on a concrete invert.

2.6 Project activities

2.6.1 Mobilization Phase

The mobilization phase is the initial stage of the project cycle, during which the Contractor will start to mobilize equipment and workforce for the project. For this project the following are some of the major activities to be carried out by the Contractor during mobilization period:

- Topographical survey and geotechnical investigations.
- Establishment of Contractor's Site Office / Camp Site and Materials Storage Yard.
- Recruitment of construction workers and administrative staff.
- Mobilization and transportation of construction equipment / machinery to the site.
- Transportation of construction materials (e.g., stone aggregates, sand, cement, gravel, etc) to the site.
- Identification and relocation of public services infrastructure and utilities such as, water supply pipelines, sewer pipelines, electrical powerlines and telephone cables.
- Installation of temporary road traffic signs and road diversions signs.
- Raising of awareness to the public on commencement of construction works.

2.6.2 Construction Phase

The second stage is construction phase, overlaps with mobilization phase, whereby some of the activities from mobilization phase will continue during the construction phase. During construction stage the following activities will be performed:

- Earth works including vegetation clearance, removal of spoil soils, excavation of road bed and storm water drainages ditches.
- Filling of road bed with gravel / base course materials, compaction and laying of concrete materials.
- Transportation of construction materials, machinery, and equipment to new construction sites
- Collection and transportation of soil/spoilt materials and demolition wastes to the dumping site.
- Transportation of construction materials such as gravel, sand, aggregates, cement bags, reinforcement bars to the materials storage yards.
- Fabrication of concrete slabs, curb stones, and concrete lining of storm water drainages,
- Installation of permanent road signs, traffic lights and street lights.

2.6.3 Demobilization Phase

This is the third stage of the project cycle, which involves restoration of the project site at least to its original conditions. The following are some of the major activities to be carried out by the Contractor during demobilisation phase:

- Removal of temporary facilities, installations and equipment from the workshop and campsite;
- Disposal of contaminated and hazardous materials including used oil, sewage, solid wastes (plastics, wood, metal, papers etc.) to the authorized recycling plants, treatment facilities and dumping site;
- Closure of temporary diversion roads, pedestrian crossings, and culverts.
- Disassembling and transportation of construction equipment/machinery from the construction sites.
- Levelling, compaction, and landscaping of the open areas.

2.6.4 Operation Phase

The operation phase is the fourth stage in the project cycle, which involves use of the constructed infrastructure. The following are some of the major activities to be carried out during the operation phase of DMDP 2 investments:

- Use of constructed roads by the public;
- Periodic maintenance of the road sections and associated infrastructures including side drains, drainage structures, greening establishment and street lights,
- Awareness creation and education to the public on proper use and protection of DMDP 2 infrastructure, including proper disposal of waste.

2.7 Project Requirements

2.7.1 Gravel/Fill Materials

Fill materials will be obtained from identified six (6) commercial borrow pits as shown in **Table 2-9**. The estimated quality and quantity of available materials is also provided. Borrow materials will therefore be required to meet the contract requirement for:

- G3 material for normal fill
- G7 material for the lower improved subgrade layer
- G15 material for the upper improved subgrade layer
- G25 or superior for stabilised pavement layers as appropriate

In order to estimate requirements for natural gravel material, the following has been preliminarily assumed:

- Carriageway width 7.0m (3.5m each side)
- Shoulder width 2.0 m (1.0m each side)
- Base course thickness 150 mm
- Sub-base thickness 200 mm
- Upper Improved subgrade 150 mm (G15)
- Lower improved subgrade 150 mm (G7)
- Fill, average 1000.0 mm (G3)

For this project (the total roads length of 32.07 Km, thus, a total of $9\text{m} \times 1.65\text{m} \times 50500\text{m} = 749,925 \text{ m}^3$ (approx. $750,000\text{m}^3$) of gravel material is required, considering that the existing base and sub-base material will be reprocessed for reuse in the walkways or as may be found otherwise during construction.

Table 2-9: Source and Quantities of Grave Materials

S/n	Location/ID	Estimated Quantity (m ³)	Material Class
1.	Boko Borrow Pit	425,000	G15
2.	Mbutu Borrow Pit	500,000	G15
3.	Kambodia Borrow Pit	550,000	G25
4.	Vigungu Kwa Pazi Borrow Pit	359,400	G7, G25
5.	Mabwe Vidunda Borrow Pit	870,060	G7, G15
6.	Ngugu Dalu Borrow Pit	132,590	G20

2.7.2 Crushed Stone Aggregates

The requirements for crushed stone aggregates will be highly significant because the road pavement will be of bitumen and rigid concrete standards. The crushed stone aggregates will also be required for concrete works during construction of bus stops, side drains, cross drainage structure, pedestrian walkways and cab stones. However, crushed stone aggregates will be required for production of base course pavement layer and bituminous pavement layer.

The potential source of crushed stones aggregates is located at Lugoba Village in the Coast Region about 140 km from Dar es Salaam, along Chalinze –Segera Trunk Road on Left Hand Side (LHS). The source is commercially operated and has fine grained weathered granite rock. This source has been used to supply crushed aggregates and base course materials for a number of road projects in Dar es Salaam, Coast, Tanga and Morogoro Regions. There are three licensed crusher sites in the area, owned by ESTIM CONTRACTORS LTD, NOREMCO A/S, and NCC. The source is estimated to yield more than 200,000 m³ of crushed aggregates.

The aggregates from the source meet the required properties for crushed rock base course and concrete works in accordance with Tanzania Pavement and Materials Design Manual of 1999 (PMDM, 1999). In addition, the source meets requirements for rigid pavement structure and asphalt concrete surface. The rock type is granite with the following properties:

- TFVdry (kN) = 200
- TFVwet (kN) = 170
- Ratio TFV wet/dry (%) = 85

2.7.3 Sand Materials

Two potential sources of sand were preliminarily identified, these are Kondo Sand Pit, about 20 km from nearest project road (Msumi Road), with an offset of about 2.5 km on the RHS along Tegeta -Bagamoyo Road and Buma Sand Pit, about 30 km from the site, at an offset of about km 10+200 LHS along Bagamoyo Road. The sources contain adequate quantity of material with respect to the project requirements. All of the two sources are operated in commercial mode.

2.7.4 Construction Water

There is limited availability of construction water in the project roads, all of the rivers found are seasonal and do not have sufficient quantity. Therefore, the existing portable water from Dar es Salaam Water and Sewerage Authority (DAWASA) has been recommended for construction of DMDP 2 Subproject Roads in Ubungo Municipality.

2.7.5 Manufactured Materials

The manufactured materials like cement, lime, bitumen, and steel bars will be required in the construction works. All these materials are available in bulk quantities from various dealers in the country.

2.7.6 Equipment

The type of equipment to be required will depend on the prevailing conditions on the site. However, the most common equipment for road works includes lorry tippers, bulldozers, asphalt plant, rollers and plate compactors, wheeled loaders, hydraulic excavators, vibrators, concrete mixers, fuel, and water tankers (bowzers), motor graders, pokers, vehicles, trucks, dewatering pumps, site dumper, hydraulic cranes, etc.

2.7.8 Construction Workforce

Based on the phased out DMDP 1 experience, the DMDP 2 investments in Ubungo Municipality is expected to create an employment of more than 600 people, of which 70% will be directly employed and 30% will be indirectly employed. In addition, it is estimated that up to 20% of the job positions may be filled by expatriate workers, coming from the country of origin of the construction company that wins the bid for the works.

However, the number of labourers to be employed will depend on the actual site work requirements, but employment priority for casual labour will be given to the local people. This will help to minimize the number of new comers into the project area, and therefore reduce incidence of HIV/AIDS transmission due to interaction between workers and local people.

2.8 Waste Management

2.8.1 Mobilization Phase

The most common types of solid wastes to be generated during mobilization phase will be mainly soil materials from site excavations. The amount and type of solid wastes will depend on the depth of the area to be excavated.

The Contractor's office is expected to generate sanitary wastes, mainly wastewater from kitchen, bath rooms, and toilets. Types of solid wastes to be generated include food residues, waste papers, plastic bottles, food cans, etc. The amount of waste water and solid wastes will depend on the number of people occupying the Contractor's Office. Other type of wastes will be generated from construction activities and operation of construction machinery/equipment. These include cement bags, pieces of bricks, wood, and metals, oils, grease, and paint containers.

Some of the solid wastes like cement bags, pieces of bricks and wood can be re-used during construction or handed over to local people. Non-re-usable wastes will be disposed into approved site by the Resident Engineer.

2.8.2 Construction Phase

During construction phase the operation of Contractor's Office is expected to generate wastewater from kitchen, bathrooms, and toilets. The type of solid wastes to be generated from camp site will be comprised of food residues, plastic bottles, plastic papers, food cans, broken glass, and waste papers, etc. The construction activities will result into generation of soil materials from excavations, cement bags, metals, waste oils, paint containers, pieces of bricks and wood. However, the quantity of solid wastes and wastewater to be generated during construction phase is not expected to be significant compared to similar types of wastes being generated in the city.

Hazardous waste like waste oils, used batteries, scrap metals, used tyres, etc, will be collected and temporarily stored on-site on well covered (roofed with iron sheets or impermeable materials) concrete paved surface with bund walls to prevent spilled materials from escaping into the surrounding environment or get and later on handed over to the authorized hazardous waste dealers. Non-reusable solid wastes will be disposed of as prescribed by the Resident Engineer.

2.8.3 Demobilization Phase

The most important waste to be generated includes pieces of bricks, concrete rubbles, pieces of wood, scrap metals. All these wastes will be disposed into the approved dump site. However, the re-usable materials can be handed over to the local people.

CHAPTER THREE

3.0 POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

Preamble

This Chapter provides the description of relevant National and the World Bank Environmental and Social Framework (ESF) for environmental and social management in the country as well as relevant regulations, strategies, standards, international conventions and/or treaties/agreements. It also considers compliance with relevant National Policies and World Bank ESF, legal requirements, and international conventions/agreements/treaties to which the country is a signatory.

3.1 World Bank EHS Guidelines and E&S Frameworks

3.1.1 World Bank Group Environmental, Health, and Safety Guidelines (EHSGs)

General EHS Guidelines are applicable to the DMDP II, as they include workplace safety, noise, air quality, and wastewater quality guidelines. They also include recommendations that shall be considered during construction activities and subproject operations in vary fields such as wastewater management, hazardous material and waste management, waste management, occupational health and safety, measures to safeguard community health and safety, traffic safety, disease prevention, and specific measures for construction activities. These guidelines shall guide development of Site-specific ESMPs.

The following Industry Specific EHSGs will apply to the proposed subprojects: (i) WB EHSG for Toll roads (given the various road works and even though not toll roads), and (ii) WB EHSG for Construction Materials Extraction (as road and possible other subprojects will need such materials).

Relevance/Compliance

The EHS Guidelines are relevant to this project because the project is likely to trigger Environmental, Health and Safety Issues during construction. These include emission of air pollutants; emission of noise nuisance; handling of hazardous wastes; accumulation of construction and domestic solid wastes.

3.1.2 World Bank Environmental and Social Framework

There are ten (10) World Bank Environmental and Social Standards (ESSs). The ESSs set out the requirements for Borrowers relating to E&S risks and impacts associated with projects. The standards are intended to support Borrowers to reduce poverty and increase prosperity in a sustainable manner for the benefit of the environment and their citizens.

The review and screening of WB ESS has been carried out to find out which of those ten standards are relevant/applicable as summarized in **Table 3-1**. The results indicate the DMDP 2 subproject roads are expected to trigger eight (8) ESSs, namely: ESS1 (the Assessment and Management of Environmental and Social Risks and Impacts Standard); ESS2 (Labour and Working Conditions Standard); ESS3 (Resource Efficiency and Pollution Prevention and Management Standard); ESS4 (Community Health and Safety); ESS5 (Land Acquisition, Restrictions on Land Use and Involuntary Resettlement); ESS6 (Biodiversity Conservation and Sustainable Management of Living Natural Resources); ESS8 (Cultural Heritage) and ESS10 (Stakeholder Engagement and Information Disclosure).

Table 3-1: Triggered WB Environmental and Social Standards

Environmental and Social Standard	Applicability
ESS 1: Assessment and Management of Environmental and Social Risks and Impacts	Yes
ESS 2: Labor and Working Conditions	Yes

Environmental and Social Standard	Applicability
ESS 3: Resource Efficiency and Pollution Prevention and Management	Yes
ESS 4: Community Health and Safety	Yes
ESS 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	Yes
ESS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	Yes
ESS 7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	No
ESS 8: Cultural Heritage	Yes
ESS 9: Financial Intermediaries	No
ESS 10: Stakeholder Engagement and Information Disclosure	Yes

3.1.2.1 ESS1: Assessment and Management of Environmental and Social Risks and Impacts

The ESS1 sets out the Borrower's responsibilities for assessing, managing and monitoring E&S risks and impacts associated with each stage of a project supported by the Bank through Investment Project Financing, in order to achieve E&S outcomes consistent with the ESSs.

Objectives of ESS1 are: -

- To identify, evaluate and manage the E&S risks and impacts consistent with the ESSs.
- To adopt the mitigation hierarchy approach (avoid, minimize, rehabilitate/restore, compensate/offset);
- Ensure disadvantaged or vulnerable people are not disadvantaged in sharing benefits and opportunities from the project.
- To utilize national legislative frameworks in the assessment, development and implementation of projects, whenever appropriate.
- To promote improved environmental and social performance.

ESS1 is applicable because the project is likely to create some environmental and social risk/impacts and therefore ESIA has to be conducted in accordance with the requirements of ESS1.

3.1.2.2 ESS 2: Labour and Working Conditions

The ESS2 recognizes the importance of employment creation and income generation in the pursuit of poverty reduction and inclusive economic growth. Borrowers 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.

Objectives of ESS2 are: -

- To promote safety and health at work.
- To promote the fair treatment, non-discrimination 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 labour and child labour.
- To support the principles of freedom of association and collective bargaining of project workers in a manner consistent with national law.
- To provide project workers with accessible means to raise workplace concerns.

ESS2 is applicable because the project will involve recruitment of construction workers, hence creation of temporary employment opportunities for local people. The presence of

construction workers will result into increased demand for food, hence creation of income generation opportunity for local people.

3.1.2.3 ESS 3: Resource Efficiency and Pollution Prevention and Management

The ESS3 recognizes that economic activity and urbanization often generate pollution to air, water, and land, and consume finite resources that may threaten people, ecosystem 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.

Objectives of ESS3 are: -

- To promote the sustainable use of resources, i.e. 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.

This ESS is applicable because the project is likely to create air pollution due to dust emission from construction activities. The project will also result into consumption of finite land-based resources like sand, gravel, and crushed stone aggregates.

3.1.2.4 ESS 4: Community Health and Safety

The 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.

Objectives of ESS4 are: -

- 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 considerations 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 have in place effective measures to address emergency events.
- 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.

This ESS is applicable because the project is likely to create health and safety risk to the local community members. For example, the project is likely to create construction related risk of accidents due to trespassing of unauthorized people into the construction site.

3.1.2.5 ESS 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 are: -

- To avoid involuntary resettlement or, when unavoidable, minimize involuntary resettlement by exploring project design alternatives.
- To avoid forced resettlement/ displacement.
- 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.

ESS5 is applicable because the project will involve land acquisition related to expansion of road construction corridors in some places with difficult accessibility and existing narrow road right of way. The roads that will trigger ESS5 include Msumi, Goba – Wakorea, Msumi, Hondogo – Shija, Posta – Matembe, Sheikh Bofu, Msikitini, Sinza KKKT, Segesera, Juma Ikangaa, Namnani, Mbegani, Mikindani, Chimwaga, Binti Kayenga and Ubungo NHC.

3.1.2.6 ESS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources

ESS6 recognizes that protecting and conserving biodiversity and sustainably managing living natural resources are fundamental to sustainable development. Biodiversity is defined as the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species, and of ecosystems. Biodiversity often underpins ecosystem services valued by humans. Impacts on biodiversity can therefore often adversely affect the delivery of ecosystem services.

ESS6 recognizes the importance of maintaining core ecological functions of habitats, including forests, and the biodiversity they support. Habitat is defined as a terrestrial, freshwater, or marine geographical unit or airway that supports assemblages of living organisms and their interactions with the non-living environment. All habitats support complexities of living organisms and vary in terms of species diversity, abundance and importance.

Objectives of ESS6 are: -

- 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.

With regard to biophysical survey conducted by the Consultant along DMDP 2 Subproject Roads, the ESS6 is applicable due to that about 33 ornament trees are needed to be cut down to pave the way for construction corridor. To address the impact, urban greening and sustainable drainage solution will be implemented concurrently with physical works.

3.1.2.7 ESS 8: Cultural Heritage

The ESS8 recognizes that cultural heritage provides continuity in tangible and intangible forms between the past, present and future. People identify with cultural heritage as a reflection and expression of their constantly evolving values, beliefs, knowledge and traditions. Cultural heritage, in its many manifestations, is important as a source of valuable scientific and historical information, as an economic and social asset for development, and as an integral part of people's cultural identity and practice. ESS8 sets out measures designed to protect cultural heritage throughout the project life cycle.

Objectives of ESS8 are:

- 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.

This ESS8 is applicable because the project involves land excavation and earth movement works at the roads and materials extraction sites, hence likely to encounter some archaeological artefacts. Presence of grave yards at Msumi (Km 9+600 LHS) and Tiptop (Km 0+280 RHS) roads, but few meters beyond construction corridor may trigger ESS8. The Contactor shall adopt Chance Finding procedure involving protection and salvaging of any encountered archaeological material during implementation of construction works.

3.1.2.9 ESS 10: Stakeholder Engagement and Information Disclosure

The ESS10 recognizes the importance of open and transparent engagement between the Borrower and project stakeholders as an essential element of good international practice. Effective stakeholder engagement can improve the E&S 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 engagements that will help Borrowers 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.

ESS10 is applicable because the project is likely to affect various stakeholders directly or indirectly and positively or negatively. Therefore, stakeholder engagement and consultation will be necessary at all stages of the project implementation.

3.2 National Policies

3.2.1 National Development Vision 2025

The vision of the National Development Vision 2025 is focused on Tanzania having graduated from a least developed country to a middle-income country by the year 2025 with a high level of human development.

The Tanzania Vision 2025 aims at achieving a high-quality livelihood for its people, attain good governance through the rule of law and develop a strong and competitive economy. It is envisioned that the following specific achievements would be attainable by the year 2025:

- High quality livelihood.
- Peace, stability, and unity.
- Good governance,
- A well-educated and learning society; and
- A competitive economy capable of producing sustainable growth and shared benefits.

Infrastructural development is one of the relevant strategies to achieve competitive economy. The strategy is focused on the development of road network for promotion of rural and urban development; investment in energy, water, and telecommunication as being central to the stimulation of local and foreign investment and for creating wealth and employment generating activities.

Relevance / Compliance

The project involves upgrading of the roads, which passes through the urban areas, hence in line with Vision 2025, which seeks to promote country socio-economic development through development of road network in the country.

3.2.2 National Five-Year Development Plan (2021/22-2025/26)

The main objective of the Third National Five-Year Development Plan (2021/22-2025/26)⁷ is to contribute to realisation of the National Development Vision 2025 goals. Therefore, one of the specific objectives of the Five-Year Plan is to build on achievements realised towards attainment of TDV 2025 to make Tanzania a semi-industrialised, middle-income country by 2025.

Another relevant objective to this project is enhance the scope of Tanzania's benefits from strategic geographical opportunities through enabling improved business environments and strengthening the country's regional position as a hub for production, trade, supply, and transportation.

Relevance / Compliance

The project is focused on construction of urban roads into bitumen standard. The project is in line with Fiver Year Development Plan which focuses in improvement of transportation in the country.

3.2.3 Cross-cutting Policies

3.2.3.1 National Environmental Policy (2021)

The National Environmental Policy (NEP) of 2021⁸ is the result of the review of NEP of 1997. As it was with NEP (1997) the NEP (2021) is the main policy document governing environmental management in the country. The overall objective of NEP (2021) is to provide a national framework for guiding harmonized and coordinated environmental management for the improvement of the welfare of present and future generations.

⁷ THE UNITED REPUBLIC OF TANZANIA. National Five-Year Development Plan. 2021/22 - 2025/26

"Realising Competitiveness and Industrialisation for Human Development" Ministry of Finance and Planning June 2021.

⁸ The United Republic of Tanzania. Vice President's Office. National Environmental Policy, 2021. October 2021.

The policy provides a broad range of measures and actions responding to key environmental issues and challenges. It provides the framework for an integrated approach to planning and sustainable management of environment in the country. It also recommends strong institutional and governance measures to support the achievement of the desired objectives and goals.

Therefore, the policy addresses the following key environmental issues and challenges:

- land degradation;
- lack of accessible good quality water for urban and rural inhabitants;
- environmental pollution;
- loss of wildlife habitats and biodiversity;
- deterioration of aquatic ecosystems;
- deforestation;
- environmental pollution;
- climate change; and
- safe use of modern biotechnology.

The policy also identifies the following crosscutting issues as challenges facing environmental management in the country:

- Inadequate environmental Good Governance at all levels;
- Inadequate financial resources for Environmental Management; and
- Inadequate Gender consideration in environmental management.

The policy recognises the role and responsibilities of key players for successful achievement and implementation of policy objectives: These include the Ministry Responsible for Environment, Ministry of Finance, Sector Ministries, Government Departments and Agencies, Regional Secretariats, Local Government Authorities (LGAs), National Environment Management Council (NEMC), National Environmental Advisory Committee (NEAC), Environmental Appeals Tribunal, Civil Society Organizations, Academic and Research Institutions, Local Communities, Media, Development Partners, Regional and International Bodies.

Relevance / Compliance

The project is being implemented by PO-RALG, Ubungo Municipal Council and TARURA, which are recognized by the policy as one of the key players in the implementation of NEP (2021). The project proponent will ensure mainstreaming of the NEP objectives and strategies into the project and will ensure there is collaboration with other stakeholders as required by the policy.

3.2.3.2 National Human Settlements Development Policy (2000)

The overall goal of the National Human Settlement Development Policy (2000)⁹ is to promote development of sustainable human settlement and to facilitate provision of adequate and affordable shelter to all people, including the poor. The policy outlines a number of objectives; however, the relevant objective is to protect the environment within human settlement and natural ecosystem against pollution, degradation, and destruction with the aim of attaining sustainable development.

Relevance / Compliance:

The project is likely to lead into environmental pollution due to dust emission and generation liquid and solid wastes. The project proponent will ensure dust emission is minimized within

⁹ National Human Settlements Development Policy (2000). United Republic of Tanzania. Ministry of Lands and Human Settlement Development. Dar Es Salaam, January, 2000.

densely populated and residential areas. The project proponent will also ensure proper disposal of solid wastes and liquid wastes to avoid pollution of surrounding environment with residential areas.

3.2.3.3 Women and Gender Development Policy (2000)

The objective of Women and Gender Development Policy (2000)¹⁰ is to provide a directive to ensure the planning, strategies, and various activities in each sector and institution take into consideration gender equality.

The policy outlines eleven specific objectives, but the most relevant ones for this project include:

- To ensure development plans take into consideration gender equality
- To identify the role of women and men to ensure their participation in development activities for the benefit of society.

In general, the policy aims at establishing strategies on poverty eradication through ensuring that both women and men get access to existing resources for their development. It values the role played by women in bringing about development in the society.

Relevance / Compliance

The project has the potential to create employment of people during construction. The project proponent will ensure the Contractor provides equal employment opportunity between women and men; and will avoid any kind of discrimination at the workplace.

3.2.3.4 National Employment Policy (2008)

The overall objective of the National Employment Policy (2008)¹¹ is to stimulate national productivity, to attain full, gainful, and freely chosen productive employment, to reduce unemployment, underemployment rates, and enhance labour productivity. The policy outlines several specific objectives but the most relevant ones are:

- To promote equal access to employment opportunities and resources endowments for vulnerable groups of women, youth, and People with Disabilities (PWDs).
- To address cross-cutting issues related to the environment, gender, and HIV/AIDS in employment

Relevance / Compliance

The project has the potential to create employment for youth and women and to create adverse environmental impacts as well as the prevalence of HIV/AIDS. The project proponent will ensure the Contractor provides equal employment opportunities to people with a focus on vulnerable groups. The project proponent will also ensure the Contractor minimize HIV/AIDS prevalence through formulation and implementation of HIV/AIDS preventive and control programme.

3.2.3.5 Occupational Health and Safety Policy (2009)

The main objective of the Occupational Health and Safety Policy (2008)¹² is to reduce the number of work-related accidents and diseases in Tanzania. The policy outlines eight specific objectives, but the most relevant ones are:

- To improve the occupational health and safety skills and resources in the public and private sectors.

¹⁰ Jamhuri ya Muungano wa Tanzania. Sera ya Maendeleo ya Wanawake na Jinsia. Wizara ya Menedeleo ya Jamii, Wanawake and Watoto. S. L.P. 3448, Dar Es Salaam, TANZANIA. Mwaka 2000.

¹¹ The United Republic of Tanzania. Ministry of Labour, Employment and Youth Development. National Employment Policy 2008. Dar Es Salaam, Tanzania 2008.

¹² The United Republic of Tanzania. Ministry of Labour, Employment and Youth Development. National Occupational Health and Safety Policy. 2009.

- To enhance education and training on occupational health and safety at all levels.
- To mainstream cross-cutting and cross-sectoral issues at workplaces.

Relevance / Compliance

The project has the potential to create occupational health and safety risks during implementation. The project proponent will ensure the provision of Personal Protection Equipment (PPE) to the construction workers and regular training on OHS issues to the construction workers.

3.2.3.6 National Health Policy (2009)

The National Health Policy (2009)¹³ outlines several objectives but the most relevant one is to reduce the burden of disease, maternal and infant mortality and increase life expectancy through the provision of adequate and equitable maternal and child health services, facilitate the promotion of environmental health and sanitation, promotion of adequate nutrition, control of communicable diseases and treatment of common conditions.

Relevance/Compliance

The project has the potential to create a spread of communicable diseases due to interaction between the construction workers and local community members. The project proponent will ensure provision of sanitary facilities for construction workers.

3.2.3.7 National Policy on HIV / AIDS Policy (2001)

The overall goal of the National Policy on HIV/AIDS (2001)¹⁴ is to provide for a framework for leadership and coordination of the National multispectral response to the HIV/AIDS epidemic. The policy outlines several specific objectives but the most relevant are:

- To create and sustain an increased awareness of HIV/AIDS through targeted advocacy, information, education, and communication for behaviour change at all levels by all sectors.
- To prevent further transmission of HIV/AIDS through: (a) making blood and blood products safe, and (b) promoting safer sex practices through faithfulness to partners, abstinence, non-penetrative sex, and condom use according to the well-informed individual decision (c) early and effective treatment of STIs in health facilities, with special emphasis on high-risk behaviour groups, and early diagnosis of HIV infection through voluntary counselling and testing.

Relevance / Compliance

The project is likely to lead into HIV/AIDS transmission due to interaction between construction of workers and local community members. The project proponent will ensure the Contractor develops and implements HIV/AIDS prevention and control programme. This will include giving employment priority to local people to minimize the number of new comers, hence reducing the possibility of new transmission of HIV among the local people.

3.2.3.8 National Plan of Action to End Violence against Women and Children

The National Plan of Action to End Violence Against Women and Children (NPA-VAWC, 2017/18-2021/22)¹⁵ emphasizes the actions needed for both preventing and responding to violence and recognizes that investing in violence prevention initiatives has a positive impact on inclusive growth.

¹³ The United Republic of Tanzania. Ministry of Health, National Health Policy, Ministry of Health, October 2003.

¹⁴ The United Republic of Tanzania. Prime Minister's Office. National Policy on HIV/AIDS. Dar Es Salaam. September 2001.

¹⁵ NATIONAL PLAN OF ACTION TO END VIOLENCE AGAINST WOMEN AND CHILDREN IN TANZANIA. December, 2016. <file:///E:/DOCS/BRT%20PHASE%204%20PROJECT/LITERATURE/NATIONAL%20PLAN%20OF%20ACTION%20TO%20END%20VIOLENCE.pdf>

Thus, strengthening the impact of the diverse investments being made by government, development partners and stakeholders on the lives of women, children, and families and subsequently on communities and Tanzania as a whole is of paramount importance. The NPA-VAWC is grounded in the Tanzanian context and envisages improved coordination, delivery of quality services, implementation of viable prevention and response measures and application of innovative solutions to end all forms of violence against women and children.

Relevance / Compliance

The project is likely to induce influx of people into the project site in the form of job seekers and small business operators. The influx of people may lead into risk of emergence of Gender Based Violence (GBV), Sexual Exploitation and Abuse (SEA) and Child Labour. The project proponent will ensure the Contractor prevents emergence of GBV/SEA and Child Labour. This will include awareness creation among the local community members on GBV/SEA and Child Labour.

3.2.4 Sectoral Policies

3.2.4.1 National Road Safety Policy (2009)

The national road safety policy is a critical initiative in the effort to elevate road safety issues to a position of high priority on the national agenda. It provides the basis for working towards attaining the vision of a safe traffic environment. Some of the relevant policy objectives are:

- to promote road safety engineering and implement road design or traffic management improvements that will cost-effectively reduce road crashes.
- to ensure that roads do not suffer unnecessary distress due to gross vehicle weight, axle weight or the combination of the two while serving their need for transportation;
- to protect the public's safety and preserve the investments while serving the need for transportation;
- to ensure that road pavement and bridge design are suitable to safe guard both interests of the road user cost and investor cost.

Relevance / Commitment:

The project involves construction of roads under DMDP 2, with the aim of facilitating efficient urban mobility and safe transportation of people and goods, which is emphasized in the policy. The project is likely to result into disruption of traffic flow along the roads. The project proponent will ensure the Contractor develops and implements traffic management plan during construction.

3.2.4.2 National Transport Policy (2003)

The vision of National Transport Policy (2003)¹⁶ is to have efficient and cost effective domestic and international transport services, while at the same time maintaining maximum safety and minimum environmental degradation. The medium and long-term objective is to have bitumen roads for all trunk roads while at the same time ensuring that all regional and district roads are sufficiently rehabilitated and maintained to ensure smooth traffic flow. The policy underlines the need for private sector participation including the local communities in the planning and rehabilitation of the road that pass through their areas.

Relevance / Compliance

The project involves construction of urban roads, which some of them have been connected to BRT and Daladala routes, hence reduced traffic congestion and improved public transport in the Dar es Salaam City. The construction of urban roads into bitumen standard will also improve road safety and reduced emission of air pollutants, hence in line with the policy objective.

¹⁶ National Transport Policy (2003). United Republic of Tanzania. Ministry of Communications and Transport. P.O. Box 9144, Dar Es Salaam. Fax +255 022 2112751. Tel; +255 022 2112858 / 022 2137650/5

3.2.4.3 Construction Industry Policy (2003)

The vision of the Construction Industry Policy (2003)¹⁷ is: To have a dynamic, efficient, and competitive local construction industry that is able to undertake construction projects of any magnitude and participate effectively in providing its services in the regional and global market place.

The mission is 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.

The policy outlines several objectives; however, the relevant policy objective is to improve the capacity and competitiveness of the local construction enterprises (contractors, consultants, and informal sector).

Relevance / Compliance:

The project proponent has involved the service of Local Consultant in the Feasibility Study, Detailed Engineering Design, Environmental and Social Due Diligence and Preparation of Bidding Documents. During construction priority will be given to local contractors, local people, as well as, the use of locally available materials, as emphasized in the policy.

3.2.4.4 National Land Policy (1995)

The overall aim of a National Land Policy (1995)¹⁸ is to promote and ensure a secure land tenure system, to encourage the optimal use of land resources, and to facilitate broad-based social and economic development without upsetting or endangering the ecological balance of the environment.

The policy outlines several specific objectives, however, the most relevant policy objective to this project is to protect land resources from degradation for sustainable development.

Relevance / Compliance

The project has the potential to create land degradation through soil excavations, and accumulation of construction solid wastes into the surrounding environment. The project proponent will ensure proper disposal of construction solid wastes and restoration of landscape after construction. The construction activities will be confined within the permitted areas by the Resident Engineer in order to minimize land degradation.

3.2.4.5 National Mineral Policy of Tanzania (2009)

The purpose of the Mineral Policy of Tanzania (2009)¹⁹ is to increase the mineral sector's contribution to the GDP and alleviate poverty by integrating the mining industry with the rest of the economy. The policy outlines several objectives, but the most relevant objective is to promote safety and maintain hygiene conditions and protect the environment in mining areas.

Relevance / Compliance:

The project will involve extraction of construction materials from quarry sites and borrow pits. The project proponent will ensure safety, hygiene and environmental protection are taken into consideration during extraction of construction minerals. This will include provision of temporary sanitary facilities at the borrow pits and quarry site areas.

¹⁷ Construction Industry Policy (2003). The United Republic of Tanzania. Ministry of Works. November, 2003.

¹⁸ National Land Policy (1997). The United Republic of Tanzania. Ministry of Lands and Human Settlements Development, Dar Es Salaam, Tanzania. Second Edition 1997.

¹⁹ The Mineral Policy of Tanzania. The United Republic of Tanzania. Ministry of Energy and Minerals September, 2009

3.2.4.6 National Energy Policy (2015)

The Vision of the National Energy Policy (2015)²⁰ is to have a vibrant Energy Sector that contributes significantly to economic growth and improved quality of life of Tanzanians. The Mission is to provide reliable, affordable, safe, efficient and environment friendly modern energy services to all while ensuring effective participation of Tanzanians in the sector.

The main objective of the policy is to provide guidance for sustainable development and utilization of energy resources to ensure optimal benefits to Tanzanians and contribute towards transformation of the national economy.

The policy outlines sector specific issues, statements, and objectives. With regards to energy efficiency and conservation, the policy objective is to promote energy efficiency and conservation in all sectors of the economy. The relevant issues to this project are energy efficiency in transport sector and in residential and commercial sectors.

Relevance / Compliance:

The project falls under the transport sector which is recognized by the policy as a large consumer of imported petroleum products. The construction of DMDP 2 Subproject Roads will result into reduced traffic congestion, faster movement of vehicles along the road sections, hence minimizing consumption of fossil fuels. Not only that but faster movement of vehicles will result into reduced emission of air pollutants, hence reduced environmental pollution.

3.2.4.7 National Water Policy (2002)

The main objective of the National Water Policy (2002)²¹ is to develop a comprehensive framework for sustainable development and management of the Nation's water resources. The policy recognizes the importance of water quality management and pollution control. In this case the policy objective is to have water resources with an acceptable quality by avoiding pollution from point and non-point sources. The policy seeks to protect water sources from encroachment of land around water source areas. It recognizes the problem of water pollution due to the disposal of untreated and/or inadequately treated domestic and industrial wastewater, agrochemicals and high turbidity caused by sediments due to soil erosion.

Relevance / Compliance:

The project will involve construction of water crossing structures at Makoka, Saranga, Ubungo and Msumi Rivers. In this regard, the construction activities will be carried out carefully to avoid pollution of this water sources. This will include temporary diversion of rivers during low flow period.

3.2.4.8 National Tourism Policy (1999)

The overall objective of the National Tourism Policy (1999)²² is to assist in effort to promote the economy and livelihood of the people, essentially poverty alleviation, through encouraging the development of sustainable and quality tourism that is culturally and socially acceptable, ecologically friendly, environmentally sustainable and economically viable. The policy outlines specific Economic, Social, Environmental and Cultural objectives. However, the most relevant one is environmental objective which to promote land development for tourism in a coordinated manner so as to attract private investment and ensure sustainable tourism development.

Relevance / Compliance:

The project involves construction of urban roads in Ubungo Municipality, which forms important links of the Dar Metro areas with coastal belt which is an important tourist

²⁰ National Energy Policy (2015). The United Republic of Tanzania. Dar Es Salaam. December, 20015.

²¹ National Water Policy (2002). The United Republic of Tanzania. Ministry of Water and Livestock Development. July 2002.

²² National Tourism Policy (1999). The United Republic of Tanzania. Ministry of Natural Resources and Tourism. Dar es Salaam September, 1999.

destination. The project proponent will ensure that design of roads takes into consideration the need for progression of tourism sector. The project proponent will also ensure any findings of archaeological and historical importance are salvaged by the contractor during construction.

3.3 Legal Framework

3.3.1 Cross-sectoral Legislations

3.3.1.1 Environmental Management Act Cap 191

The Environmental Management Act Cap 191 (EMA Cap 191)²³ is an Act to provide for legal and institutional framework for sustainable management of environment; to outline principles for management, impact and risk assessments, prevention and control of pollution, waste management, environmental quality standards, public participation, compliance and enforcement; to provide basis for implementation of international instruments on environment; to provide for implementation of the National Environment Policy; to repeal the National Environment Management Act, 1983 and provide for continued existence of the National Environment Management Council; to provide for establishment of National Environmental Trust Fund and to provide for other related matters.

Sub-section 81(1) requires any developer of a project to undertake Environmental Impact Assessment study at his/her own cost Sub-section 81(2) requires Environmental Impacts Assessment to be carried out prior to the commencement or financing of a project or undertaking.

Relevance / Compliance

The project falls under those project that require EIA to be carried out prior to commencement of construction works. This ESIA is an indicator of compliance with the requirements of the EMA Cap 191.

3.3.1.2 Environmental Impact Assessment and Audit Regulations (2005)

The Environmental Impact Assessment and Audit Regulations (2005)²⁴ are made under Environmental Management Act No. 20 of 2004. The regulations provide basis for undertaking Environmental Impact Assessment (EIA) and Environmental Audit for various development projects with significant environmental impacts in the country. These regulations provide the procedures for carrying out Environmental Impact Assessment, Environmental Monitoring and Environmental Audits.

Regulation 4 prohibits any developer or proponent from implementing a project which is likely to have a negative environmental impact without conducting Environmental Impact Assessment study.

Relevance / Compliance

The project falls under those projects that require Environmental Impact Assessment (EIA) study. The Project Proponent will adhere to the procedures for conducting EIA study as prescribed in these regulations.

3.3.1.3 Environmental Management (EIA and Audit) (Amendment) Regulations (2018)

The Environmental Management (Environmental Impact Assessment and Audit) (Amendment) Regulations, 2018 is read as one with the Environment Impact Assessment and Audit Regulations (2005)/ These provides some amendments to the EIA and Audit Regulations (2005) and classifies projects into Four (4) Categories based on the magnitude of impacts on the environment. These include Category "A"; Category "B1"; Category "B2" and

²³ Environmental Management Act No. 20 of 2004. The United Republic of Tanzania. Vice President's Office. 11th November 2004.

²⁴ Environmental Impact Assessment and Audit Regulations (2005). The United Republic of Tanzania.

“Special Category”. The regulations provide the procedures for registration of each category of project.

Relevance / Compliance

The project falls under Category A in accordance with the classification provided in the amendment regulations. The Project Proponent will adhere to the project registration procedures as prescribed in these regulations.

3.3.1.4 Occupational Safety and Health Act (2003)

The Occupational Safety and Health Act No. 5 of 2003²⁵ is an Act to repeal the Factories Ordinance; to make provisions for the safety, health, and welfare of persons at work in factories and other places of work; to provide for the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with activities of persons at work; and to provide for connected matters

Relevance / Compliance:

The project involves construction activities that are likely to create occupational health and safety risks. The project proponent will follow the provisions given in the Act to safeguard health and safety of workers. This will include ensuring that the contractor provides Personal Protective Equipment (PPE) to construction workers. The contractor will also develop Occupational Health and Safety Management Plan.

3.3.1.5 Public Health Act (2009)

The Public Health Act No. 1 of 2009²⁶ is an Act to provide for the promotion, preservation, and maintenance of public health with a view to ensuring the provisions of comprehensive, functional, and sustainable public health services to the general public and to provide for other related matters.

Section 32(1) requires the occupier or owner of any premises shall cause any drainage system to be properly protected or inspected to the satisfaction of an authorized officer in order to prevent the ingress of mosquitoes, vermin, and other disease-causing agents. According to Sub-section 32(2), any person who contravenes the provisions of this section commits an offence and on conviction is liable to a fine not exceeding one hundred thousand shillings.

Section 101(2) deals with connection of private drain or sewer with public sewer. It prohibits direct or indirect discharge of any matter from a manufacturing process or factory other than domestic or storm water into public sewer without a written agreement with the Authority.

Relevance/Commitment:

The storm water drainage is likely to create damage to adjacent properties if not properly designed or located. The project proponent will ensure all storm water drainage systems are properly designed through the concept of Sustainable Drainage Solutions (SUDs) so as to avoid damage on the adjacent properties.

3.3.1.6 HIV and AIDS (Prevention and Control) Act (2008)

The HIV and AIDS (Prevention and Control Act No. 28 of 2008²⁷ is an Act to provide for prevention, treatment, care, support and control of HIV and AIDS, for promotion of public health in relation to HIV and AIDS; to provide for appropriate treatment, care and support using available resources to people living with or at risk of HIV and AIDS and to provide for related matters. Section 6(3) requires project proponent to design and implement HIV/AIDS

²⁵ Occupational Health and Safety Act (2003). The United Republic of Tanzania. Ministry of Labour. 13th February 2003.

²⁶ The Public Health Act No. 1 of 2009.

²⁷ HIV and AIDS (Prevention and Control) Act (2008). The United Republic of Tanzania. Ministry of Health and Social Welfare. 1st February 2008.

prevention and control programme and to submit it to TACAIDS before implementation for coordination and advice.

Relevance / Compliance:

The project is likely to create increased transmission of HIV/AIDS due to interaction between construction and the adjacent local community members. Thus, the project proponent will ensure the contractor formulates and implements HIV/AIDS prevention and control programme.

3.3.1.7 Employment and Labour Relations Act of 2004

The Employment and Labour Relations Act No. 6 of 2004²⁸ is an Act to provide for core labour rights to establish basic employment standards; to provide a framework for collective bargaining; to provide for the prevention and settlement of disputes and to provide for related matters.

Relevance / Compliance:

The project involves employment of construction workers and other staff, who are covered by the provisions of the Act. The project proponent will comply with the provisions of the Act by ensuring the contractor avoids child labour, discrimination at work place directly or indirectly, and pays minimum wages to the construction workers as prescribed by the Labour Laws.

3.3.1.8 Worker's Compensation Act No. 20 of 2008

This law established the Workers Compensation Fund to administer and regulate workers' compensation for all matters related to injuries and damage to workers in Tanzania.

The law under Section 34(1) requires an employer shall, within seven days after receiving a notice of an accident from the employee or having learned in some other way that an accident has occurred, report the accident to the Director- General in a prescribed form. Sub-section 34(2) requires an employer, at the request of an employee or the dependant of an employee furnish the employee or dependant with a copy of the notice of the accident furnished by the employer to the Director-General in respect of a claim for compensation by the employee or dependant.

Section 71(1) requires an employer carrying on business in Tanzania shall within the prescribed period and in the prescribed form register himself to the Director-General and furnish the Director-General with-

- (a) the prescribed particulars of the employer's business; and
- (b) any additional particulars he/she may require.

Section 72(1) requires an employer to keep a register or other record of the earnings and other prescribed particulars of all employees employed by the employer and shall, at all reasonable times, produce the register or record or a satisfactory reproduction on demand to an authorized person for inspection. Section 73(1) requires an employer, not later than the 31st day of March in each year, to furnish the Director-General with a return in the prescribed form, certified by the employer, as correct, showing the amount of earnings up to the maximum contemplated in section 74(7) paid by the employer to its employees during the period with effect from the first day of March of the immediately preceding year up to and including the last day of February of the following year and; such further information as may be prescribed or as the Director-General may require.

²⁸ Employment and Labour Relations Act (2004). The United Republic of Tanzania. Ministry of Labour. 14th April 2004.

Relevance/Commitment:

The project is likely to create accidents or health and safety risks to construction workers. The project proponent will adhere to the objectives of the Act by ensuring that all employees employed under this project are registered with the WCF and appropriate payments are made to the Fund as per the law and regulations. This will include submission employees' records of earnings and monthly contributions.

3.3.1.9 Contractors Registration Act (1997)

This is an Act²⁹ to provide for the registration of contractors and to establish a Board to regulate the conduct of contractors and for the related matters.

Section 12(l) prohibits non-citizen of the United Republic from forming a local contracting firm unless the majority of its shares are owned by the citizens of United Republic of Tanzania. Otherwise, it will be registered as a foreign firm or company.

Section 23(1) prohibits any body of persons, whether corporate or unincorporated, from carrying out the business of contractors, unless at least one of the partners or directors who shall also be a shareholder has, as prescribed by the Board the required technical qualifications, skills, and experience.

Relevance / Compliance

The project will engage services of contractors during construction. Therefore, the project proponent will ensure only qualified and registered contractor is engaged in the execution of the project.

3.3.1.10 Contractors Registration (Amendment) Act (2008)

This is an Act³⁰ to amend the Contractors Registration Act, with a view to providing provisions for effective regulation of activities and maintenance of professional conduct and integrity of contractors and for related matters. The Act shall be read as one with the Contractors Registration Act, hereinafter referred to as the "principal Act."

Sub-section 22(4) prohibits an employer or developer from engaging an unregistered firms or persons. If found guilty is liable to a fine of not exceeding ten percent of the contract sum or project value but not less than one percent of such contract sum or project value or five million shillings whichever amount is greater or to imprisonment for a term of not less than three years or to both.

Relevance /Commitment

The project will require engagement of contractor during construction. The project proponent will comply with the requirement of the Act by employing only a qualified and registered contractor.

3.3.1.11 Engineers Registration Act (1997)

This is an Act³¹ to repeal and re-enact with modifications the Engineers (Registration) Act of 1968, to establish a Board to regulate the conduct of engineers, to provide for their registration and for related matters. Section 12(1) prohibits any person or body of persons who are not citizen of the United Republic from being registered as a local consultant or consulting firms unless:

- in the case of a natural person, he is a citizen of the United Republic;
- in the case of a company, it is incorporated in Tanzania and the firms.

²⁹ Contractors Registration Act No. 17 of 1997. United Republic of Tanzania.

³⁰ Contractors Registration (Amendment) Act No. 15 of 2008. United Republic of Tanzania.

³¹ Engineers Registration Act No. 15 of 1997. United Republic of Tanzania.

Relevance /Commitment

The project involves consultancy services during contract supervision. In this regard, the project proponent will engage only a qualified and registered engineering consultancy firm.

3.3.1.12 Engineers Registration (Amendments) Act (2007)

This is an Act to amend the Engineers Registration Act of 1997³² and shall be read as one with the Engineers Registration Act, hereinafter referred to as the "principal Act".

Sub-section (1) any person from employing as an engineer any person who is not a professional engineer or consulting engineer, or causing to undertake engineering works or services without employing the services of a professional engineer or consulting engineer.

Sub-section (2) prohibits any person from taking up or continuing in any employment as an engineer, or carrying out engineering works or services, unless he is a professional engineer or consulting engineer.

Relevance /Commitment

The project will require services of engineers during construction. In this regard, the project proponent will ensure only qualified professional engineers are employed.

3.3.2 Sector Legislations**3.3.2.1 Road Act (2007)**

The Road Act No. 13 of 2007³³ is an Act to make provisions for road financing, development, maintenance, management, and other related matters. The Act outlines several functions of road authority, but the relevant one is to control the use of roads with the aim of providing safe and adequate infrastructure for transportation commensurate with economic development of the country.

Relevance / Compliance:

The project involves construction of urban roads with associated infrastructure with the aim of improving mobility of people and goods along the road sections. The project proponent will ensure road safety issues are taken into consideration during design, construction, and operation phase.

3.3.2.2 Road Traffic Act Cap 168

The Road Traffic Act Cap 168³⁴ is an Act to provide for the control and regulation of road traffic. The Law requires Employer to keep a written record of the name and driving licence number of such other person and shall on demand by a police officer produce such a record for inspection.

Relevance / Compliance:

The project has the potential to create disruption of traffic flow and road traffic accidents during construction. The project proponent will ensure that the Contractor formulates and implements traffic management plan during construction. The contractor will erect permanent road signs to guide traffic movement during operation phase.

3.3.2.3 Water Resource Management Act (2009)

The objective of this Act is to ensure that water resources are protected, used, developed, conserved, managed, and controlled in ways which consider fundamental principles.

³² Engineers Registration (Amendments) Act No. 25 of 2007. United Republic of Tanzania.

³³ Road Act (2007). The United Republic of Tanzania. Ministry of Works. 28th August 2007.

³⁴ Road Traffic Act Cap 168 (Principal Legislation). The United Republic of Tanzania.

Section 63 requires any person who wishes to discharge effluents from commercial, industrial, or agricultural sources or from any sewerage works or trade waste systems or from any other source into surface water or underground strata to apply to the Basin Water Board.

Section 54(1) requires any person who intends to construct, sink, enlarge, or deepen a well or borehole in a Groundwater Controlled Area declared under section 38 or any other area, to apply for a Groundwater Permit.

Relevance / Compliance

The project has potential to pollute ground and surface water sources during construction and operation phase. The Project Proponent will ensure the Contractor avoids pollution of ground and surface water sources during construction. The project is likely to use ground water by drilling a borehole or shallow well. The project proponent will be required to obtain a ground water permit from the Basin Water Board.

3.3.2.4 Land Act (1999)

The Land Act No. 4 of 1999 is an Act to provide for the basic law in relation to land other than the village land, the management of land, settlement of disputes and related matters. Section 156 of the Land Act 1999 requires compensation to be paid to any person for the use of land of which he / she is in lawful or actual occupation as a communal right of way and with respect to a way leave. These include: any damage suffered in respect of trees, crops, and buildings as result of creation of way leave; and damage due to surveying or determining the route of that way leave. It is the responsibility of the government department of Ministry, Local Government authority or corporate body that applied for right of way to pay compensation.

Relevance / Compliance

The project will involve some land acquisition for construction of Dar Metro Roads. The project proponent will ensure compensation is paid for any acquired land. The project proponent will also ensure the Contractor pays compensation for any damage caused to private property during construction.

3.3.2.5 Urban Planning Act of 2007

The Urban Planning Act No. 8 of 2007 regulates land use in the country. It requires the occupier to pay land rent in order to get the Certificate of Occupancy. Other conditions stipulated in the act include:

- Erecting building by using permanent materials designed for the building in accordance with the condition of the issued Right of Occupancy.
- Conforming to the building line decided by the Authority.
- Providing plans for the building showing position of the building.
- Submitting drawings, elevations, plans and specifications to the Authority.
- Maintaining buildings in good order and repair to the satisfaction of the Commissioner for Lands.
- Protecting all beacons on land and re-establishing at the occupier's expenses as assessed by the Director of Surveys and Mapping.
- Providing adequate water supply, drainage, and disposal of trade refuse and effluent to the satisfaction of the Authority.
- Fencing the land with good quality fencing and provide car parking as required by the Authority and provide loading and unloading facilities within the boundaries of land.

The Act gives the Commissioner for lands absolute discretion to give or withhold building consent.

Relevance / Compliance

The proposed Dar Metro Roads pass through planned urban areas with certificates of occupancy. The project proponent will respect the individual right of occupancy. The roads construction will be carried out carefully without affecting public or individual plots or will pay compensation for any acquired land. The project management will adhere to the procedures stipulated in the Urban Planning Act (2007).

3.3.2.6 Local Government (Urban Authorities) Act Cap 288 (1982)

This is an Act³⁵ to make better provision for the establishment of urban authorities for the purposes of local government, to provide for the functions of those authorities and for other matters connected with or incidental to those authorities.

Section 59 provides for the functions and powers of the Urban Authorities. According to the Act, the Urban Authorities, among others, shall have power:

- to construct any new and necessary works in connection with any of the functions under this Act;
- to provide for the establishment, management, layout, planting, improvement, maintenance and regulation of parks, gardens, swimming baths, public libraries, museums and other places of public resort, recreation of entertainment for the use of the public, and to contribute to the cost of maintenance of any parks, gardens, swimming baths, public libraries, Museums and other places of public resort, recreation or entertainment provided by persons for the use of the public;
- to design the layout of streets, building areas and other areas, and to provide for and authorise the adoption of such measures with respect to expropriation or limitation of user, and with respect to the assessment and time of payment of compensation, as the authority may consider necessary or desirable for the purpose of the convenient design and construction of such layouts; save that before any layout is made, the plan or plans of such layout or alteration shall be submitted for the approval of the Minister.

Relevance/Compliance

The project involves construction and upgrading of roads in urban area, and therefore has the potential to interfere with urban land use planning, such as allocation of areas for gardens, parks, or recreational areas. In this case the project proponent will be required to ensure that construction of the roads is compatible with urban land use planning.

3.3.2.7 Explosives Act (1963)

This is an Act to make further and better provision for the control of the manufacture, import, export, purchase, sale, possession, and use of explosives, to repeal the Explosives Ordinance and for matters incidental thereof and connected therewith.

Relevance / Compliance

The project will not involve operation of quarry sites, instead crushed stone aggregates will be obtained from licensed quarry operators at Lugoba Village in Bagamoyo District. However, in the event that the operation of quarry site become necessary, the project proponent will ensure the Contractor adheres to the conditions of dealing with explosives as stipulated in the legislations. The project proponent will ensure the contractor does not use explosives for demolition works or extraction of rocks materials during foundation works.

3.3.2.8 Explosives Regulations (1964)

According to Regulation 5(1), a detailed map to a scale of not less than 1:1.000 of the area within 1 mile radius of the proposed magazine shall accompany an application for a permit to construct a magazine. Regulation 24, prohibits storage of explosives other than an

³⁵ The Local Government (Urban Authorities) Act No. 8 of 1982.

underground store or a temporary store shall be licensed for the storage of explosives unless it has been constructed in accordance with the provisions of these regulations.

Sub-Regulation 32-(1) prohibits blasting operations to be carried out in surface or open cast works within one hundred yards of any place which the public customarily frequent except with the permission of an inspector and subject to any special conditions he may impose having regard to the public safety. Sub-Regulation 32(2), requires a person in-charge to supply sufficient guards carrying red flags to guard all approaches thereto so as to ensure no person is allowed inadvertently to approach within dangerous range of the blasting operations.

Relevance / Compliance

The project will not involve extraction of stone aggregates from quarry sites. However, in the event that the operation of quarry site becomes necessary the project proponent will adhere to the requirements of these regulations. This includes employment of qualified person in blasting operations and proper storage of explosives.

3.3.2.9 Antiquities Act of 1964 and the Antiquities Rules of 1991

The Antiquities Act of 1964³⁶ and the Antiquities Rules of 1991³⁷ govern archaeological research in Tanzania. Under the Act, all objects (relics) that were made or modified by man before the year 1864 are automatically protected under the law.

Section 16 of the Antiquities Act (1964) gives powers to Local Government Authorities, to pass by-laws (with the approval of the Minister responsible for Antiquities) with respect to the preservation of the archaeological heritage in their areas of authority. They also have mandates to spearhead developments in districts and urban centres (for cities and municipalities) respectively.

Relevance / Compliance

The project has a potential of destruction of archaeological artefacts due to planned excavations and earth movement works. Presence of grave yards aside of Msumi and Tiptop roads, but few meters beyond construction corridor may likely to trigger the Antiquities Act of 1994. In case chance finds happen due to land excavations, the proponent will ensure the Contractor avoids destruction of archaeological materials and report on any archaeological findings to the Resident Engineer.

