

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



**ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT FOR THE PROPOSED
CONSTRUCTION OF URBAN INFRASTRUCTURE INVESTMENTS IN DAR ES SALAAM CITY -
PREPARATION OF DMDP PHASE II IN DAR ES SALAAM CITY COUNCIL (DCC)
PACKAGES 1 to 7 ROADS (66.41 KM)**

Tender No.: ME/022/2022/2023/HQ/C/06

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LIST OF ABBREVIATIONS AND ACRONYMS

BoQ	Bill of Quantity
BMP	Biodiversity management plan
BRT	Bus Rapid Transit
C&D	Construction & Demolition wastes
CBD	Central Business District
CCM	Chama Cha Mapinduzi
CDO	Community Development Officer
C-ESMP	Construction Environmental and Social Management Plan
CEWADAT	Conventional on elimination of all forms of discrimination against women
CHADEMA	Chama cha Demokrasia na Maendeleo
CRB	Contractors Registration Board
CSC	Construction Supervision Consultant
CSO	Civil society organisation
CSR	Community social responsibility
DART	Dar es Salaam Rapid Transit
DAs	Departments and Agencies
DAWASA	Dar-es-Salaam Water Supply and Sanitation Authority
DCC	Dar es Salaam City Council
DLAs	Dar es Salaam Local Authorities
DLP	Defect Liability Period
DMDP	Dar es Salaam Metropolitan Development Project
DoE	Director of Environment
DSM	Dar es Salaam
EAMGRS	Environmental Assessment and Management Guidelines for the Road Sector
EF	Emission Factors
EHS	Environmental Health and Safety
EHSGs	National Law and The General
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMA	Environmental Management Act
EMOs	Environment Management Officers
ERB	Engineering Registration Board
ESCP	Environmental and Social Commitment Plan
ESF	Environmental and Social Framework
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESS	Environmental and Social standards
EST	Environmental and Social Team
EWURA	Energy and Water Utilities Regulatory Authority
FGD	Focus Group Discussions
GBV	Gender-Based Violence
GHG	Greenhouse Gases
GIIP	Good International Industry Practice
GIS	Geographical Information System
GoT	Government of Tanzania
GPS	Global Positioning System
GRM	Grievance Redress Mechanism
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome
I&AP	Interested and Affected Parties
ICF	International Classification of Functioning
IEE	Initial Environmental Examination
IFC	International Finance Corporation
IPCC	Intergovernmental Panel on Climate Change
IUCN	International Union for Conservation of Nature

JNIA	Julius Nyerere International Airport
LAA	Local Assessment Area
LATRA	Land Transport Regulatory Authority
LC	Least Concern
LEA	Limited Environmental Analysis
LF	Load Factor
LGAs	Local Government Authorities
LMB	Labor Management Plan
MCs	Municipal Councils
MEO	Mtaa Executive Officer
MoID	Ministry of Infrastructure Development
MoW	Ministry of Work
NA	Not Available
NBS	National Bureau of Statistics
NEMC	National Environment Management Council
NEP	National Environmental Policy
NGOs	Non-Governmental Organizations
OSHA	Occupational Health and Safety
PAPs	Project Affected Persons
PCT	Project coordination Team
PCU	Passenger Car Unit
PDA	Project Development Area
PDO	Project Development Objective
PO-RALG	President's Office, Regional Administration, and Local Government Tanzania
PPE	Personal Protective Equipment
PPM	parts per million
RAA	Regional Assessment Area
RAP	Resettlement Action Plan
RFP	Request for proposal
RIA	Road Implementing Agency
RoW	Right of Way
RS-ES	Road Sector-Environmental Section
SEA	Sexual Exploitation and Abuse
SEP	Stakeholder Engagement Plan
SGR	Standard Gauge Railway
SOP	Series of Projects
STDs	Sexually Transmitted Diseases
STIs	Sexually transmitted infections
SUDs	Sustainable Urban Designs
TABOA	Tanzania Bus Owners Association
TANESCO	Tanzania Electric Supply Company Limited
TANROADS	Tanzania National Roads Agency
TARURA	Tanzania Rural Roads Authority
TAZARA	Tanzania Zambia Railway Authority
TDA	Tanzania Drivers Association
TMP	Traffic Management Plan
ToR	Terms of Reference
TPDC	Tanzania Petroleum Development Corporation
TRC	Tanzania Railways Corporation
TSCP	Tanzania Strategic Cities Project
TTCL	Tanzania Telecommunications Company Limited
UHI	Urban Heat Island
ULGSP	Urban Local Government Support Program
UN	United Nation
URT	United Republic of Tanzania

USD	United States Dollar
UTM	Universal Transverse Mercator
VECs	Valued Environmental Components
VPO	Vice President's Office
WB	World Bank
WBCU	World Bank Construction unit
WEO	Ward Executive Officer

EXECUTIVE SUMMARY

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT FOR THE PROPOSED CONSTRUCTION OF URBAN INFRASTRUCTURE INVESTMENTS IN DAR ES SALAAM CITY - PREPARATION OF DMDP PHASE II IN DAR ES SALAAM CITY COUNCIL (DCC) PACKAGES 1 to 7 ROADS (66.41 KM)

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BRIEF DESCRIPTION OF THE PROJECT ENVIRONMENT

The Dar es Salaam Metropolitan Development Project (DMDP) is designed as a Series of Projects (SOP) to support the long-term development of the Dar es Salaam Metropolitan (Dar Metro) region. The recently closed DMDP 1 (on January 2, 2023) was the first in the series to address urgent infrastructure demands for basic services, urban mobility, and flooding in the Dar Metro region, as well as the need for support to develop the institutional structure and capacity to manage the future Mega-city of Dar es Salaam.

DMDP PHASE 2 COMPONENTS

DMDP Phase 2, which is to be implemented in 5 DLAs, i.e., the Municipal Councils (MCs) of Kinondoni, Ubungo, Temeke, and Kigamboni, and the Dar es Salaam City Council (DCC), includes the following four project components:

- (i) Component 1: Climate-Smart Priority Infrastructure
- (ii) Component 2: Integrated Metropolitan Solid Waste Management Infrastructure and Services
- (iii) Component 3: Strengthening Urban Institutions
- (iv) Component 4: Project Management

Component 1 is further subdivided into four subprojects as outlined hereunder:

- Sub-Component 1.1: Resilient Transport Infrastructure
- Sub-Component 1.2: Resilient and Green Drainage Systems
- Sub-Component 1.3: Parks and Open Space
- Sub-Component 1.4: Area-based Urban Development

The proposed subproject roads in DCC are under Sub-Component 1.1 and cover urban roads, drainage, greening, and community infrastructure. The streets in Subcomponent 1.1 were further packed into seven packages on which the ESIA report is focused. Package 1 to 7 consists of improvements and constructions of priority sections of the existing local and feeder roads in the urban core, totalling 66.41 km, to reduce traffic congestion and improve accessibility to current and future Bus Rapid Transit (BRT) system and Standard Gauge Railway (SGR).

The Government of the United Republic of Tanzania, with financial support from the World Bank through the PO-RALG, commissioned UWP Consulting Ltd to carry out an ESIA study/Environmental and Social due Diligence for initial priority urban roads (Package 1 to 7) in Dar es Salaam City Council (DCC). **Package 1** subproject roads include Kitunda – Kivule – Msongola(9.95km) and Kivule - Majohe Junction Road (2.79km); **Package 2** includes Kiwalani Community (8.74km) Roads and **Package 3** includes Baracuda – Chang'ombe – Majichumvi (3.27km), Majumbasita – Segerea (3.31km) and Tabata Mawenzi – Kisiwani(2.12km) roads. **Package 4** subproject roads include Upanga CBD Roads, which are Undali (0.41km), Senegal (0.32km), Yangoro (0.3km), Mtitu (0.28km),

Maweni (0.48km), Mathurudas(0.51km), Kiwanuka 2 (0.09km), Kitonga(0.38km), Kalenga(1.29km), Isevy (0.35km), Bwera (0.22km), Viwandani (0.1km), Somali Kipande (0.12km), Lindi 1 (1.47), City Garden (0.34), Songea 3 (0.37), and Kilwa 2 (0.35). **Package 5** consists of Ilala CBD Roads, which includes Yegeyege(0.2km), Tunduru (0.15km), Tabora (0.44km), Sunset (0.31km), Simple Motel (0.32km), Sadani (0.48km), Pwani (0.17km), Bungoni (0.66km), Ngunde (0.09km), Ngongele (0.28km), Ngoma (0.2km), Mwela (0.24km), Mshikamano (0.09km), Mpendo (0.3km), Lindi 2 (1.05km), MinTanga(0.2km), Mwengwa(0.25km), Manyoni (0.32km), Korogwe (0.16km), Kipanzi (0.08km), Kilwa 1 + Kilwa 3 (1.32km), Kilosa (0.29km), Iringa (0.28km), Ilala (0.40km), Dodoma (0.29km), Bofu (0.04km) and Binti Mussa (alhamood) road (0.25km). **Package 6** consists of Vingunguti roads and Pugu – Majohe Junction Road: Vingunguti Mnyamani(1.91km), Trump Road(1.01km), Zahanati Road(0.49km), Kwa Simba Rd(0.48km), Kituo Cha Yatima(0.34km), Pande Road (0.17km) and Pugu – Majohe Junction Road (9km). **Package 7** consists of Kariakoo CBD Roads: Ungoni (0.31km), Ukami (0.16km), Udowe (0.27km), Simba (0.08km), Ndovu (0.41km), Narungombe (1.04km), Mvita (0.16km), Muhoro (0.31km), Muhonda (0.54km), Muheza(0.36km), Mkunguni (0.16km), Matumbi B(0.11km), Masasi(0.32km), Magila(0.32km), Mafia (0.17km), Likoma (0.05km), Kibambawe (0.22km), Chui (0.09km), Bond(0.2km), Amani(0.11km), Tabora (0.28km), Bukoba (0.58km) and Nzasa (0.62km). These roads are located in the city center and peri-urban areas.

PROJECT STAKEHOLDERS AND THEIR INVOLVEMENT IN THE EIA PROCESS

Aims and Objectives of the Public Consultation

The purpose of public consultation is to ensure that the views, interests, and concerns of project stakeholders are taken into account in assessing the potential impacts of the project and in project decisions, particularly in the project design and development of mitigation measures. In addition, the public consultation aimed to improve communication between the project and impacted or interested groups.

In the course of preparing for the stakeholders' consultation, the following activities were undertaken:

- Stakeholder identification and analysis;
- Determine the type of consultation activities to be undertaken with each category of stakeholders;
- Information disclosure, specifically the provision of timely and meaningful information that is accessible to all stakeholders;
- Prepare the approach to and mechanisms for obtaining stakeholder feedback on the information disclosed;
- Prepare principles and ground rules guiding consultation with local communities and a consultation program to ensure timely notification of consultation activities and tie in with key stages in the EIA process.

Stakeholders Identification

Stakeholder identification and consultation for the proposed DMDP Phase II sub-projects respond to Section 89 of the Environmental Management Act (EMA, 2004) and EIA Regulation 17 (URT, 2005), which provide details and procedures for public participation in the EIA process: the WB ESS 10: Stakeholder Engagement and Information Disclosure and ESS 1 (on Environmental Assessment).

The stakeholders for the DMDP phase 2 for the DCC infrastructure investments project were guided by ESS1 and ESS 10 are individual groups who:

- a) Are affected or likely to be affected by the project (project-affected parties); and
- b) May have an interest in the project (other interested parties).

The project-affected parties include those likely to be affected by the project because of actual impacts or potential risks to their physical environment, health, security, cultural practices, well-being, or livelihoods. The stakeholders identified under this group included communities and institutions living close to the proposed roads that will be impacted by the construction activities (schools, health facilities, and religious institutions), markets and businesses

that the project would directly impact, and utility companies with infrastructure that would undergo relocation during the construction phase.

Other interested parties include individuals, groups, or organizations with interest in the project, which may be because of the project location, its characteristics, impacts, or matters related to the public interest. For this project, the Institutions/organizations consulted include government agencies such as TARURA, TANROADS, SONGAS, TRC, Wami/Ruvu Basin Water Board (WRBWB), OSHA, LATRA, DART, TAA, DAWASA, Telecommunication Companies, Tanzania Police, NGOs/CSOs working closely with affected communities, Local authorities, and committees.

Individuals who are at risk of being expelled from sub-project road corridors received particular attention. These included elders, women, and youth with specific jobs depending on road infrastructure, such as Mama Ntilie (Food vendors), Bajaj and Bodaboda drivers. As part of the process, it was particularly important to identify individuals and groups who may find it more difficult to participate and those who may be differentially or disproportionately affected by the project because of their marginalized or vulnerable status, as stated in ESS 1 and ESS 10.

RESULTS OF PUBLIC CONSULTATION

Stakeholders raised the following issues;

- **Destruction of property within RoW:** The project will impact properties within the RoW, including residential, business, and community structures. The loss of these properties will affect livelihoods. Compensation may not be forthcoming or fair.
- **Compensation of affected properties:** The affected properties felt that they might not be compensated or the compensations may not consider the current market value of the properties.
- **Compensation process:** The compensation exercise should be implemented transparently and participatory, with all family members aware of the affected people's entitlements and the amount of money expected to be received. This will help avoid misuse of the money and family conflicts. The couple should be both signatories to the bank account.
- **Increased Road accidents:** Accidents will increase during operations, so precautions such as installing bumps and zebra crossings should be included in the road design. It is also important to educate communities about on-road use and the Road Act.
- **Parking area considered in the design and bus stand:** Since there are many vehicles in Dar es Salaam, it is important for a road design to consider covered drains for car parking to avoid unnecessary accidents caused by poor vehicle packing. Almost all wards expressed their dire need to have bus stops in their respective areas, as this will have several benefits to their wards.
- **Temporary road diversions during road construction:** During road construction, temporary routes should be prepared so that vehicles/buses continue to operate along the roads. This will help to reduce traffic congestion on DCC roads, which are socio-economically important to people in the Dar es Salaam area and neighboring municipalities.
- **Land take:** Unfair compensation of affected properties. This was echoed at every mtaa meeting. The inability of the proponent to mark out the Right of way (RoW) in advance, and people are worried about government officials who may embezzle compensation funds. The eligibility and compensation packages should be made transparent to the PAPs. The PAPs should be educated and counseled in implementing resettlement. The majority of people are insisting that the government should help them to find new land to relocate despite being compensated.
- **Construction of the road below-specified standards:** The community is concerned about the quality of construction work and requests integrity and commitment from contractors to ensure that sustainable roads are constructed.

(i) Explanation of why some impacts are not addressed

The impacts addressed were those identified by stakeholders, anticipated, and were systematically evaluated to be significant. The approach taken was to identify, describe, and assess all potential impacts or issues that could occur during undertaking the project mobilization, construction, operation/implementation (operational and decommissioning activities), monitoring, and possible decommissioning.

(ii) List of Proponent, consultant, local planning authorities and other people and organizations consulted.

The project engaged various stakeholders to incorporate their views and concerns in the design and make informed decisions. This included the DCC (Proponent) and the UWP Technical team, which included an Environmental Engineer, Highway Engineer, Sociologist, Economist, Municipal and Industrial Services Engineer, Environmental Scientist, Climate Change expert, Botanist, and Surveyor, Government Institutions/Agencies, and Communities in the project areas.

(iii) Description of the major significant impacts

Environmentally, the proposed project has the potential to affect multiple environmental components, such as air quality, health, and safety. The ESMP presents all impacts associated with the project's implementation in different phases and their mitigation measures.

The following are some of the identified potential risks and impacts associated with the project.

Positive impacts

Increased Employment Opportunities, Job Creation, and Increased Income to Local Communities

During this phase, people shall be employed by the contractor to do mobilization works such as the construction of campsites, quarrying material extraction and transportation activities, etc. The project area, like any other urban area, is characterized by a high level of unemployment. The availability of new employment opportunities will, therefore, increase the positive benefits for the local people who are in dire need of income for sustenance. Furthermore, indirect opportunities and direct employment will arise from the provision of services to the construction teams, such as the sale of food and beverages. It is estimated that 200 to 300 people benefit from the new employment opportunities. These will include those with skills (i.e., drivers, fundis, surveyors, etc.) and non-skilled laborers.

The frequency of this impact will be Short Term during the pre-construction period, with a high possibility of extending to the construction phase. The likelihood of the impact is definite due to the certainty of labor requirements for the project. The spread of the impact would be to individuals located within the project Wards and from different parts of the country, so it is classed as National. Based on these assessments and embedded mitigation, the magnitude is assessed as Beneficial. Impact significance is therefore assessed as Positive.

Increased income to primary supply of road construction materials

During the construction phase, a range of construction materials, both natural (borrow pit, sand, aggregates, etc.) and synthetic ware (bitumen, cement, iron bars, etc.), will be widely needed for the realization of the project. The increased need for construction materials will increase income to primary suppliers of these materials. Not only the suppliers will benefit, but also the operators of the quarry and borrow pits, the haulers, and vendors of other services around the materials sites. Similarly, primary producers and suppliers of synthetic materials will have direct and indirect income benefits from selling their goods. This impact supports the DMDP II project to realize ESS2 on the importance of employment creation and income generation in the pursuit of poverty reduction and inclusive economic growth.

The frequency of the Impacts of employment and business opportunities will be *moderate term* during the construction period. The likelihood of the impact is definite due to the definitely of labour requirements for the project. The spread of the impact would be to individuals located within the project Wards and from different parts

of the country, so it is classed as National. Based on these assessments and embedded mitigation, the magnitude is assessed as Beneficial. Impact significance is therefore assessed as substantial.

Improved Transportation Services

Roads are the predominant mode of transport in African countries and represent a critical element for economic development. Proposed road development is a major factor in reducing poverty and economic development. New roads impact access to markets, schools, health facilities, and transport charges.

The DMDP Phase II roads were selected in such a way that traffic congestion in the city is reduced after the completion of their improvement. One of the main causes of traffic congestion is the presence of potholes on the existing roads. It is expected that the improvement will reduce travel time around the city and, consequently, reduce travel costs and pollution to the environment. The benefits of the improved roads will be experienced both at the core impact zone and at the zone of influence.

Improved storm water draining

Surface and subsurface drainage facilities are common design features for road dressing. The improvement of roadside storm water drains will facilitate the collection of stormwater from the project areas and discharge it safely into the receiving environment. However, the concentration of roadside stormwater in drainage channels sometimes causes erosion challenges downstream, especially under conditions where the receiving water environment is not considered in road drainage design. Sustainable improvement of stormwater drainage shall be designed in line with mitigating floods that can destroy properties, especially houses, and other infrastructure such as roads, water supply, and sewerage infrastructure. Improved stormwater drainage will also improve the public health of communities living along the project corridor. Furthermore, it will help improve safety, particularly during the rainy season, by effectively draining storm water away and reducing maintenance costs by minimizing the occurrence of stormwater-related damage.

Reduction of traffic congestion in the city

The DMDP phase II roads are expected to reduce traffic congestion on the major roads currently experiencing frequent traffic jams during peak hours. The roads will provide breather routes of similar standard. Severe congestion is no longer confined to peak hours (7:00-9:00 am and 16:30-19:30) and is now a day-long experience on most arterial roads. A lack of roads and connections between existing roads, coupled with an ever-increasing number of vehicles, adds to the deteriorating traffic congestion problems. This project shall ease this problem.

Reduced vehicle operation costs

The cost of operating the vehicles shall go down due to savings on fuel, tires, oil, spare parts consumption, vehicle depreciation and utilization, etc. At present vehicle owners incur high operating costs such as high fuel consumption and frequent need to replace parts such as the suspension system due to the condition of the road. Moreover, during the wet season, the road is not freely passable; therefore, sometimes fuel consumption becomes high. There will be an increase in the number of vehicles passing the project roads, thus lowering transport costs.

Improved community life, services, and status

Several social-related advantages will accrue from the project. Improved transportation will enable easy delivery of drugs/medicines to health care facilities. The proposed roads will facilitate patients' faster medical attention (especially in emergency cases) in the streets along the subprojects. Health workers and teachers will enjoy easier access to work than before. The roads will facilitate easy access to health centers, and thus, the lives of some patients will be saved.