3.3.2.10 Antiquities (Amendment) Act (1979)

The Antiquities (Amendment) Act No. 22 of 1979³⁸ is an Act to amend the Antiquities Act of 1964 and shall be read as one with the Antiquities Act of 1964 (hereinafter referred to as the "principal Act").

According to Section 11(1) no person except the Director or a person acting on his behalf, shall whether on his own land or elsewhere: (a) excavate, dig or probe for monuments or relics; or (b) remove or collect any relic or any object he supposes to be a relic from the site of its discovery, except for the purposes of protecting it and reporting the discovery under the provisions of section 10 or for the purposes of delivering it to the authorities if required to do so under that section. (c) search for or collect any ethnographical object, except under and in accordance with an excavation licence or in the case of an ethnographical object, a collector's licence issued by the Director.

³⁶ Antiquities Act of 1964. United Republic of Tanzania.

³⁷ Antiquities Rules of 1981. United Republic of Tanzania

³⁸ Antiquities (Amendment) Act No. 22 of 1979. United Republic of Tanzania.

Relevance / Compliance

The project will involve land excavation during road bed preparations. During this process some archaeological artefacts may be encountered. The Contractor will comply by immediate reporting of any archaeological findings to the Department of Antiquities.

3.3.2.11 Other Relevant Regulations

The following are other relevant legislations to which the project will comply with during implementation:

- The Environmental Management (Air Quality Standards) Regulations 2007 (GN No. 237/2007)
- The Environmental Management (Water Quality Standards) Regulations, 2007 (GN No. 238/2007);
- The Environmental Management (Soil Quality Standards) regulations 2007 (GN 239/2007)
- The Environmental (Solid Waste Management) Regulations, 2009 (GN No. 263/2009)
- The Environmental Management (Quality Standards for Control of Noise and Vibration Pollution) Regulations, 2015.
- The Environmental Management (Hazardous Waste Control and Management) Regulations, 2021
- The Environmental Management (Fees & Charges) Regulations, 2021
- The Standard Act, 2009
- The Environmental Management (Prohibition of Plastic Carrier Bags) Regulations, 2009.
- The Environmental Management (Electric and Electronic Equipment Waste) Regulations, 2021

3.3.3 Environmental Management Guidelines**3.3.3.1 Environmental Assessment and Management Guidelines in Road Sector (2004)**

The Environmental Assessment (EA) Guidelines for Road Sector (July 2004) has been prepared to address environmental issues in all projects that fall under the road sector. The road sector guideline outlines resettlement plan and compensation procedures. It recognizes the considerable impacts of road infrastructure on human settlement and local community properties, including adjacent land use.

Relevance / Compliance

The project proponent will ensure compensation is paid to affected persons for any affected properties due to land acquisition or any damaged property due to construction activities.

3.3.3.2 Environmental Code of Practice for Road Works (2009)

The Environmental Code of Practice for Road Works has been prepared to guide the intervention of road engineers and technicians during the planning, design, construction, and operation phases, so that direct adverse environmental impacts of the project can be avoided or minimized through appropriate corrective measures. The intention is to ensure that all environmental considerations are well integrated into the road projects and activities.

The overall objective of the Environmental Code of Practice is to provide a tool, which integrates identified environmental aspects for project managers, road engineers, technicians, contractors, and environmental specialists. Specifically, the objectives of the environmental code are:

- To establish specific environmental criteria for road works in Tanzania.
- To provide technical assistance.
- To ensure general understanding of environmental impacts and define environmental criteria to minimise such impacts.

- To ensure that road engineers and technicians can find solutions for any problems arising during road constructions or maintenance activities.
- To facilitate the preparation of environmental assessment for road development projects.

Relevance / Compliance

The project proponent will ensure that the contractor adheres to the environmental code of practice during construction. This includes application of cost-effective mitigation measures to minimize environmental degradation due to construction activities.

3.3.3.3 Road Sector Compensation and Resettlement Guidelines (2009)

The purpose of these guidelines is to provide a consistent approach in the development and implementation of Compensation and Resettlement Plans (CRPs). The main strategy is to integrate compensation and resettlement process from the planning phase of the road project. The objectives are to:

- Create awareness on compensation and resettlement issues among the various road agencies and other stakeholders;
- Ensure transparency in the compensation and resettlement process;
- Clarify respective roles and obligations of each responsible institutions;
- Providing technical guidance;
- Clarify reporting requirements;
- Ensure information flow and public participation; and
- Provide logical methodology for C&R in the road sector.

Therefore, the overall objectives of a CRP are to:

- Ensure displaced persons/parties receive benefits from the project that is displacing them;
- Ensure Social disruption is minimised;
- Ensure Resettlement activities are executed as sustainable development programmes;
- Ensure Affected persons are consulted throughout the planning and implementation stages of the compensation and resettlement process;
- Ensure Income restoration is integral to the C&R process;
- Ensure there is a net improvement in livelihood activities and standards of living of affected persons as compared with their situation prior to displacement or implementation of the project;
- Ensure fair and prompt compensation (in cash or in kind, as preferred by the PAP) is paid before roadworks activities begin;
- Ensure Resettlement timetables are well coordinated with roadworks activities;
- Ensure an adequate budget is provided for the C&R process.

The guidelines have been developed to complement the Environmental Assessment and Management Guidelines (2004) and have drawn from the World Bank's Operational Policy 4.12 on Involuntary Resettlement, the IFC's Handbook for Preparing a Resettlement Action Plan, and the African Development Bank's Involuntary Resettlement Policy.

The guidelines are intended to guide the user in the preparation of a Compensation and Resettlement Plan (CRP) and are to be used on an individual or case by case basis, bearing in mind that the overall objective of a CRP is that the resultant standard of living of the affected persons is equivalent to, if not higher, than before the project.

Relevance / Compliance

The project will involve land acquisition due to construction of urban roads that will require expansion of corridor width. In this regard, the project proponent will ensure that all the PAPs are compensated in accordance with the Compensation and Resettlement Guidelines.

3.3.4 International Conventions**3.3.4.1 Convention on Biological Diversity (1992)**

The Convention on Biological Diversity (CBD)³⁹ entered into force on 29 December 1993. It has 3 main objectives:

- conservation of biological diversity.
- sustainable use of the components of biological diversity.
- fair and equitable sharing of the benefits arising out of the utilization of genetic resources.

Relevance / Compliance

The project is implemented in urban area where there is insignificant encounter of species of ecological importance. In case there will be encounter of species, the Contractor will take all measure of protection including retaining of plants and translocation of fauna.

3.3.4.2 Convention for the Protection, Management, and Development of the Marine and Coastal Environment of the Eastern African Region

This Convention⁴⁰ was adopted in Nairobi on 21 June 1985 for the Eastern African Region, hereinafter referred to as "the Convention area" as defined in paragraph (a) of Article 2⁴¹; and does not include internal waters of the Contracting Parties.

Article 4(10) of the Convention requires the Contracting Parties, individually or jointly, to take all appropriate measures to prevent, reduce and combat pollution of the Convention area and to ensure Sound environmental management of natural resources, using for this purpose the best practicable means at their disposal, and following their capabilities.

Article 4(2) requires the Contracting Parties to take all appropriate measures to prevent, reduce and combat pollution of the Convention area caused by coastal disposal or by discharges emanating from rivers, estuaries, coastal establishments, outfall structures or any other sources within their territories.

Relevance / Compliance

The project is implemented far away from marine environment, but importantly there are streams that crossing DMDP 2 subproject roads and ultimately draining into India Ocean. It is in this regard that the Contractor will avoid surface water pollution so as to protect downstream marine environment.

3.3.5 ILO Conventions

The ILO Conventions cover a wide area of social and labour issues including basic human rights, minimum wages, industrial relations, employment policy, social dialogue, social security, and other issues.

3.3.5.1 Working Environment (Air Pollution, Noise, and Vibration) Convention, 1977 (No. 148)

³⁹ Convention on Biological Diversity (1992) United Nations 1992 <https://www.cbd.int/doc/legal/cbd-en.pdf>

⁴⁰ Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region. Nairobi, 21 June 1985.

⁴¹ "Convention area" shall be comprised of the marine and coastal environment of that part of the Indian Ocean situated within the Eastern African region and falling within the jurisdiction of the Contracting Parties to this Convention

The Convention⁴² got entry into force on 11 Jul 1979, and Tanzania signed the Convention on 30 May 1983 and has accepted the obligation of the convention in respect of air pollution only⁴³. According to Article 3: the term air pollution covers all air contaminated by substances, whatever their physical state, which is harmful to health or otherwise dangerous; the term noise covers all sound which can result in hearing impairment or be harmful to health or otherwise dangerous; The term vibration covers any vibration which is transmitted to the human body through solid structures and is harmful to health or otherwise dangerous.

Article 4 requires national laws or regulations to prescribe measures to be taken for the prevention and control of, and protection against, occupational hazards in the working environment due to air pollution, noise, and vibration; and to have provisions concerning the practical implementation of the measures so prescribed may be adopted through technical standards, codes of practice and other appropriate methods.

Relevance / Compliance:

The project has the potential to create occupational health and safety risks due to handling of hazardous construction materials and equipment. The project proponent will ensure the Contractor provides appropriate PPE to construction workers.

3.3.5.2 Worst Forms of Child Labour Convention, 1999 (No. 182)

The Convention⁴⁴ concerning the Prohibition and Immediate Action for the Elimination of the Worst Forms of Child Labour, known in short as the Worst Forms of Child Labour Convention, was adopted by the International Labour Organization (ILO) in 1999 as ILO Convention No 182. It is one of eight ILO fundamental conventions. Tanzania signed the Convention on 12 September 2001.

By ratifying this Convention No. 182, a country commits itself to take immediate action to prohibit and eliminate the worst forms of child labour. Article 1 requires member countries to take immediate and effective measures to secure the prohibition and elimination of the worst forms of child labour as a matter of urgency.

Relevance / Compliance:

The project has the potential to create employment, and there is a possibility of children trying to seek employment during construction. The project proponent will ensure the Contractor does not employ children under 18 years old.

3.3.5.3 Discrimination (Employment and Occupation) Convention, 1958 (No. 111)

The Convention concerning Discrimination in Respect of Employment and Occupation or Discrimination (Employment and Occupation) Convention (ILO Convention No. 111)⁴⁵ is an ILO Convention on anti-discrimination. It is one of eight ILO fundamental conventions. The convention requires states to enable legislation that prohibits all discrimination and exclusion on any basis including race or colour, sex, religion, political opinion, national or social origin in employment, and repeal legislation that is not based on equal opportunities. Article 2 requires each Member Country 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, to eliminate any discrimination in respect thereof.

Relevance / Compliance:

⁴² [https://en.wikipedia.org/wiki/Working_Environment_\(Air_Pollution,_Noise_and_Vibration\)_Convention,_1977](https://en.wikipedia.org/wiki/Working_Environment_(Air_Pollution,_Noise_and_Vibration)_Convention,_1977)

⁴³ https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:11300:0::NO::P11300_INSTRUMENT_ID:312293

⁴⁴ https://en.wikipedia.org/wiki/Worst_Forms_of_Child_Labour_Convention

⁴⁵ [https://en.wikipedia.org/wiki/Discrimination_\(Employment_and_Occupation\)_Convention](https://en.wikipedia.org/wiki/Discrimination_(Employment_and_Occupation)_Convention)

This project will employ different people of different origins in terms of nationalities, tribe, race religious affiliations, and gender. The Contractor will ensure there is no any kind of discrimination based on nationality, tribe, race, religion, or gender.

3.3.5.4 Workmen's Compensation (Accidents) Convention, 1925 (No. 17)

Workmen's Compensation (Accidents) Convention, 1925⁴⁶ is an International Labour Organization (ILO) Convention, which was adopted on June 10, 1925, and came into force on April 1, 1927. Tanzania signed the convention on 30 January 1962. Article 1 requires each Member Country to ensure that workers, who suffer personal injury due to an industrial accident, or their dependents, shall be compensated on terms at least equal to those provided by this Convention.

Relevance / Compliance:

This project has the potential to cause accidents or death during construction. The project proponent will ensure the Contractor is registered by the Workers Compensation Fund, which is responsible for the payment of compensation in case of injury or death of any worker in the course of work.

3.4 Institutional Framework

The institutional framework for management of E & S issues for DMDP 2 subproject roads is well established from different implementation stages (**Figure 3-1**). Responsibilities of each stakeholder for implementation of environmental management matters are summarized in **Table 3-2**.

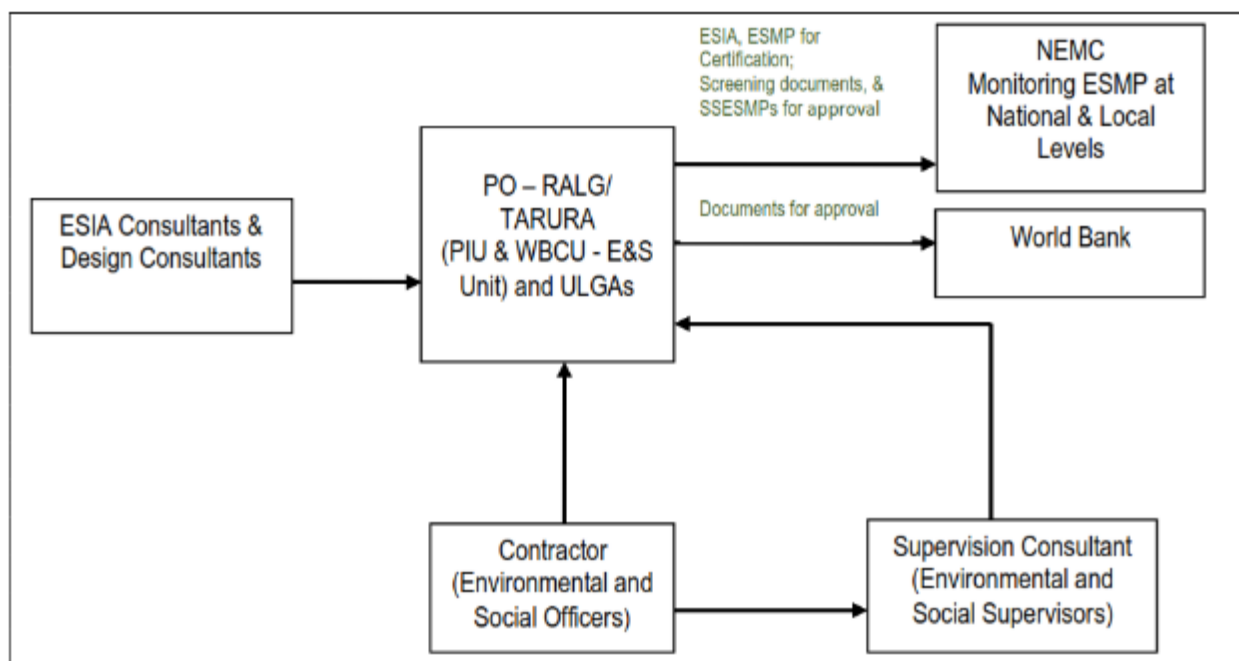


Figure 3-1: Institutional Framework for Management of E&S Issues for Subproject Roads.

Source: Excerpt from Project ESMF (March, 2022)

⁴⁶ [https://en.wikipedia.org/wiki/Workmen%27s_Compensation_\(Accidents\)_Convention,_1925](https://en.wikipedia.org/wiki/Workmen%27s_Compensation_(Accidents)_Convention,_1925)

Table 3-3: Stakeholders Roles and Responsibilities for Management of E&S Issues for DMDP 2 Subproject Roads

Stakeholder	Key Roles	Responsibilities
National Environment Management Council (NEMC)	Decision Maker	- Screening and registration of subproject - Review of ESIA and ESMP - Certification of subproject - Monitoring of ESMP implementation - Enforcement of compliance for National Environmental Management Act (2004) and its subsequent Regulations
PO-RALG/ TARURA and LGA	Implementing Agencies	- The overall project implementation and coordination function will be undertaken by World Bank Coordination Unit (WBCU) comprising staff from PO-RALG and TARURA. - Ubungo Municipal Council (LGA) is responsible to implement the works under DMDP 2 subproject roads including procurement, contract management, safeguards, resettlement, monitoring and evaluation, as well as project reporting to WBCU
E&S Unit comprising of Experts and Consultants at WBCU	Provision of Technical Support	- Ensure that the subproject roads are implemented in compliance with National Legislations and ESSs requirements; - Determine the scope of environmental and social risks i.e. identify the magnitude, sensitivity and risk category of the sub-projects; both - Apply the Exclusion List to the potential sub-projects; - Hire consultants to develop ESIA, ESMPs and, where needed, site-specific ESMPs (SSESMP) based on subproject designs; - Facilitate public consultations with Project Affected Persons (PAPs) and other project stakeholders in preparation of ESIA/ESMP and oversee functionality of the project - Grievance Redress Mechanisms (GRMs); - Send ESIAs and associated ESMPs and site-specific ESMPs to NEMC for certification and to the World Bank for approval prior to commencement of any works on site; - Ensure that the necessary environmental authorizations and permits are obtained; - Ensure the relevant elements of the ESIAs (including budget) are incorporated into final designs; - Include the requirements and mitigation measures from site-specific ESMPs in the bidding documents and contractors' contracts; - Ensure that contractors have an Environmental, Health and Safety Officer (EHS), who are familiar with the compliance requirements, including WB EHS guidelines; - Ensure supervision of the civil works either by hiring a supervision consultant or through designated environmental supervisors in the team of the supervision engineer;

Stakeholder	Key Roles	Responsibilities
		- Conduct inspection of the sites and review progress reports by the supervision engineer/consultant during civil works; - In case of any major accident and incident, notify the World Bank within 24 hours; - Send progress reports every 3 months to the World Bank.
E&S Unit comprising of Experts and Consultants at Project Implementation Unit (PIU) of UMC	Provision of Technical Support	- Ensure that the subproject roads are implemented in compliance with National Legislations and ESSs requirements; - Determine the scope of environmental and social risks i.e. identify the magnitude, sensitivity and risk category of the sub-projects; - Apply the Exclusion List to the potential sub-projects; - Facilitate public consultations with Project Affected Persons (PAPs) and other project stakeholders in preparation of ESIA/ESMP and oversee functionality of the project - Grievance Redress Mechanisms (GRMs); - Ensure that the necessary environmental authorizations and permits are obtained; both - Ensure the relevant elements of the ESIA (including budget) are incorporated into final designs; - Provide site-specific ESMPs to the Design Consultants to incorporate identified E&S measures; - Ensure that Contractors have Environmental, Health and Safety Officers (EHSS), who are familiar with the compliance requirements, including WB EHS guidelines; - Conduct inspection of the sites and review progress reports by the Supervision Engineer/Consultant during civil works; - In case of any major accident and incident, notify the Occupational Safety and Health Authority (OSHA) and WBCU. - Ensure the relevant elements of the ESIA (including budget) are incorporated into final designs;
ESIA Consultant/ NIMETA Consult (T) LTD	Provision of Consulting Services	- Work with the PIU to understand the requirements of the E&S assessments; - Conduct initial site visits with the PIU to understand the sub-project setting and site-specific requirements; - Prepare the ESIA and ESMP based on the procedures described in the ESMF including carrying out an alignment walk, alternatives analysis and baselines studies, identifying the - E&S risks and impacts, developing mitigation measures and monitoring plans incorporating EHS requirements; - Cost all the mitigation and management measures proposed in the ESMP and SSEMPs;

Stakeholder	Key Roles	Responsibilities
		- Propose a capacity building plan for the implementation of the sub-projects for all actors involved with cost estimates and schedule; - Carry out public consultations; - Conduct trainings as needed; and - Assist the PIU in preparing documentation to obtain certification from NEMC for the ESIA and ESMP.
Design Consultant/ NIMETA Consult (T) LTD	Provision of Consulting Services	- Understand the sub-project setting and site-specific requirements with discussions with the PIU; - Incorporate the issues identified in the ESIA and ESMP into the designs of the subproject roads (including necessary budget) and ensure consistency with the design guidelines and specifications as relevant; and - Provide cost estimates for implementing the design requirements.
Supervision Engineer/ Consultant (Not yet Engaged)	Provision of Construction Supervision Services	- Assist the PIU to ensure that the necessary environmental, social, health and safety authorizations and permits have been obtained; - Maintain open and direct lines of communication between the PIU and Contractors with regard to environmental, social, health and safety matters; - Review and approve the Contractor's site-specific construction ESMPs (CESMPs), Health and Safety Management Plan (HSMPs), Grievance Redress Mechanisms (GRMs), Labor Management Plans (LMPs), and Traffic Management Plans (TMPs) etc. together with the PIU; - Review, approve and monitor contractor's HIV/AIDS, STDs and other communicable diseases like COVID-19 and TB awareness and prevention program; - Conduct regular site inspections of all work areas to ensure compliance with CESMPs and E&S specifications for contractors/ Tanzania's Environmental Code of Practice for Road Works (URT, 2009); - Take appropriate action if the specifications are not followed as outlined in the Contract and site-specific ESMP/CESMP; - Assist the Contractors in finding environmentally and socially responsible solutions to problems; - Instruct the Contractors to take remedial actions within a specified timeframe, and carry out additional monitoring, if required, according to the contractual requirements and procedures in the event of non-compliances or complaints; - Instruct the Contractors to stop activities which generate adverse Environmental, Social, Health and Safety (ESHS) impacts, and/or when any of the Contractors fails to implement the ESMP requirements / remedial actions; - Provide training to the Contractors on the ESHS requirements to be followed;

Stakeholder	Key Roles	Responsibilities
		• Monitor the Contractor's ESHS awareness training program for all personnel working onsite; • In case of any accidents or incidents, immediately notify the PIU and support the process of documenting, investigating, and reporting the case to OSHA and the WB; • Prepare written reports for the PIU such as weekly report of non-compliance issues; summary monthly report covering key issues and findings from supervision activities; and consolidated summary report from Contractor's monthly report.
The Contractors (Not Yet Procured)	Construction of DMDP 2 Subproject Roads	• Compliance with relevant ESHS legislative requirements (project-specific, district- and national level), including allocating adequate budget for implementation of these requirements; • Work within the scope of contractual requirements and other tender conditions; • Prepare and implement CESMPs based on the ESMPs in the bidding documents and contracts; • Prepare and implement HSMP, GMP, Community Health Management Plan, LMP, GBV prevention action plan, and TMP • Prepare and implement HIV/AIDS, STDs and other communicable diseases like COVID19 and TB awareness and prevention program through qualified service provider; • Recruit qualified E&S and OHS personnel and facilitate them adequately, including providing them with reliable transport. • Regularly train workers about EHS (including relevant WBG EHS Guidelines) and the site-specific environmental and social measures to be followed; • The EHS officer of the Contractor will participate in the joint site inspections with the PIU and Environmental Supervision Engineer/Consultant; • Carry out any corrective actions instructed by the Supervision Engineer/Consultant; • Provide and update information to the Supervision Engineer/consultant regarding works activities including off-site activities/facilities such as borrow pits, quarries, disposal sites, which may contribute, or be continuing to the generation of adverse environmental and social impacts; • In case of non-compliances/discrepancies, carry out investigation and submit proposals on mitigation measures, and implement remedial measures to reduce environmental and social impact; • Stop civil works which generate adverse ESHS impacts upon receiving instructions from the Supervision Engineer/Consultant and/or PIU and other responsible authorities like NEMC and OSHA; • Propose and carry out corrective actions in order to minimize the environmental and social impacts;

Stakeholder	Key Roles	Responsibilities
		• Send immediate reports to the Client (PIU) in case of any accidents or incidents involving project site, project workers or otherwise occurring within the project area of influence and carry out incident investigation to determine root causes of any near misses, injuries, or fatalities; • Send weekly reports of non-compliance to the Supervision Engineer/consultant; • Send monthly progress reports to the Supervision Engineer/Consultant; • Ensure proper decommissioning or closure of camp sites, borrow pits, quarries, and waste disposal sites in line with local and national requirements and WB Standards.
The World Bank	Financial	• Review sub-project screening including risk level categorization; • Review the ESIAs, ESMPs, site-specific ESMPs; HSMPs, GRMs, LMPs and TMPs. • Review quarterly reports by the implementing agencies; • Monitor compliance with the ESMF, SEP, LMP, ESCP and RPF; • Advise on the required instruments when informed of the presence of IP/SSAHUTLC⁴⁷ for the subproject to go ahead; and • Undertake implementation support Missions.

⁴⁷ IP/SSAHUTLC stands for Indigenous People/Sub-Saharan African Historically Underserved Traditional Local Communities

CHAPTER FOUR

4.0 ENVIRONMENTAL AND SOCIAL BASELINE CONDITIONS

4.1 Physical Environment

4.1.1 Topography

Topography of the selected DMDP 2 Subproject Roads in Ubungo Municipality varies greatly from low lands to hilly terrain with an elevation difference of nearly 60m. Sinza roads are found in relatively low lands with average elevation of 40m above mean sea level (**Figure 4-1**). Due to being located in low lands, Sinza ward often affected by floods during long rain season.

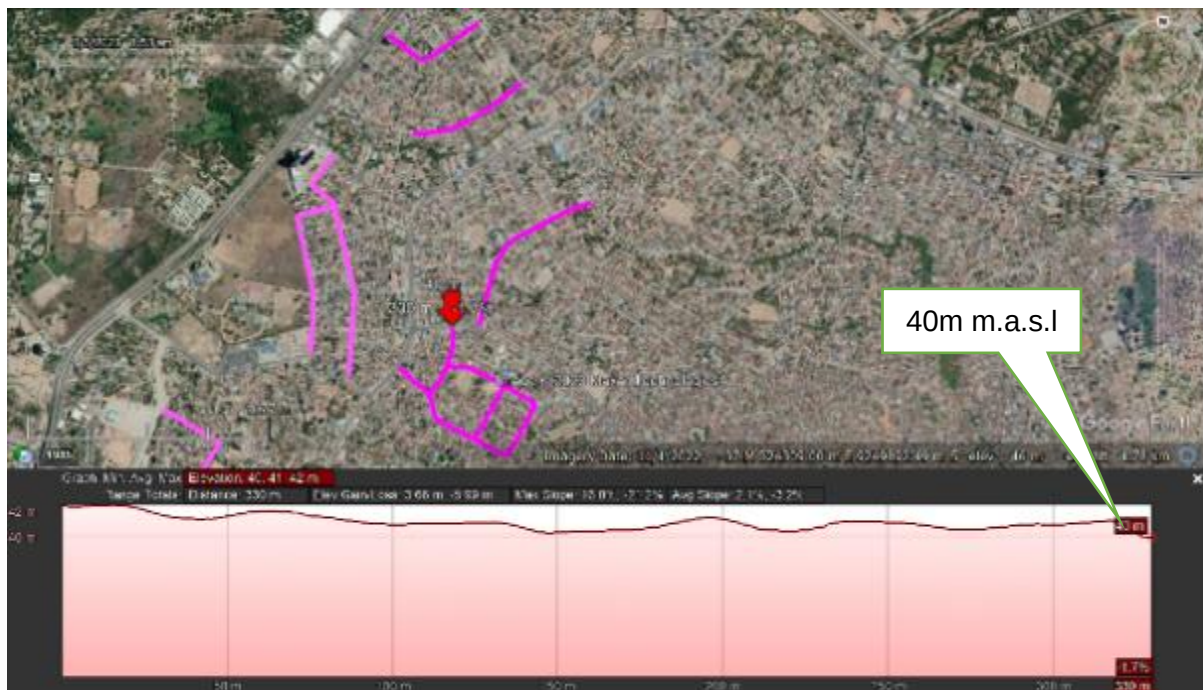


Figure 4-1: Average Elevation Profile of Sinza Roads

Source: After Google Earth Map (Retrieved in July 2023)

Msumi, Goba – Wakorea and Hondogo – Shija Roads are found in the hilly parts of Ubungo Municipality whose average terrain elevation varies between 69m and 162m above mean sea level. The terrain nature of hilly part area is prone to soil erosion caused by a combined effect of rains and steepened gradient.

4.1.2 Drainage and Hydrology

The field investigation carried out by the ESIA study team indicates that seven (7) major seasonal river systems are found within influential area of the selected DMDP 2 investment roads. These include Tegeta, Kibwegere, Nyakasongwe, Ng'ombe, China and Msumi/Mbezi Rivers (**Figures 4-2, 4-3, 4-4 and 4-5**). All the river systems within project area are found within Wami/Ruvu Water Basin which ultimately draining into Indian Ocean.

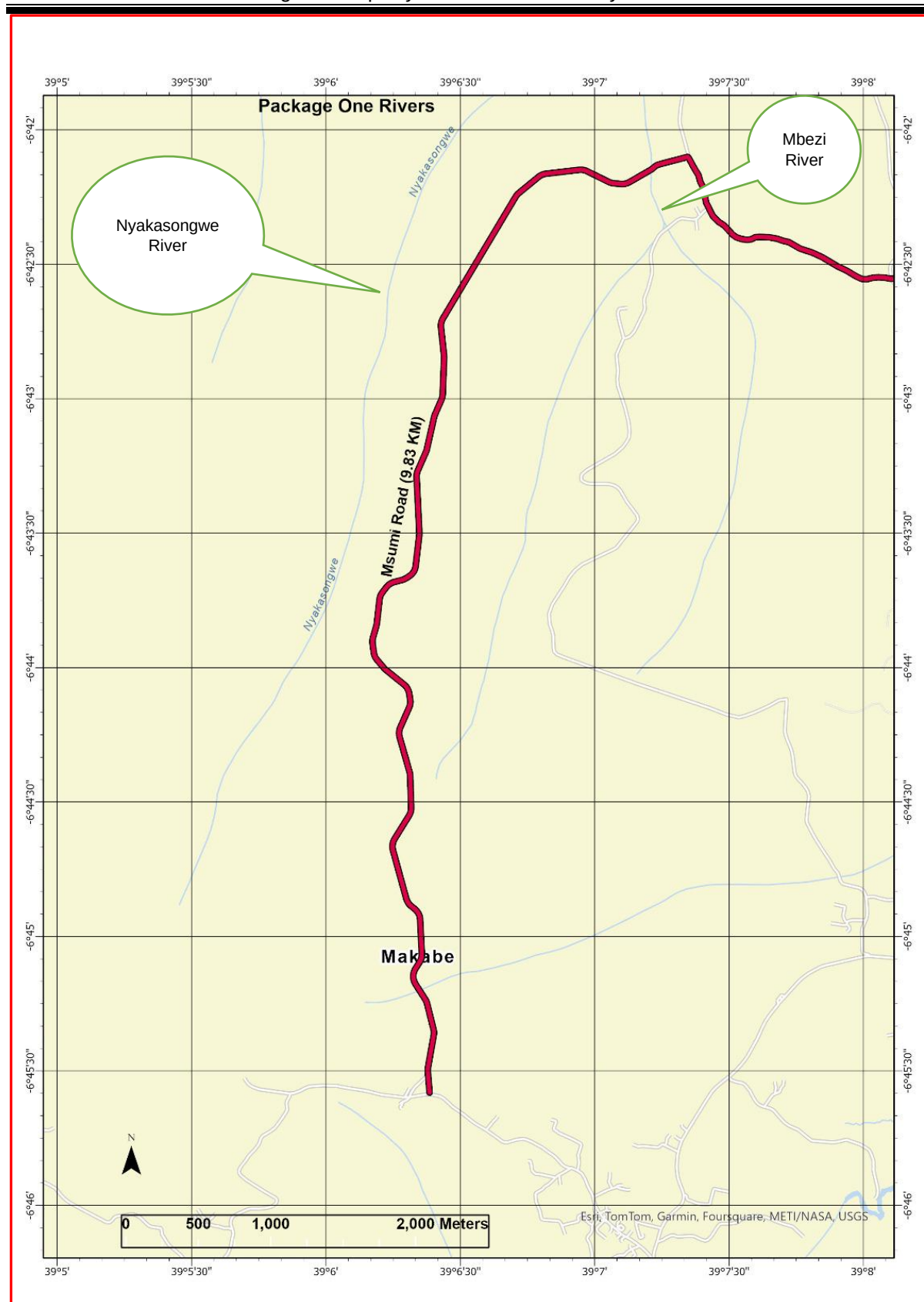


Figure 4-2: Existing River System for Package 1 DMDP Road

Source: After Esri Map (Retrieved in September 2024)

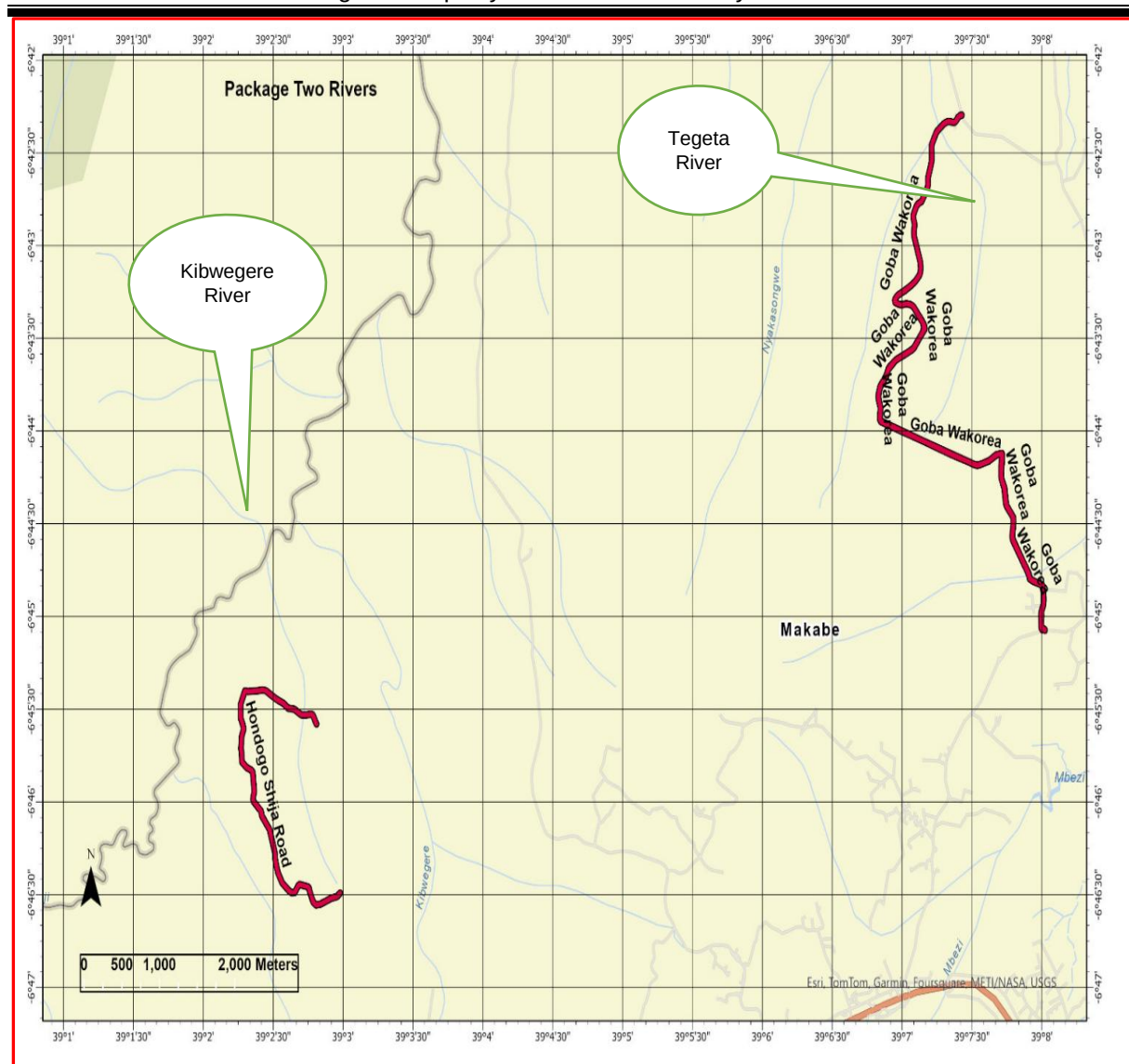
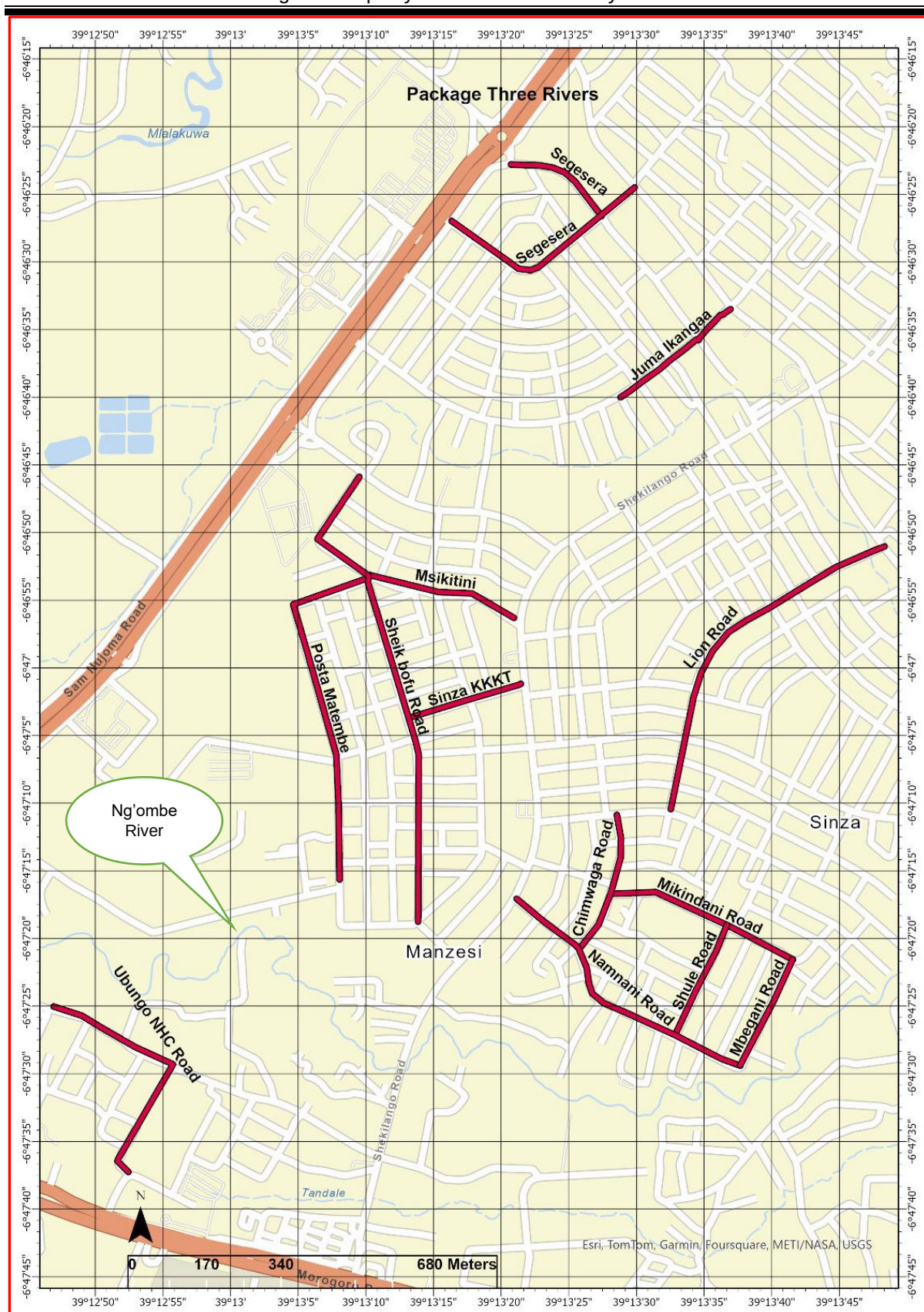


Figure 4-3: Existing River System for Package 2 DMDP Roads

Source: After Esri Map (Retrieved in September 2024)

**Figure 4-4: Existing River System for Package 3 DMDP Roads**

Source: After Esri Map (Retrieved in September 2024)

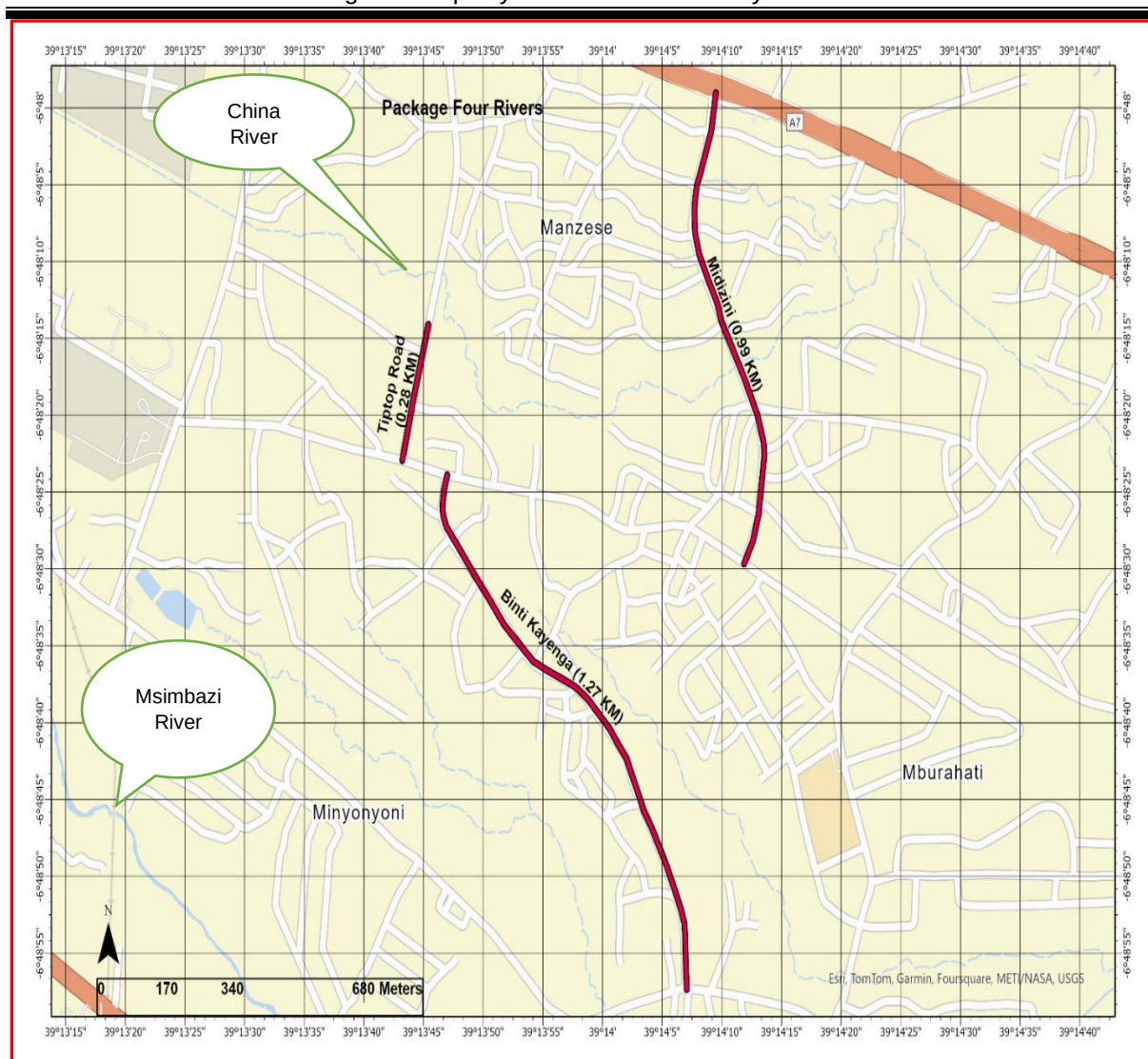


Figure 4-5: Existing River System for Package 4 DMDP Roads

Source: After Esri Map (Retrieved in September 2024)

4.1.3 Climate

Dar es Salaam Region has a tropical climate characterised by hot and humid weather throughout much of the year with an average temperature of 29°C. In general, the climate is influenced by its proximity to the warm Indian Ocean. The hottest season is from October to March during which temperatures can raise up to 35°C. It is relatively cool between May and August, with temperature around 25°C.

The proposed project area has a tropical wet and dry climate with two distinct rainy seasons. These include the “long rains” between March and May, and “short rains”, from October to December. The average rainfall is 1000mm (lowest 800mm and highest 1300mm). Humidity is around 96% in the mornings and 67% in the afternoons. The project area is relatively cool between May and August, with temperature around 25°C⁴⁸.

⁴⁸ African Development Bank Group. Dar Es Salaam Bus Rapid Transit Project, Tanzania. Environmental and Social Impact Assessment Summary. March 2015.

4.1.4 Climate Change

Climate change projection analysis for the Dar es Salaam City was conducted in 2021 by the World Climate Research Program using global climate model compilations of the Intergovernmental Panel on Climate Change (IPCC) and Coupled Model Inter-comparison Projects Sixth Assessment (CMIP6). Under this assessment, Shared Social-economic Pathways (SSP2-4.5 and SSP5-8.5) scenarios were analysed using multi-ensemble models for the mid Century 2040-2059, the results are as follows: -

4.1.4.1 Increase in Temperature

By the mid-century (2040-2059), the average temperature is likely to increase by 1.1°C and 1.5°C under SSP2-4.5 and SSP5-8.5 respectively. In the end century (2080-2099) the average temperature is anticipated to increase by 1.8°C and 3.4°C for the SSP2-4.5 and SSP5-8.5 respectively (**Table 4-1 and Figure 4-6**).

Table 4-1: Temperature Increase Projections for Dar es Salaam City

Month	Mid-Century, 2040-2059		End-Century, 2080-2099	
	SSP2-4.5	SSP5-8.5	SSP2-4.5	SSP5-8.5
Jan	0.97	1.48	1.66	3.43
Feb	0.94	1.51	1.6	3.25
Mar	1.09	1.5	1.79	3.42
Apr	1.12	1.53	1.77	3.35
May	1.37	1.73	1.99	3.77
Jun	1.13	1.47	1.95	3.6
Jul	1.24	1.54	1.87	3.63
Aug	1.24	1.54	2.07	3.71
Sep	1.16	1.58	1.96	3.54
Oct	1.1	1.47	1.88	3.33
Nov	0.97	1.38	1.74	3.28
Dec	0.96	1.31	1.57	3.03

Source: World Climate Research Program (2021)

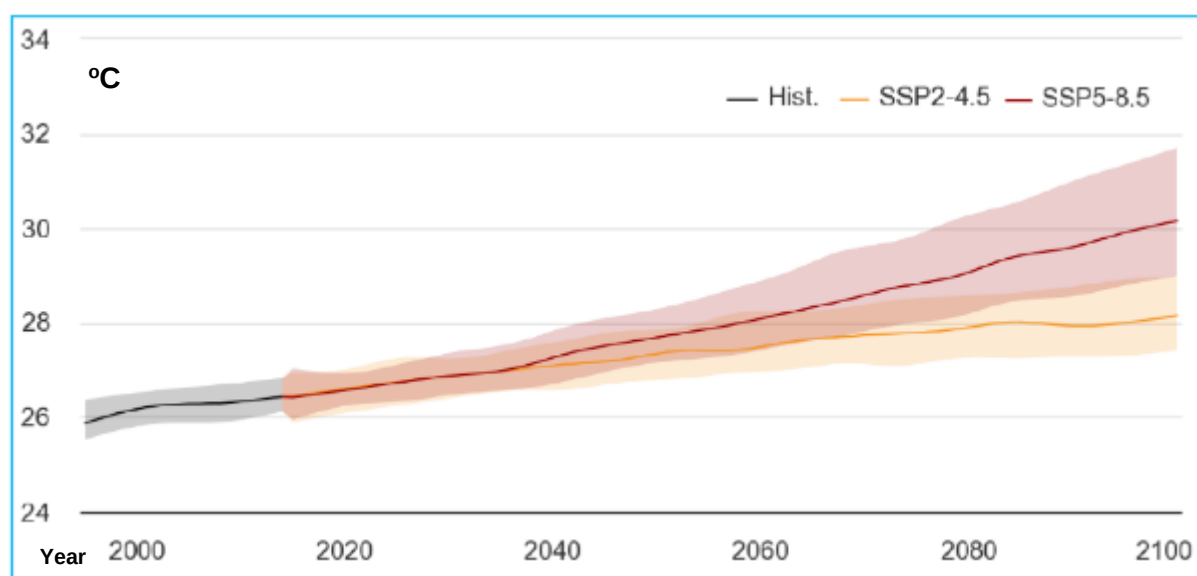


Figure 4-6: Projection Temperature Increase in Dar es Salaam to Year 2100

Source: World Climate Research Program (2021)

4.1.4.2 Increase in Precipitation

By the mid-century (2040-2059), the average wet season precipitation is anticipated to increase by 9.44% and 9.11% under SSP2-4.5 and SSP5-8.5 respectively. In the end-century (2040-2059), the average wet season precipitation is anticipated to increase to about 14.24% and 20.2% under SSP2-4.5 and SSP5-8.5 respectively (Table 4-2 and Figure 4-7).

Table 4-2: Projections of Precipitation Increase for Dar es Salaam City

Month	Mid-Century, 2040-2059		End-Century, 2080-2099	
	SSP2-4.5	SSP5-8.5	SSP2-4.5	SSP5-8.5
Jan	18.72	22.43	-13.55	-28.97
Feb	21.78	17.43	-7.09	-15.22
Mar	20.61	13.76	2.67	4.16
Apr	1.81	0.78	7.61	20.74
May	2.36	-4.54	29.88	51.61
Jun	2.15	-6.95	35.59	43.43
Jul	-6.08	-7.03	21.26	33.25
Aug	-9.68	-10.69	3.75	4.01
Sep	-8.52	-10.96	-1.06	-17.08
Oct	-7.16	-2.98	-9.3	-23.11
Nov	0.92	1.31	-8.35	-20.14
Dec	-0.12	12.58	-12.43	-24.39

Source: World Climate Research Program (2021)

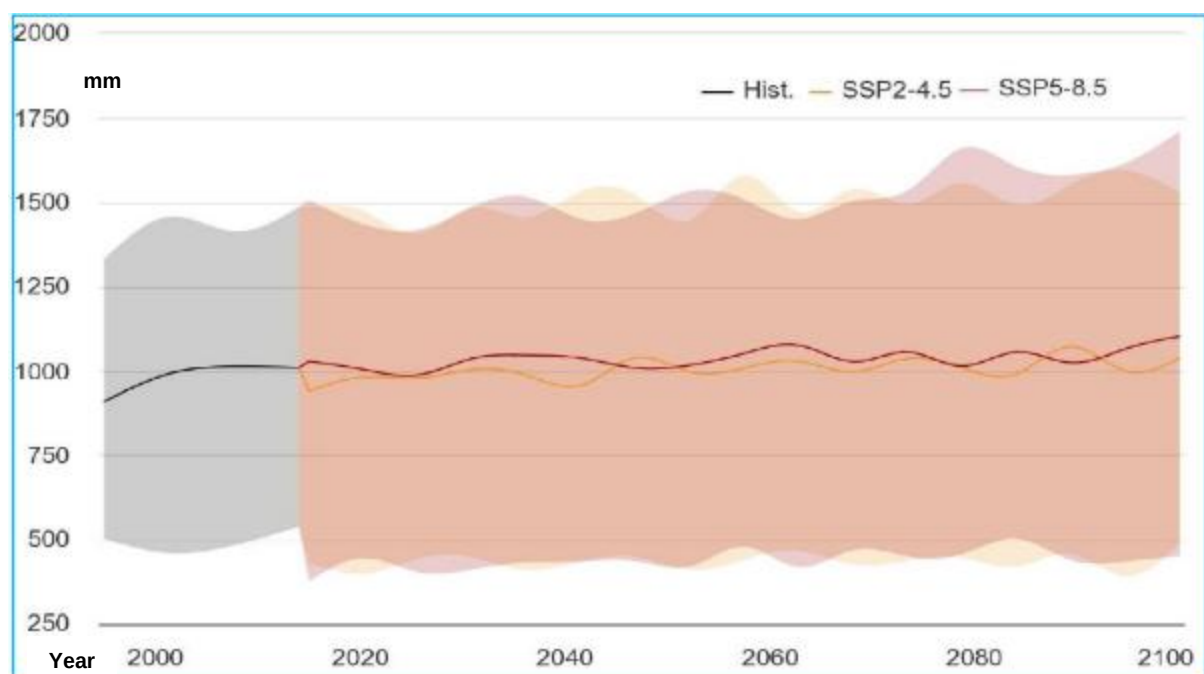


Figure 4-7: Projection of Precipitation Increase in Dar es Salaam to Year 2100

Source: World Climate Research Program (2021)

4.1.5 Ambient Noise and Vibration Levels

The noise measurements carried out along the DMDP 2 Subproject Roads in Ubungo Municipality are shown in **Table 4-3**. The results indicate that Midizini road had the highest noise levels (71.8 dBA), followed by Tip Top and Lion Roads (69.0 dBA). The baseline information indicates the traffic noise levels range between 59.1 to 71.8 dBA, which are lower than noise levels from common construction equipment (**Table 4-4**)⁴⁹. The traffic noise levels are also lower than the maximum permissible noise levels for construction site during the day time in accordance with Tanzania Standards⁵⁰ as shown in **Table 4-5**.

It is therefore expected that during construction phase noise levels are likely to increase along the project roads due to operation of heavy construction equipment. The significance of noise and vibration effects will depend on the location of sensitive receptors. During the field investigation some residential buildings were found to be close to the roads (less than 5m), especially at Sinza Roads, hence likely to be affected during construction.

Results of measured ground vibrations were found not more than 108.2dBL overpressure noise and not more than 2.12m/s² Peak to Peak Acceleration (PPA) during day time hours (**Table 4-3**). The Environmental Management (Quality Standards for the Control of Noise and Vibration Pollution) Regulations 2011, provide vibration limit of 5 m²/s. This implies that DMDP 2 Subproject Roads in Ubungo Municipality have vibration levels within prescribed Tanzania Standard.

Table 4-3: Average Noise Levels Along the DMDP 2 Subproject Roads in Ubungo Municipality

SN	Subproject Road	Length (Km)	Sampling Date	Sampling Duration	Measured Noise Level (dBA)	Vibration (m/S ²)
1	Msumi Road	9.83	5 th July, 2023	115 Minutes	67.3	0.90
2	Goba Wakorea Road	7.76	5 th July, 2023	130 Minutes	62.6	0.87
3	Hondogo Shija Road	4.04	5 th July, 2023	120 Minutes	61.3	0.72
4	Posta Matembe Road	0.82	3 rd July 2023	45 Minutes	63.2	0.77
5	Sheikh Bofu Road	1.13	3 rd July 2023	54 Minutes	65.0	0.51
6	Segesera Road	0.77	3 rd July 2023	40 Minutes	65.4	1.48
7	Lion Road	0.84	4 th July 2023	45 Minutes	69.0	2.12
8	Juma Ikangaa Road	0.97	4 th July 2023	70 Minutes	66.8	0.79
9	Mbegani Road	0.28	3 rd July 2023	40 Minutes	51.9	0.51
10	Namnani Road	0.66	3 rd July 2023	55 Minutes	63.6	0.31
11	Chimwaga Road	0.34	4 th July 2023	25 Minutes	65.0	0.78
12	Shule Road	0.28	3 rd July 2023	45 Minutes	54.6	0.36

⁴⁹ Bolt et al. (1971, 1987); Western Highway Institute (1971); WSDOT (1991); LSA Associates (2002).

⁵⁰ The Environmental Management (Standards for the Control of Noise and Vibrations Pollution).

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SN	Subproject Road	Length (Km)	Sampling Date	Sampling Duration	Measured Noise Level (dBA)	Vibration (m/S ²)
13	Mikindani Road	0.45	4 th July 2023	60 Minutes	58.7	0.37
14	Ubungu NHC	0.6	5 th July, 2023	70 Minutes	61.9	0.89
15	Tip Top	0.28	3 rd July 2023	60 Minutes	69.0	0.40
16	Midizini Road	0.99	3 rd July 2023	45 Minutes	71.8	0.82
17	Binti Kayenga	1.27	3 rd July 2023	45 Minutes	64.1	0.61

Source: Field Measurement by the Consultant (July 2023)

Table 4-4: Noise ranges at 50 feet from common construction equipment

Equipment	Noise (dBA)	levels	Equipment	Noise (dBA)	levels
Heavy trucks (avg.)	82-96		Backhoe (avg.)	72-90	
Grader (avg.)	79-93		Paver (avg.)	85-89	
Excavator (avg.)	81-97		Front loader (avg.)	72-90	
Crane (avg.)	74-89		Generator (avg.)	71-82	
Pile driver (peak)	81-115		Jackhammer/rock drills (avg.)	75-90	
Concrete mixer (avg.)	75-88		Roller (avg.)	72-75	

Sources: Bolt et al. (1971, 1987); Western Highway Institute (1971); WSDOT (1991); LSA Associates (2002).

Table 4-5: Maximum Permissible Noise Levels for Construction Site

Facility	Maximum noise level permitted (Leg) in dBA	
	Day	Night
Hospital, schools, Institutions of higher learning, homes for the disabled, etc.	60	50
Building other than those prescribed in (i) above	75	65

Source: Environmental Management (Quality Standards for the Control of Noise and Vibration Pollution) Regulations (2011)⁵¹.

4.1.6 Ambient Air Quality

4.1.6.1 Measurements of Particulate Matter

The measurement results of ambient air quality in terms of particulate matter (PM₁₀ and PM_{2.5}) emissions at some selected DMDP 2 investment roads is provided in **Table 4-6**. The results as further illustrated in **Figure 4-8**, indicate Mbegani Road has the highest concentration of PM_{2.5} and PM₁₀ (63.3 and 73.1 µg/m³ respectively) followed by Namnani, Midizini and Binti Kayenga Roads. As per Tanzania Standards (TZS837:2005) emission limits for PM_{2.5}, PM₁₀, are 25µg/m³, 50µg/m³ respectively.

Thus, the existing environment for Lion, Mbegani, Namnani, Binti Kayenga and Midizini are polluted with particulate matter. Higher concentration of particulate matter in these roads is

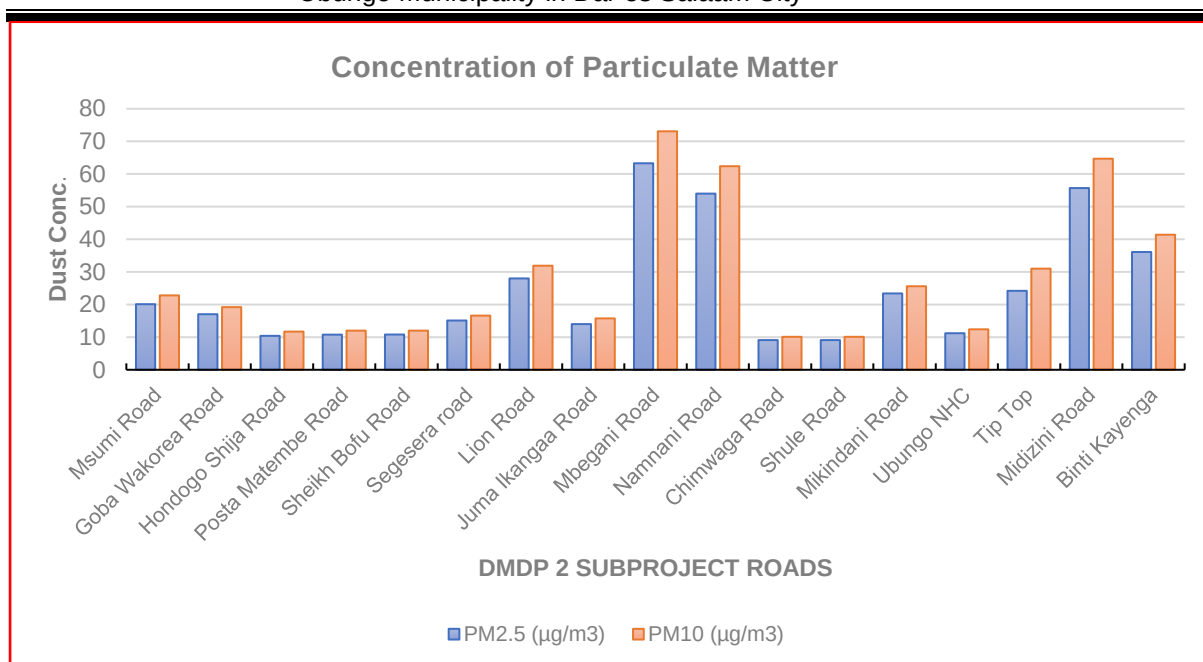
⁵¹ The Environmental Management (Standards for the Control of Noise and Vibrations Pollution) The Government Notice No. 32 Published on 30/01/2015.

attributed by unpaved condition, traffic movement and wind blowing. It is expected that successful upgrading of DMDP 2 subproject roads into bitumen/concrete standards will contribute to reduce level of particulate matter to be within emission standards.

Table 4-6: Recorded PM₁₀ and PM_{2.5} Concentrations

SN	DMDP 2 Investment Road	Sampling Date	Sampling Duration	PM _{2.5} (µg/m ³)	PM ₁₀ (µg/m ³)
1	Msumi Road	5 th July, 2023	115 Minutes	20.1	22.8
2	Goba Wakorea Road	5 th July, 2023	130 Minutes	17.0	19.2
3	Hondogo Shija Road	5 th July, 2023	120 Minutes	10.4	11.7
4	Posta Matembe Road	3 rd July 2023	45 Minutes	10.8	12.0
5	Sheikh Bofu Road	3 rd July 2023	54 Minutes	10.8	12.0
6	Segesera Road	3 rd July 2023	40 Minutes	15.1	16.6
7	Lion Road	4 th July 2023	45 Minutes	28.0	31.9
8	Juma Ikangaa Road	4 th July 2023	70 Minutes	14.0	15.8
9	Mbegani Road	3 rd July 2023	40 Minutes	63.3	73.1
10	Namnani Road	3 rd July 2023	55 Minutes	54.0	62.4
11	Chimwaga Road	4 th July 2023	25 Minutes	9.1	10.1
12	Shule Road	3 rd July 2023	45 Minutes	9.1	10.1
13	Mikindani Road	4 th July 2023	60 Minutes	23.4	25.6
14	Ubungo NHC	5 th July, 2023	70 Minutes	11.2	12.4
15	Tip Top	3 rd July 2023	60 Minutes	24.2	31.0
16	Midizini Road	3 rd July 2023	45 Minutes	55.7	64.7
17	Binti Kayenga	3 rd July 2023	45 Minutes	36.1	41.4

Source: Field Measurement by the Consultant (July 2023)

**Figure 4-8: Results of Measured Particulate Matter Concentration**

Source: Field Measurement by the Consultant (July 2023)

4.1.6.2 Measurements of Gaseous Emission

The average concentrations of Carbon Monoxide (CO), Carbon Dioxide (CO₂), Nitrogen Oxide (NO), Hydrogen Sulphide (H₂S), Sulphur Dioxide (SO₂) and Ozone (O₃) were measured from 22 DMDP 2 Subproject Roads in Ubungo Municipality and recorded in **Table 4-7**. These results have been further illustrated in **Figure 4-9**.

Table 4-7: Measured Average Concentration Values of Gaseous Pollutants

S N	DMDP 2 Road	Sampling Date	Sampling Duration	CO (mg/m ³)	CO ₂ (mg/m ³)	NO (mg/m ³)	H ₂ S (mg/m ³)	SO ₂ (mg/m ³)	O ₃ (mg/m ³)
1	Msumi Road	5 th July, 2023	115 Minutes	0	0.04	0	0	0	0.22
2	Goba Wakorea Road	5 th July, 2023	130 Minutes	0	0.04	0	0	0	0.21
3	Hondogo Shija Road	5 th July, 2023	120 Minutes	0	0.04	0	0	0	0.20
4	Posta Matembe Road	3 rd July 2023	45 Minutes	0	0.04	0	0	0	0
5	Sheikh Bofu Road	3 rd July 2023	54 Minutes	0	0.03	0	0	0	0
6	Segesera road	3 rd July 2023	40 Minutes	0	0.03	0	0	0	0.02
7	Lion Road	4 th July 2023	45 Minutes	0	0.04	0	0	0	0.08
8	Juma Ikangaa Road	4 th July 2023	70 Minutes	0	0.03	0	0	0	0.62
9	Mbegani Road	3 rd July 2023	40 Minutes	0	0.04	0	0	0	0
10	Namnani Road	3 rd July 2023	55 Minutes	0	0.03	0	0	0	0.17
11	Chimwaga Road	4 th July 2023	25 Minutes	0	0.04	0	0	0.01	0.05
12	Shule Road	3 rd July 2023	45 Minutes	0	0.02	0	0	0	0

S N	DMDP 2 Road	Sampling Date	Sampling Duration	CO (mg/m ³)	CO ₂ (mg/m ³)	NO (mg/m ³)	H ₂ S (mg/m ³)	SO ₂ (mg/m ³)	O ₃ (mg/m ³)
13	Mikindani Road	4 th July 2023	60 Minutes	0	0.02	0	0	0	0
14	Ubungu NHC Road	5 th July, 2023	70 Minutes	0	0.04	0	0	0	0.21
15	Tip Top Road	3 rd July 2023	60 Minutes	0	0.02	0	0	0.01	0
16	Midizini Road	3 rd July 2023	45 Minutes	0	0.03	0	0	0	0
17	Binti Kayenga Road	3 rd July 2023	45 Minutes	0	0.03	0	0	0	0

Source: Field Measurement by the Consultant (July 2023)

The average concentration of ozone at Msumi, Goba – Wakorea, Hondogo Shija, Juma Ikangaa, Namnani and Ubungu NHC roads was observed to be higher than Tanzania and WHO emission standards. This indicates that pollutant gases emitted by vehicles and other sources reacted in the presence of sunlight and caused increased level of ozone near the ground.

The remained other measured pollutant gases were found to be within local (TZS837:2005) and international (WHO) guidelines (**Table 4-8**). Concentration values that recorded a zero reading (0.00ppm⁵² or 0.00mg/m³) do not necessarily indicate the absence of the measured gases but rather than that the levels present (if any) may be below the detection levels of the measuring device. In this regard, a zero reading indicates that the measured parameter is well below the pollution limit/thresholds.

Table 4-8: National and International Standards for Ambient Gases

Standard	Ambient Gases Emission Limit					
	CO ₂ (%)	CO (ppm)	NO (ppm)	SO ₂ (ppm)	H ₂ S (ppm)	O ₃ (ppm)
TZS837:2005	Not Specified	0.40	0.08	0.08	Not Specified	0.10
WHO Guidelines	Not Specified	0.10	0.05	0.05	Not Specified	0.12

⁵² 1ppm is equal to 1mg/m³

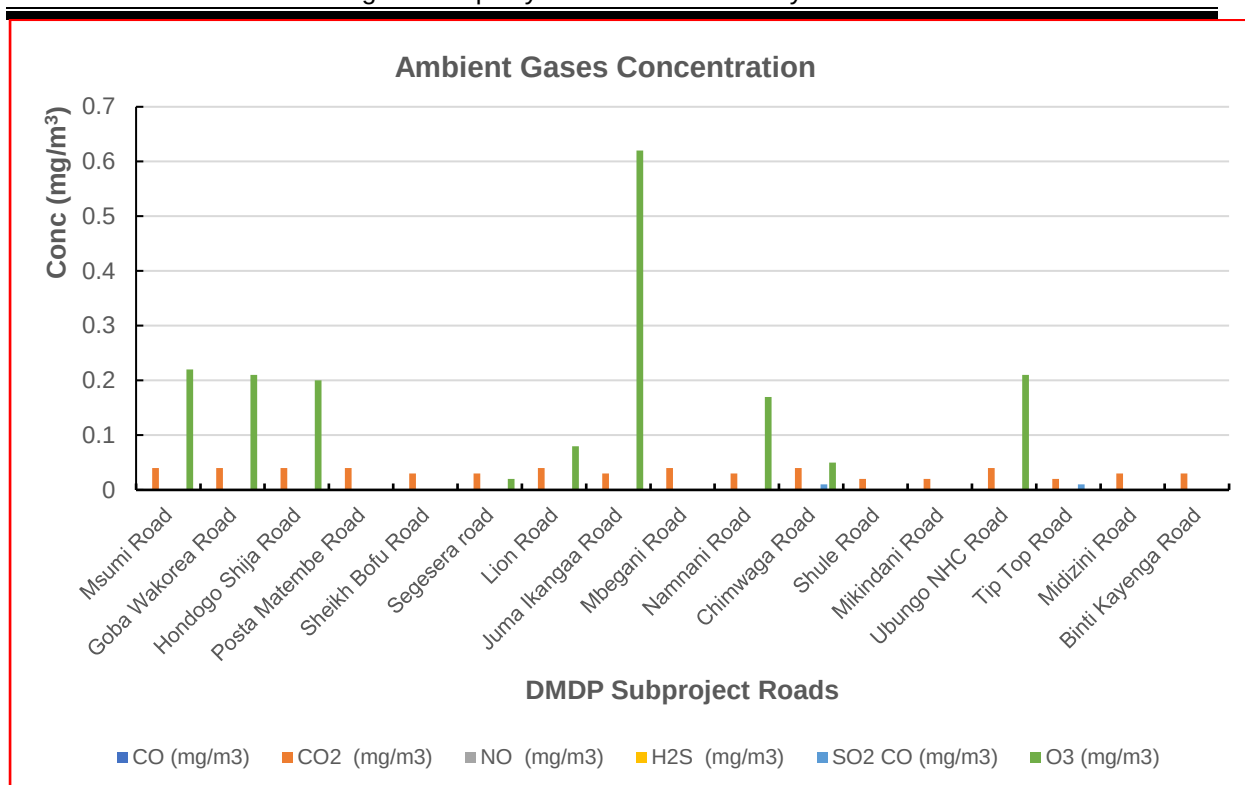


Figure 4-9: Results of Measured Gases Emission Level for DMDP 2 Subproject Roads in Ubungu

Source: Field Measurement by the Consultant (July 2023)

4.1.7 Geology and Soils

The geology of the project area is dominated by continental and lacustrine sedimentary formations⁵³. The sub-soil is dominated by marine limestone, mainly comprised of sandy clay and clayey sands. According to the Geological Map of Tanzania⁵⁴ the project area is comprised of Mesozoic rocks, limestone, sandstone, shales and mark. Generally, the soils are categorized as SAND and loamy SAND with good drainage properties.

4.1.8 Ground and Surface Water Resource

(i) Surface Water Quality

The road section crosses seven major seasonal rivers, namely: Tegeta, Kibwegere, Saranga, Gide, Ng'ombe, China and Msumi/Mbezi. Physical observation shows that these rivers are highly contaminated due to discharge of raw sewage wastewater from adjacent local residents and dumping of solid wastes. Sand mining activities is common in the river beds, hence affecting the stability of the river banks. Laboratory examination for water samples collected from these rivers is underway.

(ii) Ground Water Quality

The project site is within the Coastal Sedimentary Aquifer, which is typically five to 30 meters thick, with a water depth of 10 to 35 meters below ground. Water quality varies, with periodic nitrate and salinity issues and better productivity from limestone and sandstone, compared with shale and marl.

According to the hydrogeological map of Tanzania⁵⁵, the project area is within the Karoo Sandstone Aquifer is unconfined with the inter-granular flow and is also comparatively near-

⁵³ Geology and Mineral Map of Tanzania. Patrice Pinna, Sospeter Muhongo, Boniface A. Mcharo, Elizabeth Le Goff, Yves Des Champs, Francis Vina Uger and Jean Pierre Milesch, December 2004

⁵⁴ Source: http://earthwise.bgs.ac.uk/index.php/Hydrogeology_of_Tanzania

⁵⁵ Source: Hydrogeology of Tanzania. http://earthwise.bgs.ac.uk/index.php/Hydrogeology_of_Tanzania

surface—boreholes are seldom drilled more than 80 meters deep. However, the baseline indicates there is not any groundwater source within the road construction corridor. It is therefore unlikely that ground water sources will be affected during construction.

4.1.9 Biological Environment

4.1.9.1 Flora

The project is located within heavily built-up urban environment with commercial, residential and institutional buildings. Most of the existing flora is comprised of planted grass and ornamental or shade trees along the roads.

During undertaking of field survey along the selected DMDP 2 Subproject Roads in Ubungo Municipality, a total of 130 plant species were identified including 66 indigenous (50.8%) and 64 exotics (49.2%). Of the 130 plant species, only 30 were judged as the most distribute with the relative frequency (RFQ) of 3.1 - ≥1.19% (**Table 4-9**).

Table 4-9: Most Distributed Plant Species along DMDP 2 Subproject Roads in Ubungo Municipality

Botanical name	GF	Ind	Exo	FQ	RFQ
<i>Muntingia calabura</i>	T	0	1	13	3.1
<i>Trichilia emetica</i>	T	1	0	13	3.1
<i>Carica papaya</i>	T	0	1	11	2.62
<i>Cocos nucifera</i>	T	0	1	11	2.62
<i>Senna siamea</i>	T	0	1	10	2.38
<i>Tamarindus indica</i>	T	1	0	10	2.38
<i>Leucaena leucocephala</i>	T	0	1	9	2.14
<i>Pithecelobium dulce</i>	T	0	1	9	2.14
<i>Polyalthia longifolia</i>	T	0	1	9	2.14
<i>Elaeis guineensis</i>	T	0	1	8	1.9
<i>Maerua angolensis</i> ***	T	0	1	8	1.9
<i>Terminalia calamansanai</i>	T	0	1	8	1.9
<i>Albizia petersiana</i> ***	T	1	0	7	1.67
<i>Annona senegalensis</i>	T	1	0	7	1.67
<i>Cascabela thevetia</i>	SR/T	0	1	7	1.67
<i>Delonix regia</i>	T	0	1	7	1.67
<i>Mangifera indica</i>	T	0	1	7	1.67
<i>Moringa oleifera</i>	T	0	1	7	1.67
<i>Azadirachta indica</i>	T	0	1	6	1.43
<i>Pluchea discolors</i>	SR	1	0	6	1.43
<i>Pteleopsis myrtifolia</i> ***	T	1	0	6	1.43
<i>Sideroxylon inerme</i> ***	T	1	0	6	1.43
<i>Terminalia mantaly</i>	T	0	1	6	1.43
<i>Dalbergia melanoxylon</i> ***	T	1	0	5	1.19
<i>Harrisonia abyssinica</i> ***	SR/T	1	0	5	1.19

Botanical name	GF	Ind	Exo	FQ	RFQ
<i>Lamprothamnus zanguebaricus</i> ***	T	1	0	5	1.19
<i>Ravenala madagascariensis</i>	T	0	1	5	1.19
<i>Ravenea rivularis</i>	T	0	1	5	1.19
<i>Tectona grandis</i>	T	0	1	5	1.19
<i>Thespesia danis</i> ***	SR/T	1	0	5	1.19
<i>Vachelia nilotica</i> ***	T	1	0	5	1.19

Key: *** = indigenous plant; Exo = exotic; FQ = frequency; RFQ = relative frequency; GF = growth form; Ind =indigenous; SR = shrub; SR/T = shrub or tree; T = tree;

Source: Field Survey by the Consultant (June 2023)

4.1.9.2 Fauna

The existing flora provides a natural habitat for small mammals (e.g., rats and squirrels), insects, reptiles (e.g., snakes), amphibians (e.g., toads, and frogs), and birds (e.g., Indian house crow). However, the presence of Indian house crow (*Corvus splendens*) has resulted into elimination of other avian species.

4.2 Socio-economic and Cultural Environment

4.2.1 Population

Ubungo Municipality has a total area of 269.40 square kilometres. According to the 2022 population Census, the Municipality had a population of 1,086,912 where male was 519,925 which is 47.8% of the population and female was 566,987% which is 52.2% with a growth rate of 3.4% per annum. The municipality is estimated to have 317,087 households (Table 4-10).

Table 4-10: Population of Ubungo Municipality

Male	Female	Total	Sex ratio	Number of households	Average household size
519,925	566,987	1,086,912	92	317,087	3.4

Source: National Bureau of Statistic (Housing and Population Census, 2022)

The proposed project roads are found at Goba, Kibamba, Ubungo, Mbezi, Sinza, Manzese, and Mabibo wards in Ubungo Municipality. Table 4-11 shows ward population where the DMDP 2 subproject roads are passing across, whereas Goba ward is the highest populated area. It has been estimated that the project will directly benefit a total population of 540,440 people.

Table 4-11: Population of Ubungo Municipality

Ward name	Both sexes	Male	Female	Sex ratio	Number of households	Average household size
Goba	140,572	66,829	73,743	91	37,934	3.7
Kibamba	43,191	20,349	22,842	89	11,399	3.8
Mabibo	74,887	36,813	38,074	97	25138	3.0
Manzese	62,251	31,209	31,042	101	21507	2.9
Mbezi	143,803	68,369	75,434	91	37,740	3.8
Sinza	31,396	14,759	16,637	89	19,874	2.9
Ubungo	44,340	21,738	22,602	96	15,712	2.8
Total	540,440	260,066	280,374		169,304	

Source: National Bureau of Statistic (Housing and Population Census, 2022)

4.2.2 Land Use

Ubungo Municipality is poorly served, particularly in the unplanned settlements. Old and new planned residential areas as the quality and quantity of utility services provided do not meet the demand. Inadequate and uncoordinated infrastructure provisions have caused slow pace of development in the Municipality. Thus, increase of un-serviced and unplanned shelter development.

4.2.3 Community Structure

The main organization of Mtaa government in the study area is the Mtaa Assembly and Council. The Mtaa Assembly is made up of the adult members of the community and the Mtaa council is composed of 5 members comprised of men and women representatives. The Mtaa council is responsible for overseeing day to day activities in the Mtaa (sub-ward) as well as to make decisions on matter concerning the whole community. Functions of the Mtaa Assembly are the maintenance of peace and order the promotion of social welfare and economic development. The Council manages Mtaa and implements decisions made by the assembly.

Like the Municipal Council, the Mtaa government is arranged into a series of committee's and overseen by the Mtaa Chairperson, Mtaa Executive Officer (MEO), and Mtaa members of the council). The main committees include Finance and Planning, Safety and Security, Construction and finally Education, and Social Services. The sub-committees of the latter include the water and sanitation committee, health committee, environment committee and the school committee.

4.2.4 Employment

It is estimated that Ubungo has a population of 1,086,912, among of those 701,317 are manpower while the remainders are elders and children who are 364,969 and 20626 respectively. Whereby 65% manpower are engaged in private sector, 35% are self-employed and 4% are employed in public sector. The activities engaged are private companies, institutions, business, petty traders, fishing, livestock keeping and agricultural activities.

4.2.5 Household Resource Control and Property Ownership

Although men are still regarded as the family breadwinner gender relationships reflect the importance of both men and women in the present socio-economic set-up and activities in the study area. In access to, and utilization of production resources, both genders are involved. Both men and women are in retail business, operating food-vending, industrial employment and casual labour and urban agriculture.

Transport operators remain to be youth activities living in the study area. Ownership of means of production such as capital, labour, basic capital assets (plots, houses and working tools) and seasonal inputs such as seed is also balanced. In some cases, ownership of capital and interest from the financial capital is based on the male domination where, husband has more voice over his wife (wives). However, at the end men are regarded as the owner and final decision maker over the family resources.

4.2.6 Education

In this project area education is divided into three areas of pre-primary, primary and secondary education. Almost every ward in the municipality has pe-primary, primary and secondary schools. Ubungo Municipality has 113 pre-primary schools, of which 60 are owned by the government and 53 by the private sector. Additionally, the Municipality has 118 primary schools, of which 64 are owned by the government and 54 by the private sector. 76,346 students in STD I through STD VII are enrolled in all 64 primary schools, together with 2,434 teachers.

4.2.7 Adolescent Pregnancy

Despite efforts to reduce adolescent pregnancy rates in Tanzania, they are still high. Information from Municipal Social Experts in Ubungo MC highlighted that, adolescent pregnancies are caused by different factors including social capital whereby adolescents did not get pregnancy information from their parents and peers, when in need of information on how to avoid or deal with teenage pregnancy. In previous times, other relatives like aunts, in particular were approached, but due to societal changes and new family structures (moving from extended to nuclear families because of modernity and increasing mobility) this service seemed to cease.

Other factors are cultural capital (used as barrier) where family members, and peers may not offer reliable information about sexual health and pregnancy. Economic capital has also contributed to adolescent pregnancy especially for school girls from low earners families. It was revealed (Anecdotal data) that almost 27% of school drop outs at primary school and 31% of drop out at secondary school in the study area are caused by lack of basic needs at school including pocket money and other supplies. It is within the context that the proposed project must provide reproductive health education to adolescents and temporary employment to local people to minimize economic constraints which may put the adolescents into more temptations and health risks.

4.2.8 Learning Institutions along the Road

There are significant institutions found nearby and along proposed DMDP 2 Subproject Roads which provide training/courses at different stages. Among of the others, include St. Joseph University and University of Dar es salaam. There is also an institute called Paradigm which provides certificates and diploma in laboratory, medicine, nursing and Social studies.

4.2.7 Medical Facilities/Hospitals Along the Road

Health is one of the key sectors of which people depend on it when seeking their health status. The DMDP 2 project will also require the services from health sector as construction workers will have to seek health services when get injuries or for the sake of knowing their health status.

In the project area there are few health facilities ranging from dispensaries and Health centres. The Municipal Council currently has a total of 68 health facilities of which 17 are government owned, while the remaining 51 are owned by Private Organizations.

Sinza Hospital is the only government owned hospital providing health services within the Municipality. The Hospital is located at Sinza "C" Mtaa along Shekilango Road close to Msikitini Road. This hospital is ranked to a District Hospital whose attendance ranges between 1,000 and 1,500 in and out patients per day. All the health facilities provide cure, preventions of communicable and non-communicable Diseases. **Table 4-12** shows a list of health facilities available in Ubungo Municipality.

Table 4-12: Available Health Facilities in Ubungo Municipality

Health Facility Level	Ownership		Total
	Government	Private	
Hospital	1	4	5
Health Centres	0	6	6
Dispensaries	16	41	57
TOTAL	17	51	68

Source: Ubungo Municipality Socio-economic Profile (UMC, 2022)

4.2.8 Livelihood

The main economic activities taking place around proposed DMDP 2 Subproject Roads in Ubungo Municipality can be categorized as mercantile business, retailing businesses (including small and medium shops, hotels, bars and restaurants), transportation services, clearing and forwarding, Agro businesses, medical businesses, handcraft businesses, banking businesses and construction business. These activities employ about 45% of the total population of the Municipality. The businesses play a significant role to the Municipal's economy in terms of revenue and in provision of job opportunities to the residents.

Agriculture and livestock sector is another important economic activity in the Municipality whereby about 13% of the population is employed in the sector. The livestock kept in the study area are cattle, goats, sheep, pigs, and chicken. Also provides employment to a sizeable proportion of the people in the Municipality.

4.2.9 Income Generating Activities (IGA)

The analysis of social economic activities determined income and expenditure pattern of people living along and adjacent DMDP 2 Subproject Roads where the project is located. In access to, and utilization of production resources, both genders are involved. Although men are still regarded as the family breadwinner gender relationships reflect the importance of both men and women in the present socio-economic set-up and activities in the area. Both men and women are engaged in whole sell business, retail business, operating food-vending, industrial sector, horticulture, and agriculture.

4.2.9.1 Retail Shops

Currently the residents along the project roads have retail shops particularly in all business centres in all 8 wards. The shops and kiosks stock a wide range of goods including foodstuffs, household utensils, school supplies, textiles, cosmetics and minor spare parts for motorbikes, bicycles. The photograph below shows different commodities found in one street in the project area. However, some of the goods are slow moving commodities because of many shops selling the same items.

4.2.9.2 Restaurants and Food Vending

There are medium and small restaurants and numerous food vendors in business centres in the study area especially at Tip Top, Midizini and Binti Kayenga where DMDP 2 connect with BRT infrastructure through Morogoro road. The restaurants serve soft drinks, tea snacks and meals basically to industrial workers, visitors, workers at the market. It was noted that restaurants and food vending employ a good number of girls in a daily basis and wages range from TZS. 5,000 to TZS. 10,000. These girls apart from preparing food they also serving to the customers in their respective working places. This technique is to reduce the walking distance of customers and increase income of to the owners. In rare cases girls are paid according to the plate of food they sell daily.

4.2.9.3 Boda-boda (motorbike) Business

This is the recently emerged business which employs good number of youths. The business deals with transportation of passengers from the trunk roads to remote areas with transport difficulties. Due to transport congestions in Dar es Salaam, Bodaboda are used as means of transport which penetrates during traffic jams and reach the intended destination within a reasonable time. So many workers and people who want to reach early at their respective destinations opt to use Bodaboda other than commuters. Most of the Bodaboda operators do not own the bike but they work for wage in daily basis. However, few of them engage in contract with owners and after servicing the agreeable amount, the operator owns the bike. Bodaboda business makes more than TZS. 30,000/= and pays the owner TZS. 10,000 per day. It means the operator can accumulate TZS. 20,000/= per day as a daily income.

4.2.9.4 Small Business Operations

Petty trade includes selling a range of products in small and medium quantities in stalls/shelves along the project road and, in other areas, at the local market or along the streets. The products sold include rice, maize and cassava flour, vegetables, and dry cassava, and dried fish, and fruits. Other products dealt by petty traders include household utensils and textiles, mainly second-hand clothes.

4.2.10 Urban Agriculture

As far as agriculture is concerned, there has been a significant variation in the production capacity of vegetables, fruits, coconut, cashew nuts and food crop in Ubungo Municipality. About 1,850. (Ha) of land in the Municipality is potential for agricultural practices especially crop cultivation (Though the figure might differ due to rapid expansion of urban related activities). Land estimated under use for both cash crops and food crops is 174.94(Ha); approximately 9.45% of land is potential for agriculture. Farmers engage in small and large farming, and they mostly till their land using hand equipment's. Few of them use tractors and traditional upgraded technology. Agriculture provides the Municipality with 1,007.54 tons of food crops, which is only 0.65% of the total annual food requirement of the population.

The major food crop grown includes cassava, sweet potatoes, paddy, maize, and cowpeas. Cassava is the main food crop in the peri – urban areas. The main cash crops grown include a variety of vegetables such as Amaranthus, Chinese cabbages, egg plants, okra, kale, and leek (*matembele*), fruits like citrus, passions, paw paws (papaya), pineapples, mangoes, cucumbers, and cashew nuts.

4.2.11 Livestock

Livestock keeping is usually done in rural areas. Major types of animals kept are dairy cattle, poultry, sheep, goats, and pigs. Zero grazing is practised in urban areas and semi-intensive to extensive method in peri urban. The available data reveal that wards in peri-urban are leading in livestock keeping. The project area has a significant number of livestock, they are owned by individual families. An urban livestock system is characterized by a large variation of livestock systems that occur in and around densely populated areas and that strongly interact with the surrounding wealthy as well as poor human communities in different ways, at several levels of system- hierarchy and with nearby and distant rural areas.

Intensive system is practiced in Ubungo Municipality. It contributes to income of livestock keepers, provide food, waste management (manure for Farming), utilize products such as brewers spent grains, maize bran to convert to high quality protein. Driving force to urban livestock keeping; is the growing demand for meat eggs and milk in town and income generation.

4.2.12 Fisheries Sector

Field Survey by the Consultant in July 2023 revealed that capture fisheries is not undertaken in Ubungo District; instead, fish farming dominates within the Fisheries Sector within project influential area. There are approximately 30 fish ponds in Ubungo district. The most common fish species being farmed includes Tilapia (*Oreochromis Niloticus*) and Catfish (*Clarias gariepinus*). More than 50% of consulted business operators own fish butchers in Ubungo Municipality. Fish butchers are mainly located at Shekilango, Mbezi, Mabibo, Sinza and Manzese areas.

4.2.13 Distribution of Income

The socio-economic survey obtained from Dar es salaam City Master Plan (2016/2018) indicated that, in the project area majority of residents (about 71%) earn income between TZS 50,000 and 200,000, of which 28% earned monthly income ranging from TZS 50,000 to 100,000, 21% earn income between TZS 100,000 and 200,000 and 22% ranging between TZS 200,000 and 400,000.

Only 15% of the residents earn income above TZS 400,000 while 14% of residents earn income below TZS 50,000. The result from socio economic survey indicates that about 91% of residents had a monthly income below TZS 600,000. Only 8% had monthly income ranging from TZS 600,000 to TZS 1,500,000 and 1% had income above TZS 1,500,000. This is below the national average where the group earns income above TZS 1,500,000 is 3.8%, also the fact implies that majority of households in peri-urban are low-income earners.

4.2.14 Infrastructure and Utilities

4.2.14.1 Water Supply

The main source of drinking water for Ubungo residents is from Lower and Upper Ruvu piped-water supply distribution systems which managed by Dar es Salaam Water and Sanitation Authority (DAWASA).

In Ubungo MC, water from DAWASA systems contributes to 81% of water being consumed daily and the rest is contributed by deep wells which owned by both private and public. In Ubungo Municipality only 81% of the population has direct access to clean and safe drinking water in less than 400 metre according to National Water Policy (2002) while the rest 19% have no smooth access.

4.2.14.2 Transport Issues

Transportation plays a major role in urban development enabling movement of both people and goods between points. For Dar es Salaam, transportation is dominated by public transit and walking between its primary roads and arterial roads. Traveling for Dar es Salaam residents is influenced by behaviour, proximity, and a mix of land use, density, and design. The city's residents travel short distances but with much difficulty, leading to low levels of mobility and therefore, difficulty in meeting transportation demands. The poor level of mobility is caused by overpopulation, poverty, and uncontrolled urban growth, factors that directly affect the provision of transport services and transportation infrastructure construction. Thus, DMDP2 project will solve transport difficulties by connecting people from their homes/businesses to Rapid Transit Buses and to other social services.

4.2.15 Housing

Shelter is one of the most important human basic needs. Good housing has a close correlation with good health and other aspects of human dignity and wellbeing. Although there is no clear-cut definition on which is proper and good housing facility, but enough and well-ventilated rooms, kitchen and toilets provision were used to determine the quality of the shelter in the study area. Moreover, type of structures and materials used in construction were also primarily used to determine the quality of the house in the study area.

It is estimated that 70 percent of the population in Dar es Salaam live in unplanned and unserved settlements. This situation leads to: poor accessibility and frequent flooding, soil erosion, ground water and air pollution, public safety issues, lack of playground for children, high cost of services such as potable water, long walking distances to water points, health services and schools. Most of houses are also in poor condition require major improvements or replacement.

4.2.16 Solid Waste Disposal

In regard to solid waste collection and transportation, there has been an increase in rates of solid waste collected and transported to the disposal site since 2000, when Councils opted to work in partnerships with the private sector as contractors of solid waste collection and transportation, the collection rate decreased from 650 tons in 2015 to 550 tons per day 2018 and now Ubungo Municipal is estimated to generate about 827.4 tons per waste per day (which gives 302,001 tons per year) according to the current generation projections based on the other informal sectors comprise this amount.

The decrease was due to decrease of skip buckets, decrease in number of skip loaders, and decrease in number of refuse trucks the main factors contributing to low level of solid waste collection includes:

- fast population growth resulting in daily waste generation levels that exceed the handling capacities of the council
- limited financial resources which constrain the ability of the council to secure the necessary infrastructures and appropriate equipment in adequate numbers to provide the services

4.2.17 Energy

Electricity is the power source for domestic, commercial premises, institutions, and industries. All Municipalities are connected to the National grid. The power supply line connects almost all wards except few wards in per-urban.

In Ubungo Municipality, the energy services include Ubungo II Thermal Power station (TANESCO) and Ubungo Power Plant (SONGAS) which provide energy services such as electricity in the Ubungo Municipality and the whole country.

4.2.18 Safety and Security

Urban safety and security are a deepening concern worldwide. In the study area and Dar es Salaam city in general, safety and security are low due to increases in urban crimes and violence and environmental degradation that tends to affect public health. In high-density areas the crimes rate is higher than in medium and low-density areas. Informal housing development, lack of street lighting compounds the problem.

4.2.19 Gender Issues

Gender empowerment ensures that, all sexes particularly women are fully participating in policy and decision-making processes and in all aspects of economic, socio-cultural, participation in managerial, political, professional, and technical personnel. It is within this context women are encouraged to participate fully in this DMDP 2 project from planning stage, construction, and operation stages as one of the most beneficiaries of employment in the project. In the project area women are significantly involved in implementing activities especially in economic activities besides horticulture, 60% of the interviewed women were engaged in business activities such as selling of food crops, local brewing, food vending and alike.

For example, in Ilala Women groups have been assisted in different projects. In 2015, data available shows that there were 298 women groups with 1,489 members among them 92 groups were loaned TZS 774,652,652.00. In 2018, there were 2, 322 women economic groups, with members being 11,624 who were loaned TZS 1,021,200,000.00 who were engaged in a variety of economic activities such as petty business, agriculture and animal husbandry, Batik, tie and die and food/beverages processing.

The unequal access to economic opportunities such as sharing of household income and other family/clan wealth existing between men and women leaves women with minimal options of earning their lives decently. It is reported that sometimes some of the women resort to promiscuity in order to meet their needs. With the prevalence situation of HIV/AIDS, they place themselves in a high-risk. Furthermore, women and girls are more vulnerable as they face early pregnancies, school dropout, early marriages, raping, unequal gender roles and prevalence of STDs among women and girls.

4.2.20 HIV/AIDS Prevalence

According to Tanzania HIV/AIDS and Malaria Indicator Survey (THMIS, 2017/18), Tanzania is experiencing some recent decline in national HIV prevalence. Between 2004 and 2012, the overall adult prevalence rate fell from 7% to 5.0 (from 6% to 3.8% % for men and from 8% to 6.5% % for women). Declines in HIV prevalence were also observed among pregnant women attending antenatal clinics and among blood donors.

The downward trend in levels of HIV infection correlates with the reduction in behaviours known to have a high risk of transmitting HIV. For example, in the 15-49 age group, casual sex with non-marital, non-cohabiting partners declined from 46% to 29% among men, and from 23% to 16% among women. (National HIV and AIDS Policy, 2013).

Looking at the study area HIV/AIDS is a killer disease in all the regions including Dar es Salaam. It was revealed from the reported cases in Ilala Municipal (one of the project municipalities) from 2015 to 2018 that a total of 208 persons were tested in 2015, 314 in 2016, 2,445 in 2017 and 9,397 in 2018. The same report reveals that Expectant mothers were tested for HIV/AIDS status and the status of their children born in 2018 and 49,823 mothers tested indicated that 2.7% were HIV/AIDS positive. Thus, the number of children born with negative status were 40312 and 1521 children was HIV positive.

Regarding the life style of the people and socio-cultural and traditional practices, the project area is not exceptional from other communities with similar traditions which in one way or another early marriage, raping cases and early pregnancies are indicators of activities fuelling the prevalence of HIV. With the coming project stern measures should be taken to prevent the spread of it through HIV awareness campaigns including safe sexual relations and fidelity to couples.

4.2.21 Ethnic Groups

The dominant ethnic groups in the Ubungo Municipality are Zaramo, but due to urbanization many people of different ethnicity have immigrated making a heterogeneous tribal composition where no single ethnic group accounts for more than 50 percent of the total Dar es Salaam population. The project area inherits a long-established Swahili-Arab Culture that predates Arabs Settlers. The majority of ethnic groups speak Swahili, as a common language for communication and general trading.

4.2.22 Aspirations and Attitudes of the Adjacent Communities

Transport in Dar es Salaam is a major problem faced by almost every resident in the city despite his/her age. Workers and school children face constant transport hurdles in the morning and in the evening. The proposed DMDP 2 Subproject Roads seemed to be the best solution of ferrying magnitude of passengers in peak hours to and from city centre.

4.2.23 Gender Based Violence, Sexual Exploitation and Abuse

4.2.23.1 Country and District Level GBV

Gender Based Violence has been defined as “any harmful act that is perpetrated against a person’s will and that is socially ascribed (gender) differences between males and females. GBV has a greater impact on women and girls, as they are most of often the survivors and suffer of great physical damage than men when victimized. It was revealed by Community Development Officer (DCDO) from GBV Desk that in the project area the gender-based violence which is leading is *sexual abuse* reflecting; rape, dishonesty in relationship, forced unprotected sex, touching of private parts of a person without his/her consent, etc; followed by *physical violence* referred to beating, punching, pushing, grabbing, maiming, and killing with or without weapon. *Psychological violence* includes verbal abuse, scolding, isolating, verbal humiliation, gesture, annoyance, slandering and disgracing.

The last (but not the least) is economic abuse includes lack of voice in economic rights affecting one, working for less pay, failure to own property that one deserves, trafficking of persons, denial of basic necessity e.g., food, denial of education as a basic right, and early marriages, lack of right to access health delivery in hospitals, denial of funds for attending health services by parent or guardian, etc

According to the study carried out in 2013 shows that in the project area GBV is existing with alarming rate that women Ever experienced physical violence is 31.8% and those Ever-experienced sexual violence is 24.1%. Looking at the acceptance of GBV the study shows that attitudes towards wife beating 39% of women aged 15-49 agree that a husband has a right to beat his wife if he argues with him. 18% of women of the same age cohort agree that a husband has the rights to beat his wife if she burns the food. 40% of women agree that the husband has the rights to beat his wife if she neglects children.

The main challenge of such violence in the project area is attitudes, norms and behaviours that are deep-rooted in the families, homes and communities and institutionalized at all levels and consequently producing a culture of social acceptance of gender violence, especially violence against women. The study is still collecting current data from respective districts which may be higher than this due to COVID 19 where children (school children) remained home for couple of months.

4.2.23.2 Project Related Risks on GBV, SEA and SH

It should be noted that the main affected personnel in the project are company staff, local workers (skilled and non-skilled) as well as the surrounding community. At the working scenarios there will be high interaction of different cadre of people. At the working sites the Contactor should develop GBV and Sexual harassment Policy to guide workers not to engage in:

- Physical conduct – beating, unwelcoming physical conduct like patting, kissing etc
- Physical violence including sexual assault
- The use of job-related threats or rewards
- Verbal conduct
- Non-verbal conduct like display of sexually explicit or suggestive materials

Provision of training to all workers on GBV, SEA and SH and collaborate with community leaders on GBV related issues existing in the community (physical violence, sexual violence, and economic violence) that can be a barrier in executing site works among labourers (men and women).

4.2.24 Road Traffic Safety

In this section traffic and road accidents are not yet available. Zonal Traffic Officer in Dar es Salaam is still working on it. However, in the past there was an increase in road traffic accidents in the region of 4.3% between 1999 and 2000 and 2.7% during 2000 and 2001. The total number of traffic accidents was 16 372 during these 3 years. There were more injury victims among men than among women in all 3 years. A steady increase of 15 % of injured victims was observed from 1999 to 2001 (3426 vs. 3926 injuries).

Men had an approximately four times higher prevalence of death compared to women in each survey year. The total number of death cases in road traffic accidents increased by 21% from 1999 to 2001 (296 vs. 375 death cases). The causes of road traffic accidents in 2001 were speeding (25.1%), careless driving (20.1%) and mechanical defect of the vehicle (14.0%). Most of the injuries occurred during the day (61.2 –65.9%, These former findings will be used as benchmark for current road accidents. In the last decade the Government has put some stern measures to reduce road accidents through speed limits in urban areas which is 50 Km/hr, inspected driving licence, vehicle inspections and other related measures.

CHAPTER FIVE

5.0 STAKEHOLDER CONSULTATIONS AND PUBLIC PARTICIPATION

5.1 Stakeholder Identification and Analysis

The identified stakeholders can be categorized into developer, decision makers, interested parties; and Affected parties positively or negatively and directly or indirectly. The stakeholder analysis matrix is provided in **Table 5-1**. The identification of stakeholders was based on how they are related to the project, how the project is going to affect them and why should they be consulted.

5.2 Project Developer

The developer in this project is Ubungu Municipal Council (UMC) under coordination of President office, Regional Administration and local government (PO-RALG). Tanzania Rural and Urban Roads Agency (TARURA) is an operator of DMDP 2 Subproject Roads. Therefore, UMC, PO-RALG and TARURA are responsible for ensuring the project is implemented and operated during and after construction, respectively in compliance with sectoral and national policy objectives.

PO-RALG Permanent Secretary is responsible for financing the project on behalf of the government of the United Republic of Tanzania (GOT) and TARURA Regional and District Managers are responsible for assisting UMC in overseeing the implementation of the project at regional and district levels.

5.3 Interested Parties

The interested parties are those stakeholders who are not directly or indirectly affected by the project but they can influence the success or failure of the project or can provide advice to the project. For this project, the interested parties are the World Bank (Co-Financier), Division of Environment in the Vice President's Office (VPO-DOE), National Environmental Management Council (NEMC), Tanzania Roads Agency (TANROADS), Dar es Salaam Bus Rapid Transit Agency (DART), Dar es salaam City Council (DCC) and ward Development Committees (WDCs) and Street/Mtaa Development Committees (MDCs) in Ubungu Municipality. The local government Authorities (LGAs) are responsible for land use planning and issuance of development permit within their jurisdictional boundaries.

The VPO-DOE is responsible for approval of Environmental Management Council (NEMC) is responsible for screening and registration of the project, review and approval of scoping report and review of environmental impact assessment report and submission to the VPO-DOE for approval. TANROADS is responsible for construction and maintenance of city roads, which are linked to the DMDP 2 Subproject Roads.

5.4 Affected Parties

These are those stakeholders who can be directly or indirectly affected, whether positively or negatively by the project. The infrastructure /utility authorities namely, Tanzania Electricity Supply Company Limited (TANESCO), Dar es Salaam Water and Sewerage Authority (DAWASA); Vodacom Tanzania Private Limited Company, Airtel Company Limited, Halotel Tanzania Limited and Tanzania Telecommunication Company Limited (TTCL) are considered to be indirectly and negatively affected because their infrastructure/utilities are likely to be affected.

The Medium and Small Business Operators, Commuter Transport Operators, Bajaji/Bodaboda Operators and Local Residents living adjacent to the road corridors will be direct negatively and positively affected by the project. It is expected that during construction some of the local residents will get temporary employment opportunities while small business

operators like food vendors will get opportunity to increase their income by selling food items to the construction workers, hence considered to be directly and positively affected parties.

The local residents are also indirectly and negatively affected due to environmental, health and safety effects associated with the project activities. It is anticipated that during construction the project is likely to create some air pollution and risk of health and safety hazards to the local residents and therefore, considered to be indirectly and negatively affected parties.

Table 5-1: Stakeholder Identification and Analysis Matrix

SN	Stakeholders	Categorization
1.	President's office, Regional Administration and Local Government (PO-RALG)	
2.	Tanzania Rural and Urban Roads Agency (TARURA)	
3.	The World Bank	
4.	Vice President's Office - Division of Environment (DOE-VPO)	
5.	National Environment Management Council (NEMC)	
6.	Tanzania National Roads Agency (TANROADS)	
7.	Dar es salaam City Council (DCC)	
8.	Ubungu Municipal Council (UMC)	
9.	Kinondoni Municipal Council (KMC)	
10.	Ward Development Committee (WDCs)	
11.	Mtaa Development committee (MDCs)	
12.	Embassy of France, Japan and Indonesia	
13.	Tanzania Electricity Supply Company Limited (TANESCO)	
14.	Telecommunication Companies	
15.	Commuter Transport Operators	
16.	Business operators along the road corridors	
17.	Local Communities along the Road Corridors	
KEY		
	Interested Party	
	Affected Parties (Direct Positively)	
	Affected Parties (Indirect Positively)	
	Affected Parties (Direct Negatively)	
	Affected Parties (Indirect Negative)	

5.5 Stakeholder Consultation

The stakeholder consultation involved face to face interviews with representatives of relevant government institutions, agencies and local government authorities. These include TANROADS, Tanzania Rural and Urban Roads Agency (TARURA) Dar es salaam Rapid Transit (DART), Tanzania Forest Services (TFS) and Dar es salaam Water and Sewerage Authority (DAWASA). The stakeholder consultation was also carried out with local leaders at Goba, Mbezi, Kibamba, Manzese, Mabibo, Sinza and Ubungu wards. Names and signatures of consulted stakeholders are provided in **APPENDIX 2** while the minutes of undertaken community engagement meetings are attached as **APPENDIX 3**.

5.6 Results of stakeholder Consultations

5.6.1 Consultation with stakeholder Representatives

The consultation with stakeholder representatives was carried out between July and August 2023. In general, the stakeholders have raised some issues /concerns have provided recommendations or mitigation measures. The record of issues/concerns raised during

consultation with stakeholders is provided in **APPENDIX 4** while photos taken during carrying out of stakeholder consultation are given in **APPENDIX 5**.

It can therefore be concluded that the stakeholders were more concerned that the project will have more effect on public service infrastructure/utilities and houses.

5.6.2 Identified issues/concerns

The following are the identified issues / concerns by the consulted stakeholder officials:

- Disruption of public service Infrastructures and utilities.
- Land acquisition and demolition of housing structures
- Disruption of road transportation, hence the need to create diversion roads during construction.
- Noise and air pollution during construction stage.
- Destruction of adjacent land use and properties due to storm water discharge from the road, hence the need to avoid directing storm water drainages into the adjacent land and properties.
- Risk of damaging nearby building (cracks formation) due to vibration likely to be caused by heavy construction equipment.
- Severance of communities to access their properties during construction period
- Risks of increased prevalence of HIV/AIDS, hence the need to formulate HIV/AIDS prevention and control programme to be implemented by qualified NGOs/CBOs.

5.6.3 Recommendations

The following are some of the recommendations provided by the consulted stakeholder representatives:

- The discharge from the drainage system should not be directed to residence areas they must use SUDS in the design.
- The Project Proponent/UMC should come with a good plan to receive complaining during implementation of the project,
- Sensitization to the public should be done early for them to know the government plan and accept the situation if the plan will need them to vacate from the proposed road corridor.
- Contractor should make sure that he has the contracts with sanitation facility owner that will be utilized by their workforces during construction along the road.
- SUDS must be given priority in this design
- The pipes that cross the proposed road corridors have to be provided with service ducts.

CHAPTER SIX

6.0 IDENTIFICATION AND ASSESSMENT OF IMPACTS

6.1 Preamble

In this Chapter, the assessment of effects/impacts has been carried out in two steps, whereby the first step is identification of impacts and the second one is determination of significance of impacts. The identification of impacts considers both positive and negative impacts which result from interaction between the Project related activities and Valued Environmental Components (VECs)⁵⁶.

The assessment also considers cumulative effects/impacts; impacts of the potential environmental effects arising from credible accidents, malfunctions, and unplanned events; and effects of the environment on the projects. For the purpose of this report, the term “environmental effects” will be taken to be synonymous to the term “environmental impacts” as referred to in the EIA and Audit Regulations (2005). As such, the EIA study considers environmental effects and impacts as defined by the national legislation. However, for convenience the term “impact(s)” shall be used throughout this report, unless otherwise specified.

6.2 Identification of Impacts

The identified potential environmental effects/impacts are based on the interaction between the project related activities and selected VECs. The selection of VECs was based on existing project environment (environmental baseline conditions), opinions/views obtained from stakeholder consultations, and consultant’s professional judgement. For this project the selected VECs include Atmospheric Environment; Acoustic Environment; Water Resources; Aquatic Environment; Wetland Environment; Terrestrial Environment; Public Health and Safety; Labour and Economy; Public Services Infrastructure / Utilities; Transportation; Current Land and Resource Use; and Cultural Heritage Resources. The potential interactions between the Project Related Activities and the Selected VECs for each phase of the project implementation is illustrated in **Table 6-1**.

Table 6-1: Potential Interactions of the Project with VECs

Valued Environmental Components	Project Phase		
	Construction	Demobilization	Operation
Atmospheric Environment	✓	✓	✓
Acoustic Environment	✓	✓	✓
Water Resources	-	-	-
Aquatic Environment	✓	-	-
Wetland Environment	-	-	-
Terrestrial Environment	✓	✓	-
Public Health and Safety	✓	-	✓
Labour and Economy	✓	✓	✓
Public Services Infrastructure / Utilities	✓	-	-
Transportation	✓	-	✓
Land and Resource Use	✓	-	✓
Current Use of Land and Resources by Indigenous Peoples ⁵⁷	-	-	-
Cultural Heritage Resources	✓	-	-
Legend:			

⁵⁶ Valued Environmental Components can be physical, biological, social, economic or cultural

⁵⁷ Defined as members of those cultures which have historic, ancestral, spiritual and functional connection to the land on which and from which they live. Distinguished from members of those cultures whose connection to the land on which they live is limited to the historical period.

Valued Environmental Components	Project Phase		
	Construction	Demobilization	Operation
- No Substantial Interaction			
✓ Possible Interaction			

The identified impacts were screened during scoping study to identify the likely significant environmental effects/impacts as shown in the summary of scoping results provided in **APPENDIX 6**.

The identified potential risks/impacts were further categorized into generic and site-specific risks/impacts and can be positive or negative. Generic risks/impacts are those risks/impacts that are not site specific and not directly associated with construction activities along the road sections. The identified potential generic risks/impacts that are likely to occur are provided in **Table 6-2**.

Table 6-2: Identified Potential Generic Risks/Impacts

SN	Potential Generic Risks/ Impacts	Affected Component	Positive	Negative
1.	Creation of temporary employment due to recruitment of construction workers	Labour and Economy	✓	
2.	Loss of employment due to retrenchment of construction workers after closure or completion of the project.	Labour and Economy		✓
3.	Increased prevalence of HIV/AIDS, STIs due to social interactions between construction workers and local community members.	Public Health and Safety		✓
4.	Creation of occupational health and safety risks due to handling of hazardous materials or operation of construction equipment.	Public Health and Safety		✓
5.	Emergence of GBV/SEA and SH at due to gender inequalities among the project staff and workers.	Labour and Economy		✓
6.	Creation of income generation opportunities for local food vendors due to presence of construction workers along the road sections.	Labor and Economy	✓	
7.	Risk of environmental pollution due to lack of sanitary facilities at the construction sites.	Public Health and Safety		✓
8.	Increased risk of traffic accidents due to over-speeding on the improved road sections.	Public Health and Safety		✓
9.	Reduced travel time, increased comfortability and productivity for local people due to improved road conditions.	Labour and Economy	✓	
10.	Reduced vehicle maintenance and operation costs due to improved road conditions.	Labour and Economy	✓	
11.	Reduced air pollution due to improved road conditions into bitumen or concrete standard.	Atmospheric Environment	✓	

SN	Potential Generic Risks/ Impacts	Affected Component	Positive	Negative
12.	Loss of income to street vendors during construction stage as the subproject roads will be temporary closed to give way for upgrading works	Labour and Economy		✓

The site-specific risks/impacts are those risks/impacts that are associated with construction activities along the road sections. The detailed description of potential site-specific risks/impacts associated with construction activities along the road sections and possible mitigation measures are provided in **APPENDIX 7**. In addition, the summary of identified site-specific potential risk/impacts associated with construction activities along the road sections is provided in **Table 6-3**.