Bitumen roads will reduce the current level of dust experienced in the subprojects. In so doing, the quality of settlement will increase, and the health of people living in the project areas will be protected.

Increased property and land values along the project area

Improved infrastructure will have a back-to-back impact along and around the project zone. Road improvement shall increase the value and status of the area. Experience shows that house rents often increase with improved infrastructure in the area. These effects will be felt for a long period to come and will be beneficial to property owners. On the other hand, the tenants will see such improvements as a negative impact, mainly because of the increased rents. Looking at the large society, the increased property value is seen to be more beneficial to the general community.

Induced development and Urban sprawl (local economic growth)

Apart from the fact that the proposed projects are located in already urbanized areas, upon completion, the roads will play an important role in stimulating more development and growth of the local economy. As can be seen in other completed road projects in the city, road infrastructure attracts more development. It creates activity centers (shops and other businesses) in the vicinity of the roads. The relationship between road infrastructure development and land use changes around the road infrastructure is a crucial project impact to be explored. Currently, many businesses and centers along the proposed Kitunda-Kivule- Msongola, Barakuda -Chang'ombe -Majichumvi, Majumbasita-Segerea and Tabata Mawenzi-Kisiwani, Upanga CDB, Kariakoo CDB, Ilala CDB, and Vingunguti roads, are said not operating to their full potential due to deficiency of roadside drainage infrastructure (which cause ponding of runoff), absence of reliable access roads and risky bridges especially for heavy tracks. Upon implementation of the proposed projects, more development and growth of the local economy are expected to increase.

Increased income generation through the operation and maintenance of roads

Operation and maintenance (O & M) are key for the trafficability and prolonged lifespan of roads. Road operation is a routine work performed to upkeep pavement, shoulders and other designed facilities provided for the road to meet its objectives and security of users. Maintenance refers to all efforts meant to keep the roads nearly as possible in their constructed conditions under normal conditions of traffic and forces of nature. Operation and maintenance are essential to getting optimum service from the road pavement during its life period. Both operation and maintenance activities require a labor force throughout the road design period (both skilled and unskilled). It is expected that local communities living in the project area will benefit from the proposed project in terms of increased income associated with the O & M of the envisioned roads.

Negative Impacts

Land acquisition and Resettlement

The project may be associated with minor (small scale) acquisition of land for localised improvements along the road or improvement, and for walkways and bus-bays. Site clearance will involve the demolition of some properties to pave the way for construction activities. This can include land parcels, residential houses, part of residential houses, commercial/business structures, and crops. This loss has an impact on individuals, families, and the community as a whole. RAP will be implemented as per the requirement of ESS5. RAP has identified and categorized PAPs and affected property, including 62 residential houses, 154 commercial buildings (148 business frames and 6 shops), and 4 institutions' buildings. Apart from buildings, some of the planted fruit trees (i.e., pawpaw and coconut trees) will be affected. Families consume these, but they are also a source of income for the owners. A total of 552 PAPs have been identified.

The impacts of land expropriation are not only social and economic but also psychological and can be depressing. However, adhering to the requirements of the ESS5 and national guidelines, the DCC will make all efforts to design the roads so that involuntary resettlement is largely avoided. Where it can be avoided, appropriate measures to mitigate adverse impacts associated with the loss will be carefully planned and implemented.

The Intensity of this impact will be low. Only a few permanent structures were found within the RoW). The probability of the impact is highly probable, and the spread of the impact is local. The duration of the impact is long-term since the relocation will not be reversed. Based on these assessments, the nature of the impact is Negative. Combined with the receptor vulnerability, the premeditation significance is *Moderate* and so additional

mitigation is required. With the application of a RAP developed for the project, the impacts could be reduced to low (minor) impact.

Loss /reduction of Ecosystem Services

Site clearing activities will contribute to the removal of vegetation alongside the roads, which provide habitat service to fauna species, provide shade to road users, and, in some cases, provide food (i.e., coconut and fruit trees). The project recognizes that site clearance will trigger ESS6 on Biodiversity Conservation and Sustainable Management of Living Natural Resources. However, since the project area is an urban area, and the roads exist, thus very minimal vegetation clearance is expected.

Impacts on ecosystem services include small-scale reductions in cooling, shed, and microclimate effects, reduced control of soil erosion, and reduced bee forage.

Impact evaluation considers the intensity of the loss of vegetation, loss or alteration of habitats, and loss/reduction of ecosystem services as low due to the fact that only minimal vegetation will be affected. Further, the location of the project is in an urban and disturbed environment. The impact is considered local and long-term. The probability of occurrence of the impact is definite and has a negative impact on the biological environment. The impact significant is rated as moderate without mitigation measures; however, with the implementation of proper mitigation measures, the impact can be reduced to low.

Damage or relocation of existing utility infrastructure and public services

Public utilities are critical to the local economy, providing the vital infrastructure that ensures the community has energy, clean water, and proper sanitation services. The ESIA studies existing utility infrastructure for the supply of electricity, communication, natural gas, and water, running along the road and some within the RoW. Also noted is the transport infrastructure, such as the railway track crossing the Banana-Msongola Road (Table 6-6). These infrastructures may be partly or destroyed during construction. Relocation -destruction of the infrastructure will result in temporary loss of services and may lead to social, economic, and even health problems for served communities. Interruption of water and power might affect businesses that depend on these services for their operation. All potential stakeholders have been identified and consulted. However, also, they will also be engaged during the project implementation in a manner that conforms to ESS10, and appropriate mitigation measures will be put in place to alleviate the impact.

It is expected that the DCC will lease with respective utility companies and either compensate or relocate the infrastructure in a manner that will reduce impacts to customers of the interrupted services. Therefore, the intensity of this impact will be *moderate*. The probability of the impact is certain since the utilities must be relocated before construction. The spread of the impact is considered *regional to national* (a large part of Dar and the region's services by TAZARA could be affected). The duration of the impact is long-term. Based on these assessments, the nature of the impact is Negative. Combined with the receptor vulnerability, the premeditation *significance* is *substantial* and so additional mitigation is required. With the application of a RAP developed for ESS 3 and adequate compensation, the impact could be reduced to a minor impact.

Increase Traffic and road accidents.

Mobilization and transportation of construction materials and equipment will increase traffic along the Banana - Kitunda (3.95km), Kivule Msongola Road (9.95km), Barakuda Changombe Majichumvi Road (3.27km), MajumbaSita – Segerea Road (3.31km), Migombani Road (1.93km) and Tabata Mawenzi – Kisiwani Road (2.12 km), Upanga CDB roads (4.63km), Kariakoo CDB roads (7.79km), Ilala CDB roads (8.55km), and Vingunguti roads(4.4KM). Such an increase has the potential to cause disturbance to other road users increase traffic jams along the road (s), and may also increase safety risks to the communities and other road users.

Risk of environmental pollution by demolition waste

During the mobilization phase, the entire project corridor will be cleared and leveled. This includes demolishing structures protruding into the demarked area for the area of the proposed road, which mostly includes parts of buildings and fencing walls. This activity will generate solid waste that will need to be managed prior to construction activities.

Only a few structures have been identified for demolition; thus, minimal demolition waste will be generated. Therefore, the intensity of this impact is considered to be *low*. The probability of the impact is *definite*. The spread of the impact is considered *local* (only at the construction sites). The duration of the impact is *short-term*. Based on these assessments, the nature of the impact is *Negative*. Combined with the receptor vulnerability, the premeditation *significance is low*. With the application of mitigation measures such as re-use and recycling (according to ESS3, the impact could be reduced to *low impact*).

Risk of damage to private properties due to increased vibration levels

During the construction phase, project implementation activities like machinery operation and large blasts may produce ground vibrations that can cause damage to nearby structures, either directly from wave propagation or indirectly through soil densification. Excessive vibrations in this phase are expected to be caused by the operation of heavy equipment like motor graders, crawler loaders, crawler dozers, scrapers, backhoes, and skid steers, which are commonly used during the project construction phase of road infrastructure.

The frequency of vibration impacts will be *moderate* during the construction period. The likelihood of the impact is *unknown* (i.e., the strength of the adjacent structure is unknown). The spread of impacts will be *local*. Based on these assessments and embedded mitigation, the magnitude is assessed as *negative*. Impact significance is, therefore, assessed as *low*.

Interference with local hydrology

The construction of roads, together with the improvement of drainage channels, will result in a change in the drainage patterns of the site. As highlighted earlier, the proposed development will increase the impervious surfaces, limiting water infiltration into the ground, altering the primary hydrology in terms of increased volume and speed of stormwater runoff, and emergency new drainage routes. Interference with local hydrology may have negative environmental and social impacts, such as floods and excessive soil erosion along the road surface and other adjoining areas. However, it may also affect water resources and the ecosystem. The effects on water resources might lead to water shortage in the area, especially during dry seasons. Other negative hydrological and drainage impacts cannot be foreseen but may emerge during the implementation or operation phase of the project. Another main impact associated with the provision of road drainage channels is the blocking of shortcut access paths to residences for houses located along the road.

The magnitude of the impact is *low*, with a local scale and *long* duration throughout the project's life. The probability of its occurrence is definitely low, and therefore, its significance is *low*.

Labour and Working Conditions

The WB ESS2 requires the DCC to promote safety and health at work; promote the fair treatment, non-discrimination, and equal opportunity of project workers; protect project workers, with emphasis on vulnerable workers; prevent the use of all forms of forced labor and child labor; support the principles of freedom of association and collective bargaining of project workers in a manner consistent with national law; and provide project workers with accessible means to raise workplace grievances. In case any of the mentioned is bridged, the project will be associated with impacts on human rights. To safeguard Workers' rights, all the project workers will be provided with clear information and understandable documentation regarding their terms and conditions of employment.

Increased risks to community health (i.e., STI, COVID, and HIV/AIDS)

Similar to other development investments, project activities, equipment, and infrastructure can increase community exposure to risks and impacts (ESS 4). Since communities in the project area are already subjected to impacts of

climate change (e.g., flooding and stagnation of water) may experience an acceleration or intensification of impacts due to project activities. The major health risk from the envisioned project is the possibility of acceleration of the spread of social illnesses, which is always there when there is an influx and or intermixing of people. Unhealthy social interaction might exist, as fuelled by many factors, including economic benefits (i.e., from the construction force to the local community). Unhealthy social interaction might increase the incidence of diseases such as STIs, COVID-19, and HIV/AIDS.

The intensity of the impact is *moderate*, and its local scale and duration are moderate. Its probability of occurrence is definitely high. The nature of the impact is negative. The impact is considered to be moderate if unmitigated and of low significance after applying mitigation measures.

Increased road accidents

Road accident-related deaths, injuries, and damage to property are the most tangible negative impacts on the community environment and may be reduced or increased as a result of road projects. The project roads transverse wards, and the effects the road causes on safety in these settlements are dependent on location. Increased traffic and speed driving will result in unnecessary road accidents to livestock and people, especially school children and older adults. The main causes of accidents are poor road conditions due to lack of maintenance, reckless driving, defective vehicles, drunkenness, poor road facilities for pedestrians and cyclists, and unqualified drivers.

Vehicles traveling at increased speeds will make it difficult for road users to cross the road, particularly children and older adults will be at risk of accidents.

The magnitude of the Impact is considered moderate. It is local scale and long-lasting throughout the project life. The likelihood of impacts is possible with high exposure. Therefore, the significance of the impact is considered Moderate.

Increased level of noise annoyance/disturbance

The operation of the roads will increase the number of vehicles on the roads and thus increase noise levels along the projects. Baseline conditions indicate that there is a significantly high number of schools (nursery, primary, and secondary schools, Segerea Seminary, and others), health centers, and religious places located just adjacent to the project roads i.e. along Banana -Msongola, Majumbasita – Segerea, Barakuda – Chang'ombe Majichumvi, Tabata Mawenzi -Kisiwani, Migombani and Upanga CDB, Kariakoo CDB, Ilala CDB, and Vingunguti roads. Traffic noise will be a significant nuisance to these sensitive receptors and has the risk of affecting school children's learning ability.

The magnitude of the Impact is considered moderate. It is of a local scale and long duration throughout the project life. The likelihood of impacts is definite, with a high exposure. This significance of the impact is, therefore, considered Moderate.

ALTERNATIVES CONSIDERED

The No Project Alternative

The no-project alternative entails retaining the current status quo without constructing and upgrading the proposed local roads. Based on the objective and benefits of the project (as described in Chapter 1 of this report) are of high significance for the DCC socio-economic development. Although the project is associated with some negative environmental and social impacts, they do not match the high positive impacts expected from the implementation of the DMDP project. Adopting this option would mean avoiding most of the negative impacts associated with the project and missing all the positive benefits, such would increase social and economic growth in Dar es Salaam City Council. The No project alternative was therefore abandoned.

Alternatives routes

The initial stage of this project included identifying priority roads. The client and the local leaders from the Mtaa, Ward, and District levels developed an initial list of roads. Each of the identified roads was investigated using a matrix of criteria. The following criteria were used in the selection of road alternatives.

- i. Roads that link existing trunk roads (have the potential to increase mobility and reduce traffic congestion on the existing trunk roads;
- ii. Roads that enhance other existing or proposed transport development projects, i.e., the SGR and BRT infrastructure;
- iii. Roads with adequate Right of Way (ROW) that will require no or minimum compensation and
- iv. Roads that will address flood resilience.

A list of priority roads was developed and included in the DMDP II through a number of meetings and site verification, which were jointly conducted by the PO-RALG, DCC, Wards, and Mtaa leaders.

Alternative Sources of Construction Materials

Alternative sources of road construction materials (i.e., soils and aggregates) were investigated. The design team looked at existing and new borrow sites. Currently, authorized quarry and borrow sites are located in the Pwani Region, in Msoga, Kibaha, and Bagamoyo sites. The investigation found that these sites have enough deposits of qualified materials. Opening new sites is associated with compensation costs and will cause environmental degradation, loss of habitat, and a number of socio-economic impacts. Therefore, with environmental, social, and economic considerations, all construction materials shall be sourced from authorized vendors.

Further, alternative sources of water for use in construction were assessed. Two water sources were considered: groundwater from boreholes, surface water from Rivers on the site, and treated water supplied by DAWASA. Two sources, groundwater and River water, were disqualified as they contained impurities that could endanger the quality of work. Further, the use of the two sources will require water from the WAMI/RUVU basin office and will need treatment. The project will, therefore, use water supplied by DAWASA.

The whole design process investigated alternative construction materials and designs using these materials. The investigations were done for roads, drainage and walkways.

- **Road carriageway: Construction materials:** For the road carriageway, two types of pavement materials were considered (i.e., asphalt and concrete), while for walkways, bricks and concrete pavements were considered. The investigation was based on the applicability of the materials to existing and projected environmental conditions of the selected roads. These conditions are such as 'flood prone areas' and 'high groundwater table'. From this assessment, the roads were classified into five different types. The assessment proposes the use of asphalt in most areas and concrete in flood-prone areas. In some areas (as indicated in the design section), the subsurface materials will be enhanced with SUDS. The use of asphalt as the major pavement material is based on the following properties of the material:
- **Durability:** Asphalt Concrete is a flexible pavement with the same bridging action, which allows it to withstand occasional overloads without serious damage. Its lack of repetitive joints removes the possibility of blow-ups that are associated with concrete while exposed to temperature variations. Inch for inch, asphalt cement concrete performs better than Portland cement concrete.
- **Economical:** Research has shown that a dollar spent on asphalt pavements is 26.9 percent higher than a dollar spent on concrete pavements. That is because asphalt is cost-effective. It has a lower first cost than concrete, and it lasts longer. Staged construction helps spread out the cost of placement. Because asphalt pavement has no joints to repair, it is much less expensive to maintain.
- **Safety:** Asphalt pavements offer high skid resistance values. Their dark color reduces glare and provides a high contrast for lane markings.

- **Ease of Construction:** Asphalt Concrete is machine-placed, removing the need for time-consuming formwork and steel reinforcement. Traffic can use the pavement almost immediately; no delay is required to allow the pavement to cure. The lack of pavement joints reduces maintenance requirements. Repairing an asphalt surface is quick and easy because there is little downtime waiting for a patch to cure.
- **Staged Construction:** A major advantage of Asphalt Concrete is the potential for staged construction. The asphalt base course can be placed and used under traffic during initial construction. This pavement can then be overlaid with final surface courses. Staged construction improves on-site conditions, removes the aspect of muddy soils, and provides a place to store construction materials and equipment. This method also provides an opportunity to discover and correct unanticipated problem areas, such as a weak subgrade, poor drainage, or poorly compacted trenches, which can be repaired at minimal cost.
- **Recyclable:** Another major advantage of Asphalt Concrete is its ability to be completely recycled. Not only can the aggregates be reused, but the asphalt cement binder also retains its cementing properties and can be reused in a new mix. Pavements can be recycled both on-site using a cold mix and via a hot mix plant. Recycled pavements have been tested and proven in both the laboratory and the field to perform at least as well as virgin aggregate mixes. Asphalt pavements are 100 percent recyclable.

Alternative materials for Walkways

Apart from concrete paving and sand cement interlocking blocks, an attempt is being made to produce paving blocks from recycled plastics. When this is successful, it will be environmentally friendly by reducing the number of plastic objects littered haphazardly.

The use of a layer of fine aggregates in standing and walking is also gaining momentum. This layer is porous, and where it is used, the systems support SUDs. Neatly ground stones can also be used to pave walkways without the need for mortar joints.

Climate Risk Vulnerability Assessment

Climate change will directly affect the proposed road infrastructure in several ways. High temperatures will cause roads to develop cracks easily within a short period after construction.

Furthermore, higher temperatures combined with increased solar radiation (UV) may reduce the life of the proposed asphalt road surface. Additionally, high precipitation will allow new roads to develop potholes easily.

The direct impact of climate change on the road and its indirect impact on other economic systems are equally enormous. Poor roads resulting from huge potholes can lead to road accidents and delay the transport of foodstuffs, agricultural produce, and other road users to their intended destinations within the city. In contrast, vehicular traffic jams can lead to more fuel consumption in addition to huge time losses.

RECOMMENDATIONS AND MITIGATION OF THE IMPACTS

The identified risks and impacts are manageable and can be mitigated following the timely implementation of the recommended mitigation measures in the ESMP. The following are the mitigation measures for the aforementioned negative risks and impacts of the proposed subproject roads.

Land acquisition and Resettlement

- i. The design team has minimized involuntary resettlement by exploring project design alternatives or selection of alternative routes, hat minimized the number of PAPs along the roads. This was done without compromising the project objectives;
- ii. The project has avoided forced eviction of PAPs;
- iii. Where it cannot be avoided, loss of land or property, transparent procedures for undertaking property valuation and compensation activities have been developed and shall be followed during implementation;

- iv. The developed RAP shall be implemented according to the requirements of ESS5 and Tanzanian compensation laws. For compensation costs, see the RAP report.
- v. For affected properties, the DCC shall conceive and execute resettlement activities (expected along the Migombani Road and Msongola roads) as a sustainable development program, providing sufficient compensation to enable displaced persons to benefit directly from the project.

Loss /reduction of Ecosystem Services

- i. Prepare and implement a vegetation replenishment plan along the project corridor. Re-vegetation shall be done according to the plan specified by the Standard Specifications for Road Works of 2000 Section 5700 (Landscaping and Grassing) and the Dar Greening Handbook.
- ii. Confine construction work within the acquired project areas
- iii. Enforce laws governing the protection of rare endemic and endangered species
- iv. Prepare and implement an invasive species eradication plan in all areas impacted within the Project area
- v. Screen sources of construction materials by identifying all organisms on identified sources
- vi. Implement monitoring and evaluation programs to ensure minimum footprint beyond construction sites
- vii. Any contaminated soils shall be segregated and transported by the contractor to the waste collection area (WCA) located at the campsite, where it shall be collected separately from other wastes till disposed of by a third party.