Table 6-3: Identified Site-Specific Risks/impacts

SN	Site-Specific Risks/Impacts	Affected Component	Sub-project Roads
1.	Loss of land ownership and other properties due to land acquisition.	Current Land and Resources Use	• Msumi Road • Goba Wakorea Road • Hondogo Shija Road • Binti Kayenga Road • Ubungu NHC Road • Sheikh Bofu Road • Msikitini Road • Sinza KKKT Road • Juma Ikangaa Road • Segesera Road • Namnani Road • Mbegani Road • Mikindani Road • Chimwaga Road
2.	Soil erosion and sedimentation of stream/riverbed due to destruction of stream/river banks vegetation cover.	Aquatic Environment	• Msumi Road at Km 7+700 across Mbezi/Msumi River • Goba Wakorea Road at Km 0+900 and Km 7+300 across Tegeta and Nyakasangwe Rivers • Hondogo Shija Road Km 3+400 across Kibwegere River • Midizini Road at Km 0+400 across China River
3.	Loss of ecological functions and landscape quality due to removal of vegetation cover/trees.	Terrestrial Environment	• Msumi Road • Goba Wakorea Road • Hondogo Shija Road
4.	Creation of air pollution due to dust emission along the construction road sections.	Atmospheric Environment	All road sections
5.	Creation of noise nuisance and vibration effects on the adjacent buildings due to operation of mobile equipment/heavy trucks along the road section.	Acoustic Environment	All road sections

SN	Site-Specific Risks/Impacts	Affected Component	Sub-project Roads
6.	Severance of community access to and from their residences/business premises due to excavation of road bed and roadside stormwater drainages.	Transportation	All road sections
7.	Creation of landscape degradation and loss of aesthetic value of the surrounding environment due to accumulation of construction solid wastes.	Terrestrial Environment	All road sections
8.	Creation of construction related risk of accidents due to trespassing by unauthorized persons into the construction site.	Public Health and Safety	All road sections
9.	Disruption of socio-economic activities due to relocation of public service infrastructure/ utilities from the road section.	Community and Public Services Infrastructure / Utilities	All road sections
10.	Risk of damaging the nearby tombs	Cultural Heritage	• Msumi Road at Km 9+600 LHS • Tiptop Road at Km 0+280 RHS
11.	Excavation of road bed, storm water drainages and borrow pit areas is likely to result into encountering of underground archaeological materials	Cultural Heritage	All road sections
12.	Loss of business due to dislocation of petty traders who occupied road construction corridor	Labour and Economy	Midizini Road from Km 0 + 400 to Km 0 + 990

6.3 Assessment of Impacts

The identified impacts were assessed by using Environmental Impact Assessment Matrix provided in **APPENDIX 8**, based on the Rapid Impact Assessment Matrix (RIAM) Methods⁵⁸. The assessment of impacts helped to determine the significance of impacts based on the following criteria:

- **Importance** – whether important to national, regional or international interest or site specific.
- **Magnitude of Change** – whether Positive or Negative
- **Permanence** – whether condition is permanent or temporary.
- **Reversibility**- reversible or irreversible.
- Whether **Cumulative / Synergistic** for positive and negative impacts, respectively.

The significance of impacts also took into consideration existing by-laws, national and international environmental standards, legislation, treaties, and conventions that may affect the significance of identified impacts. These techniques have been used in order to have a logical and systematic way of identifying, assessing, and analysing environmental impacts.

⁵⁸Environmental Impact Assessment Using the Rapid Impact Assessment Matrix (RIAM). Ed. Kurt Jensen. Published by Olsen & Olsen, 1998.

The techniques also allowed subjective judgments to be quantitatively recorded and therefore make the assessment of impacts become more objective.

6.4 Mobilization Phase Impacts

6.4.1 Impacts on Current Land and Resource Use

The project will result into loss of land ownership and other properties due to land acquisition for expansion of roads observed to have narrow corridors. Detailed topographical survey and valuation of properties conducted by the Consultant in September 2024 revealed that 12 buildings and 814m² of Land will be affected by proposed DMDP 2 subproject roads in Ubungo Municipality (**Table 6-4**). These properties need to be compensated whose total value is TZS 668,219,000.00.

Table 6-4: Identified Affected Lands and Properties along DMDP 2 Subproject Roads in Ubungo

SN	Sub-Project Road	Length (Km)	No. of Affected Housing/Commercial Structures	Affected Land Area (Sqm)	Total Payable Compensation (TZS)
1	Posta-Matembe	0.82	0	-	-
2	Sheikh Bofu Road	1.13	0	-	-
3	Msikitini Road	0.37	0	-	-
4	Sinza KKKT Road	0.27	0	-	-
5	Segesera Road	0.77	0	-	-
6	Juma Ikangaa Road	0.97	0	-	-
7	Mbegani Road	0.28	0	-	-
8	Namnani Road	0.66	9	263	351,980,000
9	Chimwaga Road	0.34	0	-	-
10	Shule road	0.28	0	-	-
11	Mikindani Road	0.45	0	-	-
12	Ubungo NHC Road	0.6	1	102	113,423,000.00
13	Lion Road	0.84	0	-	-
14	Tiptop Road	0.28	0	-	-
15	Midizini Road	0.99	0	-	-
16	Binti Kayenga Road	1.27	1	146	85,720,000.00
17	Hondogo-Shija	4.16	0	-	-

SN	Sub-Project Road	Length (Km)	No. of Affected Housing/Commercial Structures	Affected Land Area (Sqm)	Total Payable Compensation (TZS)
18	Goba Wakorea	7.76	0	-	-
19	Msumi	9.83	0	-	-
TOTAL		32.07	12	814	668,219,000.00

Source: Field Survey by the Consultant (September, 2024)

The impact has been assessed to be **Indirect** and **Negative** with **High Significance**; and is expected to be **Long-term** and **Permanent**, with **Irreversible** effects on the socio-economic conditions of the Project Affected Persons (PAPs).

6.4.2 Impacts on Public Services Infrastructure and Utilities

(a) Disruption of public infrastructure and utility services

The relocation of existing infrastructures and utilities will result into disruption of public service infrastructure and utilities, hence leading into financial and economic loss to the affected people.

The impacts have been assessed to be **Indirect** and **Negative** with **Medium Significance**; and is expected to be **Short-term** and **Temporary** as it occurs only during relocation of affected infrastructure and utilities. However, its effects on human life can be **Irreversible** if it occurs.

(b) Increased revenue for community and service providers

The increased influx of people into the project area for employment reason is likely to result into increased demand for housing and accommodation services. This will result into increased revenue for community and public service providers.

The impact has been assessed to be **Indirect** and **Negative** with **Medium Significance**; and is expected to be **Short-term** and **Temporary** as it occurs during construction phase. However, it can have **Long-term** effects on the socio-economic conditions of the local people.

6.5 Construction Phase

6.5.1 Impacts on Atmospheric Environment

The following are the identified impacts on the Atmospheric Environment during Construction Phase:

- Increased air pollution due to dust emission from road construction activities.
- Increased air pollution due to dust emission from movement of heavy trucks hauling construction materials from borrow pits/quarry sites.

(a) Creation of air pollution due to dust emission from road construction works

The project will involve soil excavations, stockpiling and earth moving activities along the construction roads. This is likely to result into dust emission, especially during dry seasons, hence affecting the adjacent local residents and nearby road users.

The impact has been assessed to be **Indirect and Negative** with **Low Significance**; and is expected to be **Short-term** and **Temporary** as it will occur only during construction phase. However, its effects on the environment is **Reversible** as sources of dust and fumes can be stopped.

(b) Creation of air pollution due to dust emission from movement of heavy trucks along access roads to borrow pits/quarry sites.

The project will involve transportation of construction materials from borrow pits and quarry sites. The movement of heavy trucks hauling construction materials along the access roads to borrow pits / quarry pits will result into dust emission, hence likely to affect the adjacent local residents, cultivated crops and natural vegetation.

The impact has been assessed to be **Indirect** and **Negative** with **Medium Significance**; and is expected to be **Short-term** and **Temporary** as it will occur only during construction phase. However, its effects on human health, cultivated crops and natural vegetation is reversible, as the sources of dust emission can be reduced through sprinkling of water.

6.5.2 Impacts on Acoustic Environment

The following are the identified impacts on the Acoustic Environment during Construction Phase:

- Noise nuisance and vibration effects on adjacent buildings along the construction roads.
- Noise nuisance and vibration effects on adjacent buildings along the access roads to borrow pits/quarry sites.

(a) Creation of noise nuisance and vibration effects along the construction roads.

The project will involve operation of mobile equipment/machinery during the construction. This is likely to result into creation of noise nuisance and vibration effects on the adjacent buildings. The vibration effects on adjacent buildings will be more significant during compaction of soil/gravel materials along the construction road. However, the effect is not likely to be very significant to the adjacent buildings because the construction works will be within the median, which is far from the adjacent buildings.

The impact has been assessed to be **Direct** and **Negative** with **Medium Significance**; and is expected to be **Short-term** and **Temporary** as it occurs only during construction phase. However, its effects on environment is **Reversible** as the source of noise can be controlled and sound level will be reduced to acceptable limit. However, the effects of vibration on building structures are also **Reversible** through repair of damaged structures.

(b) Creation of noise nuisance and vibration effects along the access roads to borrow pits/quarry sites.

The project will involve transportation of construction materials from borrow pits / quarry pits will create noise nuisance on the adjacent buildings. The effects will be more felt if the access road passes through human settlements or densely populated areas.

The impact has been assessed to be **Indirect** and **Negative** with **Medium Significance**; and is expected to be **Short-term** and **Temporary** as it occurs only during construction phase. However, its effects on human health will be **irreversible** if it occurs. But the effects of vibration on building structures can be **Reversible** through repair of damaged structures.

6.5.3 Impacts on Terrestrial Environment

The following are the identified impacts on Terrestrial Environment during Construction Phase:

- Creation of landscape degradation due to water flow from roadside storm water drainages into the adjacent lands.
- Loss of aesthetic value of the surrounding environment due to accumulation of construction and domestic solid wastes
- Loss of aesthetic value of the surrounding environment due to spillage of waste oils from storage containers.

(a) Landscape degradation due to water flow from road side storm water drainages

The project will involve construction of roadside storm water drainages. If not properly designed the flow from roadside storm water drainages may result into landscape degradation due to soil erosion on the adjacent lands.

The impact has been assessed to be **Direct** and **Negative** with **Low Significance**; and is expected to be **Short-term** and **Temporary** as it persists on short length of subproject roads and only during construction phase. Its effect on the terrestrial habitats is **Reversible** because the vegetation can be regenerated again.

(b) Loss of aesthetic value of the surrounding environment

The project will involve generation of construction and domestic solid wastes and waste oils from vehicles and mobile construction equipment. The accumulation of construction and domestic solid wastes and spillage of waste oils from storage containers is likely to result into loss of aesthetic value of the surrounding environment.

The impact has been assessed to be **Indirect** and **Negative** with **Very Low Significance**; and is expected to be **Short-term** and **Temporary** as it occurs only during the construction phase. Its effects on the surrounding environment are **Reversible** because the surrounding environment can be restored to its original condition after removal of the impact or completion of the project.

6.5.5 Impacts on Public Health, Safety and Security

The following are the identified impacts on Public Health and Safety Component during Construction Phase:

- Increased prevalence of HIV/AIDS and STIs due to interaction between the construction workers and local community members.
- Creation of occupational health and safety risks to the construction workers due to handling /operation of hazardous construction materials/equipment.
- Creation of risk of construction related accidents due to trespass by unauthorized people into the construction sites.
- Creation of construction related risk of accidents due to trespassing of the construction site by unauthorized people.
- Increased risk of traffic accidents at the junction of access road due to frequent movement of construction vehicles to and from the construction site.
- increased risk of fire outbreak at the Contractor's electrical and mechanical workshops.

(a) Increased prevalence of HIV/AIDS and STIs

DMDP 2 investments are likely to result into increased prevalence of HIV/AIDS and STIs in the project areas due to social interaction between construction workers and local community is likely to result into increased prevalence of HIV/AIDS and STIs among the local community members of the project area.

The impact has been assessed to be **Indirect** and **Negative** with **High Significance**; and is expected to be **Long-term** and **Permanent** as it continues to occur even after construction phase. Its effects on the human health are **Irreversible** because there is not yet any known treatment for HIV, apart from Ant-retrovirus (ARV) drugs, which helps to increase resistance against HIV.

(b) Creation of occupational health and safety risks

The project will involve handling and operation of hazardous construction materials and equipment by construction workers. This is likely result into creation of occupational health and safety risks to the construction workers. These include physical injury by construction

equipment like jack hammers; exposure to dusty construction materials like dry cement, sand, and aggregate and hand injury due to exposure to wet cement, etc.

The impact has been assessed to be **Direct** and **Negative** with **Substantial Significance**; and is expected to be **Short-term** and **Temporary** as it occurs only during construction phase. However, its effects on the human health will be **Irreversible** because once a damage occurs it cannot be reversed. For example, hearing loss due to prolonged exposure to high pitch noise, occurrence of disease like Chronic Obstructive Pulmonary Disorder (COPD) due to prolonged exposure to dust emission, etc.

(c) Creation of construction related risk of accidents.

Trespassing by unauthorized people into the construction site is likely to result into risk of construction related accidents due to movement of mobile construction equipment like bulldozers, graders, and heavy dumper trucks, around the construction site. For example, a person may be overrun by backward moving mobile construction equipment / machinery, especially if it is not fitted with sounding alarm device.

The impact has been assessed to be **Indirect** and **Negative** with **Moderate Significance**; and is expected to be **Short-term** and **Temporary** as it occurs only during construction phase. However, its effects on the human health may be **Irreversible** because the impact may result into fatal injury (death) or non-fatal injury which results into loss of an organ (E.g., legs, arms, etc).

(d) Increased risk of COVID-19 transmission.

The project will result into induced influx of people into the project sites in form of small business operators, customers, and job seekers. This will result into increased population at the construction sites, hence increased risk of COVID-19 transmission among the construction workers and local community members.

The impact has been assessed to be **Indirect** and **Negative** with **Substantial Significance**; and is expected to be **Long-term** and **Permanent** as it continues to occur during operation phase after completion of construction works. Its effects on human health may be **Irreversible** because COVID-19 can cause death to its victim.

(e) Increased risk of traffic accidents

The project will involve movement of heavy trucks vehicles to and from the construction site during transportation of construction materials into the construction site and spoil materials from the construction site to the dumping site. The frequent movement of heavy trucks to and from the construction site is likely to result into risk of traffic accidents at the junction between the access roads to the construction site and the local roads or at the entrance and exit of the construction site.

The impact has been assessed to be **Indirect** and **Negative** with **Substantia Significance**; and is expected to be **Short-term** and **Temporary** as it occurs only during construction phase. However, its effects on the human health may be **Irreversible** because the impact may result into fatal injury (death) or non-fatal body injury and irreversible damage to a property.

(f) Risk of fire outbreak at the Contractor's electrical and mechanical workshops

The project will involve storage of inflammable liquids like petroleum products and gas at the construction camp site. This is likely to result into increased risk of fire outbreak due to accidental ignition of spilled or leaking petroleum products or gas from storage containers.

The impact has been assessed to be **Indirect** and **Negative** with **Low Significance**; and is expected to be **Short-term** and **Temporary** as it occurs only during construction phase.

However, its effects on the human health and property will be **Irreversible** because the impact may result into fatal injury (death) or non-fatal body injury and irreversible damage to a property.

6.5.6 Impacts on Transportation

The following are the identified impacts on Transportation Component during Construction Phase:

- Severance of community access to and from their residences due to excavation of road bed and trenches for roadside storm water drainages.
- Disruption of traffic flow and public transport due to construction of DMDP 2 Subproject Roads and associated drainage structures.
- Disruption of traffic flow along the project roads and associated storm water drainages.

(a) Severance of community access to their residences.

The project will involve excavation of road bed and trenches for road side storm water drainages. This is likely to result into severance of access for local people to their residences or business premises due to creation of deep trenches. Ultimately, this will result into increased travel time to the local residents.

The impact has been assessed to be **Indirect** and **Negative** with **Low Significance**; and is expected to be **Short-term** and **Temporary** as it occurs only during construction phase. Its effects will be **Reversible** because it will no longer exist after provision of access.

(b) Disruption of traffic flow and public transportation along the project roads

The project will involve construction of road pavement and drainage structures. This is likely to create disruption of traffic flow and public transportation along the project roads. This will also result into increased travel time due to delayed movement of traffic along the construction road.

The impact has been assessed to be **Direct** and **Negative** with **High Significance**; and is expected to be **Short-term** and **Temporary** as it occurs only during construction phase. Its effects will be **Reversible** because it will no longer exist after completion of construction works.

6.5.7 Impacts on Labour and Economy

The following are the identified impacts on Labour and Economy Component during Construction Phase:

- Loss of business due to relocation of existing petty traders who occupied road construction corridor at Midizini Road.
- Loss of income to existing street vendors during construction stage as the subproject roads will be temporary closed to give way for upgrading works
- Recruitment of construction workers will result into creation of employment opportunity for local people.
- Increased demand for food and other items from construction workers will create opportunity for local food vendors to increase their income by selling food and other items to the construction workers.
- Emergence of Gender Based Violence (GBV), Sexual Exploitation and Abuse (SEA), and Sexual Harassment (SH) due to influx of people into the project site.

(a) Loss of business to petty traders

The road construction corridor of Midizini road is highly occupied by small business operators (petty traders) commonly known as “Machinga”. During implementation of road upgrading works, the project proponent will have to dislocate all Machinga and thus will result into loss of businesses as the new locations may not have good number of customers as compared to Midizini Road.

The impact has been assessed to be **Direct** and **Negative** with **High Significance**; and is expected to be **Short-term** and **Temporary** as the petty traders may regain business momentum in newly relocated area. However, it can have **Irreversible** effects on the petty traders, as once dislocated from the road construction corridor they will never return.

(b) Loss of income to existing street vendors

Almost all of the subproject roads have street vendors located along the roads operating variety of businesses such as shops, beauty salon, money transaction, restaurants, bars, hotels and conference halls. During construction stage, the subproject roads will be temporary closed to give way for smooth execution of upgrading works, a situation that will lead into loss of income to street vendors as both vendors and customers will not be able to access the businesses.

The impact has been assessed to be **Direct** and **Negative** with **Medium Significance**; and is expected to be **Short-term** and **Temporary** as the businesses can be shifted to another nearby location with no road construction works. However, the impact has **Reversible** effect to the street vendors, as businesses will resume once road construction works are completed.

(c) Creation of employment opportunities for local people

The project will involve recruitment of construction workers during construction phase, hence resulting into creation of employment opportunity for local people.

The impact has been assessed to be **Direct** and **Positive** with **Medium Significance**; and is expected to be **Short-term** and **Temporary** as it occurs only during construction phase. However, it can have **Long-term** effects on the socio-economic conditions of the local people.

(d) Increased income generation opportunity for local people.

The presence of large number of construction workers will result into increased demand for food and other items, hence resulting into increased income generation opportunity for local people.

The impact has been assessed to be **Indirect** and **Positive** with **Medium Significance**; and is expected to be **Short-term** and **Temporary** as it occurs only during construction phase. However, it can have long-term effects on the socio-economic conditions of the local people.

(e) Emergence of Gender Based Violence, Sexual Exploitation and Sexual Harassment

The influx of people into the project site will result into increased number of people seeking for employment into the project and other economic activities. This will also result into emergence of Gender Based Violence (GBV), Sexual Exploitation and Abuse (SEA), and Sexual Harassment (SH). The increased demand for employment will make some corrupt senior project staff may use this opportunity to demand sexual favours in exchange for employment. Also, senior staff may resort into sexual harassment of junior staff and workers.

The impact has been assessed to be **Indirect** and **Negative** with **High Significance**; and is expected to be **Short-term** and **Temporary** as it occurs only during construction phase. However, it can have long-term and **Irreversible** effects on the socio-psychological conditions of the affected people.

6.5.8 Impacts on Cultural Heritage Resources

The following are the identified impacts on Cultural Heritage Resources during Construction Phase:

- Likely destruction of grave yards located aside but beyond construction corridors of Msumi and Tiptop roads.

- Likely destruction of archaeological artefacts due to land excavation at the road construction sites and earth material sources.

(a) Destruction of grave yards

The field survey undertaken by Consultant in June 2023 revealed that there are grave sites at Km 9+600 LHS of Msumi Road and Km 0+280 RHS of Tiptop Road. All of these grave sites are beyond the road construction corridor. However, there is a risk of being destroyed by moving equipment due to existing short distance from construction site.

The impact has been assessed to be **Indirect** and **Negative** with **Very High Significance**; and is expected to be **Long-term** and **Permanent** because once a grave will be destroyed it cannot be returned again to original condition. The effect is considered to be **Irreversible** destroyed human remains cannot be salvaged.

(b) Destruction of archaeological artefacts

The project is likely to result into destruction of archaeological artefacts due to extraction of construction materials from borrow pits, excavation of road bed and roadside storm water drainages during the road construction. If precautions are not taken these activities are likely to result into destruction of archaeological artefacts.

The impact has been assessed to be **Indirect** and **Negative** with **Low Significance**; and is expected to be **Short-term** and **Temporary** as it occurs only during construction phase. Its effects will be **Irreversible** because when destroyed the artefact will never be recovered or restored into its original condition.

6.6 Demobilization Phase Impacts

6.6.1 Impacts on Labour and Economy

The project will involve retrenchment of construction workers after completion or closure of the project. This will result into loss of employment opportunity by the local people. About 600 people will obtain temporary employment as local people from nearby communities. It is therefore, expected that about 600 people will be retrenched during closure or completion of the project.

The impact has been assessed to be **Direct** and **Negative** with **Low Significance**; and is expected to be **Long-term** and **Permanent** as it occurs after completion of construction works. Its effects will be **Reversible** because the affected workers are likely to return into their original economic and income generating activities.

6.7 Operation Phase Impacts

6.7.1 Impacts on Public Services

The following are the identified impacts on Public Health and Safety due to improvement of the road into bitumen standard during Operation Phase:

- Reduced risk of traffic accidents due to construction of DMDP 2 Subproject Roads with dedicated pedestrian walkways.
- Increased mobility of urban dwellers due to improved road surfaces.

(a) Reduced risk of traffic accidents due to provision of dedicated pedestrian lanes

Currently the traffic at selected roads is mixed together between pedestrians and motorized transport, hence creating the risk of traffic accidents. The most vulnerable groups being the school children, disabled persons, the elderly and sick people. The construction of dedicated pedestrian lanes will reduce the risk of traffic accidents for pedestrians.

The impact has been assessed to be **Indirect** and **Positive** with **High Significance**; and is expected to be **Long-term** and **Permanent** as it will continue to occur throughout the operation phase.

(b) Increased mobility for urban dwellers

The project will involve upgrading of roads (32.07 Km) to bitumen and concrete standards. This will result into increased mobility of urban dwellers due to increased passable road network throughout the year.

The impact has been assessed to be **Indirect** and **Positive** with **High Significance**; and is expected to be **Long-term** and **Permanent** as it will continue to occur throughout the operation phase.

6.7.2 Impacts on Labour and Economy

The following are the identified impacts on Employment and Economy Component after improvement of the roads into bitumen standard during Operation Phase:

- Increased productivity and stimulation of economic growth.
- Employment creation and economic improvement of households.
- Increased Revenue Collection by Ubungo Municipal Council
- Reduced Transportation Costs and Improved Access to Social Services.
- Reduced risk of traffic accidents
- Increased mobility of urban dwellers.

The identified impacts have been assessed to be **Indirect** and **Positive** with **High Significance**; and are expected to be **Long-term** and **Permanent** as it will continue to occur throughout the operation phase.

6.8 Overall Assessment of Impacts

The overall assessment of impacts in **Table 6-5** indicates most of the negative impacts will occur during construction phase and their significance ranges from Very Low, Low and Medium and most of the positive impacts will occur during operation phase and their significance ranges from Low, Medium to High.

Table 6-5: Overall Assessment of Impacts.

Affected Component	Environmental Effects/Impacts	Significance	Mobilization Phase	Construction Phase	Demobilization Phase	Operation Phase
Atmospheric Environment	Increased air pollution due to dust emission along the construction roads.	Low	-	✓	-	-
	Increased air pollution due to dust emission along the access roads to borrow pits/quarry sites.	Medium	-	✓	-	-
Acoustic environment	Creation of noise nuisance and vibration effects the adjacent local residents due to road construction works.	Medium	-	✓	-	-
	Creation of noise nuisance and vibration effects to adjacent local residents along the access roads to borrow pits.	Medium	-	✓	-	-
Terrestrial environment	Loss of aesthetic value of the surrounding environment due to accumulation of excavated soil materials and construction solid wastes.	Low	-	✓	-	-
Public Health, Safety and Security	Increased transmission of HIV/AIDS and STIs due to social interaction between the construction workers and local community members.	High	-	✓	-	-
	Increased risk of COVID-19 transmission due to influx of people into the construction sites.	High	-	✓	-	-
	Creation of occupational health and safety risks due to handling / operation of hazardous construction materials/equipment.	High	-	✓	-	-
	Creation of construction related risk of accidents due to trespassing by unauthorized persons into the construction site.	High	-	✓	-	-
	Increased risk of traffic accidents due to movement of heavy trucks to and from the construction site.	High	-	✓	-	-
	Increased risk of fire outbreaks due to accidental contact between inflammable materials and ignition sources at the workshops.	Medium	-	✓	-	-
	Reduced road traffic accidents due to provision of dedicated lanes.	High	-	-	-	✓

Affected Component	Environmental Effects/Impacts	Significance	Mobilization Phase	Construction Phase	Demobilization Phase	Operation Phase
Labour and Economy	Increased employment opportunities for local people due to recruitment of construction workers.	High	-	✓	-	-
	Risk of emergence of GBV/SEA, SH, and Child Labour due to influx of people into the project sites.	Medium	-	✓	-	-
	Increased income generation opportunities for local people due to increased demand for food by construction workers.	High	-	✓	-	-
	Loss of businesses to petty traders (Machinga) at Midizini road due to dislocation from construction corridor	High	-	✓	-	-
	Loss of income to existing street vendors during construction stage as the subproject roads will be temporary closed to give way for upgrading works	Medium	-	✓	-	-
	Loss of temporary employment opportunities for local people due to closure or completion of construction works.	High	-	-	✓	-
	Operation of DMDP 2 Subproject Roads after construction will result into the following impacts:					
	- Increased productivity and stimulation of economic growth.	High	✓	✓	✓	✓
	- Employment creation and economic improvement of households.	High	✓	✓	✓	-
	- Increased revenue collection by Ubungo Municipal Council	High	-	✓	✓	✓
	- Reduced transportation costs and improved access to social services.	High	-	-	-	✓
	- Reduced risk of traffic accidents	High	-	-	-	✓
	- Increased mobility to urban dwellers.	High	-	-	-	✓
Commodity and Public service	Increased pressure on existing sanitary and solid wastes disposal facilities due to increased influx of people into the construction sites.	Medium	-	✓	-	-

Affected Component	Environmental Effects/Impacts	Significance	Mobilization Phase	Construction Phase	Demobilization Phase	Operation Phase
infrastructure/ utilities.	Disruption of public infrastructure and utility services due to relocation of infrastructure/utilities from the construction road.	Medium	-	✓	-	-
Transportation	Severance of access by local residents to their premises due excavation of road bed and roadside storm water drainages.	High	-	✓	-	-
	Disruption of traffic flow and public transportation due to construction of DMDP roads.	High	-	✓	-	-
Current Land and Resource Use	Loss of land and other properties by local residents.	High	-	✓	-	-
Cultural Heritage	Likely destruction of adjacent grave yard	High	-	✓	-	-
	Likely destruction of archaeological artefacts due to extraction of construction materials from borrow pits, excavation of road bed and roadside storm water drainages	High	-	✓	-	-
KEY:						
	Ver High Positive Impact		Very High Negative Impact			
	High Positive Impact		High Negative Impact			
	Medium Positive Impact		Medium Negative Impact			
	Low Positive Impact		Low Negative Impacts			
	Very Low Positive Impact		Very Low Negative Impact			

Source: Analysis by the Consultant (September, 2023)

6.9 Assessment of Cumulative Environmental and Social Impacts

The general approach to the assessment of cumulative environmental and social impacts is to identify other past, present, or reasonably foreseeable future projects or activities whose environmental effects could overlap those of the Project. The cumulative impacts occur if there is substantive interaction between project related environmental and social impacts with that of other activities.

The project has been found to have cumulative environmental and social impacts on Atmospheric Environment, Acoustic Environment, Terrestrial Environment, Public Health, Safety and Security. The summary of the identified cumulative environmental and social impacts and VECs is provided in **Table 6-6**.

The findings indicate most of the negative cumulative environmental and social impacts will occur during construction phase and their significance ranges from Very Low, Low, Medium, and High; and most of the positive cumulative (synergistic) environmental and social impacts will occur during operation phase and their significance is assessed to be High.

Table 6-6: Identified Cumulative Impacts and Affected VECs.

Affected Component	Environmental Effects/Impacts	Significance
Atmospheric Environment	Increased air pollution due to dust emission along the construction road.	Low
	Increased air pollution due to dust emission along the access roads to borrow pits/quarry sites.	Medium
Acoustic environment	Creation of noise nuisance and vibration effects the adjacent local residents due to road construction works.	Medium
	Creation of noise nuisance and vibration effects to adjacent local residents along the access roads to borrow pits.	Medium
Terrestrial environment	Loss of aesthetic value of the surrounding environment due to accumulation of excavated soil materials and construction solid wastes.	Low
Public Health, Safety and Security	Increased transmission of HIV/AIDS and STIs due to social interaction between the construction workers and local community members.	High
	Increased risk of COVID-19 transmission due to influx of people into the construction sites	High
	Increased risk of traffic accidents due to movement of heavy trucks to and from the construction site.	Low
KEY:		
	Ver High Positive Impact	Very High Negative Impact
	High Positive Impact	High Negative Impact
	Medium Positive Impact	Medium Negative Impact
	Low Positive Impact	Low Negative Impacts
	Very Low Positive Impact	Very Low Negative Impact

Source: Analysis by the Consultant (December, 2023)

6.10 Impacts of the Environment on the DMDP 2 Subproject Roads

The effects/impacts of environment on the proposed project are associated with risks of natural hazards and influences of nature on the investment roads. Typically, these are a function of project or infrastructure design in the context of its receiving environment, and ultimately how the project is affected by nature. These effects/impacts may arise from physical conditions, land forms, and site characteristics or other attributes of the environment which

may act on the project such that the project components, schedule, and/or costs could be substantively and adversely changed.

In this report the assessment of the effects of the environment focuses on the environmental attributes that are considered to have a potential effects/impact on the Project. These are based on the regulatory consultation, public and stakeholder input, a review of the known past and existing conditions, and knowledge gained through projections of potential future conditions. For example, potential effects of climate change, severe weather, including: wind; precipitation; floods; electrical storms; seismic activity; and external fires resulting from causes other than the project activities.

This section provides the summary of the identified environmental effects on the Project. In general, the effects of the environment on the proposed project during the construction phase have been rated not significant.

6.10.1 Effects/Impacts of Climate Change on the Project

The project area may experience extreme weather conditions during construction and operational life of the proposed DMDP 2 subproject roads due to increasing climate change events. To assess the environmental effects of climate on the DMDP 2 subproject roads, current climate and climate change must both be considered. Current climate conditions are established by compiling relevant historical data and establishing a climatological background for the project area. The historical and projected extremes in temperature, intense precipitation, or other storm events, are important considerations that must be accounted for in the design of the project roads and in all other aspects of construction. The study on climate projections indicates by the mid-century (2040-2059) Dar es Salaam is projected to feature increase in temperature by 1.1°C and increased rainfall by 9.44% under SSP2-4.5.

Forecasted changes in climate may affect construction and operation in both positive and negative ways and may vary from nominal to extreme effects. Climate changes that could potentially have residual effects on the project include:

- Extreme low and high temperatures
- Increased frequency and magnitude of heavy precipitation events;
- Increased frequency of extreme storms accompanied by heavy precipitation, thunderstorms, and strong winds; and
- Increased incidence of soil erosion and flooding.

Each of these effects must be considered in terms of how they may adversely affect the proposed project if they are not planned, engineered, and designed to account for such effects. Such effects could cause:

- Reduced visibility and inability to manoeuvre operation equipment;
- Delays in shipment of materials, supplies and/or products;
- Changes to the ability of workers to access the site (e.g., if a road were to wash out);
- Damage to infrastructure;
- Increased structural loading; and/or
- Loss of electrical power resulting in potential loss of production.

Mitigation measures

The potential effects of climate change on construction shall be considered in the planning and design of the project and in the scheduling of construction activities to limit delays, prevent damage to infrastructure and the environment, and to maximize the safety of construction staff. Compliance with design and building codes and standards are expected to account for weather extremes through built-in factors of safety to prevent undue damage to infrastructure from such events. **Table 6-7** provides the general mitigation measures against climate change

effects. **Table 6-8** outlines the specific mitigation measures against the potential effects/impacts of climate change on the proposed DMDP 2 subproject roads.

The predicted effects of climate change on the proposed project will be carefully considered in the planning, design, and construction activities; the selection of materials to be used; and the operating plans for the project to ensure the long-term viability and sustainability of the DMDP 2 investments.

The likely adverse effects on the project during construction and operation phases will be taken into consideration in the planning and design of the DMDP 2 investments (or managed adaptively as appropriate as information regarding climate change evolves). As a result, substantive damage to the project or interruption to the project schedules are not anticipated.

Table 6-7: General Climate Change Effects and Mitigation Measures.

Event	Effects	Mitigation measures
(a) Extreme temperature variations	Reduced ductility of construction materials and increased susceptibility to brittle fractures.	The specification of construction materials must comply with the applicable standards and codes and must maintain structural integrity at the anticipated minimum and maximum ambient temperatures. Use resistant materials to extreme temperatures for roads and drainage construction.
(b) Extreme wind storm and severe precipitation.	Reduced visibility and inability to manoeuvre construction equipment/machinery.	Make prediction of short delays and make allowance for them to be included in the construction schedule.
	- Disruption of construction activities and delays to the construction schedule. - Delays in the transportation of construction materials to the site. - Inability of construction personnel to access the construction site (e.g., if the roads were to wash out) - Damage to roads and other infrastructure. - Increased structural loading. - Loss of electrical power resulting in potential loss of production.	Scheduling of tasks that require precise movement of equipment (e.g., positioning steel I-beams in place with cranes) to periods when the weather conditions are favourable.

Source: Analysis by the Consultant (September, 2023)

Table 6-8: Potential Climate Effects on the Roads and Mitigation Measures.

Climate event	Risks to the road	Mitigation Measures
(a) Heavy rain for longer periods	Water overtopping on road crest.	Increase road level to at least 0.5 m over the maximum flood level.
	Increased capacity of moistures, decreased cohesion of soil, increased	Implement erosion protection and control measures.

Climate event	Risks to the road	Mitigation Measures
	seepage and infiltration across road bed.	Increase capacity of culverts.
	Drainage system over capacity of and increase drainage erosion.	Build up weirs and spillways. Increase capacity of compaction (lower moisture percentage).
	Embankment instability or loss, road wash away.	Decrease hydrodynamic force of water through urban greening and sustainable drainage solution.
(b) Storm events (Typhoons, Cyclones) and extreme winds	Destabilisation of road cross drainage structures.	Increase capacity of bridges and culverts.
	Falling of trees and blocking the roadway.	Undertake embankment protection by planting grass and trees/shrubs.
	Creation of damage on the traffic signs.	Increase frequency of road inspections. Decrease road traffic movement during storms.

Source: Analysis by the Consultant (December, 2023)

6.10.2 Effects/Impacts of Seismic Activity on the Project

Since the proposed DMDP 2 Subproject Roads are not located within an area with high seismic hazard as shown in **APPENDIX 9**, the possibility of seismic activity occurring in the project immediate impact zone is low. Therefore, the likelihood of a major seismic event in the immediate vicinity of the proposed DMDP 2 Subproject Roads that could cause major project damage or interrupt operations during any phase is low.

6.10.3 Effects/Impacts of External Fires on the Project

In the event that an external fire did occur in close proximity of the proposed project, there is a potential risk of contact with fuel storage tanks, thereby potentially creating a risk of fire with petroleum products which are by their nature highly flammable.

Mitigation measures

Firefighting capabilities (including appropriate equipment) on-site will be at a high level of readiness. The safety and security personnel will be in place in collaboration with Fire and Rescue Department to provide for rapid detection and response to any fire threat.

The materials to be used for construction will be inherently fire resistant. For example, the Contractor's workshops can be constructed primarily of concrete and steel, which are not typically affected by fire.

CHAPTER SEVEN

7.0 ANALYSIS OF ALTERNATIVES

7.1 Preamble

Three alternatives have been considered in this study based on technical, economic, environmental, and social point of view. That means selected alternative must be technically feasible, economically viable, environmentally friendly, and socially acceptable. The analysis of alternatives considered whether the project should be implemented or not ("No project Alternative" vs "Project" alternative), and if it will be implemented what type of construction method should be used (Labour-intensive Method vs Machine-intensive Method). For comparison of these alternatives the Multi-Criteria Analysis Method has been used, based on Technical, Economic (Techno-economic), Environmental and Social Criteria. Another considered alternatives is pavement alternatives, whereby the comparison of these alternatives has been based on their advantages and disadvantages.

7.2 No Project Alternative VS Project Alternative

The "No project" alternative" means the project should not be implemented at all and therefore we should continue using the unpaved roads under existing condition but only making periodic maintenance. The comparison of alternatives based on techno-economic, environmental, and social criteria is summarized in **Table 7-1**.

From techno-economic point of view the "No Project Alternative" will have less investment cost, but higher maintenance costs due to the need for long-term periodic maintenance. The "Project Alternative" will result into higher increased productivity due to reduced travel time and less fuel consumption due to reduced traffic congestion.

Upgrading of the DMDP 2 subproject roads to bitumen and concrete standards will also result into increased mobility for urban dwellers and reduced vehicle operation and maintenance costs, hence low transportation costs. Therefore, from techno-economic point of view the "No Project Alternative" should be rejected and the "Project Alternative" should be selected.

From environmental and social point of view the "No Project Alternative" will have long term impacts due to continued dust emission within unpaved roads, continued emission of exhaust fumes and more fuel consumption as a result of poor roads condition. The "Project Alternative", the above benefits will be achieved, but during construction the project is expected to have more environmental impacts including increased dust emission.

However, the environmental impacts will be short-term as they occur only during construction and could be minimized through implementation of appropriate mitigation measures. The improvement of the DMDP 2 subproject roads into bitumen standard will result into more comfortable travel and improved aesthetic value of the urban environment due to less dust emission, hence socially acceptable. In addition, the Project Alternative is likely to create more temporary and income generation opportunity to the adjacent local residents during construction.

Therefore, from environmental and social point of view the "No Project Alternative" should be rejected and the "Project Alternative" should be selected.

Table 7-1: No Project Alternative VS Project Alternative

Evaluation Criteria	No Project Alternative		Project Alternative	
	High	Low	High	Low
(a) Techno-economic				

Evaluation Criteria	No Project Alternative		Project Alternative	
	High	Low	High	Low
Investment Costs	-	+1	-1	-
Maintenance Costs	-2	-	-	+2
Durability		-2	+2	
Transportation costs	-2	-	-	+2
Fuel consumption	-1	-	-	+1
Vehicle operation and maintenance costs	-2	-	-	+2
Travel time spent	-2	-	-	+2
Productivity	-	-2	+2	-
(b) Environmental and Social	-	-	-	-
Dust emission	-2	-	-1	-
Exhaust emission	-2	-	-1	-
Employment and income generation opportunity	+1	-	+1	-
Incidence risk of traffic accidents	-	-2	-2	-
Aesthetic and/or social acceptability	-	-2	+2	-
Total Score:	-12	-7	+2	+9
Overall Net Score:	-12		+11	
KEY: +1 = Short-term Positive Impact -1 = Short-term Negative Impact +2 = Long-term Positive Impact -2 = Long-term Negative Impact				
Conclusion: The “No Project Alternative” has been found to have an overall score of -12 and the Project Alternative an overall score of +11. Therefore, the “Project Alternative” should be selected and “No Project Alternative should be rejected.				

7.3 Labour Intensive Alternative VS Machine Intensive Alternatives

The use of labour-intensive construction method is compared against machine-intensive construction method. The comparison of alternatives based on techno-economic, environmental, and social criteria is summarized in **Table 7-2**. From economic point of view the labour-intensive construction method makes use of manual labour and therefore likely to create employment opportunity to a large number of adjacent local residents than machine-intensive method, hence improving the local economy. The employment creation will have multiplier effect as it will also benefit their families, hence socially acceptable. However, the use of mobile equipment / machine is costlier than labour-intensive method, but it is more efficient than labour-intensive method.

From environmental point of view the labour-intensive method will have minimum risk of construction related risk of accidents to construction workers and the local community, unlike the use of mobile equipment / machinery during excavation works, Labour-intensive method has less environmental impacts compared to machine-intensive method. For example, the use of mobile equipment / machine is likely to create more dust emission than labour-intensive method. The use of mobile equipment / machine will also create air pollution and noise nuisance than labour-intensive method. The use of mobile equipment will have will create more landscape degradation than labour-intensive method.

From the analysis it can be seen that the labour-intensive method could be selected and machine-intensive method could be rejected. However, due to the nature of the project and limitations of labour-intensive method, the combination of the two methods should be more

favourable. In this case, the contractor should give priority to labour-intensive method for those activities that could be done manually. For, example, excavation of roadside drainages could be done manually instead of using an excavator.

Table 7-2: Labour-intensive VS Machine-intensive Methods

Evaluation Criteria	Labour-intensive method		Machine-intensive method	
	High	Low	High	Low
(a) Techno-economic				
Cost of equipment / machinery	-	+1	-1	-
Employment creation	+1	-	-	-1
Efficiency and time consumption		-1	+1	
Work productivity	-	-1	+1	-
(b) Environmental and Social	-	-	-	-
Dust emission		+1	-1	-
Exhaust emission	-	-	-1	-
Landscape degradation		+1	-1	
Risk of construction related accidents	-	+1	-1	-
Social acceptability	+1	-		-1
Total Score:	+2	+2	-3	-2
Overall Net Score:	+4		-1	
KEY: +1 = Positive Impact -1 = Negative Impact				
Conclusion: The “labour-intensive method ” has been found to have an overall score of +4 and machine-intensive method an overall score of -1. Therefore, the “labour-intensive method” should be favourable than machine-intensive method. However, due to the nature of the project the labour-intensive method has limitation of time consuming and low productivity, therefore the combination of the two methods should be more favourable.				

7.4 Asphalt Pavement VS Concrete Pavement Alternatives

The comparison between Asphalt Pavement and Concrete Pavement has been evaluated based on technical, economic, and environmental criteria as shown in **Table 7-3**. In addition, the advantages and disadvantages of each alternative is provided in **Tables 7-4 and 7-5**. However, it seems there is no simple answer on which material is preferable. According to experts, when trying to decide between concrete vs asphalt roads, it is important to consider the specifications of the project first and foremost; and as such choosing a paving material cannot be decided on initial costs alone⁵⁹.

Table 7-3: Asphalt Pavement Alternative VS Concrete Pavement Alternative

Evaluation Criteria	Bitumen Road Alternative		Concrete Pavement Alternative	
	Rank	Score	Rank	Score
(a) Techno-economic				
Durability	Low	-1	High	+1
Construction Costs	Low	+1	High	-1
Maintenance Costs	Low	+1	High	-1
Fuel efficiency	Low	-1	High	+1

⁵⁹<https://www.perrinconstructionredding.com/blog/2018/9/25/concrete-vs-asphalt-roads-pros-and-cons-of-each>

Evaluation Criteria	Bitumen Road Alternative		Concrete Alternative	
	Rank	Score	Rank	Score
Suitability under urban condition	High	+1	High	+1
Suitability under flood condition	Low	-1	High	+1
(b) Environmental and Social				
Air pollution	High	-1	Low	+1
Noise nuisance	Low	+1	High	-1
Risk of traffic accidents	Low	+1	High	-1
Heat absorption capacity	High	+1	Low	-1
	Total Score:	(+6) (-4)		(+5) (-5)
Overall Score:		+2		0

The comparison was made between the asphalt pavement and concrete pavement based on their disadvantages and disadvantages as listed below;

- **Durability and maintenance free life:** Concrete roads have a long service life of forty years, whereas asphalt roads last for twenty years. Moreover, during this service life concrete road do not require frequent repair or patching work like asphalt roads.
- **Vehicles consume less fuel:** A vehicle, when run over a concrete road, consumes 15-20% less fuel than that on asphalt roads. This is because of the fact that a concrete road does not get deflected under the wheels of loaded trucks.
- **Resistant to automobile fuel spillage and extreme weather:** Unlike asphalt roads, concrete roads do not get damaged by the leaking oils from the vehicles or by the extreme weather conditions like excess rain or extreme heat.
- **Greener process:** Asphalt (bitumen) produces lots of highly polluting gases at the time of melting it for paving. Also, less fuel consumption by the vehicle running on a concrete road means less pollution.
- **Saving of natural resources:** Asphalt (bitumen) is produced from imported petroleum, the reserve of which is becoming reduced drastically. On the other hand, concrete (cement and aggregates) is produced from abundantly available limestone and stones
- **Durability:** Concrete roads are highly durable and more environmentally friendly as compared to asphalt roads. However, asphalt paving costs far less than concrete paving. Also, asphalt road provides a little better safety of the vehicle against skidding.

Table 7-4: Advantages and Disadvantages of Asphalt Pavements

Asphalt Pavement	
Advantages	Disadvantages
Asphalt is very cost-effective material and time-efficient too. Asphalt dries very fast and does not need to block the road for a long time.	Asphalt pavement is more of maintenance than concrete. You need to reseal it every 3-5 year to prevent it from cracking. And after applying sealers you do not have to drive on the surface from a few hours to days.
Asphalt is a reliable weather resistant material which can be used for low and high traffic as well. Asphalt can withstand the harshest weather condition.	If you have not mixed and laid asphalt properly then it'll erode. Before paving you should also take care of uneven surfaces and previous cracked surface. First, make them compact and then pave.
Asphalt paved road will have a feature that it gets smooth like finish. It offers	If you would likely to get the best result from the asphalt then you should heat it to 250 to 350°F.

Asphalt Pavement	
Advantages	Disadvantages
drivers skid resistance, splash back and better visual distinction between road markings.	Once the asphalt has been paved on the surface then it must be covered with the sand or other aggregates to get more compaction and durable lifespan.
Asphalt is 100% recyclable material. You can use it all over again because its lifecycle is endless. When you are repairing road then all the dug-up asphalt can be used again for the resealing.	Melting asphalt creates air pollution due to emission of hydrocarbons. Cutback asphalt which is used in creating asphalt cement releases more hydrocarbons.
Asphalt is time-efficient and easy when it comes for repairing. If you provide your asphalt a little routine maintenance then the deterioration of the surface can be delayed.	Asphalt, irrespective of the type used for the pavement requires heavy-equipment to install. Unless you've paving equipment's, you will not be able to lay down the asphalt.

Table 7-5: Advantages and Disadvantages of Concrete Pavements

Concrete Pavement	
Advantages	Disadvantages
Concrete roads have long life than any other roads.	The initial cost of concrete road is high.
These roads are durable and are practically unaffected by weathering agencies.	They are liable to crack and warp due to temperature variations.
They provide an excellent riding surface under all weather conditions.	Become noisy under iron-wheeled traffic.
They provide impervious, dustless, and clean surface.	Skilled supervision and labour are required for construction.
They do not develop corrugations.	Less resilient than bituminous or WBM ⁶⁰ roads
Can be laid on any subgrade.	Require long time for curing and thus cannot be opened to traffic earlier.
Can be easily reinforced when they are to resist high stresses due to heavy wheel loads of the traffic.	It is very difficult to locate and repair sewers and water mains lying under the pavement in their case.
Concrete roads are non-slippery and offer less tractive resistance.	
They provide good visibility for traffic during night hours	
Maintenance cost is low	

Conclusion

From the above table it can be noted that Bitumen Alternative have an overall score of +2 and Concrete Alternative has a neutral score. It can therefore be concluded that the Bitumen Alternative is preferable over to Concrete Alternative. However, at Sinza and Ubungo NHC Roads, where floods normally occur the most feasible option is construction of concrete roads.

⁶⁰ Full form of **WBM** is Water Bound Macadam. It is the layer of broken stone aggregates bound together by stone dust or screening material and water applied during **construction** and compacted by heavy smoothed wheel roller.

CHAPTER EIGHT

8.0 MITIGATION AND ENHANCEMENT MEASURES

8.1 Preamble

In general, the project has been found to have both beneficial (positive) and adverse (negative) effect/impacts. However, the positive has been found to outweigh the negative impacts. Moreover, most of the identified negative impacts have very low significance, and short-term, as they occur only during construction phase.

There are several environmental, social, health and safety, and economic benefits to be obtained from the proposed DMDP 2 investment roads. The environmental benefits will be obtained from improved air quality for urban population because the use of improved roads will result into increased urban mobility, reduced traffic congestion, hence reduced exhaust emission along the road sections.

Socio-economic benefits include creation of temporary employment and income generation opportunity for local people during construction of roads; increased revenue collection by Ubungo Municipal Council; reduced transportation costs and improved access to social services. The employment opportunities during construction can be enhanced by emphasising on labour-intensive construction methods such as excavation of trenches for roadside storm water drainages and culverts. The labour-intensive construction methods help poor families to supplement their incomes, and at the same time gives them some skills for future employment.

Finally, the project is expected to result into reduced risk of traffic accidents for pedestrians and other non-motorized road users due to construction of dedicated walkways. The most beneficiaries will be the vulnerable groups mainly the vulnerable groups such as school children, disabled, sick persons, and the elderly persons.

Despite the mentioned benefits the project is likely to create some negative impacts. These include loss of land and other properties; disruption of public utilities; increased risk of traffic accidents during construction; increased transmission of communicable diseases such as HIV/AIDS and STIs. The project is also likely to result into emergence of GBV/SEA and SH.

The purpose of this Chapter is to outline some proposed enhancement and mitigation measures for the identified positive and negative impacts, respectively. In order have better understanding the information is presented in tabular form showing the affected valued environmental component, project related activities, which are likely to create effects/impacts and proposed enhancement or mitigation measures for the identified positive and negative effects/e effects/impacts, respectively.

8.2 Enhancement Measures for Positive Impacts

Most of the beneficial impacts are long-term and socio-economic in nature and will be obtained during operation of DMDP 2 subproject roads. **Table 8-1** gives enhancement measures for the identified significant positive impacts on Atmospheric Environment; Public Health, Safety and Security; and Labour and Economy:

Table 8-1: Enhancement Measures for the Identified Positive Impacts

Affected Component	Effects/Impacts	Enhancement Measures
Atmospheric Environment	Reduced exhaust emissions due to increased mobility and reduced traffic congestion.	Carrying out periodic maintenance of the roads' pavement surface.

Affected Component	Effects/Impacts	Enhancement Measures
Public Health, Safety and Security	Reduced road traffic accidents due presence of dedicated pedestrian walkways.	TARURA in collaboration with Traffic Department will promote education, awareness creation and enforcement of rules and regulations to prevent vehicles from using pedestrian lanes.
Labour and Economy	Creation of temporary employment opportunities for local people during construction.	The contractor will give employment priority to the residents. This will include consultation with local community leaders to identify appropriate skills among the local community members. The contractor will give equal employment opportunities to males and females and will avoid any kind of discrimination based on gender, race, religion, etc. The Contractor will ensure all workers are served with Employment Contracts which stipulates all workers' rights under the labour laws such as maternity leave, sick leave, etc. The Contractor will ensure workers are paid not less than minimum wage as stipulated by the government. The Contractor will ensure payment of monthly contributions to the National Social Security Fund (NSSF) and Workers Compensation Fund (WCF) as required by the Country laws. The Contractor will ensure all workers are made aware, understand and follow the Code of Ethical Conduct.
	Increased income generation opportunities for local people by selling food items to the construction workers	Provide enabling environment for food vendors to sell their food in a clean and hygienic environment by providing shelter and water supply.
	Increased productivity and stimulation of economic growth due to reduced travel time.	TARURA will create awareness among the local residents and public on the protection of constructed DMDP 2 infrastructure.

Affected Component	Effects/Impacts	Enhancement Measures
	Employment creation and economic improvement of households.	Ubungo Municipal Council will promote local entrepreneurship by establishing small business operations.
	Increased revenue collection by Local and Central Government	Ubungo Municipal Council in collaboration with TRA will create awareness to the public to pay service levies and income tax to the local authorities and central government respectively. This includes issuing receipts to customers whenever they buy goods and customers must demand receipts of any service provided.
	Reduced transportation time and improved access to social services.	TARURA will regular maintenance of constructed DMDP 2 subproject roads.
	Reduced risk of traffic accidents and improved environmental quality.	TARURA will create awareness among the local residents and public on the proper use of constructed DMDP 2 infrastructure.

8.3 Mitigation Measures for Negative Impacts

Most of the identified adverse impacts are short-term and will be associated with construction activities, and could be mitigated through engineering design and good construction practice. The implementation of mitigation measures will be the responsibility of the Contractor under the supervision of the Resident Engineer.

However, successful implementation of some of the mitigation measures will require participation of other stakeholders. For example, mitigation measures against HIV/AIDS prevalence during construction will require collaboration from local NGOs/CBOs. In addition, relocation of public service infrastructure/utilities and small business operations will require involvement of infrastructure/utility service providers and community. These stakeholders will help in the identification of new areas for relocation of affected small business operations and infrastructure/utilities.

8.3.1 During Mobilization Phase

8.3.1.1 Mitigation of Impacts on Current Land and Resources Use

The following is the planned mitigation measures for the identified negative effects/impacts on Current Land and Resource Use:

Effects/Impacts	Mitigation Measures
Loss of land and other properties by local residents due to land acquisition for expansion of road corridor.	- Identification of the affected lands and properties - Identification and consultation of PAPs - Valuation of affected lands and properties - Paying prompt and fair compensation to the PAPs.

8.3.1.2 Mitigation of Impacts on Disruption of Public Utilities

The following are planned mitigation measures for the identified negative effects/impacts on public infrastructure/Utilities including powerlines, communication cables, water supply pipes and sewerage systems:

Effects/Impacts	Mitigation measures
Disruption of social and economic activities due to relocation of public utilities.	▪ The Contractor shall make consultation with relevant public infrastructure/utility operators to identify location of underground utilities before commencement of construction works. ▪ Before commencing of earth works the Contractor shall excavate trial pits to locate position of underground utilities ▪ The Contractor shall provide prior information through mass media to the public on the possible interruption of public services. ▪ The Contractor shall carry out immediate relocation and restoration of affected infrastructure/utilities within 12 hours.

8.3.2 During Construction Phase

8.3.2.1 Mitigation of Impacts on Atmospheric Environment

The following are mitigation measures for the identified effects/impacts on the Atmospheric Environment: -

Effects/Impacts	Mitigation Measures
Air pollution due to exhaust emissions from operation of mobile equipment and dust emission from construction activities.	▪ Avoid the use of old vehicles and construction equipment /machinery that emit visible smoke. ▪ Ensure regular maintenance of vehicles and construction equipment / machinery. ▪ Always switch off the engines when the vehicles and equipment are not in use. ▪ Application of water on dusty areas. ▪ Minimize stockpiling of excavated soils within the construction site by immediate removal and transportation to dumping site.

8.3.2.2 Mitigation of Impacts on Acoustic Environment

The following are planned mitigation measures for the identified effects/impacts on Acoustic Environment: -

Effects/Impacts	Mitigation measures
Creation of noise nuisance to the adjacent sensitive receptors due to operation of mobile equipment and construction activities.	▪ Limiting noisy construction activities only to day time hours. ▪ Prohibit the use of old equipment / machinery which produce high noise levels and ensure noise emission from heavy trucks and mobile construction equipment do not exceed 75 dB, in accordance with Tanzania Noise Emission Standards⁶¹. ▪ Ensure exhausts of heavy trucks and mobile equipment /machinery are fitted with noise reducing mufflers. ▪ Carry out regular maintenance of vehicles and mobile equipment / machinery.

⁶¹ United Republic of Tanzania. Environmental Management (Standards for the Control of Noise and Vibration Pollution) Regulations (2010). THIRD SCHEDULE (Made Under Regulation 15(1)).

Effects/Impacts	Mitigation measures
	▪ Limiting transportation of construction materials only to daytime hours. ▪ Whenever, possible avoid passing through human settlement areas.

8.3.2.3 Mitigation of Impacts on Water Resources

The following are planned mitigation measures for the identified effects/impacts due to interaction between project related activities and Water Resources Component: -

Effects/Impacts	Mitigation measures
Creation of ground and surface water pollution due to accidental overflow of raw sewage waste water into the surrounding environment	▪ Avoid locating the Contractor's Office close to surface and ground water sources. ▪ Avoid discharge of raw sewage waste water into natural streams/river or natural water courses. ▪ Ensure that sewage treatment system (septic tank system) is provided on-site at the Contractor's Office and carry out periodic maintenance of sewer pipeline and inspection chambers. ▪ Carry out regular emptying of soak pits and maintenance of sewage chambers to prevent overflow of raw sewage into the environment. ▪ All discharged wastewater from sewage treatment plant must not exceed Tanzania Effluent Discharge Standards⁶².

8.3.2.4 Mitigation of Impacts on Terrestrial Environment

The following are the planned mitigation measures for the identified effects/impacts on the Terrestrial Environment: -

Effects/Impacts	Mitigation Measures
Landscape degradation and loss of aesthetic value of the surrounding environment due to accumulation of construction solid wastes and accidental spillage of diesel and oils.	▪ Ensure proper design of roadside storm water drainages to ensure there is no concentration of storm water flow on adjacent lands. ▪ Adopting urban greening by vegetation plantation in public open spaces and road sides ▪ Adopting of sustainable drainage solution concept by enhancing infiltration rate of stormwater through grass plantation of earth drains ▪ All stockpiled soil materials and construction related solid wastes must be immediately removed and transported to the permitted dumping site. ▪ Useful soil materials can be retained, but properly stockpiled for landscaping purpose. ▪ Ensure all waste oil containers are stored in concrete paved area with bund wall to prevent spilled oil from escaping into the surrounding environment.

⁶² United Republic of Tanzania. Environmental Management (Water Quality Standards) Regulations (2007). FIRST SCHEDULE (Made Under Regulation 8).

Effects/Impacts	Mitigation Measures
	Always take precautions to prevent spillage of petroleum products into the surrounding environment.

8.3.2.5 Mitigation of Impacts on Public Health and Safety

The following are planned mitigation measures for the identified negative effects/impacts on Health and Safety Component: -

Effects/Impacts	Mitigation Measures
Increased transmission of HIV/AIDS and STIs due to social interaction between construction workers and local community	- Formulation and implementation of HIV/AIDS prevention and control programme. - Giving employment priority to local people to minimize the number of new comers, hence minimizing the likelihood of new HIV transmission. - Collaboration with local NGOs/CBOs dealing with HIV/AIDS to promote awareness and education campaigns.
Increased risk of COVID-19 transmission due to influx of people into the project sites.	- The Contractor will take necessary precautions as stipulated in the ESF/Safeguards Interim Note: COVID-19 Consideration in Construction/Civil Works Projects. These include: ✓ Checking and recording temperatures of workers and other people entering the site or requiring self-reporting prior to or on entering the site. ✓ Providing daily briefings to workers prior to commencing work, focusing on COVID-19 specific considerations including cough etiquette, hand hygiene and distancing measures, using demonstrations and participatory methods. ✓ Preventing a worker from an affected area or who has been in contact with an infected person from returning to the site for 14 days or (if that is not possible) isolating such worker for 14 days. ✓ Preventing a sick worker from entering the site, referring them to local health facilities if necessary or requiring them to isolate at home for 14 days. ✓ Provision of hand sanitizers, hand washing basins and soap at the entry gate. ✓ The Contractor shall provide respiratory masks (N95) to all workers in case of COVID-19 epidemic. The Contractor shall provide respiratory masks (N95) to all workers in case of COVID-19 epidemic. - Stakeholder consultations will be carried out before commencement of construction works to create awareness among the local residents on prevention and control of COVID-19.
Creation of construction related risk of accidents due to trespassing by unauthorized persons	- Fitting all mobile construction equipment / machinery and trucks with alarm and signal device to warn people, especially during backward movement. - Placing written warning signs at strategic locations to prohibit or prevent entrance of unauthorized persons into the construction sites.

Effects/Impacts	Mitigation Measures
into the construction sites.	▪ Restrict operation of mobile construction machinery / equipment to trained personnel only. ▪ Barricading of some sections of the construction area (e.g. bridge site) to prevent people from unauthorized entrance. This will include putting a written warning in both English and Kiswahili at a strategic location to prevent unauthorized people from entering the construction sites.
Creation of risk of accidents to pedestrians and other road users due to presence of excavated pits and trenches along the construction roads.	▪ All excavated pits or trenches must be surrounded by safety nets to prevent people from falling into open pits or trenches.
Creation of occupational health and safety risks due to handling of hazardous construction materials.	▪ Conduct mandatory Health and Safety induction trainings to all workers ▪ Conduct daily morning toolbox talks in the active construction sites ▪ Provision of appropriate Personal Protection Equipment (PPE) to construction workers including reflector jackets, hard hats, safety glasses, safety shoes, gloves and dust masks. ▪ Preparation and implementation of Environmental Health and Safety Management Plans (EOHSMP). This includes carrying out risk assessment and mitigation, conducting toolbox meetings; health and safety training; daily health and safety inspection by a competent person at the construction sites.
Increased risk of traffic accidents due to movement of heavy trucks to and from the construction site	▪ Develop and implement traffic management plan. This includes deploying flag persons to guide traffic movement along the roads. The involvement of traffic police may be useful, whenever possible, as well as installation of road signs and marks.

8.3.2.6 Mitigation of Impacts on Labour and Economy

The following are planned mitigation measures for the identified negative effects/impacts on Labour and Economy: -

Effects/Impacts	Mitigation measures
Risk of emergence of Gender-Based Violence and Sexual Exploitation and Abuse due to influx of job seekers into the project sites.	▪ Ensuring there are codes of ethical conduct in place that forbid and place penalties for Gender-Based Violence and Sexual Exploitation and Abuse. ▪ Ensure a Code of Ethical Conduct (CEC) is signed and understood by all project workers. This will include the provision of training and information regarding Workers' Code of Ethical Conduct in Kiswahili. ▪ Disseminating information that raises awareness on the prohibition of GBV and SEA among the workers, local community members and general public and disseminate information that promotes good and respectful relationships between workers and the community members. ▪ As a prevention measure, the contractor will be required to develop a code of conduct of GBV that will be attached to the ESMP and signed by all workers.

Effects/Impacts	Mitigation measures
	▪ The Contractor shall engage a qualified NGO to carry out awareness raising campaign against GBV and SEA on monthly basis during the entire construction phase. ▪ Provision of cultural sensitization training for workers regarding engagement with local community. ▪ Stakeholder consultation on GBV/SEA and SH and EH&S issues will be carried out with community members before commencement of rehabilitation / construction works. ▪ Grievances Redress Mechanism shall be in place to deal with any likely project related complaints from construction workers and the local residents.
Loss of business to petty traders due to dislocation from construction corridor at Midizini Road	▪ Consultation with petty traders before commencement of construction works to looking for alternative locations of doing business ▪ Ensuring that the alternative locations for relocated petty traders have improved facilities and infrastructures such as shades, water supply and toilets
Loss of income to existing street vendors during construction stage as the subproject roads will be temporary closed to give way for upgrading works	▪ The Project Proponent shall give 3 months advance notice to the street vendors to inform on commencement of road construction works that will involve temporary closure of roads up to completion period ▪ The Contractor shall execute works in sequence to avoid closure of large section of the roads
Loss of temporary employment opportunities for local people due to closure or completion of the project.	▪ The Contractor shall give employment priority to local people, because after project closure they will easily revert back to their normal economic activities. ▪ The Contractor shall ensure that all workers are registered with National Social Security Fund (NSSF) and their contributions are paid timely on monthly basis. ▪ The Contractor shall support workers with necessary documents for obtaining their terminal benefits from NSSF immediately before retrenchment from jobs.

8.3.2.7 Mitigation of Impacts on Transportation

The following are planned mitigation measures for the identified negative effects/impacts on Transportation: -

Effects/Impacts	Mitigation Measures
Severance of access by local residents to the road due to presence of excavated road bed and storm water drainages.	▪ Provision of temporary access for pedestrians and non-motorized transport users. ▪ Provision of temporary pedestrian crossings.
Disruption of traffic flow along the construction roads.	▪ Formulation of traffic management plan. This includes: ✓ Diverting all traffic to other local roads. ✓ Deployment of flag persons to guide movement of vehicles. ✓ Installation of speed limit signs and diversion signs.

8.3.2.8 Mitigation of Impacts on Cultural Heritage Resources

The following is the planned mitigation measures for the identified negative effects/impacts due to interaction between Project Related Activities and Cultural Heritage Resources Component: -

Effects/Impacts	Mitigation Measures
Risk of damaging nearby graves at Msumi and Tiptop Roads	▪ Presence of grave yard (Km 0+280 RHS) close to Tiptop will trigger into implementation of Chance Finding procedure for cultural heritage materials ▪ Road Before commencement of construction works, the Contractor shall confirm and ensure that there is no any grave found within road construction site. ▪ In case there is identified grave within construction corridor salvaging shall be done as per: - ✓ The Antiquities Act No. 10 of 1964 and The Antiquities (Amendment) Act No. 22 of 1979. ✓ The Grave Removal Act No. 9 (1969)
Destruction of archaeological artefacts due to land excavations during construction of road sections.	▪ Formulation and implementation of chance find procedures for any archaeological findings. ▪ Any identified archaeological findings will be rescued and reported to the Resident Engineer.

CHAPTER NINE

9.0 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

9.1 Objectives and Scope of ESMP

9.1.1 Objectives of ESMP

The purpose of this Environmental and Social Management Plan (ESMP) is to ensure that the project is being implemented with minimum adverse environmental and social impacts. The ESMP focuses on avoiding, where practical, unacceptable adverse environmental, social and/or economic impacts. In the event that an impact cannot be avoided, then appropriate compensatory and/or mitigation measures have to be implemented.

The objectives of this ESMP are to: -

- Describe the mitigation measures and commitments required to be implemented by construction management as guided in the ESIA Report;
- Describe specific additional measures required to implement construction related good practice, approval conditions stipulated by Tanzania National Policies/Legislations and World Bank ESF;
- Identify the roles and responsibilities of the environmental and social management organisation of the project; and
- Communicate environmental and social expectations and requirements to various stakeholders and relevant institutions, and regulatory agencies.

All contractors and subcontractors shall comply with the ESMP requirements as applicable to the tasks they are employed to undertake. The contractors must be contractually bound to respect the ESMP.

The measures and procedures outlined in this ESMP are commitments made by the project developer, and therefore remain responsible for their implementation. It is recognised that practical implementation of many mitigation measures may rest with contractors and subcontractors and consequently, the Proponent will require the implementation of a robust review/audit programme, as described in this ESMP, to measure and ensure that it is executed on her behalf.

9.1.2 The Scope of ESMP

This Environmental and Social Management Plan (ESMP) has been developed to identify the environmental and social management and mitigation actions required to implement the project in accordance with the requirements of the World Bank ESF and applicable Tanzania national policies and legislation.

The ESMP also outlines the performance standards based on the National Policies/Legislations, World Bank Safeguard Policies/Guidelines; and International Conventions/Treaties/Agreements.

The potential impacts and associated mitigation measures and management procedures presented in this ESMP are based on the baseline information and assessments provided in the ESIA Report.

9.2 Institutional Roles and Responsibilities

The important stakeholders / agencies identified in this ESMP include: PO-RALG, Ubungo Municipal Council, TARURA, World Bank Group (IBRD/IDA); NEMC; Ward and Mtaa Development Committees, and Non-Governmental Organisations (NGOs) / Community Based Organisations (CBOs) dealing with project related environmental and social aspects in the project area. The organisational structure for implementation of ESMP is provided in **Figure 9-1**.

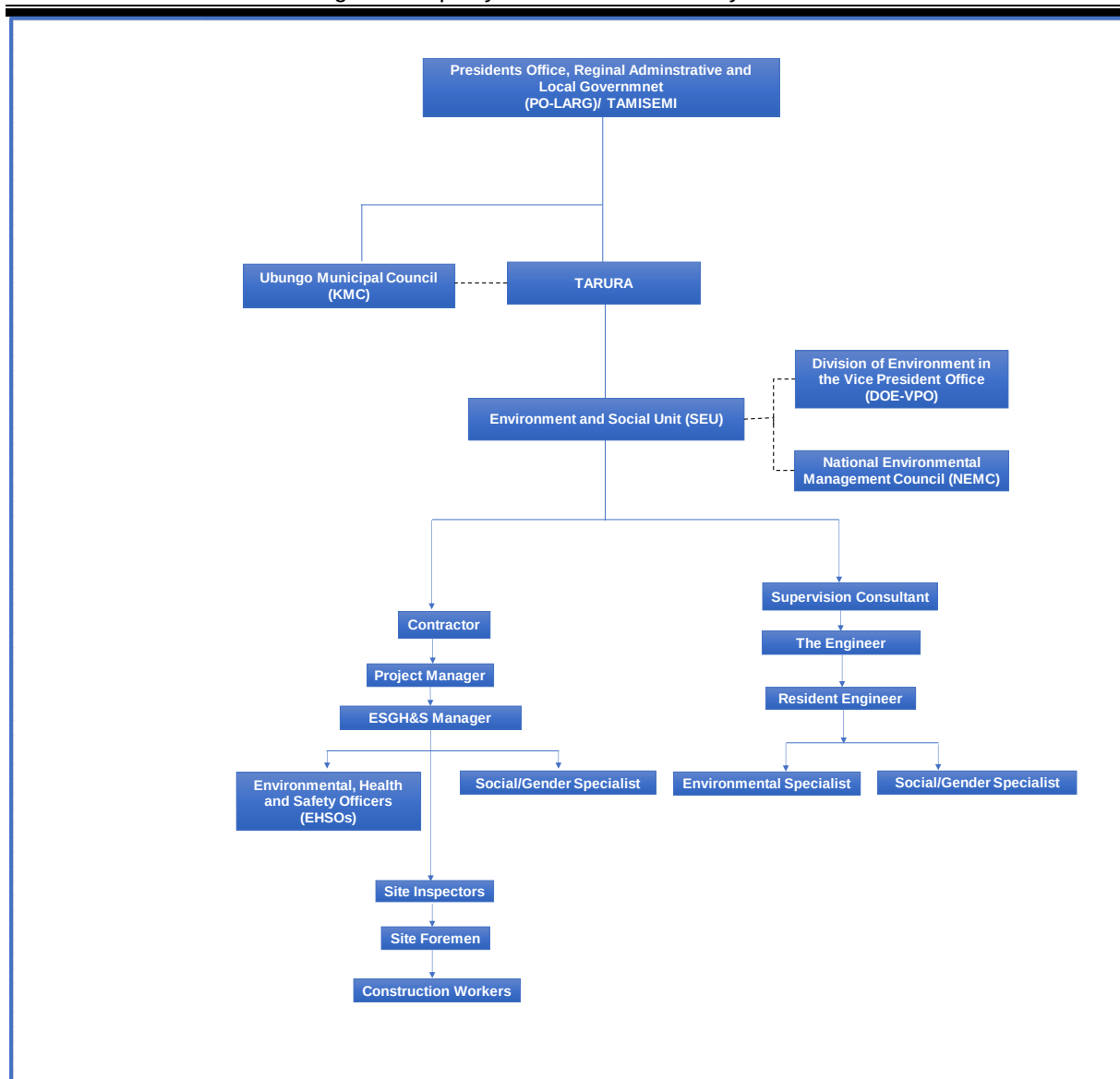


Figure 9-2: Organization Structure for ESMP Implementation

The effective implementation of ESMP also requires that all persons working for the project are aware of the importance of environmental requirements of the project; their roles and responsibilities in the implementation of the ESMP. They should also be aware of the significant actual or potential environmental impacts of their work activities; the benefits of improved performance and the consequence of not complying with environmental requirements.

Specifically, ESMP as shown in **Table 9-1**, summarizes all anticipated significant adverse environmental/social impacts and provides specific description of institutional arrangement for carrying out mitigation measures. In order to have effective ESMP there will be an integration of efforts among various stakeholders. This ESMP therefore specifies roles and responsibilities of various stakeholders during implementation. It is important that all responsible agencies / stakeholders should appreciate that they are united and should interact and work towards a common purpose.

9.2.1 Financing Agencies

The project is being financed by PO-RALG/OR-TAMISEMI on behalf of the Government of the United Republic of Tanzania in collaboration with the World Bank Group (IBRD/IDA). OR-

TAMISEMI and the WB shall be responsible for review and approval of Contractor's ESMP (C-ESMP), and monthly progress reports. The PO-RALG will also be responsible for review and approval of Monthly Environmental, Social, Gender, Health and Security (ESGH&S) Compliance Reports submitted by the Contractor.

9.2.2 Ubungu Municipal Council

Ubungu Municipal Council with coordination support from OR-TAMISEMI is the developer of DMDP 2 subproject roads and responsible for the implementation of environmental and social management plan. In this regard, Ubungu Municipal Council also holds final responsibility for environmental performance of the project. This is to say that Ubungu Municipal Council shall be responsible for overseeing implementation of mitigation measures and compliance monitoring through its Environmental Management Department.

9.2.3 Tanzania Rural and Urban Roads Agency (TARURA)

The District Manager of TARURA, apart from its operational responsibility, shall be responsible for overseeing compliance with national environmental policy objectives, including the outlined mitigation measures in the ESMP during operation phase. TARURA will collaborate with Ubungu Municipal Council to ensure that constructed roads under DMDP 2 investments are well protected against vandalism, hence safeguarding the road safety.

Currently, there is no any environmental and social unit within TARURA at the District level. There will be a need for capacity building by establishing the Environmental and Social Unit at the District levels. TARURA will also need to employ the Health, Safety and Environmental Officer (HSEO) and Social Gender Officer for smooth implementation of ESMP during operation phase through its Environmental and Social Unit.

Specifically, the ESU through its Environmental Health and Safety Officer (EHSO) and Social/Gender Officer (SGO) will be responsible for conducting site inspections to verify contractor's compliance with outlined mitigation measures in the ESMP. In addition, the EHSO and SGO will be responsible for attending Engineer's Monthly Site Meetings and conducting review of the Contractor's Monthly Environmental, Social, Health and Safety (ESHS) Reports. During the monthly site meetings, the EHSO and SGO shall be able to raise any non-compliance with ESHS issues and recommend remedial measures to the Supervision Consultant's Resident Engineer.

Contractors shall be required to produce regular progress reports for E&S management, providing implementation status of the C-ESMP detailing out incidents, accidents, grievances, and GBV cases. The Supervision Consultant will oversee construction and monitor the contractor's work. The RE will issue Notices to Correct, indicating the non-compliances and recommend corrective action/s and timeframes for their implementation.

9.2.4 Supervision Consultant

The Supervision Consultant will be procured by OR-TAMISEMI and shall be responsible for monitoring and supervision of the construction works including implementation of ESMP. Through authorized Project Engineer, the Supervision Consultant will appoint a Resident Engineer to oversee the construction works and monitor the works undertaken by the Contractor and implementation of ESMP to ensure compliance with contract specification and contractual requirements. The Supervision Consultant will also appoint Environmental Specialist and Social/Gender Specialist to assist the Resident Engineer. The Environmental Specialist shall be responsible for Health, Safety, Security, Social and Environmental (ESGH&S) Issues and Social/Gender Specialist shall be responsible for Worker's Welfare, Resettlement / Compensations Issues, Grievances Redress Mechanism (GRM), Gender Based Violence (GBV), Sexual Exploitation and Abuse (SEA), and Sexual Harassment (SH).

9.2.5 Contractor

The Contractor for each works package shall be responsible for the implementation of construction works and ensure compliance with environmental and social requirements, including implementation of outlined mitigation measures in the ESMP. Therefore, the Contractor will be responsible for preparation and implementation of Contractor's ESMP (C-ESMP) based on this ESMP or Project ESMP (P-ESMP). The Contractor will ensure that the implementation of C-ESMP conforms to the requirements of all local laws, regulations, and contract clauses.

The Contractor for each works package shall appoint the Project Manager who will be assisted by ESH&S Team, which will be comprised of ESGH&S Manager assisted by Health, Safety and Environmental Officer (HSEO) and Social/Gender Specialist.

The ESGH&S Manager shall be an overall in-charge responsible for overseeing implementation of Environmental, Social, Health, Safety and Security (ESGH&S) issues. However, for effective implementation of the ESMP, the Contractor will be required to appoint Environmental, Health, and Safety Officers (HSEOs) and a Social/Gender Specialist.

The responsibilities of other experts shall be as follows:

Title/Position	Responsibility
Health, Safety and Environmental Officers (HSEOs)	Environmental, Health, Safety and Security Issues
Social/Gender Specialist	Social, Gender and Resettlement Issues, including GRM, GBV/SEA and SH.

In order to ensure enforcement of ESGH&S issues, the Site Inspectors and Site Foremen, apart from undertaking supervision of rehabilitation works, shall also be responsible for overseeing the implementation of outlined mitigation measures in the ESMP, including ESGH&S issues

9.2.6 Communities Around the Subproject Roads

The communities around subproject roads include the local residents of all Wards / Mtaa traversed by the DMDP 2 Subproject Roads; small business operators, commuter bus transport operators; bajaji/ bodaboda operators; petrol station operators; whole sale and retail shop operators along the road corridors.

In general, consultation with these stakeholders indicate they do support the project because they believe it going to improve mobility in the municipality. However, the project can obtain maximum support if it involves the local community members and make them aware of the project.

Therefore, OR-TAMISEMI as an implementing agency through Ubungo Municipal Council will prepare and distribute brochures which provide some information about the project.

The Project Proponent (Ubungo Municipal Council) will encourage the surrounding communities to participate in the project through temporary employment during construction and in the maintenance activities during operation phase. In this way the local community members will feel ownership of the project and therefore protect the project infrastructure against vandalism. For example, it is common to find people removing road signs or vandalising bridge structures.

Ubungo Municipal Council will prepare and implement education and awareness campaigns, which among others will educate the local people on the importance of protecting project infrastructure against vandalism.

9.3 Contractor's Environmental Specification

The *Contractor's Environmental Specification* will be incorporated into the Contract Document to ensure the environment is free from the impacts of the Contractor's activities. The Contractor shall follow the guidelines determined in the Contract Document. General environmental problems related to the Contractor's activities include:

- Site management;
- Storage and treatment of fuel and material;
- Dust and noise hazard control;
- Solid Waste Management; and
- Wastewater Management.

9.3.1 Contractor's Environmental Protection Plan

The Contractor for each works package shall hold the copy of *Environmental and Social Management Plan (ESMP)*, which shall be included in the bidding documents. Before commencement of construction works, the Contractor shall submit an *Environmental Protection Plan* for the construction sites to the Supervision Consultant's Resident Engineer and PO-RALG Project Coordination Unit for review and approval.

The plan shall include the general mitigation measures for environmental impacts and the specific mitigation measures for response to emergency accidents, and the general measures shall include the followings, but not be limited to the followings:

- General restoration, indicating operation area, fuel storage area, fuel supply area, parking area, equipment maintenance area, material storage area and workshops;
- Waste Management Plan;
- Dust Control Plan; and
- Noise Control Plan.

9.3.2 Site Facility

The Contractor's site office and materials storage yard will be secured near the construction sites. The Contractor will be required to prepare site plan for review and approval by the Resident Engineer. This will include drawings showing the layout of the Contractor's office and materials storage yard.

9.3.3 Recruitment of Construction Workers

The Contractor for each works package will always give employment priority to the local people. The Contractor shall publish the required positions for employment in the local media and all signboards. The construction workers and other personnel shall be employed in accordance with the Employment and Labour Relations Act No.6 of 2004. The Contractor shall provide training for the construction workers on environmental protection, GBV / SEA, as well as occupational health and safety issues.

9.3.4 Requirements for Contractor's Office

Since all construction workers to be recruited will be from the within the urban areas, there will not be any requirements for accommodation for the construction workers. However, the Contractor must provide cloth changing rooms, resting areas and sanitary facilities for the construction workers.

There shall be separate and sound bath facilities (toilets, bathroom) and cloth changing rooms for male and female workers. The toilets shall have sufficient water and be equipped with soap

and toilet paper, etc. All facilities shall be clean and available. The toilet shall be marked indicating separate toilets, bathrooms and cloth changing rooms for “Male” and “Female”.

Other facilities shall include: -

- Kitchen supplied with clean water, and in favourable sanitary condition.
- Septic tank soak pit system for treatment of domestic sewage before discharge into the seawater.
- First Aid Kit complete with medicine shall be available at the Contractor’s Office managed by a qualified nurse. The nurse shall receive complete emergency rescue training and be capable of properly transferring the injured or patients to local referral hospital on time.

9.3.5 Code of Ethical Conduct

The *Code of Ethical Conduct* shall be established for the construction workers and emphasize appropriate conduct, strict prohibition of drug and alcohol and conformance to relevant laws and regulations to reduce the social impacts. All workers shall be familiar with the *Code of Ethical Conduct*. The local community shall also know the *Code of Ethical Conduct* for construction workers. The workers who fail to follow the *Code of Ethical Conduct* shall be punished. The *Code of Ethical Conduct* shall include, but not be limited to the following measures:

- All workers shall abide by national laws and regulations.
- Dangerous goods and weapon are strictly forbidden at the construction site.
- Obscene goods and gambling are strictly forbidden at the construction site.
- Fighting is strictly forbidden at the construction site.
- Life and production of the surrounding area and the local people shall not be interfered.
- Local traditional culture, customs and traditional activities shall be respected.
- Smoking is only allowed in designated area.
- Dressing and personnel hygiene shall be appropriate.
- Sanitary conditions of accommodation shall be proper.

The *Code of Ethical Conduct* shall be followed even outside the project site in their residential areas during interaction with local community members.

The followings are strictly forbidden at the construction sites and the surrounding area:

- Impacting or damaging the structure with historical or architectural value;
- Burning of solid wastes into the surroundings without permission from Resident Engineer.
- Drinking during working time.
- Mechanical maintenance (engine oil and lubricant addition) of vehicles outside the designated area.
- Dumping of solid wastes outside the designated area.
- Dangerous driving in the surrounding area and local roads.
- Failure to wear PPE (safety shoes, reflective vests, safety glasses, face masks, and helmet) at the construction site.
- Causing any health and safety impact to the surrounding people.
- Leakage of any pollutant leakage, like waste oil; and
- Dumping of solid waste into the surrounding environment (e.g., plastic bottles, plastic bags, food cans, etc.).

All Contractors, office workers or other personnel who violate the above regulations shall be subject to punishment of verbal warning or termination of employment contract depending on the severity.

9.3.6 Health and Safety

The Contractor for each works package shall ensure the project conforms to all national and local safety regulations and other damage avoidance measures. Before commencement of construction works, the Contractor shall execute safety induction training for the workers. Other measures include:

- Provision of sufficient sunlight during the day time and light during the night time.
- Provision of enclosure made up of corrugated iron sheet around bridge construction sites, and shall be regularly inspected and maintained during construction. This will be reinforced by provision of written warning signboard in Kiswahili and English Language to prevent trespass by unauthorized persons into the construction site without the approval of the Contractor's personnel.
- Implement OHS management plan based on risk assessment and mitigation measures that will prioritize avoiding and minimizing exposure to hazards using engineering and administrative controls
- Provision of Fire-fighting equipment, like fire extinguisher at the Contractor's Office.
- Provision of appropriate and sufficient PPE such as eye goggles, protective gloves, face shield, dust cover, helmet, ear plugs, steel helmet, etc.) to the construction workers.
- Safety regulations, contingency plans and emergency contact information shall be indicated in the notice board at the construction site.
- Conducting medical examination for the construction workers annually;
- Provision of training on personal basic hygiene and epidemic prevention, including respiratory disease and communicable disease.
- Conducting HIV/AIDS prevention and control campaigns for construction workers and community members, including publicity at the construction sites and the surrounding areas in the form of bulletin and training course.
- Provision of basic emergency rescue service and emergency measures for the construction workers.

9.3.7 Storage of Fuel, Oil/Grease, and Other Hazardous or Toxic Material

All fuel shall be stored in a concrete paved the storage yard with bund walls and shall be 110% of the fuel storage container. Fuel storage sites shall not to be located near any water sources (i.e., within 100m from the water source). Dangerous goods shall be stored in a designated storage device. Temporary storage regulations shall be prepared for fuel, oil and paint, etc.

Only authorized personnel are allowed to enter the storage area. The storage area shall be free from vehicle damage, and shall be subject to periodic inspection for leakage, damage and pollution condition.

Equipment maintenance can only be made at the workshop / garage. The operation surface (concrete floor within the rail area) must be properly designed to ensure collection of oil and fuel in the appropriate container. In case of oil/fuel leakage, the soil polluted must be removed and transported to the approved area. Relevant preventive measures must be taken to prevent the grease, oil, fuel, solvent and chemicals from polluting soil and water.

9.3.8 Solid Waste Management

During construction, the Contractor for each works package must take proper measure to timely remove the waste at the construction site to the approved waste treatment equipment. Construction material accumulation shall be reduced by any possibility.

9.3.9 Wastewater and Storm Water Management

Wastewater from the construction site shall not be directly discharged to the surface waters. The Contractor shall be encouraged to use portable toilets or hiring existing ones from bars and commercial establishments.

Storm water must be discharged to the nearby valleys through grass-planted earth storm water drainages to increase infiltration rate while prevent sedimentation of the water courses. Storm runoff discharged from the construction site (temporary drainage facility) shall be through concrete lined storm water drainages.

9.3.10 Noise Control

Construction works shall be confined to the day time only and construction near the residential buildings shall be noise-free. Personnel, visitors, and construction workers at the site with high-pitch noise must wear proper hearing protection device to avoid hearing injury by noise.

The Contractor's ESGH&S Manager must check the site periodically to ensure the site comply with *Occupation Health and Safety*.

9.4 Grievances Redress Mechanism

The Contractor for each works package will be required to formulate Grievances Redress Mechanism (GRM) in accordance with ESS2, ESS5 and based on the procedures and principles outlined in the Stakeholder Engagement Plan (SEP)⁶³. The purpose of the GRM is to outline a process for dealing with or resolving project-level grievances raised by Aggrieved Persons (APs) regarding specific activities, and/or unanticipated social impacts resulting from project implementation. The GRM applies to the construction workers and local residents, and other stakeholders who are directly or indirectly affected by the project. The grievance process outlined hereunder provides procedures for handling complaints/claims internally in a transparent manner, to avoid conflict and therefore maintain good relationships with various stakeholders.

The PO-RALG Project Coordination Unit (PCU) will oversee implementation of GRM during execution of the project, to ensure the protection of the rights of APs and beneficiaries during Project implementation. The requirements for the GRM are as follows:

- The grievance process must not impose any cost to those raising the grievances (i.e., the complainants).
- Concerns arising from project implementation must be adequately addressed promptly.
- Participation in the grievance process must not preclude the pursuit of legal remedies under the laws of Tanzania.

The issues covered by the GRM, among others, include complaints related to employment, sexual harassment, and gender-based violence. Specifically, for employment issues may include:

- Failure by the Contractor to serve the employment contract.
- Failure by the Contractor to pay minimum wage following the labour laws.
- Failure by the Contractor to remit monthly national social security contributions.
- Failure by the Contractor to provide medical treatment for a sick employee.
- Unlawful termination of a worker,
- General workers' welfare such as annual leave, and sick, maternity and family leave,
- Failure to provide project workers with adequate periods of rest per week, as required by the country labour laws.

In case of GBV/SEA and SH a proper reception channel will be in place by appointing an NGO (or CBO) to handle all kind of complains related to GBV/SEA and SH, including providing appropriate counselling to the victims. The Contractor shall develop GBV/SEA Preventive and

⁶³ Stakeholder Engagement Plan (SEP). June 2023.

Response Action Plan which will be implemented by a qualified NGO/CBO. The GBV/SEA Action Plan will include detailed procedures for handling related complaints from reception, hearing, investigation, response and up to closure.

9.4.1 Formation of Grievance Redress Committee

To address grievances, a Grievance Redress Committee (GRC) will be formed for dealing with grievances as they arise. The GRC will be comprised of the following:

- PO-RALG PCU Safeguard Officer.
- Supervision Consultant's Environmental Specialist and Social/Gender Specialist
- Contractor's Human Resource Officer.
- Ubungo Municipal Environmental Management Officer (MEMO) and Municipal Community Development Officer (MCDO).
- Ward Executive Officers (WEO) from traversed Wards by the DMDP 2 investment roads.
- Area ("Mitaa") Executive Officers from traversed Mitaa by the DMDP 2 Subproject Roads.

Note that the presence of the local government authorities at mitaa and ward level is important because some of the grievances may originate outside the project boundaries. The involvement of NGO / CBO will also be necessary. For example, if a project worker is involved in sexual harassment of a local community member, the matter will be handled by a qualified NGO / CBO.

The construction workers and local residents will be informed of the existence of the GRM as soon as it is in place. Other issue to be informed to workers and local residents include:

- Members of the Grievance Redress Committee (GRC)
- How to access the GRC.
- How to lodge a formal complaint.
- The timeframes for each stage of the process.
- Characteristics of the GRC: confidentiality, responsiveness, and transparency.
- Alternative avenues of grievance resolution in case of conflicts of interest.

9.4.2 Role and Responsibility of Grievances Redress Committee

The Grievance Redress Committee (GRC) will be Chaired by PO-RALG PCU Safeguard Officer who shall be responsible for receiving and registering grievances. The Supervision Consultant's Social/Gender Specialist shall be the Secretary of the GRC and shall be responsible for assisting the Chairperson in documenting, registering, communicating, and reporting issues related to grievances management.

The grievance management procedure will be simple and will be administered as far as possible by the GRC at the project Level. The GRC will prepare monthly reports showing how received grievances were handled summary and submit to PO-RALG, UMC and WB for record purposes. To ensure transparency, the Grievance Redress Procedure will be printed in A3 Size Paper and posted at all strategic locations within the DMDP 2 construction sites to be read by workforce and local community members.

The GRC shall disseminate detailed procedures to redress grievances and appeal process among the construction workers and local community members through their local government offices (e.g., Ward Officers and Mtaa Officers).

9.4.3 Grievance Redress Procedures

The formal, detailed GRM will be developed to contain specific grievance procedures, including both informal and formal grievance mechanisms. In general, complaints and disputes should be resolved at the project level. Each grievance will be treated confidentially.

The grievance resolution process is comprised of four stages:

- Reception
- Investigation and inquiry.
- Response
- Follow up and close-out.

The access to the GRM will be easy and quick, in particular to APs, who are the people most likely to need it. The formal grievance will be:

- I. documented in a written Grievance Form and recorded in a logbook:
- II. assessed on its level of urgency/severity; and
- III. assigned to GRC, which will then inform the complainant within seven (7) days that it has received the grievance and that it is under review.

The AP will report his/her grievance to the GRC through its Chairperson. If a grievance is received face to face or over the phone and the AP wishes to address the grievance formally, it is the responsibility of Chairperson who receives the grievance to complete a Grievance Registration Form provided in **APPENDIX 10**. The grievance redress mechanism for dealing with complaints is illustrated in **Figure 9-2**.

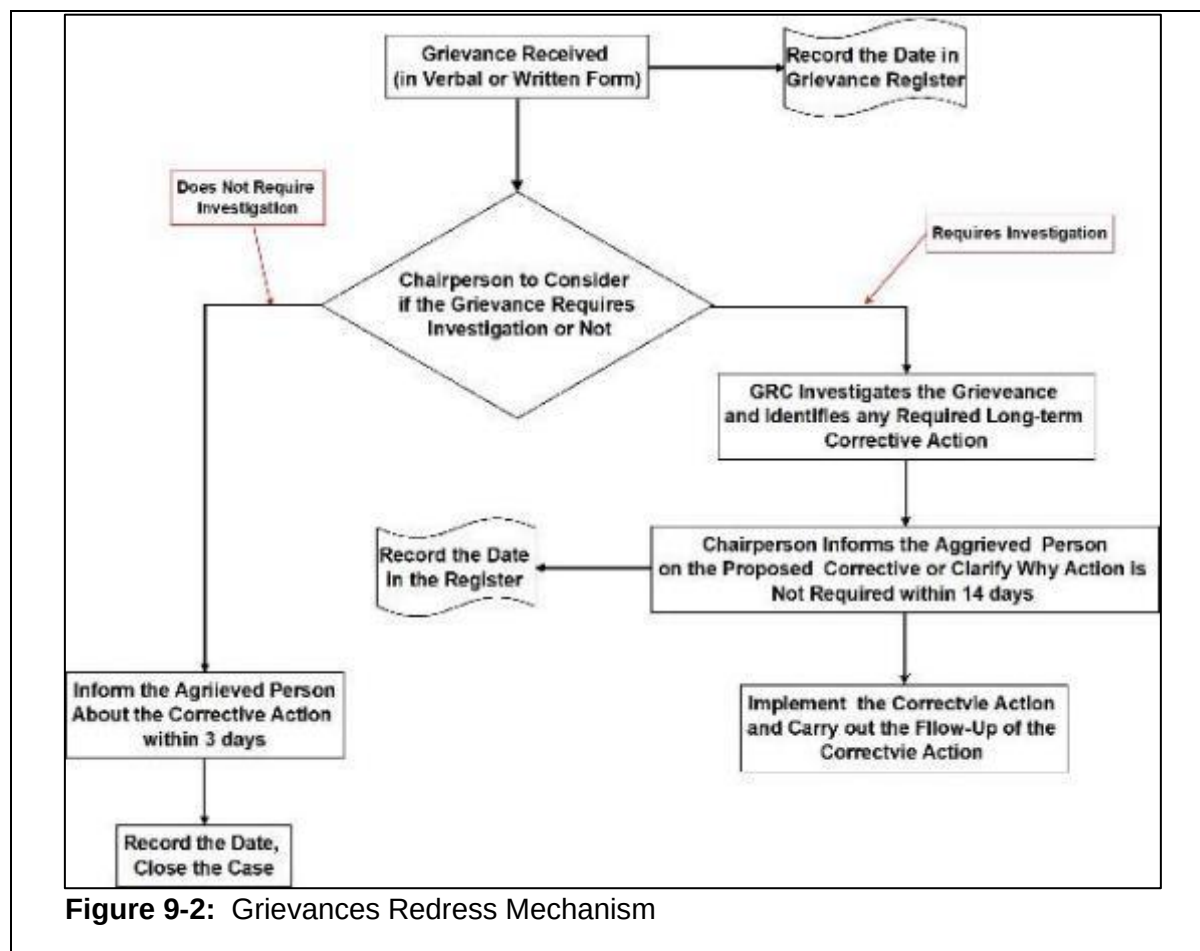


Figure 9-2: Grievances Redress Mechanism

In general, grievances should be resolved within 30 days. The Chairperson will communicate the findings of the investigation and resolution and seek approval from the AP, who will either accept or appeal the outcome. If the AP is satisfied with the outcome, then the grievance is closed out and will provide his/her signature (or fingerprint) on the Grievance Form as confirmation.

If an agreement is unable to be reached between the AP and the GRC, the grievance will be submitted to PO-RALG as a lead project Implementation Agency for review and a final decision. If necessary, further action will be taken to resolve the issue. The national courts are the last avenue for addressing grievances. In case the AP reaches the judicial system, there should be no cost to the claimant.

A grievance is closed out when no further action can be or needs to be taken. Closure status will be entered into the Grievance database as follows:

- **Resolved:** the resolution of the complaint was reached and implemented and signed documentary evidence exists.
- **Unresolved:** the agreed resolution of the complaint was not reached and the case has been authorized for closeout by the Grievance Redress Committee (GRC).
- **Abandoned:** complaints in which efforts to contact a given complainant were unsuccessful for two months after receipt of the formal grievance.

Specifically, depending on the issues that may arise during project implementation the following stages will be observed in the grievances redress process:

Stage 1: Reception

The Aggrieved Persons (AP) is documented in the appropriate form to be provided by Chairperson. If during the process it appears that the AP does not understand the procedures, this will be explained. The Chairperson should not discourage the filing of a grievance form. The grievance will also be documented in the Grievance/Issues Register.

The Grievance Registration Form should be signed and dated by the AP. Where the aggrieved person is unable to write, he shall obtain assistance from the Chairperson to fill the form and emboss the form with his/her thumbprint.

Step 2: Investigation

If the issue is easily resolvable and it does not require investigation the Chairperson will refer to the GRC, which will carry out the hearing of the grievances and provide the answer within 3 days, after the date of hearing the grievances.

If the grievance is a more complex project-related issue, it will be investigated further, and then arrange the hearing within 7 days after the date of registration.

The Chairperson will arrange the hearing day within 7, which shall be attended by the AP and the party causing the grievances. The Chairperson will notify both parties within 3 days after the date of hearing the grievance.

Step 3: Response

It is assumed that all cases shall be solved at the GRC level. However, some cases may remain unresolved. For such cases, the AP shall have an option to refer his/her case to the District Commissioner for final amicable solution.

The Chairperson will prepare a preliminary report containing the details of the grievance and hearing date, and decision of GRC and submit to the District Commissioner.

Step 4: Follow Up and Close-Out

If no amicable solution is reached in Step 3 the AP will have recourse to the court of law as a last resort. This can be a labour court, criminal court, or civil court depending on the type of grievance.

This is a stage that although should always be open and available, it will be discouraged by all positive means such as timely communication and open negotiations. The institutional arrangement has been designed to allow for the process to detect and deal with problems in a timely and satisfactory manner for all parties concerned. Therefore, the GRC shall take necessary measures to ensure that solutions are reached by consensus based on negotiation and agreement.

9.5 Stakeholder Consultations

Stakeholder consultations has been carried out during preparation of this ESIA Report and its associated Environmental and Social Management Plan (ESMP) and Resettlement Action Plan (RAP); and relevant stakeholders had the opportunity to raise issues and their concerns regarding the project. All the raised issues /concerns have been taken into consideration during the project design and preparation of ESIA Report, ESMP and RAP. However, in order to properly address environmental and social issues, further stakeholder consultation will be necessary during the project implementation.

The stakeholder consultations are aimed at providing a two-way communication or information exchange between the Contractor and the PAPs and the public. This is to ensure that information on the impact of the project is timely delivered by the Contractor and Project Proponent to the PAPs and the public. The Contractor shall disclose relevant content of the project, potential environmental and social impacts, and mitigation measures; GBV /SEA issues and ESGH&S issues.

The following actions will be taken by the Contractor during construction phase:

- Keep open communication with local government, and the surrounding local community members.
- Disseminate the project information to the PAPs and surrounding local community members and the public in general in the form of brochures written in both Kiswahili and English Languages.
- Publish relevant project information in the brochures which shall include, but not be limited to:
 - Project Overview;
 - Construction Plan;
 - Main Construction Activities;
 - Main Environmental Problems and Mitigation Measures; and
 - Name and phone number of the Contractor's Project Manager, the Consultant's Resident Engineer, and PCU Safeguard Officer.

The Contractor shall regularly communicate with the Supervision Consultant's Environmental Specialist and Social/Gender Specialist on the main sensitive subjects and to mitigate any unfavourable environmental and social impacts.

The Contractor shall provide training to the workers before commencement of construction works on Grievances Redress Mechanism, Contractor's Code of Ethical Conduct and Code of Conduct on ESGH&S and GBV/SEA, and thereafter regularly (monthly) throughout the project implementation period. The samples of Contractor's Code of Ethical Conduct and Code of Conduct on ESGH&S and GBV/SEA are provided in **APPENDIX 11** and **APPENDIX 12**, respectively.

Relevant information on Grievances Redress Mechanism, Code of Ethical Conduct and Code of Conduct on GBV/SEA will be posted at strategic locations for easy access by construction workers in Kiswahili and English Languages.

Complaint recording system shall be placed at the Contractor's Office, whereby all submitted complaints problems and other matters shall be included in the Monthly Progress Reports and submitted to the Resident Engineer and PCU for review and approval.

9.6 Institutional Capacity Building

To ensure the sustainability of this project there is a need for institutional capacity building. The purpose of institutional capacity building is to ensure the sustainability of the benefits obtained after the construction of DMDP 2 Subproject Roads and effective implementation of the outlined enhancement / mitigation measures in the ESMP during operation phase.

Therefore, institutional capacity building will involve:

- Establishment of Environmental and Social Unit (ESU) at TARURA District Level, which will be comprised of Health, Safety and Environmental Officer (HSEO) and Social / Gender Officer (SGO).
- Training of the HSEO and SGO on the environmental, social, gender, health, and safety issues during construction phase; and environmental and social monitoring issues during operation phase.
- Training of Contractor's Staff and Construction Workers.

9.6.1 Establishment of Environmental and Social Unit (ESU)

The capacity building within TARURA District Office will involve establishment of Environmental and Social Unit (ESU). The ESU will be responsible for overseeing implementation of outlined enhancement / mitigation measures in the ESMP and overseeing Environmental, Social, Gender, Health and Security (ESGH&S) issues during operation phase. The Environmental and Social Unit will also be responsible for daily monitoring of environmental and social issues, including compliance with outlined mitigation measures in the ESMP, including prevention of GBV/SEA, SH, and Child Labour.

The Environmental and Social Unit will be run by Health, Safety and Environmental Officer (HSEO) and Social/Gender Officer (SGO) and will be liaising with the National Environment Management Council (NEMC) and Municipal Environmental Management Officers (MEMO) and Municipal Community Development Officers (MCDOs) from Ubungo Municipal Council.

The budget for strengthening and running of the Environmental and Social Unit (ESU) will be part of the recurrent budget of TARURA. This budget will include salaries of two specialists, fully furnished office, two computers with accessories and other related facilities.

9.6.2 Training of ESU Staff

The objective of organizing training for ESU Staff is to strength environmental management during construction and operation phase, and to ensure the quality of environmental monitoring and effective environmental management, thus improving the quality of the construction works. At the end of the training the ESU Staff will be able to understand the main environmental and social issues during the construction and operation phase, and have a better understanding of existing problems and deficiencies on environmental management; and take necessary preventive and control measures as soon as possible.

The training shall be conducted by Supervision Consultant's Environmental Specialist in collaboration with Social/Gender Specialist. In addition, the ESU's Health, Safety and Environmental Officer (HSEO) and Social/Gender Officer (SGO) will be involved on on-the job training by participating in the environmental and social monitoring during construction phase. They will be submitting their environmental and social monitoring reports for assessment by

the Supervision Consultant's Environmental Specialist in collaboration with Social/Gender Specialist.

9.6.3 Training of Contractor's Staff and Construction Workers

Before commencement of construction works, induction trainings will be organized for the responsible personnel and construction workers, in order to avoid environmental damages due to project implementation during construction. For contract responsible personnel, the objective of training is to define the environmental protection responsibilities of the contractor; and for construction workers, the objective is to ensure the proper construction practice during the construction period in order to avoid some construction behaviours, which have adverse impacts on the environment, social, health and safety.

The training will be helpful for the project responsible personnel to understand their obligations in environmental protection needed to be assumed and possible consequences of the environmental damage. The construction workers will have a better understanding of the protection level and methods for environmental sensitive areas. Based on the actual situation of the Project, the training period for construction workers will not be more than one week.

9.7 Cost Estimates for Mitigation Measures

The cost estimate for mitigation measures takes into consideration those costs to be incurred due to affected resources as a result of construction works/ activities and costs to be incurred as a result of the Contractor's adherence to good engineering practice. Those costs resulting from implementation of mitigation measures for negative environmental and social impacts are considered as extra costs outside the Project Budget. However, the project will not be responsible for costs that arise out of normal responsibility of the project proponent or implementing agency. Therefore, for that reason, recurrent costs during operation and maintenance are excluded.

The cost estimates for the implementation of ESMP mitigation measures are cost due to the implementation of specific mitigation measures. These include Implementation of Resettlement Action Plan (RAP); GBV/SEA Awareness Programme; HIV/AIDS Prevention and Control Programme. In this regard, the following cost estimates for mitigation measures have been considered for implementation of ESMP: -

SN	Particulars of Cost Items	Amount (TZS)
1.	Compensation of PAPs due to Land Acquisition	668,219,000.00
2.	GBV/SEA Awareness Programme	260,000,000.00
3.	HIV/AIDS Prevention and Control Programme	200,000,000.00
	Sub-total:	928,219,000.00
	Add 10% Contingency:	92,821,900.00
	Total:	1,021,040,900.00

Source: Consultant Analysis

This makes the total cost for implementation of mitigation measures to be Tanzania Shillings (TZS) **1,021,040,900.00**. The cost estimates have been based on the Consultant's experience on projects of similar nature.

9.8 ESMP Implementation Schedule

The role of ESMP is to outline environmental requirements for the project and provide guidance for the Contractor to follow and properly manage environmental impacts during construction. It specifies mitigation and institutional measures to be taken during construction and operation phases to eliminate any adverse environmental and social impacts, offset them or reduce them to acceptable levels.

Specifically, ESMP schedule as shown in **Table 9-1**, summarizes all anticipated significant adverse environmental impacts and provides specific description of institutional arrangement for carrying out mitigation measures. In order to have effective ESMP there must be an integration of efforts among various institutions/stakeholders. This ESMP therefore specifies roles and responsibilities of various institutions/stakeholders during implementation. However, it is important that all responsible institutions /stakeholders should appreciate that they are united and should interact and work towards a common purpose.

Table 9-1: ESMP Implementation Schedule

Risks/Impacts	Mitigation/Enhancement Measures	Responsibility	Cost Estimates
A. Mobilization Phase			
A1. Loss of land and other properties by local residents due to land acquisition for execution of road construction works.	- Identification and valuation of affected lands and properties - Consultation with the Project Affected Persons (PAPs) - Payment of prompt and fair compensation to the PAPs.	OR-TAMISEMI in collaboration with UMC monitored by Supervision Consultant's Social / Gender Expert.	668,219,000.00
A2. Disruption of public social services due to relocation of infrastructure / utilities.	- Collaborate with relevant authorities to identify the likely affected infrastructure / utilities. - Before commencing of earth works the Contractor shall excavate trial pits to locate position of underground utilities - Ensuring that the relocated infrastructures and utilities are immediately restored within 24 hours.	Contractor in collaboration with Utility / Infrastructure Authorities monitored by Supervision Consultant's Environmental Expert and Social/Gender Expert.	Provided in the BOQ for Other Items
A3. Increased employment opportunities for local people due to recruitment of construction workers.	- Give employment priority to local people and provide equal employment opportunity for both males and females. - Ensure there is not any kind of discrimination at work place discrimination. - Ensure there is not any kind of Sexual Harassment and Gender Based Violence at work place.	Contractor monitored by Supervision Consultant's Environmental Expert and Social/Gender Expert	NA
B. Construction Phase			
B1. Loss of business to petty traders (Machinga) due to dislocation from construction corridor at Midizini Road	- Consultation with petty traders (Machinga) before commencement of construction works so as to looking for alternative locations of continue doing businesses - Ensuring that the alternative locations for relocated petty traders have improved facilities and infrastructures such as shades, water supply and toilets	Ubungo Municipal Council	NA
B2. Loss of income to existing street vendors during construction stage as the subproject roads will be	The Project Proponent shall give 3 months advance notice to the street vendors to inform on commencement of road construction works that will involve temporary closure of roads up to completion period	Ubungo Municipal Council and the Contractor monitored by Supervision Consultant's	NA

Risks/Impacts	Mitigation/Enhancement Measures	Responsibility	Cost Estimates
temporary closed to give way for upgrading works	The Contractor shall execute works in sequence to avoid closure of large section of the roads	Environmental Expert and Social/Gender Expert	
B3. Air pollution due to dust emission from soil excavations, earthworks and earth moving activities	- Application of water on dusty areas. - Minimize stockpiling of excavated soils within the construction site by immediate removal and transportation to dumping site.	Contractor monitored by Supervision Consultant's Environmental Expert	Provided in the BOQ for Other Items
B4. Air pollution due to dust emission along access roads during transportation of construction materials from borrow pits /quarry sites.	- Application of water within cultivated farms and human settlement areas. - Whenever, possible select transportation route to avoid densely populated and cultivated areas.	Contractor monitored by Supervision Consultant's Environmental Expert	Provided in the BOQ for Other Items
B5. Noise nuisance to the adjacent local residents due to operation of mobile construction equipment /machinery.	- Limiting noisy construction activities only to day time hours. - Prohibit the use of old equipment / machinery which produce high noise levels and ensure noise emission from heavy trucks and mobile construction equipment do not exceed 75 dB, in accordance with Tanzania Noise Emission Standards⁶⁴. - Ensure exhausts of heavy trucks and mobile equipment /machinery are fitted with noise reducing mufflers. - Provide ear protection muffs to construction workers operating high pitch noise creating equipment /machinery. - Carry out regular maintenance of vehicles and mobile equipment / machinery.	Contractor monitored by Supervision Consultant's Environmental Expert	
B6. Vibration effects on adjacent building structures due to soil compaction along the construction sites.	- Inform adjacent residents that they should expect ground vibrations. - Conduct inventory of existing crack on adjacent buildings before commencement of compaction works.	Contractor monitored by Supervision Consultant's Environmental Expert and Social/Gender Expert	Not Applicable (NA)

⁶⁴ The Environmental Management (Standards for the Control of Noise and Vibrations Pollution) Regulations (2010). The Government Notice No. 32. Published on 30/01/2015.