Damage or relocation of existing utility infrastructure and public services

- i. Utility providers within the project area (i.e., TANESCO, DAWASA, SONGAS, TAZARA, TAZAMA, TRC, and TTCL) have been involved in the planning and design of the road infrastructure, and their recommendations have been incorporated in the design,
- ii. The DCC and the Consultant shall have technical discussions with TRC on the best design options for the railway crossing along the Msongola road. The design shall be revisited by the DCC, Consultant, and Contractor during the Construction phase.
- iii. Utility relocation planning shall be done in consultation with the affected suppliers, and the relocation costs shall be in the BoQ;
- iv. Early notice shall be given to the community before any service interruption;
- v. DCC shall provide detailed Information about the location and layout of affected infrastructure to the contractor;
- vi. DCC shall provide fair, prompt, and effective compensation at full replacement cost of affected utility infrastructure, as specified in the developed RAP;
- vii. The developed DMDP II GRM shall provide a process for receiving grievances from communities, individuals, NGOs, and local government and managing them efficiently and transparently.

Increase Traffic and road accidents.

- i. By providing alternative diversions whenever necessary, the contractor will ensure that the traffic flow is not interfered with during the entire construction period;
- ii. No total closure of the road or drain, for instance, will be allowed;
- iii. The contractor shall provide diversions and deploy a person responsible for traffic safety;
- iv. Ensure that prior to all activities, the Project shall assess the risks of the works to local people, including people walking by, people using nearby roads;
- v. Ensure that all hazardous materials and equipment must be contained and access to them by local people must be prevented;
- vi. Put barriers and warning signs around open excavations to prevent people from falling into them

- vii. Put barriers and appropriate signage to prevent access to other hazardous areas, including areas in which equipment and vehicles are operating;
- viii. Where appropriate, flag persons shall be used to minimize risk to community members in areas of activity and where vehicles enter/exit the Project site;
- ix. Undertake visual inspections to confirm that nobody has entered the site and is in a hazardous location, e.g., people sleeping under equipment;
- x. Ensure road width, speed restrictions, and traffic load in the areas in accordance with acceptable standards.

Risk of environmental pollution by demolition waste

- i. The contractor shall adhere to local and the WBG EHS Guidelines and the ESS guidelines on waste management.
- ii. PAPs will be given a chance to demolish parts of affected structures and recover whatever materials they wish to recover. For example, cement blocks, iron sheets, wood, plumbing works, etc., could be re-used in house construction;
- iii. Recyclable materials such as scrap metal, plastics, wood, and glass shall be sorted, separated, and stored at the waste recycling plant, located at the nearest Contractors campsite (awaiting removal by licensed Subcontractor);
- iv. The remaining on-recyclables (spoils, broken tiles, waste mortar shall be transported to the Pugu Kinyamwezi site, and

Risk of damage to private properties due to increased vibration levels

- i. Shattering of excavations and physical protection of structures shall be emphasized to minimize potential damage to buildings due to vibration of heavy machines;
- ii. Employ Engineering controls (temporary or permanent retaining wall) to support adjacent private structure;
- iii. The contractor shall confine construction work within the acquired project areas
- iv. The contractor shall make proper identification of structures prone to vibration damage and prepare proper protection plans

Interference with local hydrology

- i. Conduct a special wet season study on the hydrological pattern of the affected areas, checking how hydraulic features like detention ponds, retention ponds, rivers, and wetlands (if any) are affected.
- ii. Enforce laws governing the protection of important drainage routes and receiving bodies in project-influenced areas.
- iii. The contractor shall confine construction activities to the core Area
- iv. Prepare drainage restoration and rehabilitation plan
- v. Ensure restoration and rehabilitation of all sites that the proposed sub-projects will impact

Labor and working conditions

- i. Application of developed Labor Management Procedure; Code of Conduct, GRM for DMDP II,
- ii. Working terms and conditions of employment shall address national legal requirements as a minimum and ESS 2: Labor and Working Conditions;
- iii. The contractor should ensure a fair and transparent recruitment process is outlined in the Recruitment Management Plan for all openings. This includes working with DCC and local authorities to advertise openings as early as possible, allowing potential candidates to apply and prepare their skillsets for local opportunities.

- iv. Develop and make available to all project workers the key commitments made regarding labor management for the project.
- v. Promote fair treatment, non-discrimination, and equal opportunity for both skilled and unskilled workers and support principles of freedom of association and collective bargaining of workers in a manner consistent with national law.
- vi. Provide mechanisms for project workers to raise workplace grievances freely.
- vii. Provide a clear contract of employment to all workers prior to starting their work on the project.
- viii. Local Content Policy and Plan shall be developed to supplement the Influx Management Plan.
- ix. Give employment priority to the local community with relevant skills based on gender.
- x. Provide awareness to locals on potential investment and employment opportunities.
- xi. Provide worker's code of conduct to all project workers before they sign their contract of employment
- xii. Develop a Worker's Code of Conduct which will direct project workers on appropriate behaviours.
- xiii. Prohibit physical violence, discrimination, harassment, bullying, violence, and promote equal opportunity.

Increased risks to community health (i.e., STI, COVID, and HIV/AIDS)

- i. Provide awareness on HIV/AIDS, COVID-19, and other communicable diseases.
- ii. Provide Voluntary Counselling and Testing (VCT) centers for HIV/AIDS at the workplace,
- iii. Enforce HIV/AIDS laws and regulations that prohibit stigma, discrimination and responsible for taking care of the affected communities.
- iv. Changing work schedules account for the time involved and accommodate social distancing measures.
- v. Providing ample safety measures, accounting for Coronavirus (Provision of masks, sanitizer and water to workers.
- vi. Employ a qualified health professional to lead the management of COVID-19 and communicable disease risks during construction.
- vii. Undertake screening programs for communicable diseases such as HIV/AIDS and TB based on the prevailing risk profile.
- viii. Worker induction, Project training, and awareness campaigns must include Sexually Transmitted Diseases and HIV/AIDS. Condoms must be made available to Project workers.

Increased traffic and road accidents

- i. By providing alternative diversions whenever necessary, the contractor will ensure that the traffic flow is not interfered with during the entire construction period;
- ii. No total closure of the road or drain, for instance, will be allowed;
- iii. The contractor shall provide diversions and deploy a person responsible for traffic safety;
- iv. Ensure that prior to all activities, the Project shall assess the risks of the works to local people, including people walking by, people using nearby roads;
- v. Ensure that all hazardous materials and equipment must be contained and access to them by local people must be prevented;
- vi. Put barriers and warning signs around open excavations to prevent people from falling into them
- vii. Put barriers and appropriate signage to prevent access to other hazardous areas, including areas in which equipment and vehicles are operating;
- viii. Where appropriate, flag persons shall be used to minimize risk to community members in areas of activity and where vehicles enter/exit the Project site;
- ix. Undertake visual inspections to confirm that nobody has entered the site and is in a hazardous location, e.g., people sleeping under equipment;
- x. Ensure road width, speed restrictions, and traffic load in the areas in accordance with acceptable standards.
- xi. DCC shall carry out repair and maintenance of roads and its facilities properly and timely;
- xii. Installation of proper road signs and regular inspections for their presence and validity;

- xiii. Proper use constructed of pedestrian lanes alongside the roads. DCC to ensure that the pedestrian lanes are strictly used for pedestrians;
- xiv. No temporary or permanent business activities shall be allowed within the roads RoW;
- xv. Appropriate traffic control signs shall be installed along the main road, along detours;
- xvi. The Police force to monitor the driver's behavior, including adherence to speed control measures such as humps and ramps installed with the roads;
- xvii. The road design has taken into consideration safety issues related to traffic accidents, especially near settlements and urban centers and in all accident-prone sections. *An investigation is ongoing on the feasibility of the inclusion of an overpass at a highly populated section of the Banana Msongola Road (at Kivule Njia Panda, where there are three schools and several business activities);*
- xviii. The PIU shall conduct Road safety assessments through the operation phase of the road subprojects, monitor incidents and accidents, and prepare regular reports on such monitoring.

Increased level of noise and emission annoyance/disturbance

- i. Traffic police to conduct regular inspections of running vehicles to minimize vehicular noise and emissions;
- ii. Speed limit and exhaust emissions standards shall be enforced;
- iii. Vehicle inspecting institutions should insist on regular maintenance of vehicles to minimize emissions of pollutants and noises;
- iv. Steep grades at critical locations shall be avoided so as to reduce noise from acceleration, braking, and gear changes and
- v. Cut sections shall be used (where appropriate) to decrease noise in nearby residences.

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

Institutional structure for ESMP

DCC will implement the DMDP 2 project with support from the President's Office, Regional Administration, and Local Government (PO-RALG).

- PO—RALG will provide overall coordination and technical support to the LGA Project Team, including necessary links with national authorities (e.g., NEMC, DAWASA, TANESCO, etc.).
- The DCC will implement the work, including sub-project E&S requirements and project reporting to WBCU. The DCC will establish a full-time PIT staffed with a dedicated team of officers to carry out safeguard responsibilities. The PIT will be responsible for project implementation, including environmental and social management requirements.

The DCC will use the approved ESMP to guide implementation and monitoring by the Council Teams, EMOs, Construction supervision Consultants, and Contractors.

Capacity Building and Training

The PIT at PO-RALG and the DCC have extensive experience working with the World Bank, particularly in urban projects, which has accumulated over the past fifteen years. The PO-RALG and the DCC have been actively building their capacity for Environmental and Social Safeguard requirements in construction projects, participating in WB-funded projects. However, as the staffing is not static, the departure of a few members of the PIT has created a need for capacity building for new staff and refresher courses for the ongoing PIT members. The new staff members, including three out of the nine members of the DCC, are crucial to the success of the DMDP 2 project, and therefore, their capacity building is of the utmost importance. Further, training on handling new World Bank ESF/ESS requirements is also very important.

The following teams will benefit from capacity building:

- The DCC PIT and other staff as necessary;

- The Design Consultants, interaction and mentoring with and by ESIA/ESMP Consultants, and Third-Party Monitoring and Supervision Consultants
- Contractors and Supervision Engineers/Consultants
- Roads Maintenance Teams

The contractors, supervising engineers, and entities responsible for design and construction will also train all workers about environmental, social, health, and safety and the site-specific environmental and social measures to be followed. All workers should be trained before starting work on-site, and training should be conducted periodically as needed. The following issues shall be covered:

- The new World Bank's ESF;
- How to use DMDP 2 Project E&S instruments (ESMF, RPF, SEP and LMP);
- Resettlement issues;
- Stakeholder Engagement;
- Waste management;
- Grievance handling;
- Occupational health and safety (OHS)
- Labor issues and Code of Conduct for Workers;
- Specific aspects of environmental and social assessment and monitoring of the ESIA's, ESMP, and ESMF
- Preparation and implementation of site-specific ESMPs;
- Environmental and social management of construction works;
- Environmental and social supervision of construction works; and
- Reporting requirements, etc.
- Gender-based violence/Sexual Exploitation and Abuse and sexual harassment (SEA/SH).

Public Awareness and Education

The safeguard team of the Contractor shall encourage environmental awareness among foremen before and during the implementation of the road project. The education will include:

- Provision of copies of the ESMP and discuss its contents with all construction supervisors;
- Discuss techniques and answer questions about E&S management at regular site safety meetings;
- Demonstrate proper housekeeping methods
- Inform the supervisors of actions to take in the event of spills of hazardous materials (i.e., oil, fuel, and concrete)
- Installation signage at key locations reminding the team of several aspects of E&S management
- Remind supervisors of fines and penalties that may be levied against the project by the local permitting agencies to control environmental destruction is not adhered to.

The main Contractor needs to be aware that they are responsible for education and informing all Subcontractors (if any).

ESMP Subplan for the Project

Based on ESIA findings (baseline studies, impacts identified, and proposed ESMP), during the mobilization phase, the Contractor shall be required to develop additional independent safeguard tools to guide implementation and supervision of environmental and social issues. These tools shall comply with national requirements, and World Bank Group (WBG) E&S requirements. The plans presented below shall be reviewed and approved both by DCC and before rolling out in the field. These tools shall be prepared prior to the implementation of the road projects shall form part of the project contract, and must be approved by the Resident Engineer and DCC before implementation. These tools will draw the basis for the Contractor to abide by the requirements of the implementation of the environmental, social, health, and safety mitigation measures. The Contractor will update these tools from time to time on emerging issues and challenges during project implementation or upon request from DCC and/or WBG.

The mandatory sub-plans to be prepared by the contractor and executed concurrently with the ESMP shall include;

- i. Climate change integration in the design Plan

- ii. Health and Safety Management Plan (HSMP)
- iii. Borrow Pits and Quarry Sites Operation and Reinstatement Plan (BPQSORP);
- iv. Waste Management Plan (WMP);
- v. Stakeholders Engagement Plan (SEP);
- vi. Child Abuse Protection Plan (CAPP);
- vii. Gender-Based Violence and Protection Plan (GBVPP);
- viii. Grievance Redress Mechanism (GRM);
- ix. Traffic Management Plan (TMP);
- x. Emergency Preparedness Plan (EPP);
- xi. Code of Ethical Conduct (CEC)
- xii. Site Rehabilitation Plan
- xiii. Occupational Health, Safety, and Security Plan
- xiv. Accidents reporting procedures

PROPOSED MONITORING AND AUDITING

There will be four monitoring activities: i) Baseline monitoring, ii) Impact monitoring, iii) compliance monitoring, and iv) mitigation monitoring. The monitoring of environmental and social parameters during the construction phase shall be carried out by the Contractor's safeguard team (i.e., Environmental, social, and safety experts) and under the supervision of the Consultant's safeguard team. The DCC will be responsible for mitigation and monitoring during the operation phase. Depending on the implementation status and sensitivity of any emerging issues, OSHA and NEMC will perform annual EHS reviews in which environmental concerns will be reviewed alongside project implementation.

Parameters to be monitored during the construction phase will include the Creation of employment (workers' employment contracts, wages paid to workers), Generation of dust (levels of dust generated by construction activities, implementation of measures to reduce dust, use of dust masks), Noise levels (levels of noise generated by equipment, maintenance activities, use of ear plugs for workers working in noisy areas), Gaseous emission (levels of exhaust generated by equipment), Disruption of domestic water supply in pipeline utilities (damage to pipelines, implementation measures to prevent damages to water supply utilities), Generation of wastes (management of wastes, treatment, and disposal of wastes), Road traffic congestion and accidents (fencing of work sites, separation of work site to public traffic and measures to prevent traffic congestion and accidents) and Health problems associated with the handling of cement and concrete (use of PPE, Work practice and hygiene). The budget for monitoring activities has been set.

CONCLUSION

Stakeholders have accepted the proposed DMDP 2 subproject roads in DCC as it is a positive project aiming to improve road infrastructures, reduce traffic congestion, and address climate change impacts. The study identified that most of the subproject roads pass along sensitive receptors in urban centers such as Ilala market, Kariakoo CBD, Kigilagila and Kivule markets, worship areas, schools, Msimbazi river, major highway junction, and Dispensary/Health centers. Monitoring of impacts is critical, and the monitoring parameters will include the Creation of employment (workers employment contracts, wages paid to workers), Generation of dust (levels of dust generated by construction activities, implementation of measures to reduce dust, use of dust masks), Noise levels (levels of noise generated by equipment, maintenance activities, use of ear plugs for workers working in noisy areas), Gaseous emission (levels of exhaust generated by equipment), Disruption of domestic water supply in pipeline utilities (damage to pipelines, implementation measures to prevent damages to water supply utilities), Generation of wastes (management of wastes, treatment, and disposal of wastes), Road traffic congestion and accidents (fencing of work sites, separation of work site to public traffic and measures to prevent traffic congestion and accidents) and Health problems associated with the handling of cement and concrete (use of PPE, Work practice and hygiene).

However, the subproject impacts can be mitigated following the timely application of measures stated in ESMP, adhering to the WB ESS, Tanzania environmental regulations, and Occupation health and safety regulations. The impacts could be reduced to acceptable limits. The ESMP contains mitigation measures for all identified impacts and a plan for their implementation. Further, a monitoring program has been designed to ensure the Contractor, DCC, TARURA, OSHA, and NEMC have a way of monitoring ESMP implementation either directly or indirectly.

The study findings conclude that the impacts of the proposed subprojects are substantial and can be mitigated through the proposed mitigation measures and good engineering practices. The ESIA team recommends that the proposed project proceed.

CHAPTER ONE

1 INTRODUCTION

1.1 Project background

Over the last twelve years, PO-RALG has successfully implemented the Tanzania Strategic Cities Project (TSCP), which closed on December 31, 2020; the Urban Local Government Support Program (ULGSP), also closed on December 31, 2020, and the Dar es Salaam Metropolitan Development Project (DMDP), closed recently on January 2, 2023. Together, these projects aimed to improve management, planning, and service delivery in 29 urban Local Government Authorities (LGAs). As these projects approached closure, technical discussions between the World Bank, PO-RALG, and other key stakeholders were underway in 2018 to shape the future urban program in Tanzania. Regarding DMDP, this was designed as a Series of Projects (SOP) to support the long-term development of the Dar es Salaam Metropolitan (Dar Metro) region. The recently closed DMDP was the first in the series to address urgent infrastructure demands for basic services, urban mobility, and flooding in the Dar Metro region, but also the need for support to develop the institutional structure and capacity to manage the future Mega-city of Dar es Salaam.

1.2 DMDP Phase 2 Components

DMDP Phase 2, which is to be implemented in 5 DLAs, i.e., the Municipal Councils (MCs) of Kinondoni, Ubungo, Temeke, and Kigamboni, and the Dar es Salaam City Council (DCC), includes the following four project components:

- (v) Component 1: Climate-Smart Priority Infrastructure
- (vi) Component 2: Integrated Metropolitan Solid Waste Management Infrastructure and Services
- (vii) Component 3: Strengthening Urban Institutions
- (viii) Component 4: Project Management

Component 1 is further subdivided into four subprojects as outlined hereunder:

- Sub-Component 1.1: Resilient Transport Infrastructure
- Sub-Component 1.2: Resilient and Green Drainage Systems
- Sub-Component 1.3: Parks and Open Space
- Sub-Component 1.4: Area-based Urban Development

Sub-Component 1.1 covers urban roads, drainage, parks and open spaces, and community infrastructure. The roads in Subcomponent 1.1 were further packed into three packages. Package 1 to 7 consists of improvements and constructions of priority sections of the existing local and feeder roads in the urban core, totaling 66.41 km, to reduce traffic congestion and improve accessibility to current and future Bus Rapid Transit (BRT) system and Standard Gauge Railway (SGR). This ESIA study is for the subcomponent 1-1, covering 66.41km of priority urban roads.

The Government of the United Republic of Tanzania, with financial support from the World Bank through the PO-RALG, commissioned UWP Consulting Ltd to carry out an ESIA study/Environmental and Social due Diligence for initial priority urban roads (Package 1 to 7) in Dar es Salaam City Council (DCC). **Package 1** subproject roads include Kitunda – Kivule – Msongola(9.95km) and Kivule - Majohe Junction Road (2.79km); **Package 2** includes Kiwalani Community (8.74km) Roads and **Package 3** includes Baracuda – Chang’ombe – Majichumvi (3.27km), Majumbasita – Segerea (3.31km) and Tabata Mawenzi – Kisiwani(2.12km) roads. **Package 4** subproject roads include Upanga CBD Roads, which are Undali (0.41km), Senegal (0.32km), Yangoro (0.3km), Mtitu (0.28km), Maweni (0.48km), Mathurudas(0.51km), Kiwanuka 2 (0.09km), Kitonga(0.38km), Kalenga(1.29km), Isevyu (0.35km), Bwera (0.22km), Viwandani (0.1km), Somali Kipande (0.12km), Lindi 1 (1.47), City Garden (0.34), Songea 3 (0.37), and Kilwa 2 (0.35). **Package 5** consists of Ilala CBD Roads, which includes Yegeyege(0.2km), Tunduru (0.15km), Tabora (0.44km), Sunset (0.31km), Simple Motel (0.32km), Sadani (0.48km), Pwani (0.17km), Bungoni (0.66km), Ngunde (0.09km), Ngongele (0.28km), Ngoma (0.2km), Mwela (0.24km), Mshikamano (0.09km), Mpendo (0.3km), Lindi 2 (1.05km), MinTanga(0.2km), Mwengwa(0.25km), Manyoni (0.32km), Korogwe (0.16km), Kipanzi (0.08km), Kilwa 1 + Kilwa 3 (1.32km), Kilosa (0.29km), Iringa (0.28km), Ilala (0.40km), Dodoma (0.29km), Bofu (0.04km) and Binti Mussa

(alhamood) road (0.25km). **Package 6** consists of Vingunguti roads and Pugu – Majohe Junction Road: Vingunguti Mnyamani(1.91km), Trump Road(1.01km), Zahanati Road(0.49km), Kwa Simba Rd(0.48km), Kituo Cha Yatima(0.34km), Pande Road (0.17km) and Pugu – Majohe Junction Road (9km). **Package 7** consists of Kariakoo CBD Roads: Ungoni (0.31km), Ukami (0.16km), Udowe (0.27km), Simba (0.08km), Ndovu (0.41km), Narungombe (1.04km), Mvita (0.16km), Muhoro (0.31km), Muhonda (0.54km), Muheza(0.36km), Mkunguni (0.16km), Matumbi B(0.11km), Masasi(0.32km), Magila(0.32km), Mafia (0.17km), Likoma (0.05km), Kibambawe (0.22km), Chui (0.09km), Bond(0.2km), Amani(0.11km), Tabora (0.28km), Bukoba (0.58km) and Nzasa (0.62km). .