Risks/Impacts	Mitigation/Enhancement Measures	Responsibility	Cost Estimates
B7. Noise nuisance to adjacent local residents due to movement of heavy trucks along access roads to borrow pits/quarry sites.	- Limiting transportation of construction materials only to daytime hours. - Whenever, possible avoid passing through human settlement areas.	Contractor monitored by Supervision Consultant's Environmental Expert	NA
B8. Ground and surface water pollution due to uncontrolled overflow of raw sewage into the surrounding environment.	- Carry out regular emptying of soak pits and maintenance of sewage chambers to prevent overflow of raw sewage into the environment. - All discharged wastewater from sewage treatment plant must not exceed Tanzania Effluent Discharge Standards⁶⁵.	Contractor monitored by Supervision Consultant's Environmental Expert	Provided in the BOQ for Other Items
B9. Landscape degradation due to water flow from storm water drainages.	Ensure proper design of roadside storm water drainages to ensure there is no concentration of storm water flow on adjacent lands.	Contractor monitored by Supervision Consultant's Environmental Expert	Provided in the BOQ for Other Items
B10. Loss of aesthetic value of the surrounding environment due to accumulation of excavated soil materials and construction solid wastes.	- All stockpiled soil materials and construction related solid wastes must be immediately removed and transported to the permitted dumping site. - Useful soil materials can be retained, but properly stockpiled for landscaping purpose.	Contractor monitored by Supervision Consultant's Environmental Expert	Provided in the BOQ for Other Items
B11. Loss of aesthetic value of the surrounding environment due to accidental spillage of oils from storage containers.	- Ensure all waste oil containers are stored in concrete paved area with bund wall to prevent spilled oil from escaping into the surrounding environment. - Always take precautions to prevent spillage of waste oil into the surrounding environment. - Scooping out of oil contaminated soil and send to the incineration plant	Contractor monitored by Supervision Consultant's Environmental Expert	Provided in the BOQ for Other Items
B12. Increased transmission of HIV/AIDS and STIs due to social interaction between construction workers and local residents.	- Formulation and implementation of HIV/AIDS prevention and control program. - Giving employment priority to local people to minimize the number of new comers, hence minimizing the likelihood of new HIV transmission.	Contractor monitored by Supervision Consultant's Environmental Expert and Social/Gender Expert	200,000.000.00

⁶⁵ United Republic of Tanzania. Environmental Management (Water Quality Standards) Regulations (2007). FIRST SCHEDULE (Made Under Regulation 8).

Risks/Impacts	Mitigation/Enhancement Measures	Responsibility	Cost Estimates
	Collaboration with local NGOs/CBOs dealing with HIV/AIDS to promote awareness and education campaigns.		
B13. Creation of occupational health and safety risk due to handling of hazardous construction materials.	- Provision of Personal Protection Equipment (PPE) to construction workers such as dust masks, ear plugs, safety boots, etc. - Formulation and implementation of Occupational Health and Safety Management Plan (OHSMP).	Contractor monitored by Supervision Consultant's Environmental Expert and Social/Gender Expert	Provided in the BOQ for Other Items
B14. Creation of risk of exposure to hand-arm injury due to operation of handheld vibrating construction equipment.	- Provision of appropriate gloves to the construction workers. - Avoid prolonged use of hand-held equipment by workers beyond the prescribed 8 hours in accordance with Tanzania Standards⁶⁶.	Contractor monitored by Supervision Consultant's Environmental Expert and Social/Gender Expert	Provided in the BOQ for Other Items
B15. Increased risk of COVID-19 transmission due to influx of people into the construction sites.	- The Contractor shall undertake daily body temperature checking of workforce before commencement of any work - Excusing identifies sick persons from job for at least 14 days - Encourage and promote hand washing with soap or use of sanitizer - The Contractor shall provide respiratory masks (N95) to all workers in case of COVID-19 epidemic	Contractor monitored by Supervision Consultant's Environmental Expert and Social/Gender Expert	Provided in the BOQ for Other Items
B16. Creation of construction related risk of accidents due to operation of mobile construction equipment/machinery.	- Fitting all mobile construction equipment / machinery and trucks with alarm and signal device to warn people, especially during backward movement. - Placing written warning signs at strategic locations to prohibit or prevent entrance of unauthorized persons into the construction site. - Restrict operation of mobile construction machinery / equipment to trained personnel only.	Contractor monitored by Supervision Consultant's Environmental Expert and Social/Gender Expert	Provided in the BOQ for Other Items

⁶⁶United Republic of Tanzania. Environmental Management (Standards for Control of Noise and Vibration Pollution) Regulations (2008). THIRD SCHEDULE (Made Under Regulation 15(1)).

Risks/Impacts	Mitigation/Enhancement Measures	Responsibility	Cost Estimates
	Fencing the construction site to prevent people from entering the construction site. This will include putting a written warning in both English and Kiswahili at a strategic location to prevent unauthorized people from entering the construction site.		
B17. Creation of safety risk to pedestrians and other road users due to deep excavations along the road section.	All excavated pits or trenches must be surrounded by safety nets to prevent people from falling into open pits or trenches.	Contractor monitored by Supervision Consultant's Environmental Expert and Social/Gender Expert	Provided in the BOQ for Other Items
B18. Increased risk of traffic accidents due to movement of heavy trucks to and from the construction sites.	Develop and implement traffic management plan. This includes deploying flag persons to guide traffic movement along the road. The involvement of traffic police may be useful, whenever possible.	Contractor monitored by Supervision Consultant's Environmental Expert and Social/Gender Expert	Provided in the BOQ for Other Items
B19. Risk of emergence of Gender-Based Violence and Sexual Exploitation and Abuse due to influx of people into the project sites.	- Ensuring there are codes of conduct in place that forbid and place penalties for Gender-Based Violence and Sexual Exploitation and Abuse. - Ensure a Code of Ethical Conduct (CEC) is signed and understood by all project workers. This will include the provision of training and information regarding Worker Code of Conduct in Kiswahili. - Disseminating information that raises awareness on the prohibition of GBV and SEA among the workers, small business operators, community members and general public and disseminate information that promotes good and respectful relationships between workers and the community members. - As a prevention measure, the contractor will be required to develop a code of conduct of GBV that will be attached to the ESMP and signed by all workers. An example of Code of Conduct for EH&S and GBV.	Contractor monitored by Supervision Consultant's Environmental Expert and Social/Gender Expert	260,000,000.00

Risks/Impacts	Mitigation/Enhancement Measures	Responsibility	Cost Estimates
	- Contractor will engage a qualified NGO to carry out awareness raising campaign against GBV and SEA on monthly basis during the construction phase. - Provision of cultural sensitization training for workers regarding engagement with local community. - Stakeholder consultation on GBV/SEA and SH and HSE issues will be carried out with adjacent local residents, including boda-boda and small business operators, before commencement of construction works. - Grievances Redress Mechanism will be in place to deal with any conflicts between the construction workers and adjacent local residents.		
B20. Increased income generation opportunities for local people due to increased demand for food and other items from construction workers.	Provide enabling environment for food vendors to sell their food in a clean and hygienic environment by providing shelter and water supply.	Contractor monitored by Supervision Consultant's Environmental Expert and Social/Gender Expert	NA
B21. Severance of access by local residents to other side of the roads due to excavation of road bed and roadside storm water drainages.	Provision of temporary access for pedestrians and non-motorized transport users.	Contractor monitored by Supervision Consultant's Environmental Expert and Social/Gender Expert.	Provided in the BOQ for Other Items
B22. Disruption of traffic flow along the construction road due to construction of DMDP 2 road and drainage structures.	- Formulation of traffic management plan. This includes: - Diverting all traffic to other local roads which are not under construction. - Deployment of flag persons to guide movement of vehicles. - Installation of diversion signs. and speed limit signs	Contractor monitored by Supervision Consultant's Environmental Expert.	
B23. Risk of damaging graves and underground archaeological artefacts at	Before commencement of construction works, the Contractor shall confirm and ensure that there is no any grave found within road construction corridor	Contractor monitored by Supervision Consultant's Environmental Expert.	Provided in the BOQ for Other Items

Risks/Impacts	Mitigation/Enhancement Measures	Responsibility	Cost Estimates
the construction sites and borrow pits	- In case there is identified grave within construction corridor and/or borrow area salvaging shall be done as per country Grave Removal Act No. 9 (1969) - Salvaging of the archaeological materials and chance finding shall be executed by observing World Bank's ESS8 (Cultural Heritage) and the country Antiquities Act No. 10 (1964), as amended by the Act No. 22 of 1979.		
B24. Damage on existing local roads due to overloading by heavy construction trucks.	Ensure that any damaged local roads are immediately repaired to make them passable throughout the construction period.	Contractor supervised by monitored by Supervision Consultant's Environmental Expert.	
C. Demobilization Phase			
C1. Loss of temporary employment due to retrenchment of construction workers after project completion.	- The Contractor shall give employment priority to local people, because after project closure they will easily revert back to their normal economic activities. - The Contractor shall ensure that all workers are registered with National Social Security Fund (NSSF) and their contributions are paid timely on monthly basis. - The Contractor shall support workers with necessary documents for obtaining their terminal benefits from NSSF immediately before retrenchment from jobs	Contractor monitored by Supervision Consultant's Environmental Expert and Social/Gender Expert	Provided in the BOQ for Other Items
D. Operation Phase			
D1. Reduced emission of air pollutants and greenhouse gas due to operation of DMDP 2 Subproject Roads after construction.	- Awareness creation to the road users to protect improved DMDP 2 Subproject Roads and associated infrastructure. - Carrying out periodic maintenance of the DMDP 2 Subproject Roads.	TARURA in collaboration with Traffic Department.	Provided in the BOQ for Other Items
D2. Reduced road traffic accidents due to operation of DMDP 2 Subproject Roads after construction.	TARURA in collaboration with Traffic Department will promote education, awareness creation and enforcement of rules and regulations to prevent deliberate damage of DMDP roads and associated infrastructure	TARURA in collaboration with Traffic Department.	NA

Risks/Impacts	Mitigation/Enhancement Measures	Responsibility	Cost Estimates
D3.Reduced travel time and increased urban mobility due to operation of DMDP 2 road after construction.	TARURA will create awareness among the local residents and public to emphasize on the proper use of DMDP 2 road and associated infrastructure.	TARURA in collaboration with Ubungo Municipal Council.	NA
D4.Rapid deterioration of road pavement and drainage structures due to climate change effects notably: increased temperature and flood events	OR-TAMISEMI, Ubungo Municipal Council, and TARURA will ensure that the road design takes into consideration the climate change factors. These include selection of pavement materials that are adapted to climate changed effects such as temperature variations, and provision of drainage structures that could cope with flood events.	OR-TAMISEMI, Ubungo Municipal Council, and TARURA	Provided in the BOQ for Other Items

CHAPTER TEN

10.0 ENVIRONMENTAL AND SOCIAL MONITORING PLAN

10.1 Implementation of Monitoring Plan

Information collected during monitoring exercise helps to improve ESMP by adapting measures to ensure that the anticipated impacts are mitigated. For example, in case environmental monitoring identifies some environmental concerns during construction or operation phase then construction or operation works has to be modified or stopped, whenever necessary.

Thus, the objectives of environmental monitoring programme are: -

- To ensure that mitigation and benefit enhancement measures have been adopted and are effective.
- To identify any unforeseen negative impacts during ESIA stage and propose appropriate mitigation measures.
- To provide information on the actual nature and extent of key impacts and effectiveness of mitigation and benefit enhancement measures, which through feedback mechanism can improve the planning and execution of future, similar projects.

The ESMP monitoring schedule as summarized in **Table 10-1** addresses the following questions:

- WHAT parameter to be monitored? (Monitoring Parameters)
- WHY is the parameter being monitored? (Monitoring Objective)
- WHAT indicator to be used in monitoring? (Monitoring Indicators)
- WHERE to be monitored? (Monitoring Location).
- HOW is to be monitored? (Monitoring Methods).
- HOW frequent is to be monitored? (Monitoring Frequency)
- WHAT are the monitoring targets or standards? (Performance Standards)
- WHO is responsible for monitoring? (Monitoring Responsibility)

The ESMP monitoring during construction phase will be comprised of two activities:

- Review of Contractor's plans, methods statement, and temporary works design and arrangements to ensure that environmental protection measures specified in the contract documents are adopted and Contractor's proposals provide acceptable levels of impact control.
- Systematic observation of all site activities and the Contractor's offsite facilities, including borrow pits and quarry sites areas. To ensure that the contract requirements relating to environmental matters are being complied with and that mitigation measures for those unforeseen impacts are formulated and implemented by the contractor.

The monitoring activities will be comprised of visual observation during site inspection and will be carried out at the same time as the engineering supervision activities. Site inspections will take place with emphasis on early identification of any environmental problems and the initiation of suitable remedial action. Where remedial actions have been required on the part of the Contractor, further checks will need to be made to ensure that these are actually being implemented to the agreed schedule and in the required form.

All sites where construction is taking place will be formally inspected from an environmental view point on a regular basis. However, in addition to visual observation there shall be informal questioning of members of the local communities and their leaders who live near the project.

This is because they may be aware of matters which are unsatisfactory but may not be readily apparent or recognized during normal site inspection visits.

The monitoring plan will also be integrated with other construction supervision and carried out by the Resident Engineer. The Resident Engineer will decide on the appropriate course of action to be taken in cases where unsatisfactory reports are received from the field staff regarding environmental matters. In case of relatively minor matters, advice to the Contractor on the need for remedial action may suffice, but in all serious cases, the Resident Engineer will issue a formal instruction to the Contractor to take remedial action, depending on the extent of delegated powers.

10.2 Monitoring and Reporting Responsibilities

10.2.1 Supervision Consultant

The Supervision Consultant will appoint an Environmental Specialist and Social /Gender Specialist who shall be responsible for Environmental and Social Compliance Monitoring. The Supervision Consultant's Environmental Specialist and Social / Gender Specialist shall be making a daily site inspection and shall be attending Engineer's Site Meetings.

The participation of Environmental Specialist and Social /Gender Specialist in the Engineer's Site Meetings shall enable the Environmental Specialist and Social /Gender Specialist to:

- Review the status of any problem addressed in the previous meeting; propose additional mitigation measures, if the problem has not been resolved.
- Review the main construction activities and any environmental problem that occurred since the last meeting.
- Review the construction activities and general environmental performance as listed in the ESMP.

The Environmental Specialist and Social/Gender Specialist shall be preparing Monthly Environmental and Social Monitoring Reports which will highlight:

- The extent to which the Contractor is complying with the environmental and social specifications and contract conditions (compliance monitoring).
- Any unforeseen environmental and social impacts (i.e., the failure or inadequacy of the mitigation measures) and recommendations on how to manage unforeseen impacts.

In addition, the PO-RALG PCU shall deploy an Environmental Officer and Social/Gender Officer who shall be collaborating with the Supervision Consultant's Environmental Specialist and Social /Gender Specialist to oversee implementation of ESMP. The Environmental Officer and Social/Gender Officer apart from making a close follow-up on engineering issues shall be responsible for environmental and social monitoring on monthly basis.

There must be feedback from monitoring to ensure that failure to implement an approved measure incurs a penalty to the Contractor. The Resident Engineer's responsibility will include enforcement of mitigation measures. In case an approved measure turns out to be ineffective or results into unforeseen adverse impacts it should be reported to the PCU, which would be capable of finding out why, and of commissioning appropriate further measures.

10.2.2 Contractor

The Contractor will be responsible for implementation of environmental and social mitigation measures under the supervision of Resident Engineer. This is to ensure that technical and environmental clauses are followed and well implemented by the Contractor.

The Contractor shall assign an ESGH&S Manager who shall be responsible for carrying out monitoring on daily basis and overseeing compliance with environmental and social mitigation measures. The Contractor's ESGH&S Manager will be assisted by HSEO and Social/Gender Specialist.

The Contractor's ESGH&S Manager shall submit a Monthly Compliance report to the Resident Engineer specifying that:

- All previously notified failures to comply with the mitigation measures have been rectified.
- All newly notified requirements have been fulfilled and all standard requirements (as specified in this report) have been put into effect.

The Resident Engineer shall countersign the report and make it available to OR-TAMISEMI, Ubungo Municipal Council, TARURA and the World Bank.

10.2.3 Monitoring Methods

The purpose of monitoring is to ensure that the Contractor implements the outlined mitigation measures in the ESMP. Therefore, monitoring methods will be based mainly on visual inspection and will be carried out by the Supervision Consultant's Environmental Specialist and Social/Gender Specialists in collaboration with Contractor's ESGH&S Manager assisted by Health, Safety and Environmental Officer (HSEO) and Social/Gender Specialist on daily basis.

To verify environmental effects predictions, and to evaluate the effectiveness of mitigation measures committed during the ESMP preparation, it is necessary to collect baseline data before the commencement of the construction works that may result in changes to the environment. The purpose of baseline data collection is to update the baseline information and establish the existing conditions at the construction sites.

Establishing baseline conditions allows for a comparison with conditions before and after construction works to determine the extent of any project-related environmental effects, the need for additional mitigation measures, and/or to confirm the effectiveness of mitigation measures that have been or are being implemented.

In case any environmentally and socially sensitive issues have been identified during baseline monitoring and not covered during the ESMP preparation, adaptive measures and additional monitoring or mitigation will be developed and implemented as may be necessary.

10.3 Environmental and Social Monitoring Costs

The cost of environmental and social monitoring will be included in the cost of Construction Supervision. The Supervision Consultant will be responsible for the cost of environmental and social monitoring. These costs include payment of professional fees for Environmental Specialist and Social/Gender Specialist. However, these costs will be included in the overall costs of commissioning the Supervision Consultant.

Table 10-1: ESMP Monitoring Schedule.

Monitoring Parameters	Monitoring Objective	Monitoring Indicators	Monitoring Locations	Monitoring Methods	Monitoring Frequency	Performance Indicators	Monitoring Responsibility
1. Mobilization Phase							
1.1 Compensation of PAPs.	To ensure all PAPs have been fairly and promptly compensated before land acquisition.	Number of compensated PAPs.	Along expanded DMDP Subproject Roads 2	RAP Report	Once before construction works	All PAPs have been fairly and promptly compensated	PO-RALG in collaboration with UMC monitored by Supervision Consultant's Social / Gender Specialist.
1.2 Relocation of public infrastructure / utilities.	To ensure all infrastructure / utilities have been relocated and restored within 24 hours before construction works.	Presence of infrastructure /utilities at the construction site.	Along the DMDP Subproject Roads 2	Visual inspection	Once before construction works.	All infrastructure/ utilities have been relocated and restored within 24 hours. No complaints from the public regarding disruption of services.	Contractor in collaboration with Utility / Infrastructure Authorities monitored by Supervision Consultant's Environmental Specialist and Social/Gender Specialist.
1.3 Access of local people to employment in the project area	To ensure employment priority is given to local people. To ensure equal employment opportunity without gender	Number of local people employed in the project by gender.	Contractor's Office	Interview with local people. Sample of Employment Contract.	Continues throughout construction period.	Employment priority is being given to the local people. Number of reported cases of gender or racial discrimination.	Supervision Consultant's Social/Gender Specialist

Monitoring Parameters	Monitoring Objective	Monitoring Indicators	Monitoring Locations	Monitoring Methods	Monitoring Frequency	Performance Indicators	Monitoring Responsibility
	and/or racial discrimination. To ensure Contractor is providing employment contracts in accordance with the labour laws.					Employment contracts are in accordance with labour laws.	
1.4 Submission of C-ESMP, OHSMP and HIV/AIDS Programme.	To ensure compliance with EH&S issues by Contractor.	Submitted C-ESMP, OHSMP, HIV/AIDS programme.	Based on submission of the documents to the Engineer.	Review of C-ESMP and OHSMP documents.	Before construction works.	C-ESMP, OHSMP and HIV/AIDS Programme has been approved and being implemented.	Supervision Consultant's Environmental Specialist in collaboration with Social/Gender Specialist
2. Construction Phase							
2.1 Dust and smoke emission around the project site.	To minimize impacts of air pollution from dust and exhaust emission.	Intensity of visible dust and smoke	Construction sites.	Visual inspection.	Daily, throughout construction period.	The contractor is regularly applying water on dusty areas. There is no visible smoke emission from vehicles and mobile equipment/machinery.	Supervision Consultant's Environmental Specialist in collaboration with Social/Gender Specialist

Monitoring Parameters	Monitoring Objective	Monitoring Indicators	Monitoring Locations	Monitoring Methods	Monitoring Frequency	Performance Indicators	Monitoring Responsibility
						The stockpiled dusty materials storage area has been fenced to prevent wind action. All trucks hauling dusty construction materials are always covered with tarpaulins.	
2.2 Noise nuisance and vibration effects.	To minimize noise impacts from construction activities and transportation of materials along access roads to borrow pits /quarry sites.	Noise and Vibration Levels	At the construction sites and along access roads to borrow pits / quarry sites.	Audible noise.	Daily during construction and transportation of materials.	No complaints from adjacent residents regarding noise nuisance.	Supervision Consultant's Environmental Specialist in collaboration with Social/Gender Specialist
2.3 Construction related accidents.	To minimize risk of construction accidents.	Presence of risk factors.	Construction site	Incidents Report Forms. Monthly EH&S Compliance Reports.	Daily, throughout the construction period.	Number of reported cases of construction-related accidents. The construction site has been fenced by using a	Supervision Consultant's Environmental Specialist

Monitoring Parameters	Monitoring Objective	Monitoring Indicators	Monitoring Locations	Monitoring Methods	Monitoring Frequency	Performance Indicators	Monitoring Responsibility
						corrugated iron sheet. There is a written warning signboard in Kiswahili and English Languages. All trucks and mobile equipment have been fitted with warning signal devices and audible warning alarms.	
2.4 Accumulation of demolition wastes and other solid wastes.	To minimize impacts due to accumulation of demolition / solid wastes.	Presence of demolition / solid wastes in the surrounding environment.	Construction sites	Visual inspection.	Continues throughout construction period.	No accumulation of demolition wastes around the site. All solid wastes are being collected and transported to the municipal dumping site.	Supervision Consultant's Environmental Specialist
2.5 Health and Safety of Construction workers.	To minimize occupational occupations	Number of toolbox sessions.	Construction sites	Visual inspection.	Daily, throughout	Number of reported incidences of	Supervision Consultant's Environmental

Monitoring Parameters	Monitoring Objective	Monitoring Indicators	Monitoring Locations	Monitoring Methods	Monitoring Frequency	Performance Indicators	Monitoring Responsibility
	health and safety risks.	Number of workers provided with and using appropriate PPE. Presence of approved Health & Safety Management Plan (OHSMP)."		An informal interview with workers. Monthly ESH&S Compliance Reports.	construction period.	occupational diseases and accidents.	Specialist in collaboration with Social/Gender Specialist
2.6 Implementation of HIV/AIDs Prevention and Control Programme.	To minimize risk of HIV transmission.	Number of HIV/AIDs campaigns and training sessions. Number of participants by gender.	Based on submission of HIV/AIDs reports	Monthly HIV/AIDs Campaign Reports.	Monthly	Number of reported cases of new HIV transmission as indicated by Voluntary Clinical Testes (VCTs) HIV//AIDs program is in place and being implemented on a regular basis.	Supervision Consultant's Social/Gender Specialist in collaboration with Contractor's Social /Gender Specialist.

Monitoring Parameters	Monitoring Objective	Monitoring Indicators	Monitoring Locations	Monitoring Methods	Monitoring Frequency	Performance Indicators	Monitoring Responsibility
2.7 Workers Welfare ⁶⁷ and Child labour.	To ensure compliance with labour laws.	Monthly Salary Slips; NSSF Monthly Payment Receipts. WCF Monthly Payment Receipts	Based on submission of Monthly Compliance Reports.	Monthly ESH&S Compliance Reports	Monthly	Number of reported complaints regarding minimum wages. Reported cases of non-payment of Monthly NSSF and WCF contributions.	Supervision Consultant's Environmental Specialist in collaboration with Social/Gender Specialist
2.8 Movement of heavy trucks to and from the construction site.	To minimize risk of traffic accidents.	Incidence of traffic accidents. Number of awareness sessions organized on road traffic safety for workers and community members.	Access road to the Construction sites.	Visual inspection	Daily, during Construction period.	Number of reported cases of traffic accidents. The traffic management plan is in place and being implemented by the Contractor. Flag person has been deployed to guide movement heavy trucks to and from the construction site.	

⁶⁷ (1) Payment of Minimum Wage (2) NSSF and WCF Contributions by the Contractor (3/ Deductions from payment of wages to be made as allowed by national law (project workers to be informed of the conditions under which such deductions will be made). (4) Project workers to be provided with adequate periods of rest per week, annual holiday, and sick, maternity and family leave, as required by national law.

Monitoring Parameters	Monitoring Objective	Monitoring Indicators	Monitoring Locations	Monitoring Methods	Monitoring Frequency	Performance Indicators	Monitoring Responsibility
2.9 Incidence of GBV, SEA, and SH	To prevent incidence of GBV/SEA and SH.	Number of awareness sessions.	Office/Camp Site and Construction sites.	Verification of awareness sessions organized with workers Verification of consultations with and involvement of local communities	After every 15 days	Number of workers who participated in awareness sessions by gender. Consistent and regular involvement of local community members	Supervision Consultant's Social/Gender Specialist in collaboration with Contractor's Social/Gender Specialist
3. Demobilization Phase							
3.1 Retrenchment of workers during project completion.	To ensure NSSF contributions and terminal benefits have been paid to all retrenched workers.	Number of retrenched workers	Contractor's and Engineer's Office	Monthly Compliance Site Closure Report	Once, during project completion.	Ensure that 100% of no skilled workers are hired in the project area	Supervision Consultant's Social/Gender Specialist in collaboration with Contractor's Social/Gender Specialist
3.2 Site restoration and clean up or removal of excess construction materials.	To ensure the site is restored to its original condition.	Presence of excess construction materials.	Construction site	Visual inspection	Once, during completion of construction works.	All demolition and solid wastes have been removed from the construction site.	Supervision Consultant's Environmental Specialist.

Monitoring Parameters	Monitoring Objective	Monitoring Indicators	Monitoring Locations	Monitoring Methods	Monitoring Frequency	Performance Indicators	Monitoring Responsibility
3.3 Climate change factors such as temperatures, rainfalls,	To ensure protection of road pavement and drainage structures against climate change effects.	Temperatures and rainfalls	Meteorological Stations	Visual inspection	Annually	Roads infrastructure are able to achieve the design life of 20 years for bituminous pavement and 40 years for concrete pavement.	PO-RALG / UMC/ TARURA in collaboration with Tanzania Meteorological Authority (TMA)

CHAPTER ELEVEN

11.0 RESOURCE EVALUATION OR COST BENEFIT ANALYSIS

11.1 Project Costs and Benefits

11.1.1 Project Costs

The project construction cost has been estimated to be US\$ 23.34 Million (TZS 57.18 Billion). This cost excludes the cost of operation and maintenance as well as cost of implementation of Environmental and Social Management Plan (ESMP) and Monitoring Plan (MP).

11.1.2 Project Benefits

The project is expected to have both short-term and long-term environmental and socio-economic benefits to the local community and the nation.

11.1.3 Short-term Benefits

The short-term socio-economic benefits include creation of temporary employment and increased income generation opportunities to the local people. It is expected that during construction employment priority will be given to the local people.

During construction stage, some local people, especially women will get opportunity to increase their income by selling food items to the construction workers. This benefit will be enhanced by providing water supply and sanitary facilities to enable them sell their food in clean and hygienic environment, hence preventing transmission of hygiene related diseases like cholera and diarrhoea to the construction workers.

11.1.4 Long-term Benefits

The long-term environmental and socio-economic benefits will be realized from upgrading of DMDP 2 Subproject Roads into bitumen standard. The long-term environmental and socio-economic benefits include:

- Increased urban mobility and stimulation of economic growth.
- Employment creation and economic improvement of households.
- Increased revenue collection by UMC and Central Government.
- Creation of employment and income generation opportunities
- Reduced transportation costs and Improved Access to Social Services.
- Reduced risk of traffic accidents and improved environmental quality.
- Increased comfortability of road users.
- Controlling of flooding.
- Responding to climate change effects associated with raise in temperature and increased precipitation.
- Creation of aesthetic environment due to implementation of urban greening concept.

11.2 Environmental and Social Cost

11.2.1 Direct Environmental and Social Cost

The cost of implementation of environmental and social mitigation measures as shown in **Table 11-1** is considered to be the direct environmental cost to be incurred by the project, which is estimated to be TZS 1,021,040,900.00.

Table 11-1: Direct Environmental Cost Estimates

SN	Particulars of Cost Items	Amount (TZS)
1.	Compensation of PAPs due to Land Acquisition	668,219,000.00
2.	GBV/SEA Awareness Programme	260,000,000.00
3.	HIV/AIDS Prevention and Control Programme	200,000,000.00
	Sub-total:	928,219,000.00
	Add 10% Contingency:	92,821,900.00
	Total:	1,021,040,900.00

11.2.2 Indirect Environmental and Social Cost

The indirect E&S cost as shown in **Table 11-2** includes the cost of Project Registration to NEMC; Cost of undertaking ESIA Study by Consultant; Publication of Scoping Report and ESIA Report; Review of ESIA Report by NEMC; Engagement of Environmental Monitoring Consultant This makes the estimated indirect environmental cost to be TZS 612,200,000.00.

Table 11-2: Indirect Environmental Cost Estimates.

Costed Items	Cost Estimates (in TZS)
(a) Cost of Project Registration to NEMC	200,000.00
(b) Cost of undertaking ESIA and RAP Study by Consultant	200,000,000.00
(c) Publication of Scoping Report, ESIA Report and RAP Report	2,000,000.00
(d) Review and Certification of ESIA Report by NEMC	50,000,000.00
(e) Engagement of Environmental Monitoring Consultant ⁶⁸ .	360,000,000.00
Total:	612,200,000.00

11.3 Overall Benefits Analysis

The resource evaluation or cost benefits analysis focuses on comparing the overall project costs and sum of environmental costs. The sum of E&S costs includes direct and indirect ones, which makes the total E&S costs for this project to be (TZS 1,021,040,900.00 + TZS 612,200,000.00 = TZS 1,633,240,900.00) and the total project costs to be TZS 58,813,240,900.00 after summing up the construction and the overall environmental costs.

When compared with total project costs (TZS 58,813,240,900.00), the overall E&S cost is 2.8% of the total project costs. It can be concluded that the E&S costs are significantly low and can be tolerated for this project.

⁶⁸ Guide to Estimating Environmental Costs. Prepared By: ICF International, Venner Consulting, CH2M Hill and the University of Florida. October 2008.

CHAPTER TWELVE

12.0 DEMOBILIZATION PLAN

12.1 Implementation of Demobilization Plan

The demobilization and site reclamation process are one of the required project management activities during the project substantial completion period or closure of the projects. The demobilization activities will involve removal of all mobilized items and cleaning up of the construction sites. It will include the removal of all temporary ramps, access ways, road signs, temporary fencing, construction debris including crushed stone aggregates, pieces of wood, construction stakes, and other construction-related refuse, and temporary facilities or works. The restoration of surfaces to an equal or better than existing condition shall also be included as part of demobilization. Site reclamation includes reclamation of areas disturbed during construction, other than access and staging areas, to pre-project conditions or better.

In order to ensure that all demobilization and site reclamation works are done in a comprehensive way right from the beginning, it is important to have a demobilization checklist which shows all items that need to be completed during implementation of demobilization plan. An example of Environmental and Social Demobilization Checklist is provided in **APPENDIX 13**, which groups the different items that need to be completed and inspected. The checklist covers the following issues and areas to be considered during implementation of demobilization plan:

- Workers Welfare Management
- Camp Sites and Office Facilities; Solid Waste Management; Soil Erosion and Sedimentation Control; Groundwater and Dewatering Control.
- Workshops/Garages, Vehicle Washing and Refuelling Areas.
- Fuel and Chemical Storage Area
- Sanitary and Wastewater Disposal Facilities.
- Landscape Management and Run-off Control
- Borrow pits/Quarry Sites Rehabilitation.

The demobilization checklist will be used by Supervision Consultant's Environmental Specialist. For each inspection item, the form has a column for the work completion status (Yes, No or Not Applicable), observation comments made by the inspector for non-compliance works that need to be rectified by the Contractor and the target completion date for completing the non-conformant works. The Environmental Inspector will be taking some photographs during the site inspection for recording purpose. The photographs will be attached to the Environmental Demobilization Checklist and submitted to the Resident Engineer for action.

12.2 Retrenchment of Employees at End of Contract

Three months before completion of the project works, the Contractor through Human Resource Officer (HRO) will make sure monthly NSSF contributions for all construction workers have been paid to the NSSF. This will involve posting of the names of all employees on the notice board indicating their Names, NSSF numbers and Monthly NSSF contributions paid so far. This is to ensure that the monthly NSSF deductions have been paid by the Contractor and allow rectification for any identified shortcomings before retrenchment of employees after completion of subproject works. In addition to that, the HRO shall make notification to workers who will lose their employment after completion of construction works.

12.3 Exit Medical Examination for Employees

The Contractor will carry out an exit medical examination for all employees before retrenchment. This is the requirements of Sub-section 24(2) of the Occupational Safety and Health Act No. 5 of 2003. The legislation requires the Contractor shall carry out an exit medical examination through a qualified occupational health physician. According to Sub-section 24(3), the Contractor shall be responsible for the prescribed fee and all other medical expenses.

12.4 Restoration of Utilities, Drainage Systems and Landscape

During demobilization phase all work areas, offices, workshops /garages, and other temporary installations will be cleaned up and the site will be restored. These includes removal of temporary buildings, surplus materials, pieces of wood, pieces of bricks or any other material that is not in the area before constriction works.

All drainage systems will be desilted to allow storm water flow and damaged areas will be repaired to make them compatible with urban land use and maintain the aesthetic value of the urban environment. All permanent installations such as traffic lights, street lights, electricity power supply, water supply, and sewerage systems will be restored / repaired to their initial state.

The compacted soils around buildings will be scarified to at least 15cm deep to loosen it and facilitate vegetation growth. Damaged trees will be chopped / lopped and crosscut and removed from the construction sites. The site will be cleared of equipment, solid wastes, debris, and overburden resulting from construction works.

12.5 Restoration of Workshops / Garages and Materials Storage Areas

The workshop and other materials storage areas will be cleaned to remove petroleum products like oils and grease. The petroleum products should be handled in accordance with the provisions given in the Standard Specification for Road Works (2000).

All asphalts, cements, stockpiled gravels, and any other surplus materials will be removed from the Materials storage yard. The useable materials should be taken away and stored in a safe place far from the abandoned site. The spilled materials must be removed and the site must be properly cleaned and restored to its original state. If possible, the site must be prepared and planted with vegetation. The stockpiled soils along within the project site will be spread or disposed of into permitted area by the Resident Engineer.

12.6 Restoration of Solid Wastes and Spoil Materials Dumping Sites

All unwanted soil/spoil materials will be removed from temporary dumping sites and transported to permitted disposal site. The remaining useful soil materials will be mixed with surrounding topsoil, properly levelled, and graded to allow vegetation growth.

The solid waste dump site will be cleared, levelled, and returned to a regular form. All non-toxic wastes in the dump site will be thoroughly covered with topsoil. The Contractor will ensure that no wastes are visible and no surface water drains into the site.

The eliminated dry materials should form a stable slope and must be in harmony with the surrounding landscape. The wastes will be covered with 1m of topsoil. The soils will be compacted thoroughly, the slope flattened and spread a layer of additional cover material and cover with topsoil to allow growth of natural vegetation.

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CHAPTER THIRTEEN

13.0 CONCLUSION AND RECOMMENDATIONS

13.1 Conclusion

In general, the project has been found to have short-term and long-term environmental and socio-economic benefits to the local community and the nation. The short-term socio-economic benefits include creation of temporary employment and increased income generation opportunities to the local people. It is expected that during construction some local people, especially women will get an opportunity to increase their income by selling food items to the construction workers. These benefits will be enhanced by providing clean and safe water supply and sanitary facilities to enable the food vendors sell their food in hygienic environment, hence preventing transmission of hygiene related diseases like cholera to the construction workers.

The long-term socio-economic benefits include: -

- Increased urban mobility and stimulation of economic growth.
- Employment creation and economic improvement of households.
- Increased revenue collection by UMC and Central Government.
- Creation of employment and income generation opportunities
- Reduced transportation costs and Improved Access to Social Services.
- Reduced risk of traffic accidents and improved environmental quality.
- Increased comfortability of road users.
- Controlling of flooding.
- Responding to climate change effects associated with raise in temperature and increased precipitation.
- Creation of aesthetic environment due to implementation of urban greening concept

Most of the identified negative impacts are short-term with low significance and mainly occur during construction phase. Moreover, the mitigation measures have been proposed for the identified negative impacts. The cost estimates for the planned mitigation measures have will be incorporated into the Bill of Quantities (BOQ) during preparation of Tender/Bidding Document.

13.2 Recommendations

The project has been found to have long-term environmental and socio-economic benefits. Identified adverse (negative) impacts are temporary and short-term as they occur during construction phase. In addition, the cost/benefit analysis has found that the project to be highly beneficial and economically viable. It is therefore, recommended that the project should be implemented immediately to avoid increased construction costs due to increasing inflation rate.

In order to ensure the successful implementation and sustainability of the project, the ESIA study team provides the following recommendations:

- Considering the climate change factor during the design and construction phase to ensure the long-term durability of the road pavement and associated bridge structures. In this case, TARURA in collaboration with TMA should carry out monitoring of climate change indicators such as temperature, precipitation, pressure, wind speed and direction. This will enable the design and construction of road infrastructure to take climate change indicators into consideration.
- Collaborating with Local Government Authorities (LGAs) to relocate small business operators before commencement of the construction works. The smooth way is for TARURA and Ubungo MC to make consultation with representatives of the likely affected small business operators to identify the relocation sites.

- Promoting awareness and education campaign among the road users on the importance of using pedestrian walkways to minimize risk of traffic accidents due to interaction between pedestrians and vehicles. This can be reinforced by installation of written signboard in Kiswahili, English and Sign Language at strategic locations. The use of pedestrian walkways must be emphasized in the road safety campaigns and TARURA must allocate budget for road safety campaigns. This can be done during the national road safety campaigns (“wiki ya nenda kwa Usalama barabarani”).
- Promoting awareness and education campaign among the small business operators to avoid encroachment into the road pavements. This should also be integrated into the national road safety campaigns.

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APPENDICES

APPENDIX 1: COMPLIANCE OF PROJECT WITH WORLD BANK GUIDELINES

General EHS Guidelines	Compliance by Project
If the facility or project is close to an identified ecologically sensitive area (such as a national park), it shall minimize the increase in pollution level whenever and wherever feasible. In addition, appropriate mitigation measures may also include the use of clean fuels or technologies, and application of comprehensive pollution control measures.	Not relevant
The most common pollutant involved in fugitive emissions is dust or particulate matter (PM). This is released during certain operations, such as transport and open storage of solid materials, and from exposed soil surfaces, including unpaved roads.	Dust-control methods, such as covering trucks hauling dusty construction materials by using tarpaulins; application of water on dusty areas; and covering stockpiled dusty construction materials to prevent wind action.
No industrial wastewater, domestic wastewater, wastewater from operations of public works or storm water shall be discharged into a public or private wastewater treatment system unless it meets the pre-treatment and monitoring requirements of such wastewater treatment system.	Not relevant
Storm water shall be separated from industrial wastewater and domestic wastewater in order to reduce the wastewater generation that needs treatment before emission.	Not relevant
Noise prevention and control measures shall be applied if the predicted noise level at the most sensitive receiving point due to the operation of project facilities or operation activities will exceed the noise limits.	Low sound power level equipment will be selected; vibration isolation device will be installed for machinery and equipment; Running time of certain equipment or operation will be limited, particularly mobile noise sources that will travel a longer distance beyond the site boundaries.
Design, construct, operate, and maintain wastewater treatment facilities and achieve effluent water quality consistent with applicable national requirements or internationally accepted standards.	Not relevant
Emissions from construction equipment can also be a nuisance to workers and the surrounding community. Measures are recommended to prevent, minimize, and control air emissions.	Construction equipment that produce heavy black smoke will not permitted to work until the default is completely fixed.
Sludge treatment and utilization. Following stabilization, the sludge can be dewatered and disposed of in a landfill or incinerator, or subject to further processing for beneficial uses.	Not relevant

APPENDIX 2: NAMES AND SIGNATURES OF CONSULTED OFFICIALS

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APPENDIX 3: MINUTES OF UNDERTAKEN COMMUNITY ENGAGEMENT MEETINGS**Minutes at Mbezi Ward**

07.11.2023

MUHTASARI WA MKUTANO MAALUMU WAWANANCHI WA MSUMI NA MAKABE KWA AJILI YA MRADI WA BARABARA YA MAKABE – MSUMI (DMDP) YENYE UREFU WA KM 10.

Mwonyekiti wa Serikali ya Mtaa wa Makabe alifungua mkutano kwa maambi na kisha kumkaribisha mheshimiwa Diwani.

Mkutano uliongozwa na Mkuu wa Wilaya ya Ubungu akiwakilishwa na katibu tarafa (Gavana) Kibamba Bi. Beatrice Mbawala.

Mheshimiwa Diwani aliwashukuru wananchi kwa kufika kwao kwa wingi na pia akawafahamisha wananchi kuwa tunao wageni kutoka DMDP hivyo tuwasikilize kwa makini na tusiwe sehemu ya kukwamisha mradi huu muhimu sana kwa manufaa na maendeleo ya wakazi wa mtaa yote miwili makabe na Msumi. Pia alimshukuru mheshimiwa **Raisi Samia Suluhu Hassani** kwa kuleta mradi huu wa ujenzi wa barabara ya Lami ya makabe – Msumi.

Mheshimiwa diwani alimkaribisha Afisa Tarafa Ubungu asalinie wananchi. Afisa Tarafa akasalimbia wananchi na kuruhusu utambulisho uendeleo kwa viongozi wote wa mtaa kuu na wageni kutoka DMDP.

Kiongozi wa wageni na jopo la wataalamu kutoka DMDP akasimama na kuwaeleza wananchi ya kuwa wamekuja kutambuliisha mradi wa barabara ya makabe – Msumi yenye urefu wa kilometa 10 lami nzuri yenye mchanganyiko maalumu (Asphalt concret) kama zile za Makumbusho aidha Tandale lami zege ambayo itakuja na package ya mifano pande zote mbili sambamba na faa za barabara.

Na hili nichukue fursa kumsifu mheshimiwa DC wa Wilaya yetu ya Ubungu na mheshimiwa diwani wa kata ya Mbezi ambao wamejitahia sana kufanikisha mradi huu kulewa hapa.

Napenda kukufahamisheni kuwa mradi huu utakuja na athari zake nzuri na mbaya wakati wa utekelezaji wa mradi mitambo greda zitakapoanza kufanywa kazi ya kuchimbua vumoi litatimka hivyo tuvumilie isipokuwa tumemuelekeza mkandarasi itakapokuwa katika zaazi nilo awe anamwaga maji. Endapo hatafanya hivyo basi laarifa ipelekwe Serikali ya mtaa.

Pia kutakuwa na kelele za mitambo na kutakuwepo kundi kubwa la watu watanya kazi katika hizo athari za kijamii hao watu/wafanyakazi watapanga kwenu pia kutakuwa na mwingiliano na wakazi hivyo tuwaambie watoa weli

21
22

- * wachukue tahadhari katika mahusiano kwani kesi mbalimbali juu ya watoto kuzaliwa baada ya mradi kukamilika kwa hiyo luelimishane kwani mradi huu utakamilika kwa muda wa miaka miwili kwani hawa wafanyakazi huwa hawaendeki na watoto.

Athari chanya ni kwamba wafanyakazi wa kwenye mradi watanitaji chakula hivyo mama lishe mtaufika na kujipatia kipato lilo msibaki huko kwa mkandarasi rudini nyumbani.

Vijana wa kazi kalika mtaa watanufaika kwa kupata ajira za muda kipindi cha utokelezaji wa mradi litaibidi wachaminiwe na viongozi wao serikali yao ya mtaa kwani miongoni mwa vijana ni wavivu hivyo wanahitajika vijana hodari.

Mradi huu utaaniza rasmi mwezi wa 4/2024 kwa kukabidhiwa mkandorasi kutoka Tamiemi. Baada ya maelezo hayo mwakilishi kutoka DMDP Akakaa ili kuruhusu wananchi wenye hoja na maswali juu ya maelezo kulokana na maelezo yaliyotolewa.

Mheshimiwa diwani aliposimama na kuwauliza wananchi endapo wanakupokea mradi wananchi wote kwa kauli moja wakataraka kuwa tumepokea.

Ukafika wakati wa maswali.

Mjumbe 1

Naomba barabara hiyo iendeleo hadi madale

Diwani :Nimelechukuwa.

Mjumbe 2

Je nyumba zitakazoguswa na mradi kwa maana ya hizo mita 15 za barabara kutakuwa na fidia?

Mwakilishi DMDP:Hakutakuwa na fidia lila pindi mradi ukifuata fidia itakuwepa.

Mjumbe 3

Je endapo miundo mbinu ya mabomba ya Dawasa na Tanesco yakiwepa ndani ya eneo tengwa ilokuwaje?

Mwakilishi DMDP: Tanesco na dawasa ni wadau wetu watashirikishwa kipindi chote cha utekelezaji wa mradi tutawaita pindi miundo mbinu hiyo itakapohitajika kusogezwa kimsingi taratibu zitafuatwa.

Mjumbe 4.

Kumekuwa na ucheleweshwaji wa mradi hususani barabara ya njia panda ya goba /Mbezi kwenda msakuzi imechukua muda mrefu hadi sasa hivyo sijui nyinyi mmejipangaaje?

Wakilishi DMDP

Fedha kutoka world bank tayari zimeshapokolewa na serikali ya Tanzania na tayari tumelipwa upembuzi yakinifu umeshafanyika kwa kuchukuwa sampuli za udongo na athari za kimazingira na nalo maana tayari kwa kuanza ujenzi kazi mara moja na kila baada ya miezi mitatu mkandarasi atatoa semina ya ukimwi.

Mjumbe 5

Endapo ala ipo kwanini kazi hiyo isianze hata kesho?

Mwakilishi DMDP: Tatatibu za serikali lazima zifuatwe sheria ya manunuzi kumpata mkandarasi.

Hizo kilometa 10 zinaanza wapi?

Mwakilishi DMDP: Zinaanzia karisa karoliki pale walipoishia Tanroad tumejifunza katika DMDP 1 na sasa tundaenda DMDP 2 kwenye barabara yenye upana wa mita 15

Mjumbe 6.

Awali barabara ilipimwa kwenye urasimishaji upana tukaambiwa mita 40/30 sasa ujenzi unokuja ni upana wa mita 15

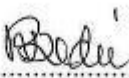
Je kiasi kinachosalia mwananchi anaweza kufanya maendelezo?

Diwani: Ni vema tukaacha kama ilivyo milhali kuna Beacon tuache kama ilivyo.

HITIMISHO

- Mwenyekiti wa serikali ya mtaa makabe aliwashukuru wataalamu kwa kuja kwenye mtaa na kutuletea mambo mazuri kama haya ya maendeleo wananchi tunayo furaha sana.
- Mwenyekiti wa serikali ya mtaa Msumi aliwashukuru wataalamu na kuwaomoa wakati wa kuchimbua barabara kifusi kinachonekana kuandolewa basi sisi tunakihitaji kuna maeneo mengi ya bonde na barabara nyingi za ndani zenye uhitaji wa kifusi hicho hivyo tunahitaji ushirikiano wa mkandarasi juu ya hilo.

Mwenyekiti wa serikali ya mtaa wa Msumi alihairisha kikao saa 16:10 jioni


Mwenyekiti




Katibu

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Minutes at Goba Ward

**MUHTASARI WA KIKAO CHA WASIMAMIZI WA MRADI WA DMDP- MRADI WA
BARABARA (WAKOREA ROAD) TAREHE 02/11/2023. KILICHOFAANYIKA SHULE YA
MSINGI TEGETA "A"**

Maudhurio:- Yameambatanishwa

AGENDA

1. KUFUNGUA KIKAO
2. UTAMBULISHO
3. UTANGULIZI MFUPI KUUSU MRADI
4. KUWASILISHA ELIMU KUUSU MADHARA YATOKANAYO NA MRADI
5. MASWALI YALIYOIBUKA KUTOKA KWA WANANCHI NA MAJIBU YAKE
6. MAPENDEKEZO
7. KUFUNGA KIKAO

1. KUFUNGUA KIKAO

Mwenyekiti alifungua kikao mnamo saa 9:40 mchana kwa kuwasalimu na kuwakaribisha wageni, pia kuwashukuru wananchi waliohudhuria kikao hicho. Baada ya ufunguzi Mwenyekiti alimkaribisha WEO kuendelea na ratiba iliyoandaliwa.

2. UTAMBULISHO

Mtendaji wa Kata aliwatambulisha wageni kutoka DMDP kisha kuwatambulisha viongozi kutoka Serikali ya Mtaa na viongozi wa Chama walioshiriki katika kikao. Baada ya utambulisho huo, Mtendaji aliwakaribisha wageni kutoka DMDP kuanza kuwasilisha mada walizoandaa kwa Wananchi.

3. UTANGULIZI (LENGO LA KIKAO)

Mwakilishi kutoka DMDP aliwaeleza Wananchi kuwa lengo la kikao ni kujenga uelewa kwa Wananchi kuhusu Mradi, ambapo alieleza kwamba, barabara ilakayojengwa ya kiwango cha lami zege, itakuwa na ukubwa wa **KM 8** yenye mitaro ya maji ya mvua na lami za barabarani.

Aidha aliendelea kusema kwamba, utekelezaji wa Mradi utaanza mwezi **April 2024**, pia alisema Mradi huu haitokuwa na watu wengi wa kulipwa fidia kutokana na tathmini iliyofanyika awali, ila ikitokea Mwananchi akafuatwa na barabara atafidiwa baada ya tathmini kufanyika. Pia aliwauliza Wananchi kama wamekubali Mradi huo nao wakakiri kukubali Mradi huo.

4. MADHARA YATOKANAYO NA MRADI

Mwakilishi kutoka DMDP aliwaeleza Wananchi madhara tarajiwa ya Mradi, yafuatayo ni madhara yatakayotokana na utekelezaji wa Mradi wa barabara ya Wakorea RD:-

- i. Vumbi kali
i.e Mkandarasi atatakiwa kumwaga Maji walau mara tatu kwa siku.
- ii. Kutakuwa na Kelele.
- iii. Ongezeko la watu kwenye Mtaa.
- iv. Watoto kuzafiwa baada ya Mradi kukamilika sababu ya muingiliano wa wageni (Mafundi).
- v. Uwezekano wa ndoa kuvunjika, migogoro baina ya wanandoa kuongezeka kutokana na mahusiano mapya baada ya wageni kuongezeka kwenye Mtaa.
- vi. Ongezeko la **V.V.U**, mkandarasi atatakiwa kutoa elimu kwa wananchi kuhusu maambukizi ya Virusi Vya Ukimwi, athari zake, na jinsi ya kujikinga, pia Uongozi wa Serikali ya Mtaa unajukumu la Kumkumbusha Mkandarasi kutoa elimu hiyo.

5. MASWALI YALIYOIBUKA KUTOKA KWA WANANCHI NA MAJIBU YAKE

- i. Swali: Je, barabara ya Wakorea itaanzia na kuishia wapi?
Jibu : Itaanzia Njia panda Tegeta "A", na kuishia kwa Mzee Ajali.
- ii. Swali: Je, mchoro utamalizika lini ili Mradi uanze?
Jibu: Zoezi la kukamilisha Mchoro lipo kwenye hatua za mwisho.
- iii. Swali: Mfadhiri wa Mradi ni nani?
Jibu: Mradi unafadhiriwa na Benki ya Dunia.

- iv. Swali: Je, kutakuwa na taarifa za wazi kwa wananchi watakapo ingiliwa na barabara?

Jibu: Taarifa zilakuwepo na kikao kitafanyika.

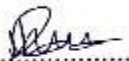
6. MAPENDEKEZO

Wananchi walimshauri Mkandarasi kuzingatia suala la kuweka mitaro imara ya maji. Pia Wananchi waliomba uandaliwe mkutano na Mkandarasi wa barabara ili waweze kupata uelewa wa kina kuhusu utekelezaji wa Mradi huu.

Baada ya mapendekezo hayo kutoka kwa wananchi Mh. Diwani alisisitiza kuwa atashirikiana na Wananchi kuanzia mwanzo hadi mwisho wa Mradi. Aliendelea kwa kusema kwamba, Mwananchi yeyote atakaye kwamisha shughuli yeyote ya Mradi atachukuliwa hatua za kisheria. Pia jukumu kubwa la Wananchi ni kuangalia na kutoa taarifa pale wanapoona mapungufu yeyote ya anayokwamisha utekelezaji wa Mradi.

7. KUFUNGA KIKAO

Mwenyekiti alifunga kikao Saa 11:30 Jioni kwa kuwashukuru washiriki wa kikao kwa maoni mbalimbali yanayolenga utekelezaji wa mradi.


MARCO B. VARINGA
MWENYEKITI




DORIS SHAYO
KATIBU



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Minutes at Kibamba Ward

MUHITAIZI WA UKAO CIA KUTAMBULIWA
A MRADI WA UJENZI WA BARABARA
YA LAMU ITAKAYOJENIWA HONDORO - SHITA
CIA TAREHE 3/11/2023

MATUMBUU YAMEAMBATANIWA

AGENDA YA UKAO

1. KUFUNUA UKAO
2. UTAMBULIWA
3. KUTAMBULIWA MRADI WA UJENZI WA
BARABARA YA SHITA - HONDORO YENYE
KILOMETA 4.2
4. MENAFIKO
5. KUFUNUA UKAO

1: KUFUNUA UKAO

Mwonyelezi wa Mtaka alifungua ukao
Saa 3:05 Alasiri. Nalimwambusha wakazi
wote kuwa kuwepo ukao.

2: UTAMBULIWA

Mwonyelezi wa Mtaka aliyetambusha
kum wakazi na pia mwonyelezi alitam
bulisha kamali yake ya Maendeleo ya
Mtaka. Pia aliboa nafsi kum kuhusu
mimi. Durum naye yimetambusha kum
Wananchi wa Hondoro wakiofika kuwepo ukao.

Watajanga kuu kichungo cha lami konye kilometa 4.2. Pia kawambie wananchi utafuta taratibu zote ili kusimpo na kulalamika pindi utakapoteza kichungo Barabara hiyo. Pia kawambie kama bado ya Wananchi kupo pipazoni kuu Barabara konye hadha ya kawali zitapigwa picha hizo nyumba ili pindi ugoni utakapofanyi ka imbakamu wanaona nini kumtotea konye hizo nyumba.