The EIA Consultant ensured high-quality due diligence on environmental and social impacts and compliance with GoT and the World Bank Environmental and Social Framework (ESF).

1.3 The Project Objectives

The Development Objective of the Dar es Salaam Metropolitan Development Project (DMDP) Phase 2 is to scale up priority infrastructure, strengthen urban institutions, and introduce new investments in solid waste management.

The main objectives of the DMDP Phase 2 (Sub-Component 1.1: Resilient Transport Infrastructure) *are to reduce traffic congestion and improve accessibility to current and future Bus Rapid Transit (BRT) system and Standard Gauge Railway (SGR).*

1.4 Project Justification

The project will reduce travel times within the city, reduce urban flood risks, and mitigate the urban heat island effect (UHI). Urban greening will also contribute to carbon sequestration, while the transport infrastructure will help avoid greenhouse gas emissions by enhancing connectivity between the BRT corridors and nonmotorised transport.

1.5 Justification for Subcomponents Selection

The justification for the selection of the proposed roads for development was based on several social and environmental factors that can influence the implementation of the project. The Consultant made a general assessment of the condition of the sub-project roads and their justification to meet the demands of a liveable and economically productive metropolitan environment. The following were the criteria used for the selection of initial priority sub-projects:

- ❖ Reduction of travel times within the city;
- ❖ Prevention/reduction of urban flooding and erosion effects;
- ❖ Connectivity to the BRT corridors;
- ❖ Connectivity with DMDP Phase 1 Sub-projects;
- ❖ Provision of access to community and social economic activities;
- ❖ Contribution to the overall improvement of Dar es Salaam Transport Master Plan.
- ❖ Infrastructures under high population densities;
- ❖ Improvement of CBD environment and mobility;
- ❖ Potentiality for the improvement of urban drainage and flood control, etc.

1.6 Regulatory Requirements for ESIA

ESIA is a requirement based on the nation's laws and the lender's guidelines.

The Environmental Management Act (EMA) 2004 and the first schedule of The Environmental Management (Environmental Impact Assessment and Audit) (Amendment) Regulations (United Republic of Tanzania, 2018) detail the types of projects requiring and not requiring ESIA. This project falls in Type A, requiring a mandatory ESIA. Type A Projects are likely to have significant adverse environmental impacts; in-depth study is required to determine the impact's scale, extent, and significance and identify appropriate mitigation measures. The EMA guides environmental management and is administrated by the National Environmental Advisory Committee, the Directorate of Environment,

and the NEMC (United Republic of Tanzania, 2004). The NEMC's decision regarding the project will be based on the information emerging from this EIA process provided in the final EIS.

Further, the World Bank Environmental and Social Framework (ESF) requires the Borrower to conduct ESIA in accordance with the requirements of the Environmental and Social Standard 1 (ESS1): Assessment and Management of Environmental and Social Risks and Impacts. ESS1 applies to all projects supported by the Bank through Investment Project Financing. Annex 1 of the ESS1 requires the Borrower to undertake an environmental and social assessment to assess a project's environmental and social risks and impacts throughout the project life cycle.

1.7 Scope of the Study

The main scope of this study, as defined in the terms of reference, is to examine social and environmental risks and impacts associated with implementing the DMDP Phase 2. The study covers 66.41 km of road. The scope also covers an assessment of impacts and risks arising from the construction of proposed workers' camps, opening and operating borrow pits, quarries, water sources, access roads, etc.

This study, among other things, aims to ensure that environmental considerations are explicitly addressed and incorporated into the decision-making process. It also aims to anticipate and avoid, minimize, or offset the proposed project's adverse significant biophysical and social effects, promote sustainable development, and optimize resource use and management opportunities.

1.8 Approach and Methodology

The methodology used is in accordance with the World Bank Environmental and Social Framework, the general WBG Environmental, Health, and Safety (EHS) guidelines, and GoT EIA and Audit Regulations 2005 and its amendment of 2018. The study adopted the following approach.

1.8.1 General Approach

A multi-disciplinary team of experienced scientists and environmental professionals was assembled to carry out the required assessment on, among others:

- Occupational and community health and safety;
- Traffic management and road safety;
- Climate change assessment, including estimated greenhouse gas emissions;
- Cultural heritage impacts and opportunities for enhancement;
- Impacts on vegetation and habitat on-site and off-site (i.e., at borrow pits)
- Resource efficiency (energy, waster raw material use) and pollution prevention; and
- Social impacts assessment.

The Consultant conducted stakeholder engagement using the approved Stakeholders Engagement Plan (SEP), generated baseline data, conducted resource assessment, established the potential impacts, and developed mitigation measures for each identified impact. Further, the Consultant developed an environmental management plan against each impact and an environmental monitoring plan for the Valued Environmental and Social Components. An iterative approach was adopted among the safeguard team members and other project professionals (i.e., the design team).

During scoping, the Consultant's team utilized a checklist (developed earlier) for data gathering, analysis, and presentation. Team members conducted the reconnaissance investigations to determine the critical elements for analysis and the issues to be highlighted for planning and design purposes. Team meetings were held to discuss the progress of investigations and analyses and facilitate data integration toward understanding the systems at work in both the natural and built environment. The activities for each environmental component are briefly reported below and described in detail in subsequent sections.

- Site Reconnaissance;

- Review of previous reports, designs, and background documents;
- Environmental and social data collection (using the checklists);
- Field Studies (including sampling of environmental parameters);
- Stakeholder's Engagement.

1.8.2 Study Methodology

The Environmental Management Act guided the methodology used in this ESIA study (EMA, 2004) (URT, 2004), the WB Environmental and Socio Standards (ESS), and the WBGs General Environmental, Health, and Safety Guidelines, 2007. The ESIA process is closely related to the flowchart in Figure 1-1 and follows the steps described below.

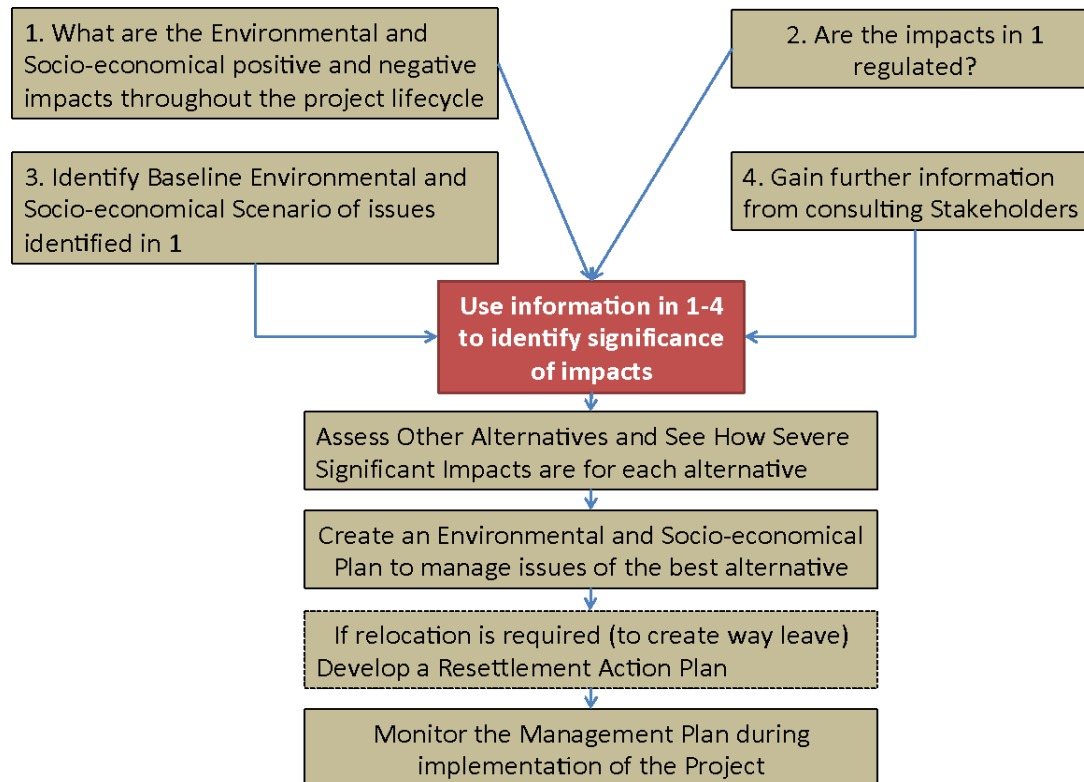


Figure 1-1: Overview of the Impact Assessment Process

1.8.3 Desk study

Desk study involved: identification and review of the country policies and laws that are relevant to the project; collection and review of previous study reports (including design reports) about the project; collection and review of information and data on the physical, social, economic, cultural as well as archaeological (if present); preliminary identification of key issues to be included in scoping report and the main ESIA study; and preparation for fieldwork, including notification of all stakeholders on the intention to conduct ESIA study as well as seek their co-operation. This was done by making phone calls, writing e-mails, and distributing letters seeking appointments to the stakeholders.

1.8.4 Fieldwork

The field visits were essential to fully realizing the project's scope. The Consultant made several visits. Fieldwork was intended to facilitate acquiring information and data on the project site and the neighboring area's physical, biological, and socioeconomic aspects. The baseline data collection was conducted by defining the scope of the ESIA. Data collected during scoping allowed the study team to determine whether more detailed information on environmental conditions at the development site and its surroundings is needed and where such information can be obtained.

1.8.5 Measurement of Baseline Environmental Data

1.8.5.1 Sampling of Air Quality Data

The ESIA team collected and analyzed baseline air quality and noise levels at selected sites, which are perceived to have the most sensitive receptors of air pollutants along the roads. Table 1-1 presents the coordinates of the selected sampling points.

The following sections present the sampling and analysis methodology for dust, gaseous pollutants, and noise levels. Air and noise sampling was done during the evening rush hours, which were associated with higher emissions.

1.8.5.2 Sampling of Baseline Dust Level

Dust levels were measured in terms of $PM_{2.5}$ and PM_{10} , using a portable device, brand Temtop M2000C (pictured in Figure 1-2). The Elitech Temtop M2000 2nd Generation sensor unit uses a Temtop PM200 particulate sensor, which separates dust particle size in $2.5 \mu g/m^3$ and $10 \mu g/m^3$ size range. The measurement principle is based on laser scattering, which converts particle numbers to mass concentrations through its proprietary algorithm. During measurements, the device was mounted at a breathing height (i.e., approximately 1.5 meters above the ground), and samples were collected for one hour.



Temtop M2000C device, used for measurement of dust level



FD-4S Portable Multi-Gas Detector used for measurement of ambient gaseous pollutants.

Figure 1-2: Some of the equipment used for the Temtop M2000C device, used for measurement of dust level

1.8.5.3 Sampling of Ambient Gaseous Pollutants

Baseline levels of ambient gaseous pollutants were measured using an FD-4S Portable Multi-Gas Detector (pictured in Figure 1-2). The instrument operates using a heated metal oxide semiconductor. The gas molecules adsorb onto the heated surface, where an oxidation-reduction reaction occurs, causing a change in the electrical conductivity of the metal oxide. This change is proportional to the concentration of the gas of interest. Parameters measured included carbon dioxide (CO_2), Sulfur Dioxide (SO_2), TVOC, and hydrogen sulfide (H_2S) in ppm. The sampling equipment was mounted on a tripod stand, about 1.5m above the ground. Three readings were collected at each sampling point, and the mean value represented that particular point. Results are presented in Chapter Four of this report.

1.8.5.4 Meteorological conditions

Temperature and relative humidity were measured at the same sampling points used for ambient air quality using the same device (e.g., Temtop M2000C). Four readings were recorded for each parameter, and the average value was used.

1.8.5.5 Ambient Noise Measurements

Noise levels were measured at the same locations as ambient air pollutants. As it was for gaseous pollutants, three readings were collected at each location, and the average values were used to represent noise levels at a particular location. The noise was measured by a Clas Ohlson digital sound level meter type 36-1604, model ST-805, measuring 30 to 130 dB (A). The meter meets ANSI S1.4 type 2 standards and conforms to IEC 651 type 2. The accuracy of the meter was calibrated to ± 1.5 dB of reading. The meter was calibrated using electrical calibration with a built-in oscillator (1 kHz sine wave). The meter was set to the "A" weighed measurement scale, which enables the meter to respond in the same manner as the human ear. The "A" scale applies to workplace compliance testing, environmental measurement, workplace design, and law enforcement. The meter was approximately 1.5 m above the ground and at least 0.5 m away from hard-reflecting surfaces such as walls. Results are presented in chapter four.

1.8.5.6 Water and sediments sampling

Water samples were collected in major waterways along the proposed roads (Figure 1-3). The collected samples are being analyzed at the Ardhi University Environmental Engineering Laboratory. The analysis was done in accordance with Standard Methods (2007) for water and wastewater Analysis (APHA), and results are presented in chapter 4 of this report.



Sediment sampling at the Kivule area



Water sampling at Mzingira River



Sediments sampling - Magereza River (Kipunguni area)

Figure 1-3: Sampling of water and sediments in selected hotspots along the roads

Table 1-1: Coordinates of environmental data sampling locations - Air Quality sampling locations

S/n	Road Name	Sampling location	Coordinates
1.	Banana-Kitunda and Kitunda-Kivule-Msongola	Banana bus stand	L: 6°52'17.62"S; LG: 39°11'21.08"E
		Kitunda relini	L: 6°53'30.57"S; LG: 39°11'28.99"E
		Kitunda shule	L: 6°54'3.79"S; LG: 39°11'48.41"E
		Kivule Fremu kumi/Market/bus stop	L: 6°57'7.54"S; LG: 39°10'40.88"E

S/n	Road Name	Sampling location	Coordinates
2.	Barakuda-Chang'ombe-Majichumvi	Chang'ombe bus stand	L: 6°50'10.01"S; LG: 39°12'19.84"E
		Majichumvi	L: 6°49'18.18"S; LG: 39°11'45.41"E
3.	Majumbasita-Segerea	SGR Bridge	L: 6°52'2.52"S; LG: 39°11'30.99"E
4.	Migombani	Kwa Mkuwa	L: 6°49'5.86"S; LG: 39°10'47.71"E
		Obama club	L: 6°49'37.22"S; LG: 39°11'17.98"E
5.	Tabata-Mawenzi-Kisiwani	Twiga	L: 6°49'13.45"S; LG: 39°12'54.66"E
6.	Ilala CBD	Junction of Mwanza Road and Uhuru Road, close to Amana Referral Hospital	L: 6°49'39.32"S; LG: 39°15'38.19"E
		Ilala market	L: 6°49'38.67"S; LG: 39°15'46.25"E
7.	Kariakoo CBD	Narung'ombe & Congo Street	L: 6°49'15.86"S; LG: 39°16'26.04"E
8.	Upanga CBD	Behind Tanganyika International School (TIS)	L: 6°47'56.54"S; LG: 39°16'36.03"E
9.	Vingunguti	Zahanati Road	L: 6°50'52.24"S; LG: 39°13'32.47"E
		Pelapela Mosque	L: 6°50'37.08"S; LG: 39°13'46.45"E

(Source: UWP, 2023)

Table 1-2: Coordinates of environmental data sampling locations- Water and/Sediments

S/n	Road Name	Sampling location	Coordinates
1.	Banana-Kitunda and Kitunda-kivule-Msongola	B1	L: 6°53'18.16"S; LG: 39°11'23.81"E
		B2	L: 6°54'23.98"S; LG: 39°11'38.25"E
		B3	L: 6°55'39.33"S; LG: 39°11'10.90"E
		B4	L: 6°56'46.87"S; LG: 39°10'40.59"E
		B5	L: 6°57'35.01"S; LG: 39°10'37.08"E
		B6	L: 6°58'20.14"S; LG: 39°10'21.65"E
2.	Barakuda-Chang'ombe-Majichumvi	Mazda-Mbuyuni	L: 6°49'45.82"S; LG: 39°11'58.16"E
		Majichumvi	L: 6°49'16.40"S; LG: 39°11'45.46"E
3.	Majumbasita-Segerea	River Msimbazi	L: 6°51'23.28"S; LG: 39°11'37.36"E
4.	Migombani	Daraja la Banyenza	L: 6°49'31.59"S; LG: 39°11'4.45"E
5.	Tabata Mawenzi-Kisiwani	Kisiwani-Mwananchi	L: 6°49'4.19"S; LG: 39°13'17.93"E

(Source: UWP, 2023)

1.8.5.7 Collection of biological information

Biological information was collected through several activities, including literature review, consultations, and rapid botanical appraisals in project areas such as along roads, rivers where the roads will pass, parks, pavements, and open public spaces. This work has employed a mixed-method approach, yielding robust findings and reliable recommendations. Literature review employed reviewing existing information on plants of Dar es Salaam, including Useful Trees and Shrubs of Tanzania (1995), Catalogue for Native Biodiversity of Dar es Salaam (2023), and Urban Greening Guidelines (2022) provided by PO RALG. Consultations were done with the experts and researchers who have worked around project areas to obtain perceptions and views on the plants and biodiversity in general. A standard plant biodiversity survey was carried out in project areas where species identity for those species that could be affected by the project was enumerated. Some trees, shrubs, and herbaceous vegetation were coordinated using a standardized hand-help GPS. Efforts were made to check the origin of such plants, whether native or exotic and its International Union for Conservation of Nature (IUCN) conservation status. For each species, a voucher specimen was collected, pressed, and brought to the herbarium of the University of Dar es Salaam for identity verification. Plants to be considered during the restoration were recommended

following Urban Greening Guidelines (2022), Catalogue for Native Biodiversity of Dar es Salaam (2023), and experts' opinions to avoid invasiveness and habitat and biodiversity degradations. During surveys, attention was paid particularly to plants with high socio-cultural values and sacred trees, e.g., the Baobab tree (*Adansonia digitata*, also known as the legendary tree of Dar es Salaam) the Sausage tree (*Kigelia africana*) and Ficus trees. The number, species types and uses of plant species found on selected site areas were enumerated to complement already collected data. Identification of plants followed Flora of Tropical East Africa. In each tree to be affected, a close look at other biodiversity, e.g., birds or their nests, was also attempted.

1.8.5.8 Collection of socio-economic data

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

1.8.5.9 Stakeholders Engagement

A Stakeholder Engagement Plan (SEP) was prepared by the Client, and was used to guide the process of consultation and engagement with project stakeholders. The SEP identified key stakeholders, analyzed their stake in the project, and included a plan for engaging with them and information on the Grievance Redress Mechanism. The team consulted several stakeholders to identify their concerns, views, possible risks and impacts, and mitigation options for various project activities. These consultations and the issues raised have been adopted in updating the engineering designs of the project, in the identification of impacts and development of mitigation measures, as well as in informing the various conclusions and suggestions made in this report. This report includes the following information.

- The SEP implementation (detailing involved stakeholders and how they were engaged throughout the project phases) together with stakeholder analysis.
- A list of stakeholders consulted.
- Method and techniques used to get stakeholder views and issues of concern raised.
- Issues raised by the stakeholders and the way they will be addressed.
- Records of stakeholder meetings, communications, and comments.

1.8.5.10 Project Impacts Identification and Assessment

Project-related environmental effects/impacts were identified and assessed based on the extent of interaction between project activities with Valued Environmental Components (VECs). The focus was on residual environmental effects/impacts, i.e., the environmental effects/impacts that remain after planned mitigations have been applied and cumulative impacts. The identification of impacts also considered impacts due to accidents, malfunctions, and unplanned events and effects/impacts of the environment on the Project.

The assessment was carried out in tabular form to facilitate the evaluation. It was followed by a detailed discussion of how the project may interact with the environment, mitigation measures, and the characterization of residual project environmental effects/impacts. Environmental effects/impacts for each VEC were characterized for each applicable Project phase and activity and presented in environmental effects/impacts.

The cumulative environmental impacts were identified by considering how project-related environmental impacts overlap with those of other planned projects or activities. The residual cumulative environmental effects/impacts of the Project in combination with other planned projects or activities were then evaluated, including the contribution of the Project to those cumulative environmental effects/impacts (as applicable). The methodology for identifying and assessing residual cumulative effects/impacts was the same as project-related environmental effects/impacts.

In line with the ToR for this assignment, The ESIA, among others, has included the assessment of impacts on the following:

- Occupational and community health and safety,
- Traffic management and road safety,
- Environmental and social impacts of road improvement,
- Climate change assessment, mitigation and adaptation measures,
- Habitats which may be affected by the project,
- Impacts of any tree and vegetation sourcing,
- Offsite facilities such as borrow pits and other materials extraction,
- Resource efficiency (energy, raw material use) and pollution prevention and management (e.g., air pollution, hazardous and non-hazardous wastes),
- Labor influx and worker camps, including GBV risks and
- Storage, management, and disposal of excavated materials; and construction and demolition waste (including hazardous waste).

The characteristics of residual environmental effects/impacts include:

- **Direction** – the ultimate long-term trend of the environmental effect (i.e., positive or adverse);
- **Magnitude** – the amount of change in a measurable parameter or variable relative to existing (baseline) conditions, defined for each VEC as low, medium, high, or other qualifier as deemed appropriate;
- **Geographic Extent** – the area where an environmental effect of a defined magnitude occurs, defined for each VEC based on definitions of PDA, LAA, and RAA as appropriate;
- **Frequency** – the number of times during the Project or a specific Project phase or activity that an environmental effect might occur (e.g., one time or multiple times) in a specified period;
- **Duration** – the period required until the VEC returns to its baseline condition or the environmental effect can no longer be measured or otherwise perceived (e.g., short-term, mid-term, long-term, or in some cases, permanent);
- **Reversibility** – the likelihood that a measurable parameter will recover from an environmental effect, including through active management techniques (e.g., habitat restoration); and
- **Ecological/Socioeconomic Context** – the general characteristics of the area in which the Project is located, as indicated by past and existing levels of human activity.

1.9 Consideration of Alternatives

This environmental assessment involved an analysis of alternatives to meet the ultimate project objectives. This analysis included alternatives that were examined while developing the proposed project. The alternatives considered were those that, from an environmental, sociocultural, or economic point of view, may be more viable than the proposed project.

The analysis of the project alternatives is considered the “No Project Alternative.” The study examined the implications of not proceeding with the project concerning environmental (both biophysical and socio-economic) factors. The proposed alternatives (options) in the Feasibility Study and Preliminary Design were evaluated based on technical, economic, financial, environmental, and social criteria. In addition, various alternative means of implementing the selected options were also considered. These include alternative location construction methods based on technical, economic, financial, environmental, and social criteria. Ultimately, ESIA describes the reasons for selecting the proposed alternatives over the others.

1.10 Developing an Environmental Management Plan

This report recommends measures to prevent or reduce any significant negative impacts to manageable levels. This involves:

- Measures to avoid an impact where possible.
- Estimating the impacts and costs of those measures and of the institutional and training requirements to implement them.
- Preparing a management plan including proposed work programs, budget estimates, schedules, staffing and training requirements, and other necessary support services to implement the mitigating measures.
- A management plan also covers the decommissioning phase of the project.

1.11 Developing an Environmental Monitoring Plan

A plan to monitor the implementation of mitigation measures and the impacts of the project during its execution is presented in this report. The plan includes a cost estimate and responsibilities for carrying out the proposed monitoring plan. Monitoring is critical as it saves the function of knowing whether the mitigation measures are effective, lessons learned from monitoring, provides data for management decisions and creates a database for future projects. Therefore, monitoring must be done properly and as stipulated in this report.

1.12 Structure of the Report

The report is structured to closely resemble Section 18 of the Environmental Impact Assessment and Audit Regulation of 2005, amended in 2018. Details of its content are presented hereunder.

- **Chapter one** contains an introduction that provides background information on the proposed project, its development objectives, rationale, and proposed project implementation arrangements.
- **Chapter two** contains the project description, which describes the location and relevant components of the project and their activities.
- **Chapter three** illustrates policy, legal and administrative framework, which are the relevant Tanzanian environmental policies and legislation applicable to construction projects.
- **Chapter four** provides baseline information relevant to environmental characteristics, giving details concerning the Biophysical and socio-economic environment in the project area.
- **Chapter five** describes the consultation exercise in the project area, detailing the list of stakeholders consulted and the issues raised.
- **Chapter six** describes the project's likely positive and negative environmental impacts from the different phases (the planning and designing, construction, operation and maintenance, and demobilization phases).
- **Chapter seven** gives the mitigation measure for the potential negative impact of the project.
- **Chapter eight** presents the Environmental and Social Management Plan (ESMP).
- **Chapter nine** presents the Environmental Monitoring Plan, which contains the proposed institutions to carry out the monitoring activities, the monitoring indicators, the time frame, and the proposed budget for monitoring.
- **Chapter ten** gives the summary and conclusions of the study.

Appendices containing some key primary information collected during the study are attached at the end of this report. Generally, the report structure flows in conformity with that specified in the EIA and Audit Regulations of 2005 and its amendments of 2018.

1.13 Public Disclosure of the ESIA

The DMDP II Project was disclosed at different stages of the ESIA process and was part of the Stakeholder Engagement Plan (SEP) that was developed for this project. The project was disclosed to the Government and Political

leaders of Dar es Salaam Region, the local government, and the general community, at the level of Mtaa. Disclosed information included the purpose, nature, and scale of the project; the duration of the various project activities; risks to and potential impacts arising from the project; and the planned stakeholder engagement process. Also, disclosure involved sharing information with stakeholders regarding a grievance redress mechanism that stakeholders can use throughout the project life. Upon approval, the ESIA report will also be shared through open public domains such as PO-RALG and the DCC website and library.

CHAPTER TWO

2 PROJECT DESCRIPTION

This section describes the project location, project components, and design. For ease of procurement and logistics, the proposed roads under Sub-Component 1.1 were categorized and grouped into seven Packages. This ESIA report is for Packages 1 to 7.

2.1 The Project Packaging

The main objectives of the packaging were based on the need for efficiency in both initial procurement and subsequent construction activities. The packaging was split into packages covering works in particular areas (i.e., Banana Msongola Road, Tabata Roads, and Kiwalani Community Roads) for efficiency in procurement, contract management, and construction. *Table 2-1* presents the names and lengths of the roads in Packages 1 to 7.

Table 2-1: Details of subproject packaging

Package	Subproject Name	Road Name	Length (KM)
1	Upgrading of Kitunda – Kivule – Msongola Road and Kivule – Majohe Junction Road in Dar es Salaam City	Kitunda – Kivule - Msongola	9.95
		Kivule - Majohe Junction Road	2.79
		Subtotal 1	12.74
2	Upgrading of Kiwalani Community Roads (Community Park 1 - Roads 1 & 2, Community Park 2 - Roads 1–4, Kigilagila Market - Roads 1-3 and Bombom Market Road), Banana – Kitunda Road and Migombani Road in Dar es Salaam City	Bombom Market Road	0.12
		Community Park 1 - Road 1	0.35
		Community Park 1 - Road 2	0.11
		Community Park 2 - Road 1	0.38
		Community Park 2 - Road 2	0.56
		Community Park 2 - Road 3	0.11
		Community Park 2 - Road 4	0.11
		Kigilagila Market - Road 1	0.76
		Kigilagila Market - Road 2	0.28
		Kigilagila Market - Road 3	0.44
		Banana – Kitunda Road	3.95
		Migombani Road	1.57
		Subtotal 2	8.74
3	Upgrading of Tabata Roads (Barakuda - Changombe – Majichumvi, Majumba Sita – Segerea, and Tabata Mawenzi – Kisiwani Roads) in Dar es Salaam City	Baracuda – Chang'ombe - Majichumvi	3.27
		Majumbasita - Segerea	3.31
		Tabata Mawenzi - Kisiwani	2.12
		Subtotal 3	8.70
4	Upgrading of Upanga CBD Roads in Dar es Salaam City	Undali Road	0.41
		Senegal Road	0.32
		Nyangoro Road	0.30
		Mtitu Road	0.28
		Maweni Road	0.48
		Mathuradas Road	0.51
		Kiwanuka 2 Road	0.09
		Kitonga Road	0.38
		Kalenga Road	1.29
		Isevya Road	0.35
		Bwera Road	0.22
		Viwandani Road	0.10
		Somali Kipande Road	0.12
		Lindi 1 Road	1.47

Package	Subproject Name	Road Name	Length (KM)
		City Garden Road	0.34
		Songea 3 Road	0.37
		Kilwa 2 Road	0.35
		Sub- Total	7.38
5	Upgrading of Ilala CBD Roads in Dar es Salaam City	Yegeyege Road	0.20
		Tunduru Road	0.15
		Tabora Road	0.16
		Sunset Road	0.31
		Simple Motel Road	0.32
		Sadani Road	0.48
		Pwani Road	0.17
		Bungoni Road	0.66
		Ngunde Road	0.09
		Ngongele Road	0.28
		Ngoma Road	0.20
		Mwela Road	0.24
		Mshikamano Road	0.09
		Mpendo Road	0.30
		Lindi 2 Road	1.05
		Min Tanga Road	0.20
		Mwengwa Road	0.25
		Manyoni Road	0.32
		Korogwe Road	0.16
		Kipanzi Road	0.08
		Kilwa 1 Road + Kilwa3 Road	1.32
		Kilosa Road	0.29
		Iringa Road	0.28
		Ilala Road	0.40
		Dodoma Road	0.29
		Bofu Road	0.04
		Binti Mussa (Alhamood) Road	0.25
		Sub-Total	8.58
6	Upgrading of Vigunguti Roads and Pugu – Majohe Junction Road in Dar es Salaam City	Vingunguti – Mnyamani Road	1.91
		Trump Road	1.01
		Zahanati Road	0.49
		Kwa Simba Road	0.48
		Kituo cha Yatima Road	0.34
		Pande Road	0.17
		Sub - Total	4.40
		Pugu – Majohe Junction Road	9.00
		Sub - Total	9.00
7	Rehabilitation and Upgrading of Kariakoo CBD Roads Roads in Dar es Salaam City	Ungoni Road	0.31
		Ukani Road	0.16
		Udowe Road	0.27
		Simba Road	0.08
		Ndovu Road	0.41
		Narungombe Road	1.04
		Mvita Road	0.16
		Muhoro Road	0.31
		Muhonda Road	0.54
		Muheza Road	0.36
		Mkunguni Road	0.16
		Matumbi B Road	0.11
		Masasi Road	0.32
		Magila Road	0.32
		Mafia Road	0.17
		Likoma Road	0.05
		Kibambawe Road	0.22

Package	Subproject Name	Road Name	Length (KM)
		Chui Road	0.09
		Bond Road	0.20
		Amani Road	0.11
		Tabora Road	0.28
		Bukoba Road	0.58
		Nzasa Road	0.62
		Sub - Total	6.87
		GRAND TOTAL	

Source: (UWP, 2023)

2.2 Project Location

The proposed DMDP-II subprojects are located in Dar es Salaam Region in Dar es Salaam City Council (DCC), distributed in several wards and sub-wards, as presented in **Error! Reference source not found.** and Figure 2-1. The proposed roads in Packages 1 to 7 traverse commercial and residential areas, with the population presented in Table 2-2.

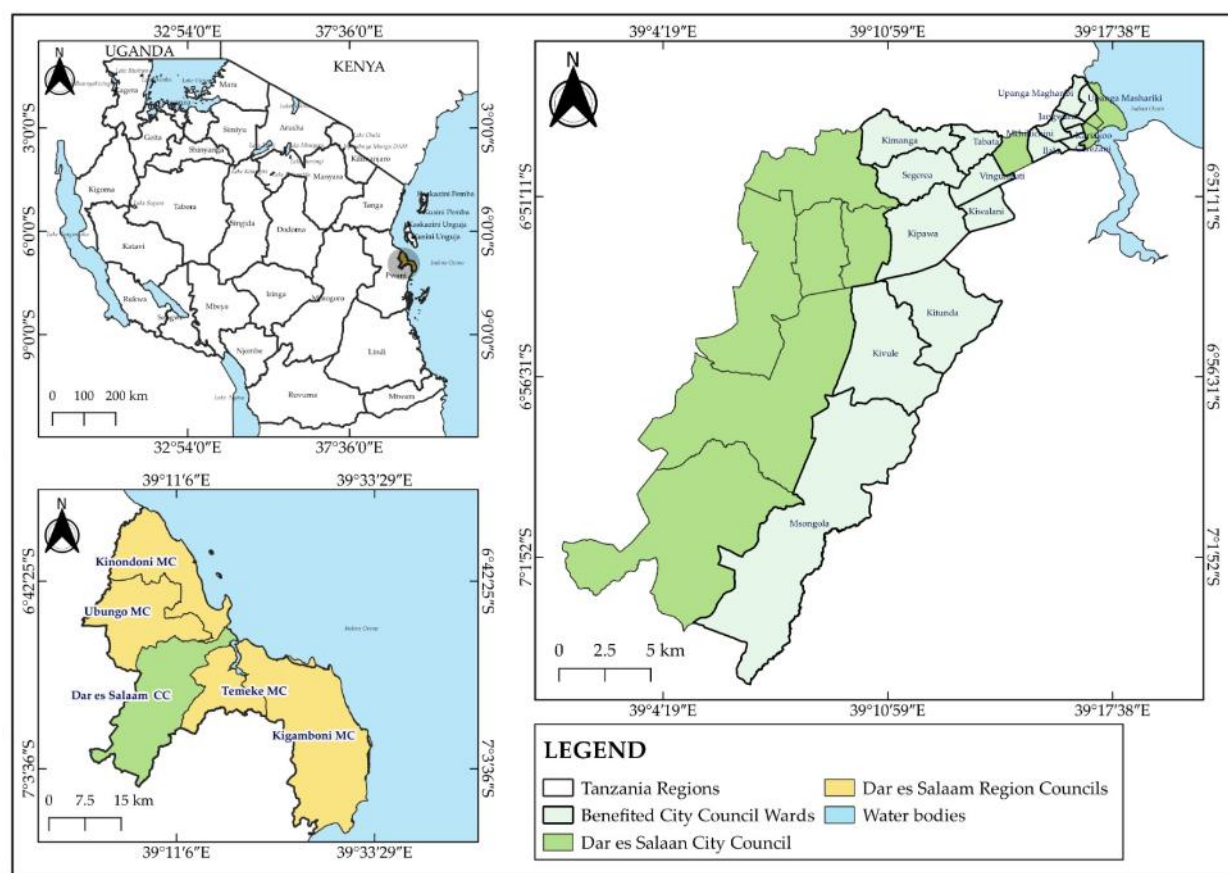


Figure 2-1: Maps showing the locations of the project in Tanzania, Dar and Ilala Maps

Table 2-2: Location of the proposed roads under Packages 1 to 7

SUB-PROJECT NAME	LOCATION		POPULATION
	WARD	MTAA	
Banana – Kitunda – Kivule – Msongola Road	Kipawa	Kipunguni	70,278
	Kitunda	Relini	

SUB-PROJECT NAME		LOCATION		POPULATION
		WARD	MTAA	
			Kitunda	
		Msongola	Yangeyange	
		Kivule	Kivule	
			Kerezange	
Tabata Roads	Majumbasita – Segerea Road	Segerea	Segerea	26,389
			Migombani	
		Kipawa	Mogo	
	Barakuda – Chang’ombe – Majichumvi Road	Segerea	Ugomboro	69,575
			Machimbo	
		Kimanga	Tembo Mgwaza	
			Kimanga	
		Liwiti	Amani	
			Liwiti	
		Mfaume		
	Migombani road	Kisukuru	Luhanga	19,504
			Mianzini	
	Tabata Mawenzi – Kisiwani Road	Kimanga	Twiga	19,798
			Darajani	
Tabata		Kisiwani		
Kiwalani Community Roads		Kiwalani	Yombo	40,049
			Kigilagila	
			Kiwalani	
Upanga CBD Roads		Upanga Mashariki	Bwera	21,162
			Kitunga	
		Upanga Magharibi	Charambe	
Kariakoo CBD Roads		Kariakoo	Kariakoo Mashariki	16,032
			Kariakoo kaskazini	
		Gerezani	Gerezani Magharibi	
Ilala CBD Roads		Ilala	Kasulu	23,787
			Mafuriko	
			Sharif shamba	
Vingunguti Roads		Vingunguti	Mtakuja	66,342
			Miembeni	
			Butiama	

(Source: UWP, 2023)

2.3 The Description of the Proposed Roads

The selected initial priority sub-projects within DCC and their justifications are presented in *Table 2-3* to *Table 2-12*. For each road, the justification for its inclusion, its physical condition, and an estimate of the level of compensation are also described. The level of compensation is rated **Low**, **Moderate**, or **High** based on the survey done along the roads to investigate **available space**. The list of subproject roads under this study is indicated in *Table 2-1*.

Table 2-3: The profile of the Banana – Kitunda (3.95km) and Kitunda – Kivule – Msongola Road (9.95km)

Road Condition	Fair
Rationale for upgrading	• Link Ilala and Temeke District • Links Regional roads (Pugu and Mbagala-Mvuti Road) • Upgrading Informal settlements • Daladala route • Communities to social and economic services (Kivule hospital Schools, Markets, Mosques, churches)

		- Addressing floods/Resilience - Links commuter routes				
Segment		S1	S2	S3	S4	Total
Location	From	0+000				
	To	12+60				
Length (km)		12.60	3.71			16.31
Traffic Volume	Year	2020	2021	2022	2023	
	PCU/day	2805	3285	3462	3849	13401
Estimated Cost (US\$ million)						
Resettlement Impact		Low	Moderate		High	
		√				

Table 2-4: The profile of the Barakuda – Chang'ombe – Majichumvi Road (3.27km)

Road Condition		Poor				
Rationale for upgrading		- Links Regional roads (Tabata-Segerea, Makuburi Road) - Links three wards (Kisukuru, Kimanga and Liwiti) - Links Trunk Road (Nyerere Road) to the airport - Links DMDP I to the Banebane road, which links with the Morogoro road - Upgrading informal settlements - Communities to social and economic services (Schools, Business Centres, Hospital, Cemetery, Religious Services) - Addressing floods/resilience - Daladala Bus Routes				
Segment		S1	S2	S3	S4	Total
Location	From	0+000				
	To	3+270				
Length (km)		3.27				3.27
Traffic Volume	Year	2020	2021	2022	2023	
	PCU/day	1457	1975	2165	2841	8438
Estimated Cost (US\$ million)		2.23				
Resettlement Impact		Low	Moderate		High	
			√			



Table 2-5: The profile of the Mjumba sita – Segerea Road + Bridge (3.31km)

Road Condition		Poor				
Rationale for upgrading		- Links Regional roads (Tabata and Majumba Sita Road) - Link Trunk Road (Nyerere Road, future BRT Network and Daladala route) - Communities to social and economic services (Schools, Public Offices, Churches, mosques etc.) - Links DMDP I Road Investment (School Road) - Links commuter routes				
Segment		S1	S2	S3	S4	Total
Location	From	0+000				
	To	3+310				
Length (km)		3.31				
Traffic Volume	Year	2020	2021	2022	2023	
	PCU/day	655	732	945	1105	3437
Estimated Cost (US\$ million)		2.98				
Resettlement Impact		Low		Moderate		High
		√				

Table 2-6: The profile of the Tabata Mawenzi – Kisiwani Road (2.12KM)

Road Condition		Poor				
Rationale for upgrading		- Upgrading informal settlements - Link Trunk Road (Nelson Mandela Road), future BRT Network, and Daladala bus route - Link Kimanga road daladala route - Communities to social and economic services (Schools, Business Centres, Hospital, Business Centres, Public Offices, Markets, Religious Services, etc.) - Addressing floods/Resilience - Links commuter routes				
Segment		S1	S2	S3	S4	Total
Location	From	0+000				
	To	2+120				
Length (km)		2.12				2.12
Traffic Volume	Year	2020	2021	2022	2023	
	PCU/day	748	798	867	946	3359
Estimated Cost (US\$ million)		2.10				
Resettlement Impact		Low		Moderate		High
		√				

Table 2-7: The profile of the Migombani Road (2.93KM)

Road Condition		Poor				
Rationale for upgrading		- Upgrading informal settlements - Link Mabibo External to Kimara Korogwe Road - Link DMDP 1 Construction Road - Communities to social and economic services (schools, business centers, hospitals, business centers, public offices, markets, religious services, etc.)				