— Pia aluambie kutimpo na lami utapata maendeleo na Dhamani ya nyumba utakam kubwa na pia vijana weny utapata ajira kupita ugoni huu.

— Pia kawambie wananchi wanao na wanao kutolea na Mungu mbinu ya maji na umeme, kutolea Simba hili ku ugoni wa Barabara Tasezi zote Ambazo zitafika kuondoa au kusogezwa Mungu mbinu yao utafanya kufokwa kama kuna bajihi yao wenyewe utafanya ili ugoni wa Barabara huendeleo.

— Pia aluambie wananchi ugoni huu wa Barabara utaanza mwalani kupindichea mweni wa nne.

Muhashimu Diwani Peter kilango aliyetambuliwa na kumshukuru wananchi waliokifika kwenye kikao hiki kuhusu sana na halakumbi kutokwa ukhatarangizi mwanachama wataalamu ambao wamepata kazi ya kutengeneza Barabara hii.

— Pia wataalamu kutoka NIMEA CONSULT LTD. walijitambuliwa kumshukuru wananchi waliokifika kwenye kikao.

8: KUTAMBULIWA MRADI WA UJENZI WA BARABARA YA SIMBA - HONDORO YENYE KUTOMBA 4.2

Mwenzetu na kibaraka aliwambia wananchi Tunapata ugoni wataalamu ambao wamekuja kujitambuliwa kumshukuru na ofisi ya Simba ya kibaraka Hondoro kuanzia jiko ya kurungumza na wananchi kutoka Simba na ugoni wa Barabara ya shiga Pia mwenzetu na kibaraka aliwambia wataalamu waliokuja ili waweze kurungumza sana hiki.

— Ndugu ESTHER MNZWA aliwambia Wakazi wa Hondoro wao wamepokea kwenye kampuni ya NIMEA CONSULT LTD Pia wamesema kibaraka Barabara hiyo ya shiga

- Ndugu Innocent Mushi kashukuru sana...
leni kuhika kutafakamu kuya kujitama
bukaka leni wakazi. Jalezi alicheombe
a mmatatani Sani kuangalia wanaochei
pindi mapotongonera hizi Barabara
hii.
- Ndugu Stanislaus Mushi kashukuru
Sani kutafakamu kuhika kwenye
Mtaa wahi. Napia kawambini tunakulu
a kumupa Vipambuli Sani wakazi
wahi kawambini.
- Muhachomoni Dumeni Peter kulango
kawambini wakazi wa Bondego mwalubuli
yeni wa kumi ya kilometa 4.2
kwenye Bondego.
- Wanaochei wa Mtaa wa Bondego kum
pamaji wamwalubuli yeni unopo ili
wawere kupata maendeleo leni hantaka
na Dhamani ya nyumba zao zipande
leni hantaka.
- Pia ndugu ESTHER MNZAVA kawambini
Barabara hii itakuwa pia na mitato
na Mtaa za Barabara.

4: MENUNEKO

— Wananchi wa Afrika wa Kiondoko wakishikiliza sana kwa Uunguzi wa Senzari ya Mbaa kwa kushikiliza na Dhamani kwa kutipambanika yama huu kushika kutikiza mbaa wa Kiondoko.

— Wananchi wanaomba asimulizi mayobulei wote kufanya kuti chakika kutikiza mbaa mifano. kutonyona kutoa Schemu laorohi ya Bambun futa zinazochopuka.

5: KUFUNUA bulao

Mwenyobuli alibingya bulao saa 5:00 jioni. Mlennishulani wote wakishika.



LEONARD SABUNI
Mwenyekiti wa MDA



JOHN F. LUANDA
Afisa Mwandishi

Minutes at Sinza Ward

MUHTASARI WA MKUTANO WA WANANCHI, ULIOFANYIKA TAREHE 07/11/2023 KATIKA VIWANDA VYA TANGI LA MATA, MITA WA SINZA A NA C KWATAILI YA MRADI WA MIUNDOMBINU YA BARABARA (DMDP).

MAHUBHURIO

Mahudhuro ya Muhtasari yameambatanishwa nyuma ya Muhtasari wa Kikao.

AGENDA ZA KIKAO.

- 1) Kufunga Kikao.
- 2) KUTAMBULISHA MRADI WA MIUNDOMBINU YA BARABARA (DMDP).
- 3) KUFUNGA KIKAO.

AGENDA NA 1: 2023 - KUFUNGA KIKAO.

Muenyekiti alifunga Kikao mnamo saa 5:12 Asubuhi, Na Kuwakaribisha Wakazi wa Mtaa wa SINZA 'C' na 'A' na Viongozi wa Chama katika Mkutano huo.

AGENDA NA 2: 2023 - KUTAMBULISHA MRADI WA MIUNDOMBINU YA BARABARA (DMDP)

Maashimwa diwani wa Kata ya SINZA alisema lengo kuu la Mradi huu ni Kuboresha Miundombinu ya Barabara na Vivuko ili Kuleta Maendeleo katika Mtaa na kuvusha watu kutoka sehemu moja kuenda sehemu nyingine.

Aliendelea kuu Kusoma, hatua za awali za Mradi zimefanyika hivyo uataalamu uataoa ufafanuzi juu ya utekelezaji wa Mradi huo kwa Kata ya SINZA juu ya asilimia 30% ya Mradi kwa UBUNGO. Hivyo Kata ya SINZA ni Miongoni mwa Kata (14) za Manispaa ya UBUNGO katika awamu hii ya asilimia 30% ya Mradi uatapat huduma ya Kufunga barabara.

Hivyo kutokana na kero kubwa kwa Kata ya SINZA ni changamoto ya Barabara za Mtaa na Mitaa hivyo changamoto hii kupitia Mradi huu inaenda kutatuliwa.

Baada ya kukumbwa hayo Mh. diwani alimkaribisha MTAALAMU kutoka taasisi ya NEIPA ambaye imeshinda katika tendo ya kandarasi ya Barabara.

Mtaalamu alisema lengo kuu la Mkutano huu ni kutambuliisha Madi kwa wananchi wa Mtaa wa SINZA 'A' na 'C'.

Baaba zitakazopitwa kwa Durumu ya Kuwasa ya Madi katika asilimia 30% ya Madi ni:

- 1) JUMA KANGA (SINZA A)
- 2) SHEIKBOFU (SINZA C).
- 3) MSIKITINI (SINZA C).
- 4) KKKI ROAD (SINZA C).
- 5) SEKEELA ROAD (SINZA A).
- 6) PATA MATEMBA (SINZA C).

Mtaalamu aliendelea kwa kusema "Kwa namna tuliyotembelea hali ya barabara hizi ni Mbaa. Hivyo katika asilimia 30% ya Madi iko barabara zitafanywa kazi kwa Kiwango Cha Lami, Mitani ya Maji Machafu na Taa za barabarani.

- Hivyo lengo kuu ni kutambuliisha Madi, Na Madi utaanza rasmi Mwakani Muzi (4).

- Kwa baadhi ya barabara kama 'SHEIKBOFU' Barabara haijika Mili 15 hivyo wakazi wameingia kuta zao na Vikaraga Vyao katika eneo la barabara. Hivyo hakuna Mkozi atakae bomolewa pindi madi huo unafanyika. Bali mtaalamu wataka na Wahusika ili waweze kuelewa na kufanya Marekebisha. Na wakazi watakuwa oneka na wameingia katika eneo la barabara watafanywa taimini na kupiwa fedha katika Maeneo hayo.

AITHARI ZA MRADI.

- Vyombo vikubwa kupiga kelele.
- Ongezeko la watu katika Mtaa.
- FAIDA: Kufanya biashara.

HASARA: Vijana na Wamama kujihusisha na Mahusiano kwa wageni watako kwa katika Mradi hali inaongelea hadi Mradi kuishia vijana kuachwa watoto wasio na baba, pamoja na ndoa na zina kuvunjika.

Aliendelea kwa Kusoma "Turapanga Kutoa elimu kwa Vijana wetu Maji mbani ili kumpukama na hali hii.

- Kila baada ya Miesi Mitatu ya Mradi, Mkandarasi atatoa elimu juu ya Virusuli wa Ukimwi (VUV). Ni vyema kukumbusha kupima maji na kutoa kinga.

MASWALI NA MAJIBU.

① RICHARD MWAKIBINGA: Aliuliza "Kuna Mradi wa Maji taka Unaendelea katika Mtaa yetu "Je na katika barabara Zingine litapita bomba la Maji Kisha barabara au lah?
Alijibu: Dawasa watawaka Miundombinu yao sawa kisha bara bara itapita.

② HAMISI HAMISI - Aliuliza / Aliita Msiwito: Dawasa wawake PIPE kubwa za njia ya kupitisha Maji.

③ SARA MABUKA - Aliuliza "Je POSTA MATEMBA ni Barabara gani?
Alijibu: ni ya LAW SUTOK.

④ MAGRETH MUTHINA: Aliuliza Je katika Mradi huo vijana wetu watapata ajira.

Alijibu: Ajira ni Kipaumbele katika eneo ambako mradi Unaifanyika. Hivyo Senkali ya Mtaa itamchamini na kumpokea kwa Mkandarasi.

⑤ JUMA IKANGA: Mradi unaanza muaka gani? Alijibuwa Muaka mwa mwaka wa mwe (4). Aliita Msiwito ambamba

6. HAUKE MARTIN - Barabara ya MKANDARASI mkandarasi hakaifunga vizuri kila Uwezekani wa bomba la Maji taka. Hapo anaomba kushirikisha jani vianji pindi wanaanza Mradi huo.

SHUSHI SINZA A: (Je huo fika zipo tayari.

Alijibu: Mtaalamu.

Udo maana kwa sasa kazi imeanza na Michoro higo ili kumweza kuanza/kwendelea na Michokoto huo.

Gondock: Wakati wa barabara zinajengwa tunasimba barabara zisichungwe ili kuendelea na biashara zetu.

Alijibu: Katika Mtaa Kuna fanda na hasara higo tunapawa kwa wawumilari ili barabara zijenge.

Aenda na 3: KUFUNGA KIKAO

Muenyekiti alifunga Kikao mnamo Saa 6:15 Mchana.



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Minutes at Ubungo NHC Mtaa, Ubungo Ward**MUHTASARAI WA MKUTANO WA WANANCHI WA MTAA WA NHC KATA YA UBUNGO PAMOJA NA DMDP ULIOFANYIKA TAREHE 06.11.2023 UKUMBI WA KANISA LA ANGLIKAN UBUNGO***Mahudhuro yameambatanishwa***AGENDA**

1. KUFUNGUA KIKAO
2. UTAMBULISHO
3. KUTAMBULISHA/TAARIFA MRADI WA UJENZI WA BARABARA YA SANAA AMBAYO DMDP WAMEIPA JINA LA NHC MKAPA MWENDO KASI BARABARA YA NJIRIMA
4. MENGINEYO
5. KUFUNGA KIKAO

1. KUFUNGUA KIKAO

Mwenyekiti aliwasalimu wajumbe na kuwashukuru kwa kuhudhuria bila kujali changamoto ya mvua kubwa na kikao kiliunguliwa saa 06.11 asubuhi.

2. UTAMBULISHO

Mwenyekiti aliwapa nafasi kwanza viongozi wa vyama vya siasa wajitambulisha na pia Uongozi wa Serikali ya Mtaa kufuatia na Uongozi wa Kata kisha walimalizia wenzetu wa DMDP.

3. KUTAMBULISHA/TAARIFA MRADI WA UJENZI WA BARABARA YA SANAA AMBAYO DMDP WAMEIPA JINA LA NHC MKAPA MWENDO KASI BARABARA YA NJIRIMA

Mwenyekiti aliwaeleza wananchi kuwa lengo la mkutano huu ni kupokea taarifa kutoka kwa wenzetu wa DMDP kuhusu ujenzi wa barabara iliyotajwa hapo juu kwa kiwango cha lami, hivyo tuwe makini kusikiliza na alimaliza wananchi kama wamepokea mradi a wote walijibu ndio wamepokea (tumepokea). Kisha alimkaribisha msemaji kutoka DMDP ili aongee na wananchi.

Kwanza aliwasalimu wananchi na kuwashukuru kwa kuja kwa wingi na aliwaeleza kuwa wao wamekuja kutambulisha ujenzi wa barabara ya Sanaa ambayo wao DMDP wameipa jina la NHC ambayo ujenzi wake utaanzia eneo la shule roundabout mpaka kwenda kuungana na barabara ya mwendokasi pamoja na barabara ya kuanzia rubada kwenda kuunga na sanaa inayoitwa Njirima na aliwaliza wananchi kama wamepokea mradi nao walijibu wamepokea (tumepokea) na walishangilia kwa makofi. Aliendelea kuwaeleza kuwa barabara hiyo yenye urefu wa 0.6 km inategemewa kuanza kujengwa mwezi Aprili 2024 na itakuwa na kiwango cha lami na mifereji ya maji ya mvua na taa za barabarani, ambapo kuna badhi ya wananchi itabidi wapishe mradi ambapo watafanyiwa uthamini na kufanyiwa malipo ambapo zoezi litafanyika kwa kushirikiana na Serikali ya Mtaa na baada ya hapo

wahusika wengine watakaotakiwa kuhamisha miundombinu kama Dawasa, Tanesco na mengineo watalazimika kufanya kwa uharaka ili kuruhusu mradi kuendelea.

Serikali ya Mtaa itakuwa na kazi ya kutoa malangazo kwa wananchi wakati wa ujenzi ukiendelea. Baada ya maelezo hayo msemaji aliomba wananchi watoe ushirikiano wakati wa utekelezaji wa mradi huo.

Baada ya maelezo hayo Mwenyekiti alitoa nafasi kwa wananchi ili kutoa maoni au ushauri na pia maswali na walieleza kama ifuatavyo:

- Mjumbe mmoja aliomba kama ni barabara ijengwe ya Zege kwani lami sio imara

Alijibiwa kwa kupewa mifumo ya barabara za lami zilizojengwa na DMDP zikiwemo za makumbusho ambazo zimezingatia ubora na kuwa imara mpaka sasa hivyo aliambiwa aondoe shaka kwani wanafanya kazi ni wataalam.

- Mjumbe mwingine aliomba barabara ziongezwe kwani Mtaa wa NHC una barabara mbovu nyingi sana

Alijibiwa kuwa hii ni awamu ya kwanza ambapo ni 30% kati ya 100% ya barabara zinazohitaji ujenzi, hivyo avumilie angalau kwa hizo 70% zilizobaki wataangalia uwezekano wa kuongeza zingine.

- Mjumbe mwingine aliomba matuta eneo la shule.

Alijibiwa kuwa utaratibu utafuatwa kama ulivyoclekezwa

- Mjumbe mwingine aliomba mifereji iwe bora na ifunikwe kwani wengine wanashindwa kupita na magari kuingia ndani ya mifereji kutokana na mifereji kuwa wazi.

Alijibiwa kuwa hilo litazingatiwa

- Mjumbe mwingine aliomba wale watakaofidiwa wawe wahusika /walengwa ili kuepusha migogoro.

Alijibiwa kuwa kila kitu kipo sawa na kitasimamiwa kwa utaratibu hivyo aondoe shaka.

- Mjumbe mwingine aliwasihi wananchi wawe watulivu na wavumilivu wakati mradi ukiendelea.

- Pia mjumbe mwingine aliomba wakati wa tathimini washirikishwe watu wanaojua mipaka vizuri.

- Vijana waliomba kipaumbele cha ajira kitolewe kwa wananchi wa NHC ili wafaidike na mradi huo,
- Pia waliomba wakati mwingine engenerar awepo ilia toe majibu sahihi.

4. MENGINEYO

Hakukuwa na mengineyo

5. KUFUNGUA KIKAO

Mwenyekiti aliwashukuru wananchi kwa michango yao mizuri ya kuleta maendeleo ya Mtaa wao na kikao kilifungwa saa 08:08 mchana.


SAID MASOUD RAMADHANI
MWENYEKITI


H. MASHAURI YA MANISPAA YA UBUNGO
H. MWENYEKITI WA MTAJI


AGNES MORIO
KATIBU


H. MASHAURI YA MANISPAA YA UBUNGO
H. AFISA MTENDAJI WA MTAJI

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Minutes at Mabibo Ward

MUKTASARI WA KIKAO CHA WANANCHI WA MTAU WA KANUNI, AZIMIO, JITEGEMEE NA MATOKEO KILICHOFAANYIKA KATIKA ENDO LA LINGO LA KUNI KWAAJILI YA KUTAMBULISHA MRADI WA UJENZI WA BARABARA YA BINTI KAYENGA KWA KIWANGO CHA ZEGE KILICHOFAANYIKA TAREHE 02/11/2023

MAHUDHURIO

Yameambatishwa katika muktasari wa kikao

AGENDA

1. KUFUNGUWA KIKAO

2. MICHANGO TOKA KWA VIONGOZI MBALIMBALI

3. MAELEZO YA MRADI TOKA KWA KIONGOZI WA DMDP

4. KUFUNGUWA KIKAO

1. KUFUNGUWA KIKAO

Kikao kilifunguliwa mnamo saa 08:00 Mchana

2. MICHANGO TOKA KWA VIONGOZI MBALIMBALI

Alisa mtendaji kata ya mabibo aliwaeleza kuwa katika mradi ambayo mliipa kipaumbele ni hii barabara ya binti kayenga hivyo tunaomba watakapoanza mradi twape ushirikiano. Wenye vitii wa mitaa husika walipongeza serikali kwa kutoa fedha za ujenzi huo na kuahidi wao na wananchi wataoa ushirikiano wa kutosha. Viongozi wa vyama vya kisiasa nao walipongeza wananchi kwa kuibua mradi huo na serikali kuunga mkono kwani ni katika utekelezaji wa ilani ya uchaguzi.

MHESHIMIWA DIWANI JOSEPH KIERRU

Barabara hii imekuwa mbovu kwa muda hata daladala hakuna ahadi yangu kwevu sasa imetiniwa kwa kuwa mradi huu unaenda katika utekelezaji wa mitaa ambayo inapitiwa ni Matokeo, Jitegemee, Azimio na Kanuni.

3. MAELEZO YA MRADI TOKA KWA KIONGOZI WA DMDP

Kiongozi anaewakilisha DMDP katika mradi (martha) alieleza kuwa mradi utakuwa ni ujenzi wa barabara kwa kiwango cha zege urefu wa barabara ni 1.3 kilometa ambayo itakuwa na mifereji ya maji, mataa na njia za wapita kwa miguu. Hapavyunji nyumba ya mtu ila jengo au ukuta utakaoingia kufuta eneo la barabara utatolewa bila fidia lakini utakaofuatwa na barabara wahusika watalipwa fidia kwa sasa wako katika hatua za awali za utambuzi wa kina wa eneo la

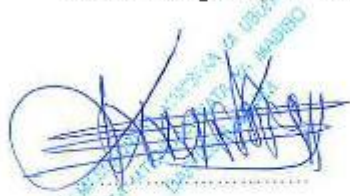
mradi sambamba na kutambulisha mradi lakini ujenzi rasmi utanza Aprili 2024. Wananchi waliulizwa wamecupokea mradi? Wote kwa pamoja walijibu wamecupokea mradi na watatoa ushirikiano.

Afisa mtendaji wa kata aliwashukuru wananchi kwa kupokea mradi na kuwaomba kutoa ushirikiano kwa serikali, wananchi kulinda rasilimali zote zitakazokuja katika mradi. Afisa tarafa wa magomeni alipongeza wananchi wote kwa kuibua mradi na kufika katika kikao, kuboresha usafi na utunzaji wa mazingira

Mh. Diwani aliwashukuru wananchi kwa kuibua mradi na DMDP kupokea maombi ya mradi na Mh. Rais wa Jamhuri ya Muungano wa Tanzania Rais Samia Suluhu kutupatia fedha za kutekeleza mradi huu wa kihistoria

4. KUFUNGA KIKAO

Kikao kilifungwa saa 10:00 jioni



ABDULL H. KHAMIS
AFISA MTENDAJI KATA
KATA YAMABIBO



JOSEPH KLERRUU
DIWANI WA KATA
KATA YA MABIBO

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Minutes at Manzese Ward

MUHITASARI WA KIKAO MKUTANO MCHU WA WANANCHI
WA KATA TA MAKURUMBA NA KATA YA MANZESE ULIOGAMBIWA
TAREHE 06/11/2023 KATIKA VIWANIA VIA VAGI

DONDOO

1. KUFUNGUWA KIKAO MKUTANO
2. UTAMBULISHO
3. MRADI DMDP
4. KUFUNGA MKUTANO

1. KUFUNGUWA MKUTANO

Mwenyekiti wa mkutano huo alifungua mkutano huo sasa tisa jioni; baada ya hapo mwenyekiti aliwakumbuka wananchi wa kata zote mbili pamoja na wafanyakashe.

2. UTAMBULISHO

Mwenyekiti aliwajulisha wananchi kuwa kwenye mkutano huo wapo viongozi mbalimbali wa kata zote mbili ambao mradi wa DMDP umepita kwenye mikoa 720, utambulisho huo ulifanyika madwini walijitambulishi pamoja na wataalam wote katika kata 120 mbili; vikile na wataalamu kutoka DMDP walijitambulisho

3. MRADI DMDP

Mwenyekiti aliwajulisha wananchi kuwa Mh. Mungu ne Mh. Mungu walikuwa ushawishi takwimu za mradi mkubwa wa DMDP kuwa utaanza rasmi 2024 APRIL, sasa leo umokujika DMDP kwa ajili ya kuongea na wafanyakashe na wananchi.

Kwamba mradi huo unatarajiya kuanza muanzo wa mwezi wa nne, alikuwambia viungozi wa DMDP waongee na wanaschi hao, na waliwaambia wafanyakia shere anasao wamerfata barabara hiyo wianze kutafuta mawazo mengine na kutafutia bishara kusudi waweze kupisha ujenzi ambao unatarajiya kuanza mapema, vilevile alwasisitiza wanaschi kuwa ujumbe kuwa yeyote aliyefata barabara hata kupita pia wianze kuondoa vitu vya vya thamani kama mabanda na bishara kusudi ujenzi ukianwa usije kumbuka mali zao. vilevile wanaschi walishukumu mradi huo na wanaschi wote walikupokea wakini kuanza kufanya msandilizi mapema kusudi mradi huo uanze bila kikwazo.

Mh. dawa aliondoka kuwajulisha wajumbe kuwa wanaschi wote mmekirika kupokea mradi huo pia mbe ushirikiano katika uharizi wa mali zote zitakazo kupa kuwa ajika na utengenezaji wa mradi huo.

Vilevile wanaschi waliondoka kuyas ajira kuwa vijana zitakuwepo. DMDP walisoma ajira zitakuwepo pia zitafata utaratibu.

KUFUNGA KIKAO/MKUFANO

Mwenyekiti alwasishukumu wanaschi wote kuwa kufika kuwa wina "na alwasitaki safari njema wote

KATIIBU
ALMASHAURI YA MAMISPA YA UBUNGO
AMISA MTENDAJI WA KATA
KATA YA NARURUMU

MWENYEKITI
DA

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APPENDIX 4: RECORD OF PROJECT CONCERNS RAISED BY STAKEHOLDERS

Date	Person Consulted	Institution	Comments/Views	Response
25/08/2023	xxx (REME)	RS-Dar es Salaam	He received the project well and he had the following concerns; • DAWASA should inform user about the water cut off during relocation of their utilities. • Storm water drainage should not be the cause of floods but the solution to floods so designer should design well to solve flood problem in the proposed area. • The project must protect biodiversity • After implementation they must plant trees to the proposed park.	We will inform DAWASA and the consultant during construction
25/08/2023	xxx (Director of Technical Operation)	TTCL HQ	He received the project well and he had the following concerns; • They have their utilities to the proposed roads, during implementation they ask to be informed early so that they can relocate their utilities without delaying the project. • These proposed roads need good storm water and caravats to remove rain water t	During construction contractor will communicate with TTCL if there is relocation

Date	Person Consulted	Institution	Comments/Views	Response
28/08/2023	xxx (Inspector) xxx (Inspector) xxx (Inspector)	OSHA	He received the project well and he had the following concerns; • The project must be registered with OSHA. • The project must be inspected by officers from OSHA. • Supervisors should attend specialized training from OSHA • All workers must undergo medical checkups done by offices and doctors from OSHA. • A detailed report must be submitted to OSHA explaining the potentially hazardous, risks and the use of PPE at the work area/place. • Action plan and a letter should be submitted to OSHA to get a compliance certificate which will be valid for one year. • OSHA will do a regular check-up during project implementation and offer professional advice. • Drinking water, changing room etc should be provided at the site. • During the design stage, all drawings must be submitted to OSHA for scrutinization before project implementation. • A Flagman, road signs and diversion should be applied at the site to prevent accidents.	Contractor will register the project to OSHA

Date	Person Consulted	Institution	Comments/Views	Response

Date	Person Consulted	Institution	Comments/Views	Response
28/08/2023	xxx (Director Manager) xxx (Engineer)	TARURA	He receives the project well and he had the following concern; • SUD's must be given priority on our design. • Design classification must be considered. • Design for disability is design for all. • Design should consider walk ways. • Places where there is social services design should consider putting zebra cross and street light. • Storm water drainage must be directed to the river or ocean not to human settlement.	Contractor will build according to design
28/08/2023	xxx (Environmental Management Officer) xxx (Ag.Municipal Natural Resource Environmental Conservation Officer)	UBUNGO MUNICIPAL COUNCIL	He received the project well and he had the following concerns; • First Aid's during construction should be available. • Works should wear PPE during construction. • In order to reduce dust constructor must watering his site. • Consultant and contractor must do courtesy call councilors and Mtaa chairperson. • Replantation of trees after construction.	Replantation will take place after construction

Date	Person Consulted	Institution	Comments/Views	Response
			Storm water drainage must be good.	
15/11/2023	(Engineer) (Engineer)	DAWASA	They receive the project well and the following was their concern; - They have ongoing project Sinza. - They ask the client o share the drawings so that they can know where to put their pipes.	During construction DAWASA will work hand in hand with contractor
16/11/2023	Xxx (Technician) xxx (Technician) xxx (Engineer) xxx (Engineer) xxxx (Supervision)	DAWASA	- They assess all the site and come with BOQ - They ask the contractor to communicate with them during construction.	DAWASA they will work hand in hand with contractor.

Date	Ward	Questions/Concerns	Response
02/11/2023	Goba Wakorea Road-Tegeta A Ward Ubungo Municipal	The residents of Tegeta A gave us a warm welcome and they accepted the project. The benefits of the project explained during the meeting include; • Increase a standard of living • Increase of economic development • Job opportunities to the residents The challenges of the project explained during the meeting • Resident who are the along the road will be supposed to relocate • Noise and air pollution during the construction process • House damages due to have construction material (cracks) • Due to the increase of people, it may lead to HIV infection and unwanted pregnancy • Many marriages will break. The following are the questions and concerns 1. What are the starting point and the ending points of the road? 2. How long is the process of getting the contractor and when are you expecting to finish the design? 3. The damage at the bridge should be considered 4. Does this project obtain find funds from the government or is loan? 5. At Mbawala Pub there is a challenge of storm water entering the residents houses 6. At Ukawa sokoine road, how to channel the drainage to avoid entering residents houses should be considered 7. At Madawa there is storm water challenge, the infrastructure should be constructed properly 8. Will this road include bus stands? 9. The difference on tenders of consultant, contractors and	1. The design is expected to end in December and the process of getting the contractor will start immediately 2. The comments will be taken into consideration on the design and construction 3. This project is funded by loans from World Bank 4. There is a good communication between the contractor and the consultant for any rectification of the project during the construction 5. All residents who will be affected by the project will be valued and compensated promptly

Date	Ward	Questions/Concerns	Response
		supervisors lead to challenges on implementation of the project 10. The design engineers should be included on the meetings 11. Will there be an open statement for those who will be affected by the project	
02/11/2023	Binti Kayenga Road- Mabibo Ward- Ubungo Municipal	The residents of Mabibo gave us a warm welcome and they accepted the project. The benefits of the project explained during the meeting include; • Increase a standard of living • Increase of economic development • Job opportunities to the residents The challenges of the project explained during the meeting • Resident who are the along the road will be supposed to relocate • Noise and air pollution during the construction process • House damages due to have construction material (cracks) • Due to the increase of people, it may lead to HIV infection and unwanted pregnancy • Many marriages will break. The following are the questions and concerns 1. There is a challenge during a rainy season, the residents houses are being flooded by the storm water 2. What is the value of this project 3. What is the length of this road? 4. The sand rubbles (Vifusi) collected during the construction should be distributed to the inner street roads	1. The design has considered the storm water drains and how they will be directed to a safe spot 2. The Value of this road project has not yet been given until the final BOQ is released after the initial procedures 3. The Councilor and the local government should request the contractor for the sand rubbles (Vifusi) in order to be distributed to the inner street roads

Date	Ward	Questions/Concerns	Response
03/11/2023	Chimwaga Road, Mbegani Road, Lion Road Sinza B and Sinza D Ward-Ubungo Municipal	The residents of Sinza gave us a warm welcome and they accepted the project. The benefits of the project explained during the meeting include; • Increase a standard of living • Increase of economic development • Job opportunities to the residents The challenges of the project explained during the meeting • Resident who are the along the road will be supposed to relocate • Noise and air pollution during the construction process • House damages due to have construction material (cracks) • Due to the increase of people it may lead to HIV infection and unwanted pregnancy • Many marriages will break. The following are the questions and concerns 1. What about sewerage system project will it also be implemented? 2. Our houses are low, the water drains kept should be channeled properly to avoid entering residents houses 3. What about the marks that have already been kept on houses will the houses be affected during the project and is there compensation? 4. How long will the project take? 5. Will the roads be built by phases or all at once? in order to ensure different road access and road diversions 6. Where will the storm water be directed?	1. We will collaborate with DAWASA to ensure they implement their project and have kept their utilities along the road 2. The comments are taken and taken to consideration on the design 3. For those residents houses with the road reserve area will be required to leave the road area. 4. The project will be by phases and the contractor will be supposed to provide road access 5. The storm water is expected to be directed to Mto ng'ombe

Date	Ward	Questions/Concerns	Response
		7. The contractors should collaborate with the residents	
03/11/2023	Hondogo Shija Road-Kibamba Ward-Ubungo Municipal	The residents of Kibamba gave us a warm welcome and they accepted the project. The benefits of the project explained during the meeting include; • Increase a standard of living • Increase of economic development • Job opportunities to the residents The challenges of the project explained during the meeting • Resident who are the along the road will be supposed to relocate • Noise and air pollution during the construction process • House damages due to have construction material (cracks) • Due to the increase of people, it may lead to HIV infection and unwanted pregnancy • Many marriages will break. The following are the questions and concerns 1. Job opportunities to youths during the construction 2. We request after the construction; the contractor should also build at Neema Bypass using concrete road 3. There is challenge of the contractor breaking the water pipes during construction	1. Youths and all those who are interested to get a job from the contractor should register their names to their respective local government 2. The ward councilor should organize with contractor for the construction of that road 3. DAWASA and the contractor will be collaborating in order to remove and replace their infrastructures from the centre of the road to beside the road
06/11/2023	Ubungo NHC Road-Ubungo Ward-Ubungo Municipal	The residents of Ubungo Ward gave us a warm welcome and they accepted the project.	1. The roads will be built using asphalt concrete at high quality standards

Date	Ward	Questions/Concerns	Response
		The benefits of the project explained during the meeting include; • Increase a standard of living • Increase of economic development • Job opportunities to the residents The challenges of the project explained during the meeting • Resident who are the along the road will be supposed to relocate • Noise and air pollution during the construction process • House damages due to have construction material (cracks) • Due to the increase of people, it may lead to HIV infection and unwanted pregnancy • Many marriages will break. The following are the questions and concerns 1. Asphalt road is not suitable on this road because of the nature of the clay soil 2. There is minimal collaboration and engagement between local governments and citizens concerning this project because there is more damaged roads in our areas 3. There should be bumps on the road 4. The compensation should be given to the people who deserve 5. Job opportunities should be given to the youths	2. Road safety such as bumps will be included in the design 3. Youths and all those who are interested to get a job from the contractor should register their names to their respective local government
06/11/2023	Midizini Road-Manzese Ward-Ubungo Municipal	The residents Manzese gave us a warm welcome and they accepted the project. The benefits of the project explained during the meeting include; • Increase a standard of living • Increase of economic development	1. The comment will be taken into consideration in the design 2. Youths and all those who are interested to get a job from the contractor should register

Date	Ward	Questions/Concerns	Response
		- Job opportunities to the residents The challenges of the project explained during the meeting - Resident who are the along the road will be supposed to relocate - Noise and air pollution during the construction process - House damages due to have construction material (cracks) - Due to the increase of people, it may lead to HIV infection and unwanted pregnancy - Many marriages will break. The following are the questions and concerns - The small water drains are overly flooding, we request for it to be removed and the storm water to be directed to Mto China. - How will the youth benefit from this project - Will the sewerage system also be included in this project - The vendors who are along the road should be notified early to evacuate before the construction start - Where will the vendors be kept during construction	their names to their respective local government - We will collaborate with DAWASA to ensure they implement their project and have kept their utilities along the road - The vendors will be notified to evacuate prior the construction - The vendors will be shifted to areas allocated by the local government
07/11/2023	Jumaa Ikangaa Road, Sheikh Bofu Road, Posta Matemba Road, Segesera Road, Sinza KKKT – Sinza A and Sinza C Wards – Ubungo Municipal	The residents of Sinza wards gave us a warm welcome and they accepted the project. The benefits of the project explained during the meeting include; - Increase a standard of living - Increase of economic development - Job opportunities to the residents The challenges of the project explained during the meeting - Resident who are the along the road will supposed to relocate	- DAWASA will be notified to remove and place their utilities to beside the road and be required to provide a BOQ for those roads with no sewerage systems yet in order to construct - The water drains built will be of good standard

Date	Ward	Questions/Concerns	Response
		- Noise and air pollution during the construction process - House damages due to have construction material (cracks) - Due to the increase of people it may lead to HIV infection and unwanted pregnancy - Many marriages will break. The following are the questions and concerns - How will the sewerage system be constructed on the road and what about the roads which don't yet have the sewerage system? - The sewerage system should be advanced and expanded because the population is increasing - Storm water is of high extent that it tends to damage residents houses - There should be job opportunities to the youths during the projects - There should be road access and road diversion during the construction and should be of good standard - What about the culvert and access to houses along roads	and the storm water will be directed to a respective area 3. Contactor is required to provide road access and diversion during construction 4. The design and construction include culverts on water drains and easy access to houses along the roads 5. Youths and all those who are interested to get a job from the contractor should register their names to their respective local government
07/11/2023	Msumi Road-Kibamba Ward-Ubungo Municipal	The residents of Kibamba gave us a warm welcome and they accepted the project. The benefits of the project explained during the meeting include; - Increase a standard of living - Increase of economic development - Job opportunities to the residents The challenges of the project explained during the meeting - Resident who are the along the road will supposed to relocate	1. The road width is 15 metres. 2. Houses which are with the road reserve(15 metres) will be required to move without compensation but houses that are outside the road reserve but will be affected due to construction will be required to evacuate

Date	Ward	Questions/Concerns	Response
		- Noise and air pollution during the construction process - House damages due to have construction material (cracks) - Due to the increase of people it may lead to HIV infection and unwanted pregnancy - Many marriages will break. The following are the questions and concerns 1. What is width of the road? 2. Will the houses along the road be compensated? 3. Will the utilities and infrastructures on the road be removed? 4. How long will the project last?	3. DAWASA and TANESCO will be notified to remove and replace their utilities on the road to beside the road
07/11/2023	Msumi Road-Kibamba Ward-Ubungo Municipal	The residents of Kibamba gave us a warm welcome and they accepted the project. The benefits of the project explained during the meeting include; - Increase a standard of living - Increase of economic development - Job opportunities to the residents The challenges of the project explained during the meeting - Resident who are the along the road will supposed to relocate - Noise and air pollution during the construction process - House damages due to have construction material (cracks) - Due to the increase of people it may lead to HIV infection and unwanted pregnancy - Many marriages will break. The following are the questions and concerns 1. What is width of the road? 2. Will the houses along the road be compensated?	1. The road width is 15 metres. 2. Houses which are with the road reserve(15 metres) will be required to move without compensation but houses that are outside the road reserve but will be affected due to construction will be required to evacuate 3. DAWASA and TANESCO will be notified to remove and replace their utilities on the road to beside the road

Date	Ward	Questions/Concerns	Response
		3. Will the utilities and infrastructures on the road be removed? 4. How long will the project last?	

APPENDIX 5: PHOTOS TAKEN DURING STAKEHOLDER CONSULTATION

PHOTOS ARE BLURRED TO AVOID DISCLOSURE OF PERSONAL INFORMATION



Photo 1: Consultation with Community Representative at Manzese Ward



Photo 2: Consultation with Community Representative at Mbezi Ward



Photo 3: Consultation with Community Representative at Goba Ward



Photo 4: Consultation with Community Representative at Kibamba Ward



Photo 5: Consultation with Community Representative at Nyakasangwe Neighbourhood, Goba Ward



Photo 6: Consultation with Community Representative at Ubungo NHC Mtaa, Ubungo Ward



Photo 7: Consultation with Community Representative at Sinza Ward



Photo 8: Consultation with Community Representative at Manzese Ward

APPENDIX 6: SUMMARY OF SCOPING RESULTS

Affected Component	Project Related Activities	Effects/Impacts	Scoped IN	Scoped OUT
1. Atmospheric Environment	Operation of heavy trucks mobile construction equipment/machinery.	Creation of air pollution due to emission of exhaust fumes.	✓	
	Soil excavations, earthworks and earth moving activities	Creation of air pollution due to dust emission	✓	
	Transportation of construction materials from borrow pits / quarry pits.	Creation air pollution due to dust emission along the access roads.	✓	
	Operation of concrete batching plant	Creation of air pollution due to dust emission.	✓	
	Operation of asphalt batch plant	Creation of air pollution due to dust emission.	✓	
	Removal of natural vegetation cover / trees	Increased concentration of GHG (CO ₂).		✓
	Operation of DMDP 2 Subproject Roads after construction.	Reduced emission of air pollutants and greenhouse gas.	✓	
2. Acoustic Environment	Operation of construction equipment / machinery	Creation of noise nuisance to the adjacent local residents.	✓	
	Compaction of soil materials along the road section.	Creation of vibration effects on adjacent building structures.		✓
	Transportation of construction materials from borrow pits /quarry pits.	Creation of noise nuisance to adjacent local residents.	✓	
3. Water Resources	Abstraction of water for construction and operation of camp site.	Depletion of local water sources.		✓
	Accidental overflow or deliberate discharge of raw sewage waste water.	Creation of ground and surface water pollution.		✓
	Discharge of storm water from roadside storm water drainages and culverts.	Creation of ground and surface water pollution.		✓
4. Aquatic environment	Construction of bridges at river crossings.	Vegetation clearance		✓
	Water flow from roadside storm water drainages	Destruction of aquatic habitats.		✓

Affected Component	Project Related Activities	Effects/Impacts	Scoped IN	Scoped OUT
	Construction of cross drainage structures.	Destruction of aquatic habitats.		✓
5. Terrestrial environment	Site clearing and preparation	Destruction of existing planted trees and grass.		✓
	Transportation of construction materials from borrow pits to the construction site.	Destruction of natural vegetation and cultivated crops due to creation of access roads to borrow pits.		✓
	Storm water flow from roadside storm water drainage.	Creation of landscape degradation	✓	
	Accumulation of excavated soil materials and construction solid wastes.	Loss of aesthetic value of the surrounding environment.	✓	
	Accidental spillage of waste oils.	Loss of aesthetic value of the surrounding environment.	✓	
6. Public Health and Safety	Social interaction between construction workers and local community	Increased transmission of HIV/AIDS and STIs	✓	
	Induced influx of people into the DMDP 2 project sites.	Increased risk of exposure to Covid-19 transmission.	✓	
	Operation of construction equipment / machinery without PPE	Increased exposure to occupational health and safety risks	✓	
	Encroachment of people into the construction site.	Increased exposure to construction related risk of accidents	✓	
	Excavation of road bed and trenches for road side storm water drainages.	Creation of safety hazards to pedestrians and other road users.	✓	
	Handling of hazardous construction materials without PPE	Increased exposure to occupational health and safety risks.	✓	
	Movement of heavy trucks to and from construction site.	Increased risk of traffic accidents.	✓	
	Operation of DMDP 2 Subproject Roads after construction.	Reduced road traffic accidents.	✓	
7. Labour and Economy	Recruitment of construction workers	Increased employment opportunities for local people.	✓	

Affected Component	Project Related Activities	Effects/Impacts	Scoped IN	Scoped OUT
	Acquisition of road construction corridor at Midizini Road	Loss of business due to dislocation of petty traders (Machinga)	✓	
	Induced influx of people into the DMDP 2 project sites.	Risk of emergence of Gender-Based Violence and Sexual Exploitation and Abuse due to influx of people into the project sites.	✓	
	Increased demand for food and other items due to presence of construction workers	Increased income generation opportunities for local people.	✓	
	Retrenchment of construction workers after project completion.	Loss of temporary employment	✓	
	Operation of DMDP 2 Subproject Roads after construction.	Increased productivity and stimulation of economic growth.	✓	
		Employment creation and economic improvement of households.	✓	
		Increased Revenue Collection by Local and Central Government	✓	
		Reduced Transportation Costs and Improved Access to Social Services.	✓	
		Reduced risk of traffic accidents and improved environmental quality.	✓	
		Increased comfortability of passengers.	✓	
8. Community Services and Public Infrastructure Service and Utilities	Increased demand for emergency response services.	Increased pressure on existing emergency response services		✓
	Increased demand for health and other social services.	Increased pressure on existing medical and social service facilities.		✓
	Increased demand for local housing and accommodation.	Increased income for owners of local housing and accommodation.	✓	
	Influx of people into DMDP 2 project sites.	Increased pressure on existing sanitary and solid wastes disposal facilities.	✓	
	Relocation of existing infrastructures and utilities.	Disruption of public infrastructure and utility services.	✓	

Affected Component	Project Related Activities	Effects/Impacts	Scoped IN	Scoped OUT
9. Transportation	Excavation of road bed and road side storm water drainages.	Severance of community access to other side of the road.	✓	
	Construction of DMDP 2 Subproject Roads and storm water drainages.	Disruption of traffic flow along the construction road.	✓	
	Movement of heavy trucks hauling construction materials along the existing local roads.	Creation of damage on existing local roads.	✓	
10. Current Land and Resource Use	Land acquisition for construction of DMDP 2 Subproject Roads infrastructure.	Loss of land and other properties by local residents.	✓	
	Induced influx of people into the DMDP 2 project sites.	Emergence of incompatible or conflicting land use with DMDP 2 Subproject Roads operations.	✓	
11. Cultural Heritage Resources	Removal of Baobab Tree from the road median.	Destruction of sacred or cultural site.	✓	
	Preparation of DMDP 2 Subproject Roads construction sites.	Destruction of archaeological artefacts.	✓	

APPENDIX 7: DESCRIPTION OF SITE SPECIFIC ENVIRONMENTAL AND SOCIAL IMPACTS AND MITIGATION MEASURES**(a) Package 1: Msumi Road**

SN	Road Section	Project Related Activities	Potential Risks/Impacts	Affected Component	Mitigation measures
1.	The entire road length	Movement of construction equipment and vehicles along the construction road and/or diversion roads will result into increased air pollution due to dust emission during dry seasons.	Creation of air pollution due to dust emission along the construction road and/or diversion roads.	Atmospheric Environment	▪ The impact will be mitigated through application of water along the construction road and/or diversion roads.
2.	The entire road length	Operation of mobile construction equipment and heavy trucks along the road section will result into creation of noise nuisance.	Creation of noise nuisance to the adjacent sensitive receptors.	Acoustic Environment	▪ Contractor will be required to limit construction works to day time (06:00 am to 18:00 pm). ▪ Presence of Makabe Secondary School close to the road at km 4+700 RHS, Midlan Health Center at Km 6+700 LHS and Millan Kindergarten School at Km 7+700 on the LHS will trigger the need for installation of noise abatement structures to minimize noise impact on the adjacent sensitive receptors during construction. ▪ Solid block boundary fence shall be constructed to Makabe Secondary School
3.	The entire road length	Excavation of road bed will be followed by back-filling with gravel/ soil materials and compaction works, hence resulting into vibration effects	Creation of vibration effects on the adjacent building structures	Acoustic Environment	▪ Before commencement of construction works the Contractor will take inventory of cracks on the adjacent buildings in collaboration with owners of

SN	Road Section	Project Related Activities	Potential Risks/Impacts	Affected Component	Mitigation measures
		on the adjacent building structures.			the building structures. This will enable the Contractor to establish if cracks have occurred due to construction/ compaction works or not and pay compensation or repair the affected buildings.
4.	Km 9+600 LHS	Excavation of road bed and storm water drainages is likely to result into damage of tombs and other underground archaeological artefacts	Risk of damaging the tombs and archaeological properties	ESS8: Cultural Heritage	▪ Before commencement of construction works, the Contractor shall confirm and ensure that there is no any grave found within road construction site. ▪ In case there is identified grave within construction corridor salvaging shall be done as per country Grave Removal Act No. 9 (1969) ▪ Salvaging of the archaeological materials and chance finding shall be executed by observing World Bank's ESS8 (Cultural Heritage) and the country Antiquities Act No. 10 (1964), as amended by the Act No. 22 of 1979.
5.	The entire road length	Excavation of road bed and storm water drainages is likely to result into severance of community access to and from their residence, hence the need for installation of culverts and/or provision of	Severance of community access to and from their residences/business premises.	Transportation	▪ Installation of culverts and/or provision of concrete slabs over the storm water drainages at important community access. ▪ Construction of covered storm water drains at strategic locations where there is schools,

SN	Road Section	Project Related Activities	Potential Risks/Impacts	Affected Component	Mitigation measures
		concrete slabs over the storm water drainages.			religious buildings and health facility (i.e., Km 0+000, 2+000, 2+120, 6+700 and 7+700
6.	The entire road length	Excavation of road bed and roadside storm water drainages will result into accumulation of soil materials, hence resulting into loss of aesthetic value of the surrounding environment.	Loss of aesthetic value of the surrounding environment due to accumulation of excavated soil materials.	Terrestrial Environment	▪ The impact will be minimized by immediate removal and transportation to the municipal dumping site. However, some useful soil materials will be properly stockpiled for landscaping purpose.
7	Km 7+700	Accidental spillage of oils and deliberate washing of construction equipment may result into surface water pollution for an existing seasonal stream	Surface water pollution	Water Resources	▪ The Contractor shall use drip trays for spillage containment ▪ Prohibition of washing construction equipment at site and within water sources
8.	The entire road length	Trespassing by unauthorized persons into the construction site is likely to result into construction related risk of accidents.	Creation of construction related risk of accidents.	Public Health and Safety	▪ Precautions will be taken during construction through installation of barricades and safety nets to prevent people from entering the construction site. ▪ Installation of safety nets and visible tapes around the excavated trenches/pits along the road section to minimize risk of people falling into open trenches/pits.
9.	The entire road length	Relocation of public service infrastructure /utilities before commencement of the construction works.	Disruption of social and economic activities.	Community and Public Service Infrastructure/Utilities	▪ Contractor will be required to make public announcement through appropriate news media in collaboration with infrastructure/utility company on the possible disruption of public

SN	Road Section	Project Related Activities	Potential Risks/Impacts	Affected Component	Mitigation measures
					infrastructure/ utility services before relocation works. Contractor will ensure immediate restoration of affected public infrastructure/ utilities within 24 hours.
10	The entire road length	Employment of workers	Increased risk for transmission of HIV/AIDS and STIs due to social interaction between the construction workers and local community members.	Public Health and Safety	Engagement of Service Provider in undertaking of HIV/AIDS and STIs Prevention and Control Program
11	The entire road length	Handling / operation of hazardous construction materials/equipment	Creation of occupational health and safety risks due to.	Public Health and Safety	- The Contractor shall restrict operation of heavy construction equipment to qualified and experienced workers - The Contractor shall conduct mandatory HSE induction trainings and drills to all workers - Provision of appropriate and adequate PPE to all workers
12	The entire road length	Employment of workers	Increased risk of COVID-19 transmission due to influx of people into the construction sites.	Public Health and Safety	- The Contractor shall undertake daily body temperature checking of workforce before commencement of any work - Excusing identifies sick persons from job for at least 14 days - Encourage and promote hand washing with soap or use of sanitizer - The Contractor shall provide respiratory masks (N95) to all

SN	Road Section	Project Related Activities	Potential Risks/Impacts	Affected Component	Mitigation measures
					workers in case of COVID-19 epidemic
13	The entire road length	Employment of workers	Risk of occurrence of GBV/SEA and SH cases.	Public Health and Safety	▪ Engagement of Service Provider in undertaking of GBV/SEA and SH Prevention and Response Action Program ▪ The Contractor shall prepare Code of Ethical Conduct (CEC) and cause every employee to sign and adhere to. The CEC shall address issues for GBV/SEA and SH prevention.
14	The entire road length	Operation of construction equipment and workers anthropogenic activities	Generation of hazardous and non-hazardous waste	Terrestrial Environment	▪ The hazardous waste shall be separated from non-hazardous waste. ▪ There shall be a bunded impervious surface for storage of each type of hazardous waste including waste oils, used batteries, sharp objects, broken glasses, scrap metals, unwanted chemicals and contaminated soil. ▪ The Contractor shall engage registered hazardous waste company for removal and transportation of generated hazardous waste to the authorized recycling plants or disposal facilities. ▪ Non-hazardous liquid waste shall be handled in mobile toilets to be supplied at site by Contractor.

SN	Road Section	Project Related Activities	Potential Risks/Impacts	Affected Component	Mitigation measures
					▪ Non-hazardous solid waste shall be handled onsite temporarily in separate waste bins for papers, plastics and garbage whereas plastics and papers shall be sent to registered recycling companies. ▪ Reuse of non-hazardous waste, e.g., plastics as much as possible ▪ All unwanted non-hazardous waste that found not suitable for reuse and recycling shall be collected and transported by a waste dealer to authorized municipal dumpsite for final disposal. ▪
15	Km 0+000 to Km 2+250	Expansion of road construction corridor	Demolition of structures and loss of properties	Current Land and Resource Use	▪ Paying compensation to the affected parties.
16	The entire road length	Closure of the road section to allow easy progressing of construction works	Disruption of traffic flow along the proposed road	Transportation	▪ The Contractor shall prepare and implement traffic management plan to ensure smooth traffic flow. ▪ Engagement of Service Provider in undertaking of Road Safety Awareness and Training to the Public

(b) Package 2: Goba Wakorea and Hondogo Shija Roads

SN	Sub-project Road	Project Related Activities	Potential Risks/ Impacts	Affected Component	Mitigation measures
1.	Goba-Wakorea and Hondogo Shija roads at the entire length	Movement of construction equipment and vehicles along the construction roads and/or diversion roads will result into increased air pollution due to dust emission during dry seasons.	Creation of air pollution due to dust emission along the construction roads and/or diversion roads.	Atmospheric Environment	The impact will be mitigated through application of water along the construction roads and/or diversion roads.
2.	Goba-Wakorea at the entire length	Operation of mobile construction equipment and heavy trucks along the road sections will result into creation of noise nuisance.	Creation of noise nuisance to the adjacent sensitive receptors.	Acoustic Environment	- Contractor will be required to limit construction works to day time (06:00 am to 18:00 pm). - Presence of Peasant Nursery School (Km 0+400 LHS), Goba Mpakani Nursery School (Km 5+100 RHS), Goba Mpakani Primary School (Km 5+400 LHS) and Goba Mpakani Secondary School (5+400 RHS) close to Goba-Wakorea Road will trigger the need for installation of noise abatement structures to minimize noise impact on the adjacent sensitive receptors during construction. - Solid block boundary fences shall be constructed to Goba Mpakani Nursery School (Km 5+100 RHS), Goba Mpakani Primary School (Km 5+400 LHS) and Goba Mpakani Secondary School (5+400 RHS)
3.	Hondogo Shija Road at the entire length	Operation of mobile construction equipment and heavy trucks along the road sections will result into creation of noise nuisance.	Creation of noise nuisance to the adjacent sensitive receptors.	Acoustic Environment	- Contractor will be required to limit construction works to day time (06:00 am to 18:00 pm). - Presence of Ezanuel Pre-and-Primary School (Km 0+300 LHS), UB Nursery School (Km 2+000 LHS), Pisho Education Center (Km 2+100 RHS) and

SN	Sub-project Road	Project Related Activities	Potential Risks/ Impacts	Affected Component	Mitigation measures
					Kibweheri Secondary School (3+000 LHS) close to Hondogo Shija Road will trigger the need for installation of noise abatement structures to minimize noise impact on the adjacent sensitive receptors during construction. ▪ Solid block boundary fence shall be constructed to Kibweheri Secondary School
4.	Goba-Wakorea and Hondogo Shija roads at the entire length	Excavation of road bed, borrow pits and storm water drainages is likely to result into damage of underground archaeological artefacts	Risk of damaging the tombs and archaeological properties	ESS8: Cultural Heritage	▪ Before commencement of construction works, the Contractor shall confirm and ensure that there is no any grave found within road construction site. ▪ In case there is identified grave within construction corridor salvaging shall be done as per country Grave Removal Act No. 9 (1969) ▪ Salvaging of the archaeological materials and chance finding shall be executed by observing World Bank's ESS8 (Cultural Heritage) and the country Antiquities Act No. 10 (1964), as amended by the Act No. 22 of 1979.
5.	Goba-Wakorea and Hondogo Shija roads at the entire length	Excavation of road bed will be followed by back-filling with gravel/ soil materials and compaction works, hence resulting into vibration effects on the adjacent building structures.	Creation of vibration effects on the adjacent building structures	Acoustic Environment	▪ Before commencement of construction works the Contractor will take inventory of cracks on the adjacent buildings in collaboration with owners of the building structures. This will enable the Contractor to establish if cracks have occurred due to construction/ compaction works or not and pay

SN	Sub-project Road	Project Related Activities	Potential Risks/ Impacts	Affected Component	Mitigation measures
					compensation or repair the affected buildings.
6.	Goba-Wakorea and Hondogo Shija roads at the entire length	Excavation of road bed and storm water drainages is likely to result into encountering of underground archaeological materials	Risk of damaging the tombs	ESS8: Cultural Heritage	- Before commencement of construction works, the Contractor shall confirm and ensure that there is no any grave found within road construction site. - In case there is identified grave within construction corridor salvaging shall be done as per Grave Removal Act No. 9 (1969)
7.	Goba-Wakorea Road at the entire length	Excavation of road bed and storm water drainages is likely to result into severance of community access to and from their residence, hence the need for installation of culverts and/or provision of concrete slabs over the storm water drainages.	Severance of community access to and from their residences/business premises.	Transportation	- Installation of culverts and/or provision of concrete slabs over the storm water drainages at important community access. - Construction of covered storm water drains at strategic locations where there is schools, religious buildings and busy business centers (i.e., Km 0+000, Km 0+400, Km 1+800, Km 2+600, Km 5+100 and Km 5+400)
8.	Hondogo Shija Road at the entire length	Excavation of road bed and storm water drainages is likely to result into severance of community access to and from their residence, hence the need for installation of culverts and/or provision of concrete slabs over the storm water drainages.	Severance of community access to and from their residences/business premises.	Transportation	- Installation of culverts and/or provision of concrete slabs over the storm water drainages at important community access. - Construction of covered storm water drains at strategic locations where there are schools, institutional and training centers (i.e., Km 0+000, Km 0+300, Km 2+000, Km 2+100, Km 2+970 and Km 3+000).
9.	Goba-Wakorea and Hondogo Shija roads at the entire length	Excavation of road bed and roadside storm water drainages will result into accumulation of soil materials, hence resulting into loss of aesthetic value	Loss of aesthetic value of the surrounding environment due to accumulation of excavated soil materials.	Terrestrial Environment	The impact will be minimized by immediate removal and transportation to the municipal dumping site. However, some useful soil materials will be properly stockpiled for landscaping purpose.