		- Addressing floods/Resilience - Links commuter routes				
Segment		S1	S2	S3	S4	Total
Location	From	0+000				
	To	2+93				
Length (km)		2.93				2.93
Traffic Volume	Year					
	PCU/day					
Estimated Cost (US\$ million)						
Resettlement Impact		Low		Moderate		High
						√



Table 2-8: The profile of the Kiwalani Roads (3.22km)

Road Condition		Poor				
Rationale for upgrading		- Links Regional Road (Airport Road) - Roads to Markets and Community parking constructed in DMDP I (Kigilagila Market, Bombom Market, Kigilagila Community Parks) - Communities to social and economic services Daladala Bus route				
Segment		S1	S2	S3	S4	Total
Location	From	0+000				
	To	3+500				
Length (km)		3.22				3.22
Traffic Volume	Year	2020	2021	2022	2023	
	PCU/day	458	822	917	983	3180
Estimated Cost (US\$ million)						
Resettlement Impact		Low		Moderate		High
				√		



Table 2-9: Profile of Upanga CBD Roads (4.63KM)

Subproject Name		Upanga CBD Roads				DLA: DCC
Road Condition		Fair				
Rationale for upgrading		• Communities to social and economic services Sports Centre, Schools, Health centers, Religious Services, etc.) • Addressing floods/resilience • Links Trunk roads UN road, Bibititi Mohammed road, and Morogoro road • Daladala Bus route • Links Future BRT Network • Links commuter routes • Population				
Segment		S1	S2	S3	S4	Total
Location	From					
	To					
Length (km)		4.31				4.31
Traffic Volume	Year	2020	2021	2022	2023	
	PCU/day	1598	1708	2718	3061	9085
Estimated Cost (US\$ million)						
Resettlement Impact		Low	Moderate		High	
		V				

Table 2-10: Profile of Kariakoo CBD Roads (12.42KM)

Subproject Name		Kariakoo CBD Roads				DLA: DCC
Road Condition		Fair				
Rationale for upgrading		• Links Regional roads (Morogoro Road, Bibititi Mohamed Road, Msimbazi Road, and Nyerere Road)				

		• Communities to social and economic services, Schools, Business Centres, Health centers, Markets, Religious Services, etc.) • Links BRT Network • Daladala Bus Routes • Link DMDP 1 Construction roads • Addressing floods/resilience • Links commuter routes • Population				
Segment		S1	S2	S3	S4	Total
Location	From					
	To					
Length (km)		8.23				8.23
Traffic Volume	Year	2020	2021	2022	2023	
	PCU/day	6505	6894	7234	7852	28485
Estimated Cost (US\$ million)						
Resettlement Impact		Low		Moderate		High
		V				

Table 2-11: Profile of Ilala CBD Roads (8.55km)

Subproject Name		Ilala CBD Roads				DLA: Ilala MC
Road Condition		Fair				
Rationale for upgrading		• Addressing floods/resilience • Links Trunk roads (Kawawa Road Future BRT Network) and regional road (Uhuru Road) Future BRT Network • Communities to social and economic services (Colleges, Schools, Health centers, Markets, Religious Services, etc.) • Addressing floods/resilience • Links commuter routes • Population				
Segment		S1	S2	S3	S4	Total
Location	From					
	To					
Length (km)		8.46				8.46
Traffic Volume	Year	2020	2021	2022	2023	
	PCU/day	2170	2980	4707	5118	14975
Estimated Cost (US\$ million)						
Resettlement Impact		Low		Moderate		High
		V				

Table 2-12: Vingunguti profile for roads (4.4km)

Subproject Name		Vingunguti Roads				DLA: DCC
Road Condition		Fair				
Rationale for upgrading		• Upgrading informal settlements • Links Regional roads (Segerea Road) • Communities to social and economic services Industrial areas, Slaughterhouse (machine) (Schools, Business Centres, Health Center Vingunguti Health center, Public Offices, Informal Car Parking, Police Station, Markets, and Religious Services, etc.) • Addressing floods/resilience • Links Daladala routes (Vingunguti-baracuda route) • Population				
Segment		S1	S2	S3	S4	Total
Location	From	0+000	0+000			
	To					
Length (km)						
Traffic Volume	Year	2020	2021	2022	2023	
	PCU/day	651	784	1054	1146	3635
Estimated Cost (US\$ million)		2.40				
Resettlement Impact		Low		Moderate		High
		V				

2.4 Project components

For the ESIA study, each subproject is considered a separate project component. Therefore, the DCC DMDP II Packages 1 to 7 project has a total of 12 components, as presented in *Table 2-13*.

Table 2-13: Project components, available corridor, and proposed cross-section for the DCC

S/No.	Component name	Available corridor (m)	Proposed Cross section*
1	Banana – Kitunda – Kivule – Msongola Road	13	Type 2
2	Kivule – Majohe Junction Road	13	Type 2
3	Barakuda – Chang’ombe – Majichumvi Road	8	Type 2
4	Majumba Sita – Segerea Road	15	Type 2
5	Tabata Mawenzi – Kisiwani Road	9	Type 5(a)
6	Migombani Road	7	Type 5(a)
Kiwalani Community Roads			
7	Bombom Market Road	10	Type 5(a)
8	Community Park 1 – Road 1	10	Type 5(a)
9	Community Park 1 – Road 2	10	Type 5(a)
10	Community Park 2 – Road 1	10	Type 5(a)
11	Community Park 2 – Road 2	10	Type 5(a)
12	Community Park 2 – Road 3	10	Type 5(a)
13	Community Park 2 – Road 4	10	Type 5(a)
14	Kigilagila Market – Road 1	10	Type 5(a)
15	Kigilagila Market – Road 2	10	Type 5(a)
16	Kigilagila Market – Road 3	10	Type 5(a)

S/No.	Component name	Available corridor (m)	Proposed Cross section*
Upanga CBD Roads			
17	Undali	12.5	Type 1(b)
18	Senegal	12	Type 1(a)
19	Nyangoro	12	Type 1(b)
20	Mtitu	12	Type 2
21	Maweni	12	Type 1(b)
22	Mathuradas	15	Type 2
23	Kiwanuka 2	15	Type 1(b)
24	Kitonga	12	Type 1(b)
25	Kalenga	15	Type 2
26	Isevyu	12	Type 1(b)
27	Bwera	10	Type 2
Kariakoo CBD Roads			
28	Viwandani	15	Type 2
29	Ungoni	12	Type 2
30	Ukani	12	Type 2
31	Udowe	12	Type 2
32	Somali Kipande	10	Type 2
33	Simba	12	Type 2
34	Ndovu	12	Type 2
35	Narungombe	12	Type 2
36	Mvita	12	Type 2
37	Muhoro	12	Type 2
38	Muhonda	11	Type 2
39	Muheza	11	Type 2
40	Mkunguni	15	Type 2
41	Matumbi B	12	Type 2
42	Masasi	12	Type 2
43	Magila	12	Type 2
44	Mafia	15	Type 2
45	Lindi	15	Type 2
46	Likoma	12	Type 2
47	Amani	13	Type 2
48	City Garden	10	Type 2
49	Kibambawe	12	Type 2
50	Chui	12	Type 2
51	Bond	12	Type 2
Ilala CBD Roads			
52	Yegeyege	7	Type 2
53	Tunduru	14	Type 2
54	Tabora	13	Type 2
55	Sunset	11	Type 2
56	Simple Motel	11	Type 2
57	Sadani	11	Type 2
58	Pwani	12	Type 1(b)
59	Nzasa	11	Type 2
60	Ngunde	12	Type 1(b)
61	Ngongele	13	Type 2

S/No.	Component name	Available corridor (m)	Proposed Cross section*
62	Ngoma	9	Type 2
63	Mwela	12	Type 2
64	Mshikamano	12	Type 1(b)
65	Mpendo	11	Type 2
66	Moshi	10	Type 2
67	Min Tanga	12	Type 2
68	Mwengwa	11	Type 2
69	Manyoni	10	Type 2
70	Korogwe	12	Type 2
71	Kipanzi	12	Type 1(b)
72	Kilwa 1	13	Type 2
73	Kilwa 2	13	Type 2
74	Songea 3	12	Type 2
75	Kilosa	13	Type 2
76	Iringa	11	Type 2
77	Ilala	13	Type 2
78	Dodoma	12	Type 2
79	Bukoba	10	Type 2
80	Bofu	11	Type 2
81	Binti Mussa (Alhamood)	12	Type 2
Vigunguti Roads			
82	Vingunguti – Mnyamani	9	Type 5(a)
83	Trump	7	Type 5(a)
84	Zahanati	6	Type 5(a)
85	Kwa Simba	6	Type 5(a)
86	Kituo cha yatima	6	Type 5(a)
87	Pande	7	Type 5(a)

Source: (UWP, 2023)

The design of each of the component will include

- Construction of the carriageway (varying dimensions depending on space availability)
- Construction of bridges and culverts where required;
- Construction of side drains (storm water drains) and other flood management measures;
- Construction of bus bays;
- Construction of pedestrian way;
- Installation of security lights and traffic lights;
- Traffic calming measures and other road signs and
- Greening

2.5 The Project Design

The ESIA was conducted parallel with the preliminary road design works. The proposed project is purely Civil works and will involve construction improvement and upgrading the earth road to asphalt level. Upgrading and replacing existing drainage and major central bridge structures and constructing new, additional drainage and bridge structures (including one major bridge across River Msimbazi in the Tabata area) are also important features of the proposed works. Pertinent features of the road design are shown in the typical road cross sections shown in Figure 2-2 to 2-6, based on available space.

Findings from the analysis of available space done on all components are also presented in Table 2-14. Due to space limitations and other factors, different road section types have been proposed, as presented in the table. The new roads will be designed with provisions for drainage structures, bus bays, pedestrian walkways, and crossings. In areas where the corridor is inadequate, land acquisition will be negotiated with the communities along the road. Identifying convenient locations for bus bays and Bodaboda/Bajaj parking areas and crossings will be done in consultation with the stakeholders. The road's design speed will be adjusted as necessary through streets and areas with a high density of people (i.e., shopping centers near schools and worship areas). The road design life is 20 years.

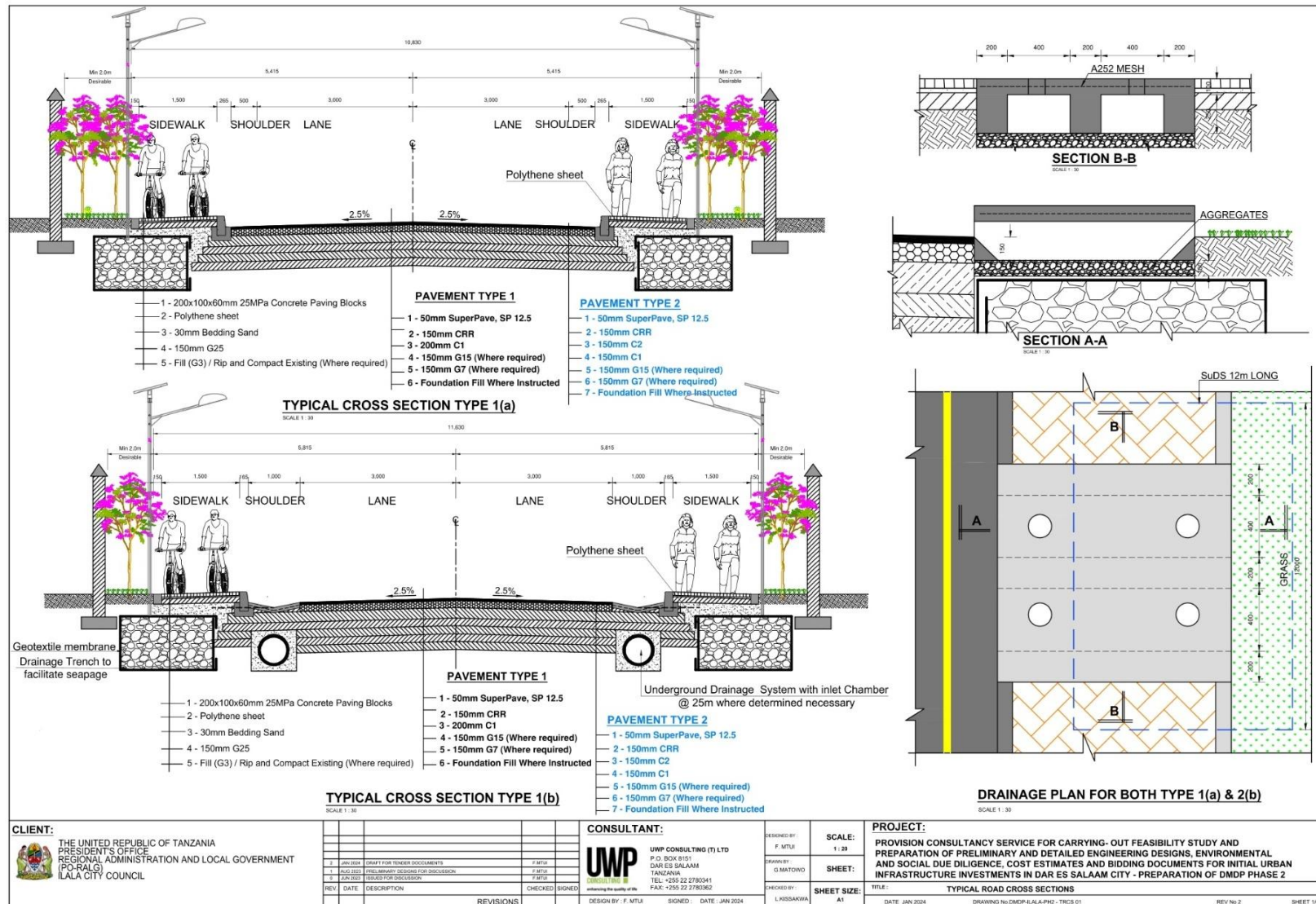


Figure 2-2: Proposed typical cross sections types 1a and 1b

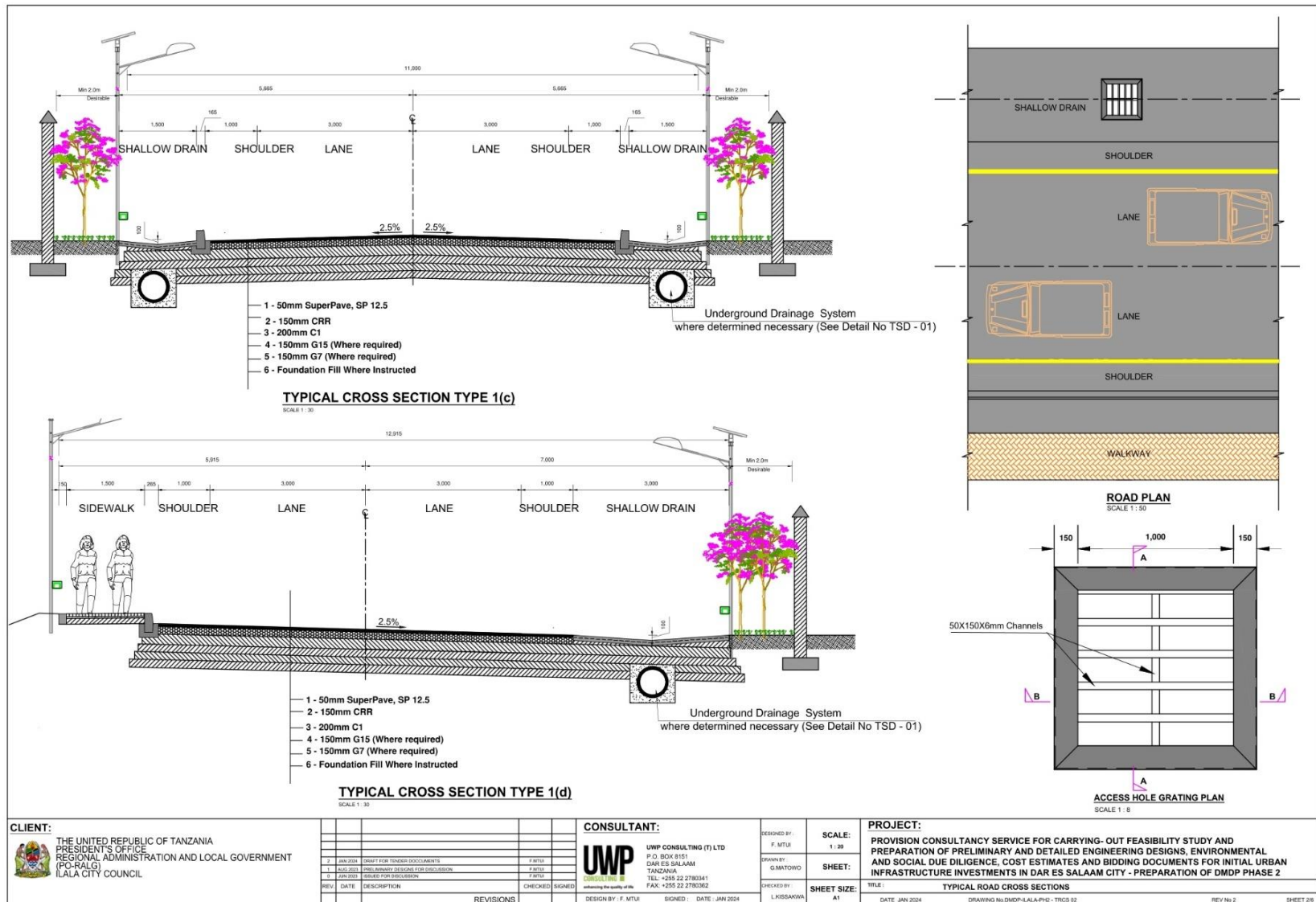


Figure 2-3: Proposed typical cross sections types 1c and 1d

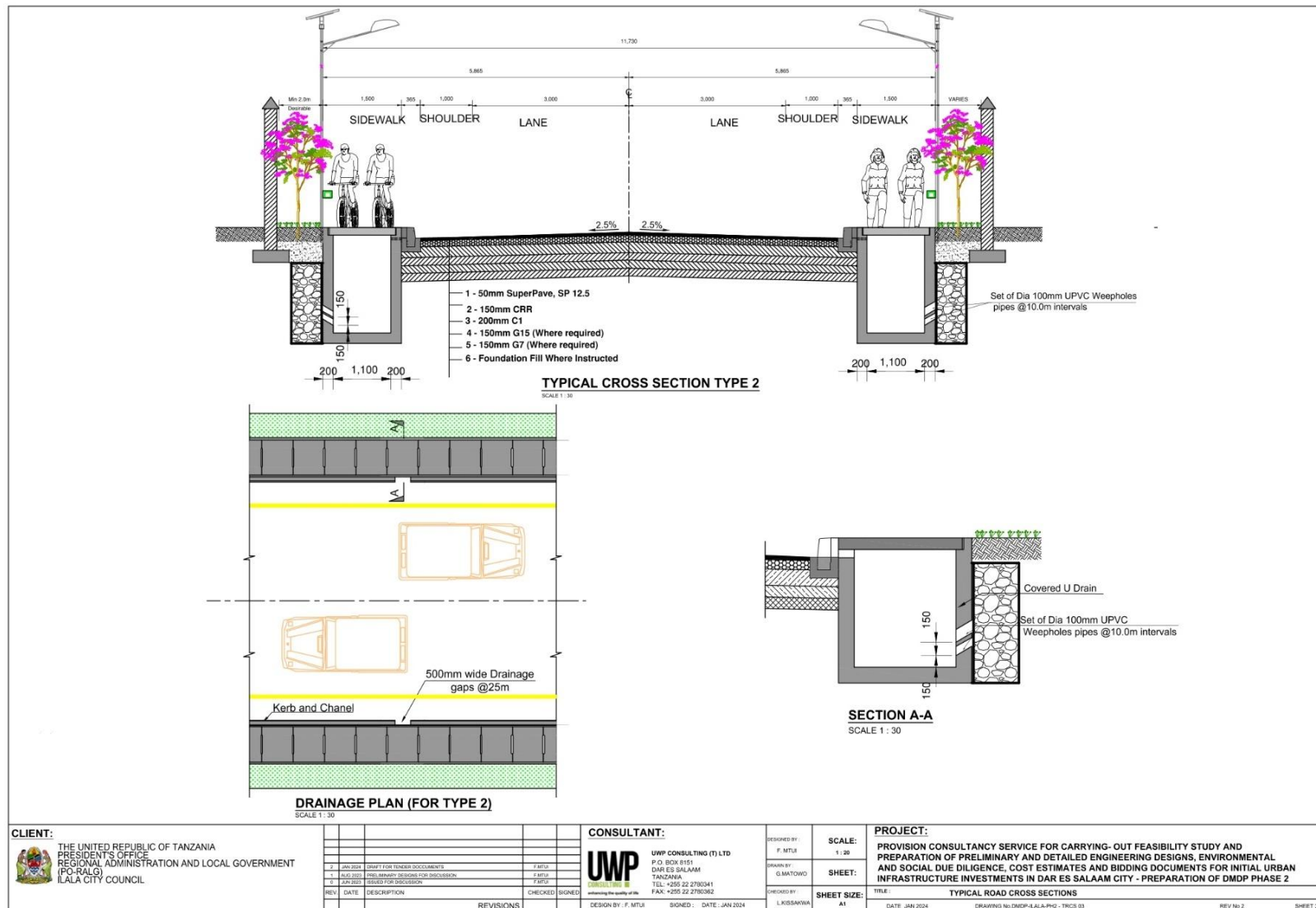


Figure 2-4: Proposed typical cross sections types 2

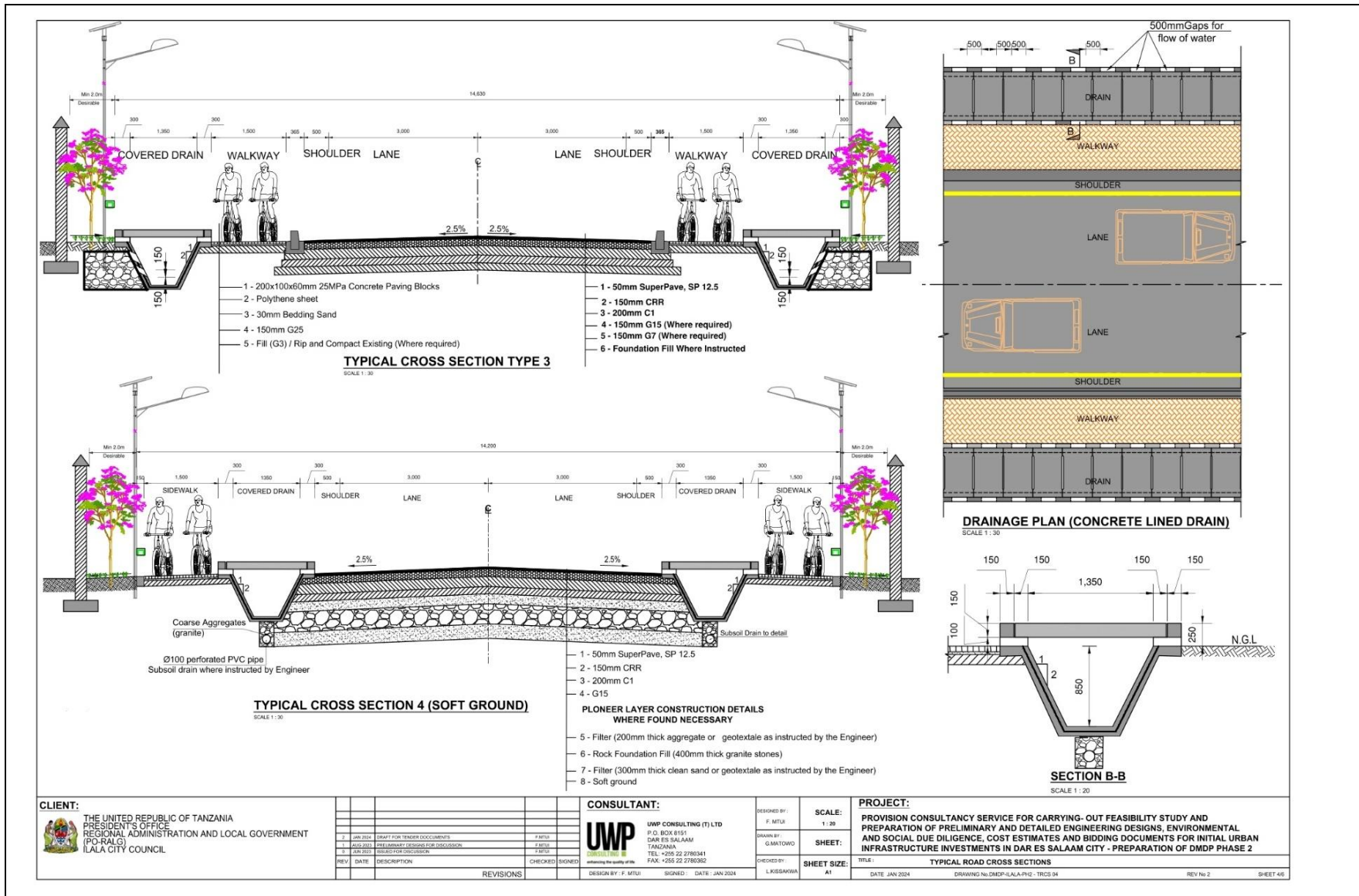


Figure 2-5: Proposed typical cross sections type 3&4

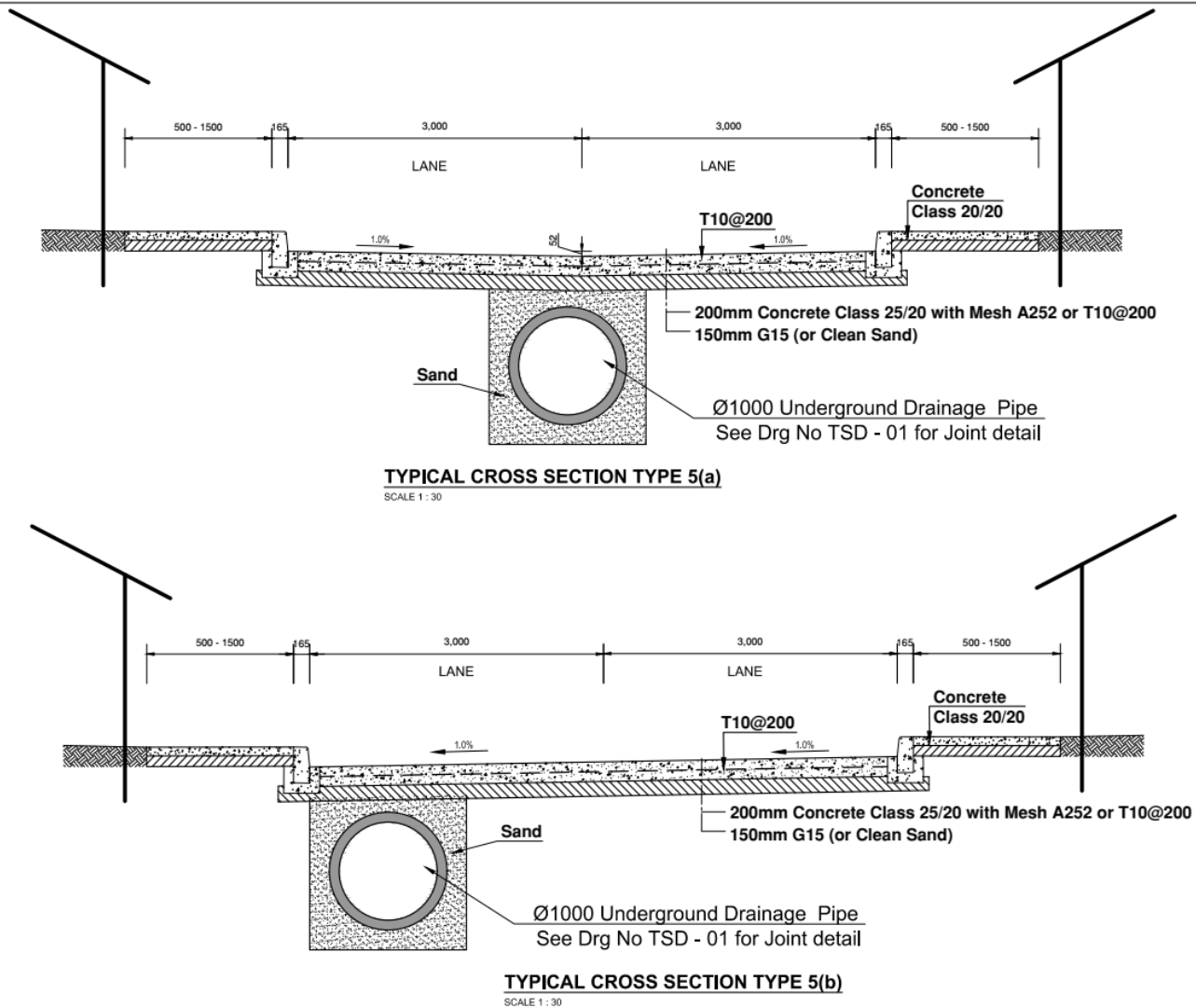


Figure 2-6: Proposed typical cross sections types 5a and 5b

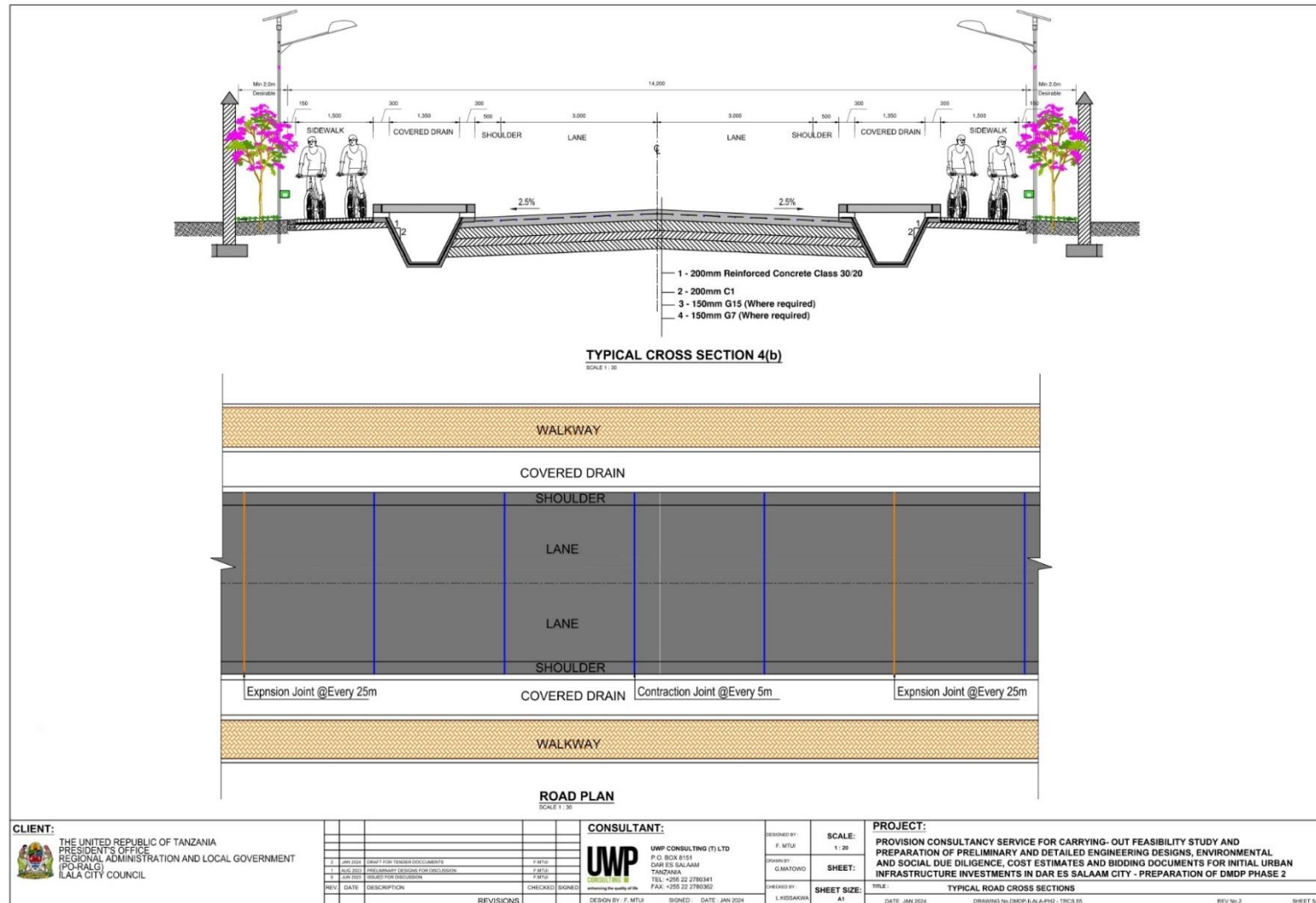


Figure 2-7: Proposed typical cross sections types 4b and walkway

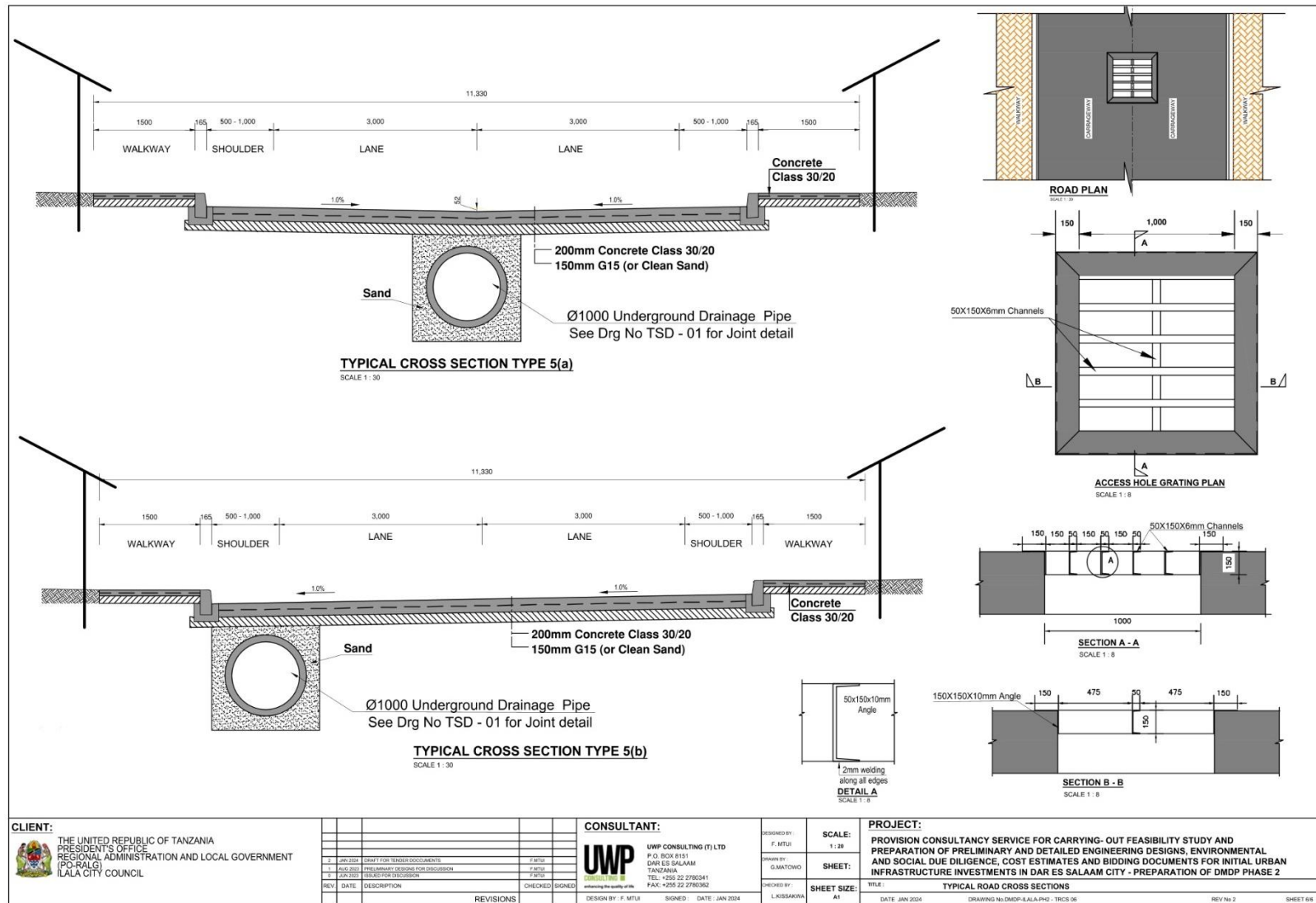


Figure 2-8: Proposed typical cross sections types 5a&5b with access to grating plan

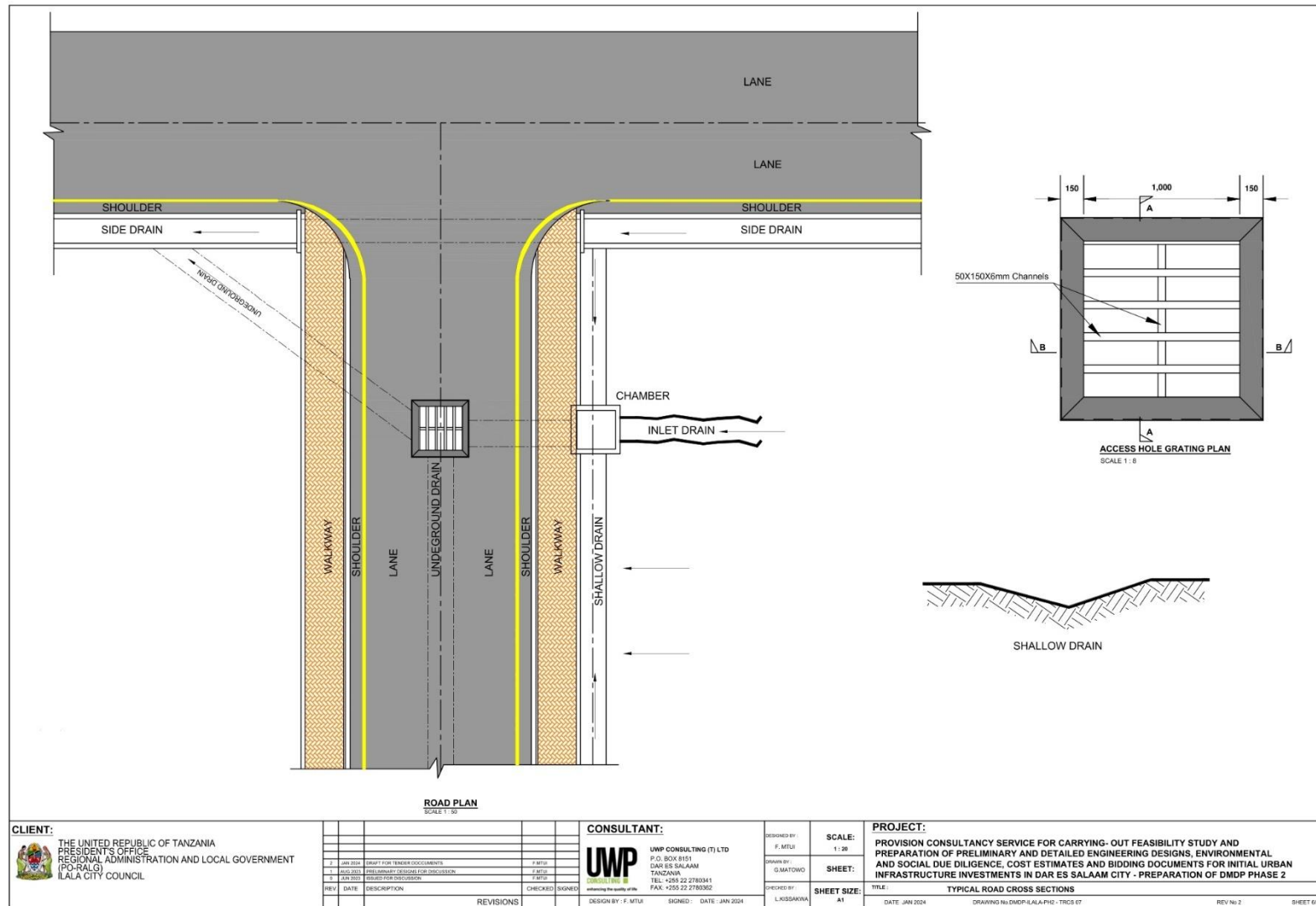


Figure 2-9: Proposed Typical Road Plan

The proposed road design features are shown in the drawings and summarized in *Table 2-14*, including the width, lane width, shoulder width, kerbstone space, and walk away. Design types 1(a), 1(b), 2, and 3 will be provided with in-ground seepage features (SUDs). Types 1 (b), 1 (c), 1 (d), 4, 5 (a), and 5 (b) will be provided with underground drainage systems. Filter layers and subsoil drainage will be provided for in wet sections of the Barakuda Chang'ombe Majichumvi Road.