SN	Sub-project Road	Project Related Activities	Potential Risks/ Impacts	Affected Component	Mitigation measures
		of the surrounding environment.			
10.	Goba-Wakorea Road at Km 0+900, 4+900 and 7+300	Accidental spillage of oils and deliberate washing of construction equipment may result into surface water pollution for an existing seasonal stream	Surface water pollution	Water Resources	▪ The Contractor shall use drip trays for spillage containment ▪ Prohibition of washing construction equipment at site and within water sources
11.	Hondogo Shija at Km 3+400	Accidental spillage of oils and deliberate washing of construction equipment may result into surface water pollution for an existing seasonal stream	Surface water pollution	Water Resources	▪ The Contractor shall use drip trays for spillage containment ▪ Prohibition of washing construction equipment at site and within water sources
12.	Goba-Wakorea and Hondogo Shija roads at the entire length	Relocation of public service infrastructure /utilities before commencement of the construction works.	Disruption of social and economic activities.	Community and Public Service Infrastructure/Utilities	▪ Contractor will be required to make public announcement through appropriate news media in collaboration with infrastructure/utility company on the possible disruption of public infrastructure/ utility services before relocation works. ▪ Contractor will ensure immediate restoration of affected public infrastructure/ utilities within 24 hours.
13.	Goba-Wakorea and Hondogo Shija roads at the entire length	Employment of workers	Increased risk for transmission of HIV/AIDS and STIs due to social interaction between the construction workers and local community members.	Public Health and Safety	▪ Engagement of Service Provider in undertaking of HIV/AIDS and STIs Prevention and Control Program
14.	Goba-Wakorea and Hondogo Shija roads at the entire length	Handling / operation of hazardous construction materials/equipment	Creation of occupational health and safety risks due to.	Public Health and Safety	▪ The Contractor shall restrict operation of heavy construction equipment to qualified and experienced workers ▪ The Contractor shall conduct mandatory HSE induction trainings and drills to all workers

SN	Sub-project Road	Project Related Activities	Potential Risks/ Impacts	Affected Component	Mitigation measures
					Provision of appropriate and adequate PPE to all workers
15.	Goba-Wakorea and Hondogo Shija roads at the entire length	Employment of workers	Increased risk of COVID-19 transmission due to influx of people into the construction sites.	Public Health and Safety	- The Contractor shall undertake daily body temperature checking of workforce before commencement of any work - Excusing identifies sick persons from job for at least 14 days - Encourage and promote hand washing with soap or use of sanitizer - The Contractor shall provide respiratory masks (N95) to all workers in case of COVID-19 epidemic
16.	Goba-Wakorea and Hondogo Shija roads at the entire length	Employment of workers	Risk of occurrence of GBV/SEA and SH cases.	Public Health and Safety	- Engagement of Service Provider in undertaking of GBV/SEA and SH Prevention and Response Action Program - The Contractor shall prepare Code of Ethical Conduct (CEC) and cause every employee to sign and adhere to. The CEC shall address issues for GBV/SEA and SH prevention.
17.	Goba-Wakorea and Hondogo Shija roads at the entire length	Operation of construction equipment and workers anthropogenic activities	Generation of hazardous and non-hazardous waste	Terrestrial Environment	- The hazardous waste shall be separated from non-hazardous waste. - There shall be a bunded impervious surface for storage of each type of hazardous waste including waste oils, used batteries, sharp objects, broken glasses, scrap metals, unwanted chemicals and contaminated soil. - The Contractor shall engage registered hazardous waste company for removal and transportation of generated hazardous waste to the authorized recycling plants or disposal facilities.

SN	Sub-project Road	Project Related Activities	Potential Risks/ Impacts	Affected Component	Mitigation measures
					- Non-hazardous liquid waste shall be handled in mobile toilets to be supplied at site by Contractor. - Non-hazardous solid waste shall be handled onsite temporarily in separate waste bins for papers, plastics and garbage whereas plastics and papers shall be sent to registered recycling companies. - Reuse of non-hazardous waste, e.g., plastics as much as possible - All unwanted non-hazardous waste that found not suitable for reuse and recycling shall be collected and transported by a waste dealer to authorized municipal dumpsite for final disposal.
18	Goba-Wakorea and Hondogo Shija roads at narrow corridors	Expansion of road construction corridors	Demolition of structures and loss of properties	Current Land and Resource Use	Paying compensation to the affected parties.
19.	Goba-Wakorea and Hondogo Shija roads at the entire length	Closure of the road sections to allow easy progressing of construction works	Disruption of traffic flow along the roads	Transportation	- The Contractor shall prepare and implement traffic management plan to ensure smooth traffic flow. - Engagement of Service Provider in undertaking of Road Safety Awareness and Training to the Public

(c) Package 3: Posta Matembe, Sheikh Bofu, Msikitini, Sinza KKKT, Juma Ikangaa, Segesera and Ubungo NHC Roads

SN	Sub-project Roads	Project Related Activities	Potential Risks/ Impacts	Affected Component	Mitigation measures
1.	All roads at the entire length	Movement of construction equipment and vehicles along the construction roads and/or diversion roads will	Creation of air pollution due to dust emission along the construction roads and/or diversion roads.	Atmospheric Environment	The impact will be mitigated through application of water along the construction roads and/or diversion roads.

SN	Sub-project Roads	Project Related Activities	Potential Risks/ Impacts	Affected Component	Mitigation measures
		result into increased air pollution due to dust emission during dry seasons.			
2.	All roads at the entire length	Operation of mobile construction equipment and heavy trucks along the road sections will result into creation of noise nuisance.	Creation of noise nuisance to the adjacent sensitive receptors.	Acoustic Environment	Contractor will be required to limit construction works to day time (06:00 am to 18:00 pm).
3.	Posta Matembe Road	Operation of mobile construction equipment and heavy trucks along the road sections will result into creation of noise nuisance.	Creation of noise nuisance to the adjacent sensitive receptors.	Acoustic Environment	Presence of the Law School of Tanzania (Km 0+200 LHS) close to Posta Matembe Road will trigger the need for installation of noise abatement structures to minimize noise impact on the adjacent sensitive receptors during construction.
4.	Msikitini Road	Operation of mobile construction equipment and heavy trucks along the road sections will result into creation of noise nuisance.	Creation of noise nuisance to the adjacent sensitive receptors.	Acoustic Environment	Presence of Grace Pre & Primary School (Km 0+070 RHS) and Luqman Islamic Centre (Km 0+300 RHS) close to Msikitini Road will trigger the need for installation of noise abatement structures to minimize noise impact on the adjacent sensitive receptors during construction.
5.	Sinza KKKT Road	Operation of mobile construction equipment and heavy trucks along the road sections will result into creation of noise nuisance.	Creation of noise nuisance to the adjacent sensitive receptors.	Acoustic Environment	Presence of Sinza Tower Secondary School (Km 0+0120 RHS) close to Sinza KKKT Road will trigger the need for installation of noise abatement structures to minimize noise impact on the adjacent sensitive receptors during construction.
6.	Juma Ikangaa Road	Operation of mobile construction equipment and heavy trucks along the road	Creation of noise nuisance to the adjacent sensitive receptors.	Acoustic Environment	Presence of Happy Tot Day Care Nursery School (Km 0+700 RHS) close to Juma Ikangaa Road will trigger the

SN	Sub-project Roads	Project Related Activities	Potential Risks/ Impacts	Affected Component	Mitigation measures
		sections will result into creation of noise nuisance.			need for installation of noise abatement structures to minimize noise impact on the adjacent sensitive receptors during construction.
7.	Ubungo NHC Road				▪ Presence of Ubungo Secondary School (Km 0+000 RHS), Ubungo NHC Primary School (Km 0+050 RHS) and Second Home Nursery School (Km 0+270 LHS) close to Ubungo NHC Road will trigger the need for installation of noise abatement structures to minimize noise impact on the adjacent sensitive receptors during construction. ▪ Solid block boundary fences shall be constructed to Ubungo Secondary School (Km 0+000 RHS) and Ubungo NHC Primary School
8.	All roads at the entire length	Excavation of road bed will be followed by back-filling with gravel/ soil materials and compaction works, hence resulting into vibration effects on the adjacent building structures.	Creation of vibration effects on the adjacent building structures	Acoustic Environment	▪ Before commencement of construction works the Contractor will take inventory of cracks on the adjacent buildings in collaboration with owners of the building structures. This will enable the Contractor to establish if cracks have occurred due to construction/ compaction works or not and pay compensation or repair the affected buildings.
9.	All roads at the entire length	Excavation of road bed, storm water drainages and borrow pit areas is likely to result into encountering of underground archaeological materials	Risk of damaging the tombs	ESS8: Cultural Heritage	▪ Before commencement of construction works, the Contractor shall confirm and ensure that there is no any grave found within road construction site. ▪ In case there is identified grave within construction corridor salvaging shall be done as per

SN	Sub-project Roads	Project Related Activities	Potential Risks/ Impacts	Affected Component	Mitigation measures
					✓ The Antiquities Act No. 10 of 1964 and The Antiquities (Amendment) Act No. 22 of 1979. ✓ The Grave Removal Act No. 9 (1969)
10.	All roads at the entire length	Excavation of road bed and storm water drainages is likely to result into severance of community access to and from their residence, hence the need for installation of culverts and/or provision of concrete slabs over the storm water drainages.	Severance of community access to and from their residences/business premises.	Transportation	▪ Construction of covered storm water drains at the entire road sections
11.	All roads at the entire length	Excavation of road bed and roadside storm water drainages will result into accumulation of soil materials, hence resulting into loss of aesthetic value of the surrounding environment.	Loss of aesthetic value of the surrounding environment due to accumulation of excavated soil materials.	Terrestrial Environment	▪ The impact will be minimized by immediate removal and transportation to the authorized municipal dumping site (Pugu Kinyamwezi). However, some useful soil materials will be properly stockpiled for landscaping purpose.
12.	All roads at the entire length	Accidental spillage of oils from construction equipment may result into soil and surface water pollution	Soil and surface water pollution	Land and Water Resources	▪ The Contractor shall use drip trays for spillage containment ▪ The Contractor shall administer log book of equipment maintenance schedule
13.	All roads at the entire length	Relocation of public service infrastructure /utilities before commencement of the construction works.	Disruption of social and economic activities.	Community and Public Service Infrastructure/Utilities	▪ Contractor will be required to make public announcement through appropriate news media in collaboration with infrastructure/utility company on the possible disruption of public infrastructure/ utility services before relocation works.

SN	Sub-project Roads	Project Related Activities	Potential Risks/ Impacts	Affected Component	Mitigation measures
					Contractor will ensure immediate restoration of affected public infrastructure/ utilities within 24 hours.
14.	All roads at the entire length	Employment of workers	Increased risk for transmission of HIV/AIDS and STIs due to social interaction between the construction workers and local community members.	Public Health and Safety	Engagement of Service Provider in undertaking of HIV/AIDS and STIs Prevention and Control Program
15.	All roads at the entire length	Handling / operation of hazardous construction materials/equipment	Creation of occupational health and safety risks due to.	Public Health and Safety	- The Contractor shall restrict operation of heavy construction equipment to qualified and experienced workers - The Contractor shall conduct mandatory HSE induction trainings and drills to all workers - Provision of appropriate and adequate PPE to all workers
16.	All roads at the entire length	Employment of workers	Increased risk of COVID-19 transmission due to influx of people into the construction sites.	Public Health and Safety	- The Contractor shall undertake daily body temperature checking of workforce before commencement of any work - Excusing identifies sick persons from job for at least 14 days - Encourage and promote hand washing with soap or use of sanitizer - The Contractor shall provide respiratory masks (N95) to all workers in case of COVID-19 epidemic
17.	All roads at the entire length	Employment of workers	Risk of occurrence of GBV/SEA and SH cases.	Public Health and Safety	- Engagement of Service Provider in undertaking of GBV/SEA and SH Prevention and Response Action Program - The Contractor shall prepare Code of Ethical Conduct (CEC) and cause every employee to sign and adhere to. The CEC shall address issues for GBV/SEA and SH prevention.

SN	Sub-project Roads	Project Related Activities	Potential Risks/ Impacts	Affected Component	Mitigation measures
18.	All roads at the entire length	Operation of construction equipment and workers anthropogenic activities	Generation of hazardous and non-hazardous waste	Terrestrial Environment	▪ The hazardous waste shall be separated from non-hazardous waste. ▪ There shall be a bunded impervious surface for storage of each type of hazardous waste including waste oils, used batteries, sharp objects, broken glasses, scrap metals, unwanted chemicals and contaminated soil. ▪ The Contractor shall engage registered hazardous waste company for removal and transportation of generated hazardous waste to the authorized recycling plants or disposal facilities. ▪ Non-hazardous liquid waste shall be handled in mobile toilets to be supplied at site by Contractor. ▪ Non-hazardous solid waste shall be handled onsite temporarily in separate waste bins for papers, plastics and garbage whereas plastics and papers shall be sent to registered recycling companies. ▪ Reuse of non-hazardous waste, e.g., plastics as much as possible ▪ All unwanted non-hazardous waste that found not suitable for reuse and recycling shall be collected and transported by a waste dealer to authorised municipal dumpsite for final disposal.
19.	All roads at narrow corridors	Expansion of road construction corridors	Demolition of structures and loss of properties	Current Land and Resource Use	▪ Paying compensation to the affected parties.
20.	All roads at the entire length	Closure of the road sections to allow easy progressing of construction works	Disruption of traffic flow and public transportation	Transportation	▪ The Contractor shall prepare and implement traffic management plan to ensure smooth traffic flow.

SN	Sub-project Roads	Project Related Activities	Potential Risks/ Impacts	Affected Component	Mitigation measures
					Engagement of Service Provider in undertaking of Road Safety Awareness and Training to the Public

(d) Package 4: Tiptop, Midizini, Binti Kayenga, Namnani, Mbegani, Mikindani, Shule, Chimwaga and Lion Roads

SN	Sub-project Roads	Project Related Activities	Potential Risks/ Impacts	Affected Component	Mitigation measures
1.	Midizini Road	Acquisition of road construction corridor will result into dislocation of existing petty traders	Economic disturbance of petty traders and loss of livelihood	Labour and Economy	- Consultation with petty traders before commencement of construction works to looking for alternative locations of doing business - Ensuring that the alternative locations for relocated petty traders have improved facilities and infrastructures such as shades, water supply and toilets
2.	All roads at the entire length	Movement of construction equipment and vehicles along the construction roads and/or diversion roads will result into increased air pollution due to dust emission during dry seasons.	Creation of air pollution due to dust emission along the construction roads and/or diversion roads.	Atmospheric Environment	The impact will be mitigated through application of water along the construction roads and/or diversion roads.
3.	All roads at the entire length	Operation of mobile construction equipment and heavy trucks along the road sections will result into creation of noise nuisance.	Creation of noise nuisance to the adjacent sensitive receptors.	Acoustic Environment	Contractor will be required to limit construction works to day time (06:00 am to 18:00 pm).
4.	Midizini Road	Operation of mobile construction equipment and heavy trucks along the road sections will result into creation of noise nuisance.	Creation of noise nuisance to the adjacent sensitive receptors.	Acoustic Environment	Presence of the Al-Irishaad Islamic Centre (Km 0+150 LHS) Ekisha Day Care Nursery School (Km 0+230 LHS) close to Midizini Road will trigger the need for installation of noise abatement

SN	Sub-project Roads	Project Related Activities	Potential Risks/ Impacts	Affected Component	Mitigation measures
					structures to minimize noise impact on the adjacent sensitive receptors during construction.
5.	Binti Kayenga Road	Operation of mobile construction equipment and heavy trucks along the road sections will result into creation of noise nuisance.	Creation of noise nuisance to the adjacent sensitive receptors.	Acoustic Environment	▪ Presence of Makutano Health Centre (Km 0+000 RHS) close to Binti Kayenga Road will trigger the need for installation of noise abatement structures to minimize noise impact on the adjacent sensitive receptors during construction. ▪ Presence of Kawawa and Amani Primary Schools (Km 1+000 LHS) close to Binti Kayenga Road will trigger the need for installation of noise abatement structures to minimize noise impact on the adjacent sensitive receptors during construction.
6.	Namnani Road	Operation of mobile construction equipment and heavy trucks along the road sections will result into creation of noise nuisance.	Creation of noise nuisance to the adjacent sensitive receptors.	Acoustic Environment	▪ Presence of Ijango Zaidia Orphanage Centre (Km 0+200 LHS) close to Namnani Road will trigger the need for installation of noise abatement structures to minimize noise impact on the adjacent sensitive receptors during construction.
7.	Mikindani Road	Operation of mobile construction equipment and heavy trucks along the road sections will result into creation of noise nuisance.	Creation of noise nuisance to the adjacent sensitive receptors.	Acoustic Environment	▪ Presence of Sinza Primary School (Km 0+120 LHS) close to Mikindani Road will trigger the need for installation of noise abatement structures to minimize noise impact on the adjacent sensitive receptors during construction. ▪ Presence of Reginald Mengi Primary School (Km 0+300 LHS) close to Mikindani Road will trigger the need for installation of noise abatement structures to minimize noise impact on the adjacent sensitive receptors during construction.

SN	Sub-project Roads	Project Related Activities	Potential Risks/ Impacts	Affected Component	Mitigation measures
					▪ Solid block boundary fences shall be constructed to Sinza Primary School (Km 0+120 LHS)
8.	Shule Road	Operation of mobile construction equipment and heavy trucks along the road sections will result into creation of noise nuisance.	Creation of noise nuisance to the adjacent sensitive receptors.	Acoustic Environment	▪ Presence of Sinza Primary School (Km 0+200 LHS) and Smile Montessori Child Centre (Km 0+100 RHS) close to Shule Road will trigger the need for installation of noise abatement structures to minimize noise impact on the adjacent sensitive receptors during construction. ▪ Solid block boundary fences shall be constructed to Sinza Primary School (Km 0+200 LHS)
9.	Lion Road	Operation of mobile construction equipment and heavy trucks along the road sections will result into creation of noise nuisance.	Creation of noise nuisance to the adjacent sensitive receptors.	Acoustic Environment	▪ Presence of Power Day Care Nursery School (Km 0+040 RHS) close to Lion Road will trigger the need for installation of noise abatement structures to minimize noise impact on the adjacent sensitive receptors during construction.
10.	All roads at the entire length	Excavation of road bed will be followed by back-filling with gravel/ soil materials and compaction works, hence resulting into vibration effects on the adjacent building structures.	Creation of vibration effects on the adjacent building structures	Acoustic Environment	▪ Before commencement of construction works the Contractor will take inventory of cracks on the adjacent buildings in collaboration with owners of the building structures. This will enable the Contractor to establish if cracks have occurred due to construction/ compaction works or not and pay compensation or repair the affected buildings.
11.	All roads at the entire length	Excavation of road bed, storm water drainages and borrow pit areas is likely to result into encountering of underground archaeological materials	Risk of damaging archaeological materials including the tombs	ESS8: Cultural Heritage	▪ Presence of grave yard (Km 0+280 RHS) close to Tiptop will trigger into implementation of Chance Finding procedure for cultural heritage materials ▪ Road Before commencement of construction works, the Contractor shall confirm and ensure that there is no any

SN	Sub-project Roads	Project Related Activities	Potential Risks/ Impacts	Affected Component	Mitigation measures
					grave found within road construction site. ▪ In case there is identified grave within construction corridor salvaging shall be done as per ✓ The Antiquities Act No. 10 of 1964 and The Antiquities (Amendment) Act No. 22 of 1979. ✓ The Grave Removal Act No. 9 (1969)
12.	All roads at the entire length	Excavation of road bed and storm water drainages is likely to result into severance of community access to and from their residence, hence the need for installation of culverts and/or provision of concrete slabs over the storm water drainages.	Severance of community access to and from their residences/business premises.	Transportation	▪ Construction of covered storm water drains at the entire road sections
13.	All roads at the entire length	Excavation of road bed and roadside storm water drainages will result into accumulation of soil materials, hence resulting into loss of aesthetic value of the surrounding environment.	Loss of aesthetic value of the surrounding environment due to accumulation of excavated soil materials.	Terrestrial Environment	▪ The impact will be minimized by immediate removal and transportation to the authorized municipal dumping site (Pugu Kinyamwezi). However, some useful soil materials will be properly stockpiled for landscaping purpose.
14.	Midizini	Accidental spillage of oils from construction equipment may result into surface water pollution	Surface water pollution	Land and Water Resources	▪ Presence of China River which crosses Midizini Road at Km 0+400 may result into surface water pollution due to accidental spillage of oil ▪ The Contractor shall use drip trays for spillage containment

SN	Sub-project Roads	Project Related Activities	Potential Risks/ Impacts	Affected Component	Mitigation measures
					▪ The Contractor shall administer log book of equipment maintenance schedule
15.	All roads at the entire length	Accidental spillage of oils from construction equipment may result into soil and surface water pollution	Soil and surface water pollution	Land and Water Resources	▪ The Contractor shall use drip trays for spillage containment ▪ The Contractor shall administer log book of equipment maintenance schedule
16.	All roads at the entire length	Relocation of public service infrastructure /utilities before commencement of the construction works.	Disruption of social and economic activities.	Community and Public Service Infrastructure/Utilities	▪ Contractor will be required to make public announcement through appropriate news media in collaboration with infrastructure/utility company on the possible disruption of public infrastructure/ utility services before relocation works. ▪ Contractor will ensure immediate restoration of affected public infrastructure/ utilities within 24 hours.
17.	All roads at the entire length	Employment of workers	Increased risk for transmission of HIV/AIDS and STIs due to social interaction between the construction workers and local community members.	Public Health and Safety	▪ Engagement of Service Provider in undertaking of HIV/AIDS and STIs Prevention and Control Program
18.	All roads at the entire length	Handling / operation of hazardous construction materials/equipment	Creation of occupational health and safety risks due to.	Public Health and Safety	▪ The Contractor shall restrict operation of heavy construction equipment to qualified and experienced workers ▪ The Contractor shall conduct mandatory HSE induction trainings and drills to all workers ▪ Provision of appropriate and adequate PPE to all workers
19.	All roads at the entire length	Employment of workers	Increased risk of COVID-19 transmission due to influx of people into the construction sites.	Public Health and Safety	▪ The Contractor shall undertake daily body temperature checking of workforce before commencement of any work

SN	Sub-project Roads	Project Related Activities	Potential Risks/ Impacts	Affected Component	Mitigation measures
					▪ Excusing identifies sick persons from job for at least 14 days ▪ Encourage and promote hand washing with soap or use of sanitizer ▪ The Contractor shall provide respiratory masks (N95) to all workers in case of COVID-19 epidemic
20.	All roads at the entire length	Employment of workers	Risk of occurrence of GBV/SEA and SH cases.	Public Health and Safety	▪ Engagement of Service Provider in undertaking of GBV/SEA and SH Prevention and Response Action Program ▪ The Contractor shall prepare Code of Ethical Conduct (CEC) and cause every employee to sign and adhere to. The CEC shall address issues for GBV/SEA and SH prevention.
21.	All roads at the entire length	Operation of construction equipment and workers anthropogenic activities	Generation of hazardous and non-hazardous waste	Terrestrial Environment	▪ The hazardous waste shall be separated from non-hazardous waste. ▪ There shall be a bunded impervious surface for storage of each type of hazardous waste including waste oils, used batteries, sharp objects, broken glasses, scrap metals, unwanted chemicals and contaminated soil. ▪ The Contractor shall engage registered hazardous waste company for removal and transportation of generated hazardous waste to the authorized recycling plants or disposal facilities. ▪ Non-hazardous liquid waste shall be handled in mobile toilets to be supplied at site by Contractor. ▪ Non-hazardous solid waste shall be handled onsite temporarily in separate waste bins for papers, plastics and garbage whereas plastics and papers

SN	Sub-project Roads	Project Related Activities	Potential Risks/ Impacts	Affected Component	Mitigation measures
					shall be sent to registered recycling companies. ▪ Reuse of non-hazardous waste, e.g., plastics as much as possible ▪ All unwanted non-hazardous waste that found not suitable for reuse and recycling shall be collected and transported by a waste dealer to authorised municipal dumpsite for final disposal.
22.	Binti Kayenga, Namnani, Mbegani, Mikindani and Chimwaga roads at narrow corridors	Expansion of road construction corridors	Demolition of structures and loss of properties	Current Land and Resource Use	▪ Paying compensation to the affected parties.
23.	All roads at the entire length	Closure of the road sections to allow easy progressing of construction works	Disruption of traffic flow and public transportation	Transportation	▪ The Contractor shall prepare and implement traffic management plan to ensure smooth traffic flow. ▪ Engagement of Service Provider in undertaking of Road Safety Awareness and Training to the Public

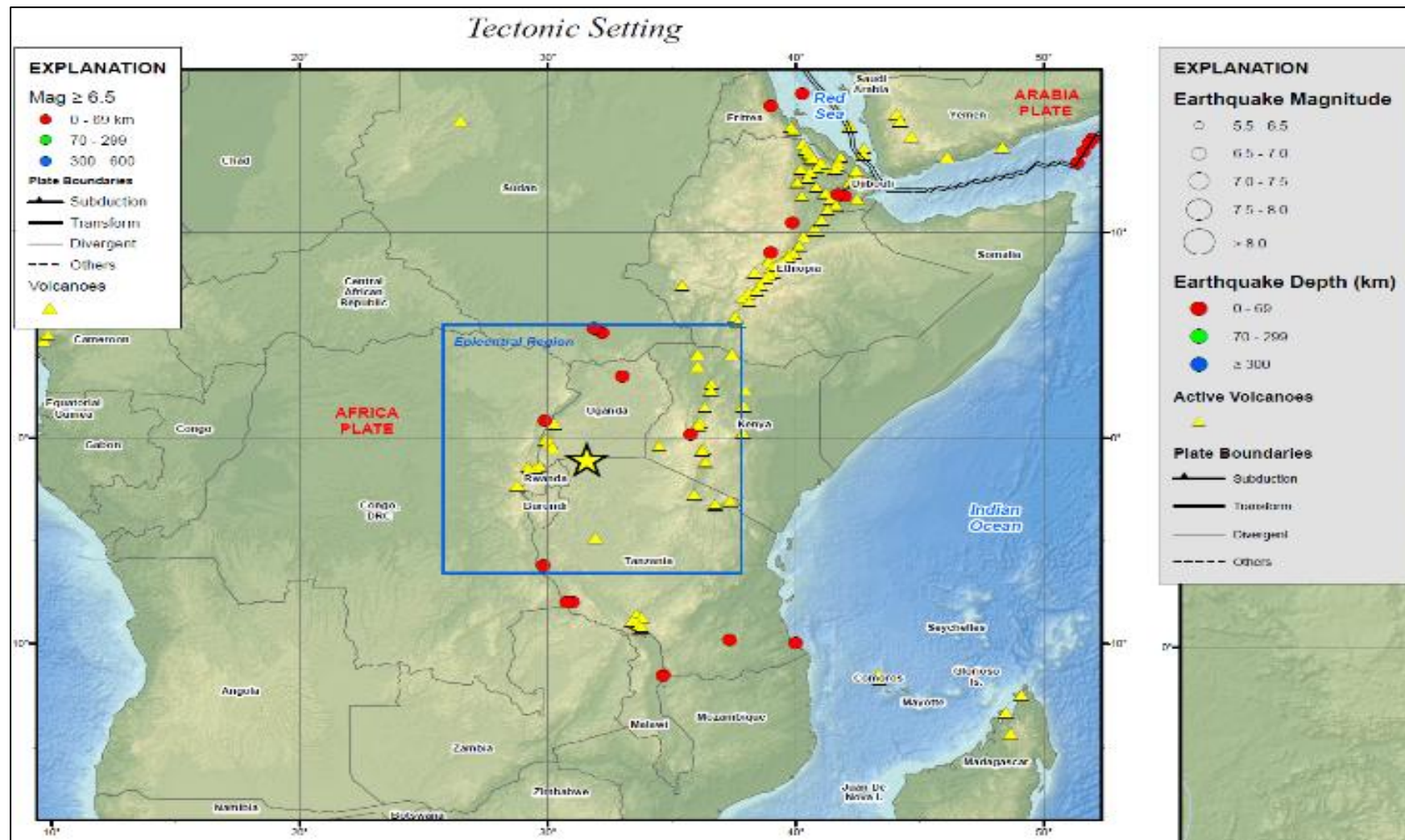
APPENDIX 8: ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT MATRIX

Atmospheric Environment	Improvement of road sections into bitumen standard.	Reduced dust emission.	1	-2	2	3	3	-2	8	-16	Low	-2	-2	-2	0	0
	Excavation and stockpiling of soil materials and dusty construction materials.	Increased air pollution due to dust emission along the construction roads.	1	-2	2	3	3	-2	8	-16	Low	-2	-2	-2	0	0
Acoustic environment	Operation of construction equipment / machinery	Creation of noise nuisance and vibration effects to the adjacent local residents.	2	-2	2	3	3	-4	8	-32	Medium	-3	0	-3	0	0
	Transportation of construction materials from borrow pits /quarry pits.	Creation of noise nuisance and vibration effects to adjacent local residents.	2	-2	2	3	3	-4	8	-32	Medium	-3	0	-3	0	0
Terrestrial environment	Water flow from roadside storm drainages.	Creation of landscape degradation	2	-1	1	1	3	-2	5	-10	Low	-3	0	-3	0	0
	Accumulation of excavated soil materials and construction solid wastes.	Loss of aesthetic value of the surrounding environment.	1	-2	2	2	3	-2	7	-14	Low	-3	0	-3	0	0
Public Health, Safety and Security	Social interaction between construction workers and local community	Increased transmission of HIV/AIDS and STIs	3	-2	2	3	3	-6	8	-48	High	-3	0	-3	0	0
	Handling and operation of hazardous construction materials and equipment.	Creation of occupational health and safety risks.	1	-2	2	3	2	-2	7	-14	Low	-2	0	-2	0	0

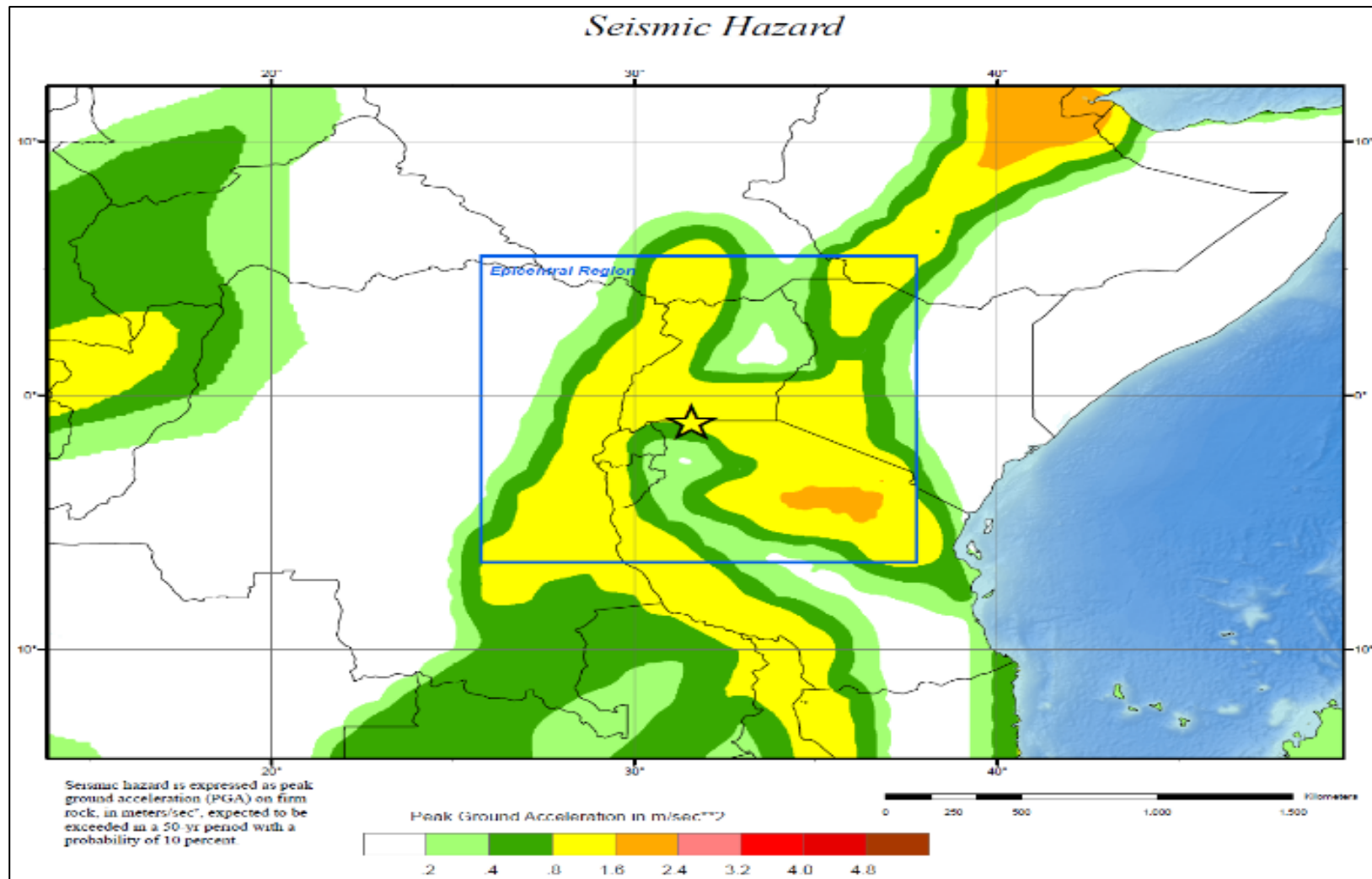
	Handling and operation of hazardous construction materials and equipment.	Creation of occupational health and safety risks.	1	-2	2	3	2	-2	7	-14	Low	-2	0	-2	0	0
	Increased influx of people into the project sites.	Increased risk of Covid-19 transmission.	1	-2	2	3	2	-2	7	-14	Low	-2	0	-2	0	0
	Operation of mobile construction equipment / machinery	Creation of construction related risk of accidents	1	-2	2	3	3	-2	8	-16	Low	-2	0	-2	0	0
	Excavation of road bed and trenches for road side storm water drainages.	Creation of safety risk to pedestrians and other road users.	2	-2	2	3	3	-4	8	-32	Medium	-2	0	-2	0	0
	Handling/operation of dusty construction materials/equipment	Creation of occupational health and safety risks.	1	-2	2	3	3	-2	8	-16	Low	-2	0	-2	0	0
	Movement of heavy trucks to and from construction site.	Increased risk of traffic accidents.	1	-2	2	3	3	-2	8	-16	Low	-2	0	-2	0	0
Labour and Economy	Recruitment of construction workers	Increased employment opportunities for local people.	3	3	2	1	2	+9	5	+45	High	+4	0	+4	0	0
	Social interaction among the construction workers and local community members.	Risk of emergence of GBV/SEA , SH and Child Labour due to influx of people into the project sites.	3	-2	2	1	2	-6	5	-30	Medium	-3	0	-3	0	0
	Increased demand for food and other items due to presence of construction workers	Increased income generation opportunities for local people.	3	+2	3	1	3	6	7	+42	High	-1	0	-1	0	0
	Demobilization or closure of the project	Loss of temporary employment opportunities for local people.	3	-3	3	1	1	-9	5	-45	High	+4	0	0	+4	0

	Increased demand for sanitary and solid wastes disposal services.	Increased pressure on existing sanitary and solid wastes disposal facilities.	2	-2	2	2	2	-4	6	-24	Medium	-3	-3	-3	0	0	
	Relocation of existing infrastructures and utilities.	Disruption of public infrastructure and utility services.	3	-2	2	1	1	-6	4	-24	Medium	-3	-3	-3	0	0	
Transportation	Excavation of road bed and road side storm water drainages.	Severance of access by local residents to and from their houses / business.	3	-2	2	2	2	-6	6	-36	High	-2	0	-2	0	0	
	Construction of road sections and associated drainage structures.	Disruption of traffic flow and public transportation.	3	-2	2	2	2	-6	6	-36	High	-2	0	-2	0	0	
Current Land and Resources Use	Land acquisition for due to widening of road sections.	Loss of land and other properties by local residents.	1	-1	3	3	2	-1	8	-8	Very Low	-1	-1	0	0	0	
	Storm water flow from roadside stormwater drainages	Destruction of adjacent land use and properties.	2	-2	3	3	2	-4	8	-32	Medium	-1	-1	0	0	0	
Historical and Cultural Heritage Resources	Land excavation during preparation of DMDP 2 Road construction sites.	Destruction of archaeological artefacts	1	-1	3	1	2	-1	6	-6	Very Low	-1	0	-1	0	0	

APPENDIX 9: TECTONIC AND SEISMIC HAZARD MAP



Source: U.S. Department of the Interior / U.S. Geological Survey.
<https://reliefweb.int/sites/reliefweb.int/files/resources/20160910.pdf>



Source: U.S. Department of the Interior / U.S. Geological Survey.
<https://reliefweb.int/sites/reliefweb.int/files/resources/20160910.pdf>

APPENDIX 10: A SAMPLE OF GRIEVANCES REGISTRATION FORM**Grievance Registration Form**

Name:			Please do not use my ☐ name when talking about this concern in the public
Company: (If applicable)			
Date:		Time:	
Preferred Contact method:	☐ Telephone ☐ E-mail ☐ Mail Please provide contact detail: _____		
Supporting documents attached?	☐ Yes ☐ No		
Please provide details of your grievance			
What outcome are you seeking?			
Additional Information			
Claimant Signature:		Date:	
WEO Signature:		Date:	
For Office Use only			
Stakeholder Reference:	NGO	Government - Central	
	Neighbour - Fisherman	Government - Local	
	Neighbour - Fisherman	Contractor	
	Neighbour – Business man/W.man	Consultant	
	Neighbour - Farmer		
	Other		
	Comments:		

APPENDIX 11: CONTRACTOR'S CODE OF ETHICAL CONDUCT

1. INTRODUCTION

As employees, we all make decisions every day that affect one another, our community around and the organization. The actions we choose to take as individual employees reflect on us all and influence how others perceive our organization. Each of us, through our actions and decisions has the power to improve our productivity.

2. LEGAL FRAMEWORK

This Code of Ethical Conduct (CEC) is attuned to Part III (Employment Standards), Section 14 (Contracts with employees) of the Tanzanian Employment and Labour Relations Act No. 6 of 2004.

3. WHAT IS A CODE OF ETHICAL CONDUCT?

A Code of Ethical Conduct (CEC) is a set of guidelines intended to support ethical behaviour and decision making for all employees of CONTRACTOR. The term 'employees' here include all management, staff, volunteers, students, contractors, and others who provide services for the organization.

In this booklet you will read about the values, policies, and behavioural expectations that, together, comprise the Contractor's CEC. That covers in the working area and outside the working surrounding.

Building and maintaining trusted relationships with employees and the community is fundamental to our work, our reputation, and our success. Managing in an ethical way, guided by a sense of social responsibility, is not just a matter of good practice but is the right thing to do.

We are often faced with challenges that require difficult decisions. This CEC explains the behaviour that is expected of all employees at all levels in the organization.

Each employee is responsible to become familiar with this CEC, comply with ethical and legal standards of conduct, and to lead by example in the workplace and outside the working area.

Implementation of this CEC will be done through inductions to new employees, and regular trainings, seminars, workshops etc. to current employees. This CEC will be signed by all employees and shall be part of their contracts.

4. COMPLIANCE WITH CEC AT WORKPLACE

Employees are expected to comply with this CEC and the policies it represents. Violations of the Code of Conduct and/or policies may result in disciplinary action up to and including dismissal.

a. What Employees Can Expect from CONTRACTOR

CONTRACTOR commits to providing all employees with:

- i. A safe, healthy, respectful, and productive work environment.
- ii. An environment free from discrimination and harassment that promotes and protects
- iii. Equal opportunities
- iv. Fair and equitable treatment
- v. Respect for diversity; and
- vi. Protection from retaliation after good faith disclosures of improper activities.

b. CONTRACTOR Expectations from All Employees

CONTRACTOR expects all employees to:

- i. Act with integrity at all times;
- ii. Be present and productive during working hours;
- iii. Operate within the law;
- iv. Follow the CEC and related policies;
- v. Adhere to professional practice guidelines and practice within professional boundaries;
- vi. Take personal accountability for their own workplace actions;
- vii. Demonstrate a sense of respect, loyalty, good faith and responsibility toward one another, and the community around the working place.
- viii. Keep all organization information confidential;
- ix. Exercise sound judgment in decision making; and x. Report violations of the CEC and related policies.

5. COMPLIANCE WITH CEC OUTSIDE WORKPLACE

Just like employees are vigilant about workplace they should also be vigilant about their overall conduct outside the workplace. Inappropriate conduct can harm an employer regardless of where it occurs. So, while outside the working place workers should behave well not limited to the following:

- i. Behaving in a manner that is appropriate when interacting with general public, and other staff;
- ii. Acting at all times in such a manner to represent CONTRACTOR in the community in a positive manner;
- iii. Avoid all acts of sexual harassment to the people around the community; and
- iv. Avoid conduct which is not criminal but place others in harm way.

6. DOs AND DON'Ts AS CONTRACTOR EMPLOYEE

The matrix below specifies what workers should do and what they should not do as CONTRACTOR employees.

Workers Should	Workers Should Not
Report to and leave work according to specified work hours.	Report late for work on a regular or habitual basis, leaving the work place early and without following established protocol.
Provide a doctor's note for sick leave as required.	Take extended lunch or breaks.
Submit time-off requests in Leave Management CONTRACTOR for all leaves in an accurate and timely manner.	Be absent from work without authorization or justifiable reason.
Comply with the directions of the employer.	Use lieu time or vacation or other approved credits to address personal issues.
Perform tasks as directed by the supervisor and within acceptable standards.	Work in Substandard, incompetent and/or careless work performance that is within the control of the employee.
Be in their working cloths i.e., Personal Protective Equipment (PPE) during all working hours.	Spend time on non-work-related matters (i.e., personal phone calls, chatting with co-workers about non- work-related matters etc.).
Care and maintain the property appropriately and use of CONTRACTOR property such as equipment, (computers, copiers, vehicles) properly.	Conduct the work of the union on agency time, except as provided in the Collective Bargaining Agreement (CBA). Failing to seek clarification or failing to access agency

Workers Should	Workers Should Not
	guidelines when information or guidance is needed.
Co-operate with co-workers in work-related activities.	Refuse to perform work assignments.
Perform work according to the job requirements, and in a competent, careful, and productive manner, in compliance with CONTRACTOR policies, procedures and practices and policies.	Show dishonesty; deception; theft; falsification of records including that contained in a resume or job application; fraudulent conduct and any other illegal behaviour (i.e., contravention of the Criminal Code).
Meet professional regulations and standards for regulated professionals.	Use profane language, threatening or abusive language to co-workers, visitors, sub-contractors, and local people
Maintain professional credentials and/or licenses as required for position and providing proof to the employer.	Use physical abuse, violence, threats of violence, bullying or intimidating behaviour aimed at or involving use alcohol or illegal drugs while in performance of their duties.
Service equipment as required, avoid deliberate damage to CONTRACTOR property and/or unauthorized use of CONTRACTOR equipment, supplies, resources, or property.	

7. PENALTIES FOR VIOLATION OF CEC

Violation of the CEC will lead to serious disciplinary measures including termination from the working place. The matrix below specifies the penalties for violating CEC items i.e. what they should not do as CONTRACTOR employees.

Act of violation of CEC	Penalty
1. Report late for work on a regular or habitual basis, leaving the work place early and without following established protocol.	Verbal warning or 1 st written warning letter
2. Take extended lunch or breaks.	Verbal warning or 1 st written
3. Be absence from work without authorization or justifiable reason.	First and second written warning
4. Use lieu time or vacation or other approved credits to address personal issues.	First and second written warning
5. Work in Substandard, incompetent and/or careless work performance that is within the control of the employee.	First and second written warning
6. Spend time on non-work-related matters (i.e., personal phone calls, chatting with co- workers about non-work-related matters etc.).	Verbal warning or 1 st written warning letter
7. Conduct the work of the union on agency time, except as provided in the Collective Bargaining Agreement (CBA). Failing to seek clarification or failing to access agency guidelines when information or guidance is needed.	First and second written warning
8. Refuse to perform work assignments.	Third warning followed by disciplinary hearing

Act of violation of CEC	Penalty
9. Show dishonesty; deception; theft; falsification of records including that contained in a resume or job application; fraudulent conduct and any other illegal behaviour (i.e., contravention of the Criminal Code).	Dismissal but an employee will be given the right to be heard Reported to police station
10. Use profane language, threatening or abusive language to co-workers, visitors, sub-contractors, and local people.	Call for disciplinary hearing for judging the case
11. Use physical abuse, violence, threats of violence, bullying or intimidating behaviour aimed at or involving use alcohol or illegal drugs while in performance of their duties.	☐ Dismissal but an employee will be given the right to be heard ☐ Reported to police station

8. ACCEPTANCE OF CEC BY EMPLOYEE

I....., employed by (CONTRACTOR), have read and clearly understood this Code of Ethical Conduct (CEC) (i.e., the Dos and Don'ts as CONTRACTOR employee) and in case I violate this CEC appropriate disciplinary actions shall be taken as prescribed in this CEC.

Name of employee.....

Position.....

Signature.....

Date.....

APPENDIX 12: CODE OF CONDUCT FOR ESGH&S AND GENDER-BASED VIOLENCE

I, _____, acknowledge that adhering to environmental, social, health and safety (ESHS) standards, following the project's occupational health and safety (OHS) requirements, and preventing Gender Based Violence (GBV) is important.

The Company considers that failure to follow ESHS and OHS standards, or to partake in activities constituting GBV—be it on the worksite, the worksite surroundings, at workers' camps, or the surrounding communities—constitute acts of gross misconduct and are therefore grounds for sanctions, penalties, or potential termination of employment. Prosecution by the Police of those who commit GBV may be pursued if appropriate.

I agree that while working on the project I will:

1. Consent to Police background check.
2. Attend and actively partake in training courses related to ESHS, OHS, and GBV as requested by my employer.
3. Will wear my protective equipment (PPE) at all times when at the worksite or engaged in project-related activities.
4. Take all practical steps to implement the contractor's environmental and social management plan (C-ESMP).
5. Implement the OHS Management Plan.
6. Adhere to a zero-alcohol policy during work activities, and refrain from the use of narcotics or other substances which can impair faculties at all times.
7. Treat women, children (persons under the age of 18), and men with respect regardless of race, colour, language, religion, political or another opinion, national, ethnic, or social origin, property, disability, birth, or another status.
8. Not use language or behaviour towards women, children, or men that are inappropriate, harassing, abusive, sexually provocative, demeaning, or culturally inappropriate.
9. Not sexually exploit or abuse project beneficiaries and members of the surrounding communities.
10. Not engage in sexual harassment of work personnel and staff—for instance, making unwelcome sexual advances, requests for sexual favours, and other verbal or physical conduct of a sexual nature is prohibited. E.g., looking somebody up and down; kissing, howling or smacking sounds; hanging around somebody; whistling and catcalls; in some instances, giving personal gifts.
11. Not engage in sexual favours—for instance, making promises of favourable treatment (e.g., promotion), threats of unfavourable treatment (e.g., loss of job) or payments in kind or cash, dependent on sexual acts—or other forms of humiliating, degrading or exploitative behaviour.
12. Not use prostitution in any form at any time.
13. Not participate in sexual contact or activity with children under the age of 18—including grooming, or contact through digital media. Mistaken belief regarding the age of a child is not a defence. Consent from the child is also not a defence or excuse.
14. Unless there is full consent by all parties involved, I will not have sexual interactions with members of the surrounding communities. This includes relationships involving the withholding or promise of actual provision of a benefit (monetary or non-monetary) to community members in exchange for sex (including prostitution). Such sexual activity is considered "non-consensual" within the scope of this Code.
15. Consider reporting through the GRM or to my manager any suspected or actual GBV by a fellow worker, whether employed by my company or not or any breaches of this Code of Conduct.

Concerning children under the age of 18:

16. Bring to the attention of my manager the presence of any children on the construction site or engaged in hazardous activities.
17. Wherever possible, ensure that another adult is present when working in the proximity of children.

18. Not invite unaccompanied children unrelated to my family into my home, unless they are at immediate risk of injury or in physical danger.
19. Not use any computers, mobile phones, video, and digital cameras or any other medium to exploit or harass children or to access child pornography (see also "Use of children's images for work-related purposes" below).
20. Refrain from physical punishment or discipline of children.
21. Refrain from hiring children for domestic or other labour below the minimum age of 14 unless national law specifies a higher age, or which places them at a significant risk of injury.
22. Comply with all relevant local legislation, including labour laws concerning child labour and the World Bank's ESS2 which among others outlaws child labour.
23. Take appropriate caution when photographing or filming children (See Annex 2 for details).

Use of children's images for work-related purposes

When photographing or filming a child for work-related purposes, I must:

24. Before photographing or filming a child, assess and endeavour to comply with local traditions or restrictions for reproducing personal images.
25. Before photographing or filming a child, obtain informed consent from the child and a parent or guardian of the child. As part of this, I must explain how the photograph or film will be used.
26. Ensure photographs, films, videos, and DVDs present children in a dignified and respectful manner and not in a vulnerable or submissive manner. Children should be adequately clothed and not in poses that could be seen as sexually suggestive.
27. Ensure images are honest representations of the context and the facts.
28. Ensure file labels do not reveal identifying information about a child when sending images electronically.

Sanctions

I understand that if I breach this Individual Code of Conduct, my employer will take disciplinary action which could include:

1. Informal warning.
2. Formal warning.
3. Additional Training.
4. Loss of up to one week's salary.
5. Suspension of employment (without payment of salary), for a minimum period of 1 month up to a maximum of 6 months.
6. Termination of employment.
7. Report to the Police if warranted.

I understand that it is my responsibility to ensure that the environmental, social, health, and safety standards are met. That I will adhere to the occupational health and safety management plan. That I will avoid actions or behaviours that could be construed as GBV. Any such actions will be a breach of this Individual Code of Conduct. I do hereby acknowledge that I have read the foregoing Individual Code of Conduct, do agree to comply with the standards contained therein, and understand my roles and responsibilities to prevent and respond to ESHS, OHS, and GBV issues. I understand that any action inconsistent with this Individual Code of Conduct or failure to act mandated by this Individual Code of Conduct may result in disciplinary action and may affect my ongoing employment.

Signature: _____
 Printed Name: _____
 Title: _____
 Date: _____

APPENDIX 13: ENVIRONMENTAL AND SOCIAL DEMOBILIZATION CHECKLIST

Note: Put a tick (✓) at appropriate place and always take photographs for illustration.

S/n	Description of Works	Yes	No	NA*	Comments	Target Completion Date
1.	Employment and Workers welfare					
1.1	Have all employees been paid their terminal benefits before retrenchment?					
1.2	Has the Contractor NSSF and WCF contributions for all employees before retrenchment?					
2.	Camp Sites and Office Facilities					
2.1	Has all camp site and office facilities been demolished or handed over to the relevant authorities?					
2.2	Has the all the bare areas been scarified and planted trees after demolition or removal of camp site or office buildings?					
3.	Solid Waste Management					
3.1	Has all construction and demolition solid wastes been removed?					
3.2	Has all hazardous wastes been removed (e.g. waste oils, used batteries, used tyres, scrap metals, etc)					
3.3	Has all excavated soil and spoil materials been removed?					
3.4	Has the temporary solid waste collection bay been dismantled and removed?					
4.	Soil Erosion and Sedimentation Control					
4.1	Has all excess construction materials been removed?					
4.2	Has all sediment control structures been removed?					
4.3	Has susceptible areas to erosion been adequately stabilized ?					
4.4	Have all stockpiles been removed or appropriately landscaped?					
4.5	Has all temporary storm water control system (e.g. drains, settling ponds, etc.) been removed?					

S/n	Description of Works	Yes	No	NA*	Comments	Target Completion Date
5.	Groundwater and Dewatering Control					
5.1	Has all dewatering equipment (pumps, hose pipes, etc.) been removed?					
5.2	Has all settlement tanks / water bowzers been removed?					
5.3	Has all temporary lagoons, settlement basins been removed and returned to its original state?					
5.4	Has all inert materials from lagoons been disposed of appropriately?					
5.5	Have all well casing been removed?					
5.6	Have all wells been adequately backfilled?					
5.7	Have all wells been capped with concrete (500 mm)?					
6.	Workshops/Garages, Vehicle Washing and Refueling Areas					
6.1	Have all vehicle maintenance, washing and refueling areas been scanned for soil decontamination?					
6.2	Has all contaminated soil been collected and appropriately disposed of?					
6.3	Has all contaminated water been removed from sumps, interceptors, etc?					
6.4	Has all concrete bunds and floor slabs been scanned for signs of contamination?					
6.5	Has all contaminated concrete (portion of floor slabs, bunds and refueling aprons) been removed as hazardous wastes?					
7.	Fuel and Chemical Storage Areas					
7.1	Has all chemical substances and PCLs been removed?					
7.2	Has chemical and bulk fuel storage areas been scanned for oil contamination?					
7.3	Has all contaminated soil been collected and appropriately disposed of?					
7.4	Have bulk fuel tanks been removed?					

S/n	Description of Works	Yes	No	NA*	Comments	Target Completion Date
7.5	Have concrete bunds been scanned for signs of contamination?					
7.6	Have all contaminated concrete (portions of floor slabs, bunds, and refueling apron been removed as hazardous wastes?					
8.	Sanitary and Wastewater Disposal Facilities					
8.1	Have all septic tanks from temporary facilities been emptied?					
8.2	Have all septic tanks been removed?					
8.3	Have all septic tanks drainage networks and inspection manholes been removed?					
8.5	Have all raw sewage discharge chambers or pit latrines been demolished and backfilled?					
9.	Landscape Management and Run-off Control					
9.1	Has the contractor planted grass on bare areas around the buildings?					
9.4	Has the contractor used pavement blocks instead of concrete on foot paths to promote infiltration and minimize run-off?					
10.	Borrow pits/Quarry Sites Rehabilitation					
10.1	Has all borrow pits been properly reshaped and backfilled with surrounding soil materials?					
10.2	Has all access roads to borrow pits been scarified and planted grass?					
10.2	Has the usable borrow pit for livestock water drinking been properly reshaped and handed over to local authority?					

Note: *NA = Not Applicable