All roads are designed with tree zones on both sides, except for Type 5 roads (e.g., Barakuda Chang'ombe Majichumvi Road), which have insufficient space for greening.

Table 2-14: Features of the proposed road design

Type	FEATURES								
	Width (m)	Lane Width (m)	Shoulder Width (m)	Kerbstone space (m)	Walkway (m)	In Ground Seepage (SUDs)	Underground Drainage System	Filter layer + Subsoil Drainage for Wet Sections	Trees zone
1(a)	10.83	3	0.5	0.265	1.5	Allowed	Nil	Nil	Provided
1(b)	11.63	3	1	0.165	1.5	Allowed	Provided	Nil	Provided
1(c)	11.00	3	0.5	Nil	1.5	Nil	Provided	Nil	Provided
1(d)	11.15	3	1	Nil	3	Nil	Provided - 1 side	Nil	Provided- 1 Side
2	11.73	3	1	0.365	1.5	Allowed	Nil	Nil	Provided
3	14.23	3	0.5	0.365	1.5	Allowed	Nil	Nil	Provided
4	13.80	3	0.5	Nil	1.5	Nil	Provided	Provided	Provided
5(a)	7.33-9.33	3	Nil	0.165	0.5-1.5	Nil	Provided	Nil	Nil
5(b)	7.33-9.33	3	Nil	0.165	0.5-1.5	Nil	Provided	Nil	Nil

(Source: UWP, 2023)

2.5.1 Design specifications

According to the ToR, approved standards by the GoT relevant to the sub-projects were adopted and adhered to. Without such standards from the Government, other authoritative standards and practices may be accepted subject to the Client's review and written consent. The General standards adhere to are presented in *Table 2-15*.

Table 2-15: Design Standards adopted

SN	Item	Design Standards
1.	Roads Geometric Design	MoW Road Geometric Design Manual, 2011 MoW Low Volume Roads Manual, 2016 SATTC Draft Code of Practice for the Geometric Design of Trunk Roads, 1998
2.	Roads Pavement Design	MoW Pavement and Materials Design Manual, 1999 MoW Low Volume Roads Manual, 2016
3.	Specifications	MoW Standard Specifications for Road Works, 2000
4.	Field Investigations	MoW Field Investigation Manual, 2003
5.	Road Signs, Markings, and Traffic Signals	MoW Draft Traffic Signs Guide, 2007 MoID - A Guide to Traffic Signing (2009)
7.	Testing Procedure	MoW Central Materials Laboratory Testing Manual, 2000
8.	Structures	British Standards BS 5400 British Standards BS 8110 British Standards BS 5950 British Standards BS 5268 British Standards BS 5628
9.	Hydrology and Hydraulics	TRRL East African Flood Model MoW Low Volume Roads Manual, 2016
10.	Road Safety	MoID - A Guide to Traffic Signing (2009) MoID - Safety Auditing Manual A Guide to Road Safety Audit (2009) TANROADS - Traffic Management at Road Works (2012)

SN	Item	Design Standards
11.	Surveying	Land Survey and Mapping Standards of Tanzania (Land Surveying Regulations CAP 390)
13.	Climate change	For all projects, increase 24-hour storm depth by a factor of 15% to account for climate change unless otherwise agreed with the Client.

Source: (UWP, 2023)

2.5.2 Climate change issues during the operation and maintenance phase

Climate change will also affect road maintenance, which, therefore, must be taken into account when dealing with climate-resilient road infrastructure. Attention will be paid to all maintenance services, including:

- cleaning and maintenance of drainage systems (removal of silt, litter, and vegetation) that tend to block the drains and cause flooding;
- pruning of bushes and maintenance of grass alongside the road;
- management of water erosion at waterways across the roads and
- Management of sand mining activities at Msimbazi Bridge along the Majumbasita -Segerea area, at Barakuda-Changombe area, and other similar areas.

2.5.3 Summary of Geotechnical Study

The Geotechnical investigation conducted for the proposed Segerea Bridge, situated on the Majumba Sita to Segerea route, aimed to furnish essential design data and recommendations pertinent to the bridge's foundation design. This comprehensive study provided an in-depth soil characterization, delineating soil types, strength, moisture content, and distribution patterns, which are pivotal for the foundation design process. Additionally, the investigation scrutinized the potential risks related to soil erosion and slope stability, alongside evaluating groundwater levels to mitigate future subsurface water complications.

The findings indicated a robust soil-bearing stratum commencing at a depth of 3.0 meters for shallow foundations and extending beyond 7.0 meters for deep foundations. The soil's allowable bearing capacity, determined through the Terzaghi general shear failure criterion for square footings, is quantified to be greater than 400kN/m² at a depth of 3.0 meters for shallow foundations and similarly for deep foundations at a depth of 7.0 meters.

In light of these discoveries, the decision between opting for a raft foundation, which presents a safe bearing capacity of 200kN/m² at a 3.0-meter depth, versus adopting a deep foundation strategy, selecting a depth from 7.0 meters onwards with a safe bearing capacity of 250kN/m², warrants careful consideration. This decision should take into account the load requirements and the detailed geotechnical characteristics outlined in the investigation, to ensure the structural integrity and longevity of the Segerea Bridge and its associated road structures.

2.5.4 Summary of Topographical Survey Study

The topographical surveying involved different survey operations, including construction and coordination of primary and secondary control points, orthometric leveling, and detailed surveying. The Surveys and Mapping Division of the Ministry of Lands, Housing, and Human Settlements Development was consulted for the details of the National Triangulation points around the project area.

The control points second-order Pillars T07D (Makoka), UGPS3 (Coco Beach), and T10D at PUGU Mwakanga in the TAREF11 coordinate system were identified. The same were used as found convenient for the sub-projects in the vicinity.

Table 2-16: Details of National Triangulation Points around the Project Area

Name	Northing	Easting	Elevation	Location	Class
UGPS3	531714.136	9250407.968	12.441	Coco Beach	Second Order Pillar
T07D	9248431.6383	522072.9607	107.6587	Makoka area	Second Order Pillar
T10D	9237959.1476	515174.6939	143.9249	Pugu Mwakanga	Second Order Pillar

Topographic surveys were done to facilitate the location of permanent structures/houses/features adjacent to the road, control points, centrelines, drainage structures, and the computation of estimated quantities of earthworks.

A topographical survey was conducted by differential GPS in RTK mode. All points are feature-coded to facilitate downloading the data to the computer for reduction by using powerful topographical survey software called 12D. The topographic surveys for roads and roadside drains included:

- Survey of the existing road, junctions, drains, culverts, road furniture, utilities, buildings, etc., within the allocated road reserve/Right of Way (ROW) for preparation of maps and completion of the detailed engineering design as necessary,
- A topographical survey of bridge sites at Segerea Road extended at least 100 m upstream and downstream.
- Detailed surveys at all proposed locations for new drainage structures covered at least a length of 50 m downstream and upstream of the structures,
- Leveling along the centreline at 25 m intervals for the longitudinal profile,

2.5.5 Summary of Hydrological Survey Study

Topographic surveys were done to facilitate the location of permanent structures/houses/features adjacent to the road, control points, centrelines, drainage structures, and the computation of estimated quantities of earthworks. A topographical survey was conducted using differential GPS in RTK mode. All points are feature-coded to facilitate downloading the data to the computer for reduction using powerful topographical survey software called 12D. The topographic surveys for roads and roadside drains included:

- Survey of the existing road, junctions, drains, culverts, road furniture, utilities, buildings, etc., within the allocated road reserve/Right of Way (ROW) for preparation of maps and completion of the detailed engineering design as necessary,
- A topographical survey of bridge sites at Segerea Road extended at least 100 m upstream and downstream.
- Detailed surveys at all proposed locations for new drainage structures covered at least a length of 50 m downstream and upstream of the structures,
- Leveling along the centreline at 25 m intervals for the longitudinal profile,
- Cross-section levelling was done at 25 m intervals and encountered local irregularity,
- Cross sections covered at least 25 m on each side of the centreline.
- The hydrological and hydraulic studies were conducted to estimate the design peak flow, check the discharge capacity of existing drainage structures, and propose new drainage structures needed along the DMDP – Phase 2 project roads. The drainage system is designed to collect stormwater runoff from the road and surrounding areas, safely pass it across the road, and discharge it to a suitable receiving body without causing adverse impacts. However, it was observed that in Tabata Mawenzi – Kisiwani Road, Barakuda – Chang'ombe – Maji Chumvi Road, Majumba Sita - Segerea Road, and Migombani Road, the existing waterway passes through a narrow corridor near existing houses or there is no clear existing waterway. To effectively lead stormwater from the drainage structure across the road to the discharge point, some existing houses may need to be demolished to create a corridor for an adequate outfall drain.
- It is recommended that, despite meeting all TOR requirements and following design guides and standards, the proposed structures should be able to handle storms of respective return periods and be resilient to climate change. However, the proposed drainage structures must be cleaned regularly to remove silt and debris and prevent clogging, which could reduce their performance. Regular maintenance will ensure that the structures perform optimally.

2.5.6 Project Cost and Life span

The project cost for all packages (1 to 7) is estimated to be TZS 27,775,000,000.00, and the design life span is 20 years.

2.6 PROJECT ACTIVITIES

This section describes the project activities under each project implementation phase. The phases include mobilization-construction, construction, demobilization, and operation and maintenance.

2.6.1 Activities during the mobilization or pre-construction phase

Mobilization refers to the initial stage of a construction project, where preparations occur onsite prior to the commencement of any work. The mobilization phase follows the completion of the detailed project design, award of the EIA certificate and any other relevant permits, and procurement of Contractor(s). At this point, the client will hand over the site to the Contractor(s).

The Contractor(s) will fulfill all the contractual requirements, including preparing specific plans, such as a Traffic Management Plan (TMP), an HIV/AIDS management plan, a Health and Safety Management Plan, a Construction Environmental and Social Management Plan (C-ESMP), a Waste Management Plan, and a Labor Management Plan (LMB).

Other activities during this phase are

- Identification and preparation of stockpile areas;
- Establishment of Contractors campsite and office;
- Mobilization of labor force, construction equipment, and materials;
- Carrying out scientific studies and investigations on the landscape, soils, water, and construction materials;
- Acquisition of various permits, such as water abstraction right, OSHA certificates, and others, as required by the law.

Where the right of way is not adequate, the Developer (DCC) may need to compensate for land to relocate structures and infrastructure utilities that may be directly or indirectly affected by the project activities. In the CDB area, where business activities are located alongside the roads, relocation will be needed to pave the way for construction activities.

Preliminary identification of sites for the establishment of campsites and materials storage facilities is ongoing. During stakeholder engagement, it was established that few are willing to rent out privately owned land to the contractors for use as camping sites and materials storage facilities. These are in Msongola, Kitunda ana Tabata areas. The selected Contractors will establish appropriate sites based on their needs.

Duration

The duration of the Construction phase will be about four (4) months.

2.6.2 Activities during the Construction Phase

The construction activities will commence with site clearance. Site clearance will involve removing vegetation within the road's right-of-way (RoW) and relocating utility supply infrastructure, such as electricity lines, water supply pipelines, gas pipelines, telecommunication cables, etc., which may be within the road's right-of-way. Typical relocation/demolition activities that may be undertaken as part of site clearing are presented in *Table 2-17*.

Table 2-17: Site clearing activities with the potential to impact private property

Sn.	Activities affecting third parties	Specific project component
1.	Relocation of electricity infrastructure	All components
2.	Relocation of water supply infrastructure	Barakuda Chang'ombe- Majichumvi rd* All subprojects
3.	Relocation of gas/natural gas pipeline	Banana Kivule Msongola
4.	Railway	Banana Kivule Msongola
5.	Relocation of telecommunication cables	Banana-Kivule-Msongola, Upanga CBD, Kariakoo CBD and Tabata roads
6.	Relocation of business activities/vendors	Banana Kivule Msongole
7.		Migombani road; Barakuda Changombe MajiChumvi;
8.	Demolition of bridge(s)	and Banana Kitunda Kivule Msongola,

Sn.	Activities affecting third parties	Specific project component
9.	Demolition of culverts	All components
10.	Demolition of part house structures/fencing wall(s)	Migombani
11.	Extended house verandas	of Migomani, and Tabata-Mawenzi-Kisiwani
12.	Cut and remove mature trees	All components
13.	Relocation of vendors alongside the roads (Markets, kiosks, mama Ntilies)	Banana Kitunda Kivule and -Msongola (at Kivule), Kariakoo CBD

Source: (UWP, 2023)

The actual construction activities will include but not limited to the following:

- Provision of temporary crossings, traffic diversions, and installation of signage in appropriate locations;
- Continued extraction and transportation of materials (gravel, sand, hard stones, aggregates, water and bitumen);
- Demolition and removal of culverts and, bridges, and other drainage structures that need a replacement;
- Cut/fill and reshaping of the existing roads to sub-grade level;
- Construction of sub-base course, base course, and bituminous surfacing (asphalt concrete);
- Rehabilitation or construction of new cross-drainage structures;
- Construction of pedestrian lanes and crossings;
- Construction of stormwater drainage channels for the roads;
- Construction of bus bays along the roads
- Site landscaping and removal of construction materials.
- Greening and beautification of the roads sideways.

During this phase, the Contractor will also implement the relevant activities as provided in the ESMP, including pollution prevention through careful purchase of construction materials, site planning, dust suppression, and other emission control strategies. The Contractor will also conduct periodic environmental and socio-monitoring, occupational health and safety training, and HIV/AIDS sensitization programs.

Duration

The duration of the construction phase is expected to be 2 years.

2.6.2.1 Extraction and storage of construction materials

The sites identified as potential sources of contraction materials shall be managed through a pre-prepared Environmental Management Plan. EMP, approved by the DCC. The extraction of any construction materials shall be done in accordance with the conditions given by the DCC and as per the WBG EHS Guidelines – Construction Materials Extraction (WBG, 2007). These are outlined in the ESMP table in Chapter 8 of this report. As per the WBG guidelines, the Contractor will be required to manage exhaust emissions, general air emissions, noise and vibrations, water quality, waste, and land conversion.

In case construction materials are to be stored close to the construction site for some time before use, these will be stored in approved storage areas. In adhering to the requirement of ESS3 on *Resource Efficiency and Pollution Prevention and Management*, construction materials shall be stored in a manner that will avoid environmental pollution (through spills and leaching) as well as avoid damaging the materials. For example, cement and reinforcement bars will be stored in special storage rooms to avoid spoilage and rust, respectively. To prevent environmental pollution, fuel/oils will be stored in drums, which shall be stored in bunds (well-paved areas that do not allow fluids to come into contact with the soil). The storage areas will be fenced to restrict entry by unauthorized personnel and also to ensure public health and safety are protected.

Amounts and sources of project requirements during preconstruction and construction phases

The types, amounts, and sources of project requirements (including equipment and machines) during the pre-construction and construction phases are presented in *Table 2-18* and *Table 2-19*.

Table 2-18: Preliminary list of construction equipment

SN	Equipment	Specifications	Nos.
1	Excavators	320D	10
2	Dozers	9D	8
3	Trenchers	-	-
4	Wheel loaders	856 H	8
5	Dump Trucks	340HP	30
6	Backhoe	JCB	10
7	Graders	140K	10
8	Road Roller Machine/Roller- compactor	CAT 2H	11
9	Vibrators	CAT 2H	8
10	Water Boozers	SINOTRUCK	9
11	Truck Crane	CAT	6
12	Asphalt Plant	CAT	6
13	Asphalt Paver	CAT	6
14	Service vehicles		

Source (UWP, 2023)

Table 2-19: Preliminary estimates of types, quantities, and sources of construction materials

Requirements	Type (units)	Quantity	Source
Raw Materials	Soils (m ³)	35,000	Kisarawe
	Gravel (m ³)	62,000	Kisarawe
	Hard Stone (m ³)	24,000	Lugoba
	Sand (m ³)	10,000	Kisarawe
	Cement (tones)	4,500	Local Cement Factories
	Reinforcement bars (tones)	370	Steel Factories in DSM
	Timber (pieces)	2,500	Local Hardware Stores
	Bitumen (tones)	514	Imported
	Binders and admixtures	-	Imported
	Aggregates (coarse and fine) (m ³)	62,000	Lugoba Chalinze
	Electricity (KWH)	2,500	TANESCO
Energy	Fuel-diesel (litres)	250,000	Local Vendors
	Fuel -petrol (liters)	90,000	Local Vendors
Water	Constructional use (litres)	2,000,000	Msimbazi River
	For domestic use (liters)	600,000	DAWASA
Workforce/ Labour size	Skilled	75	Via public procurement
	Unskilled	300	Locals
Equipment	NA	NA	The selected Contractor(s)

Source: (UWP estimates, 2023)

2.6.2.2 Sources of industrial materials for road construction

Traditional road construction materials will be used in this project. Materials will be tested in a locally approved laboratory. These include;

- Cement: It is easily available on the mainland, packed in 50kg bags and sourced from the factories in Dar es Salaam. The nearest industries include Wazo Cement (located in Tegeta, Ubungo Municipality) and Mbagala (located in Temeke Municipality).
- Reinforcement Steel: Reinforcing steel for structural works is also available on the mainland from various factories in Dar es Salaam, including the MMI steel industry located in the Mikocheni light industrial area. Before use, the strength and other properties of reinforcing steel must be confirmed by testing samples in approved testing laboratories.

- Bitumen: Bitumen for road works is generally readily available from TPDC or external suppliers. Bitumen properties will be checked by testing representative samples in approved laboratories.
- Lime: Industrial hydrated Lime can be obtained from the Pugu Kaolin industry and other sources. The material is available in Tanzania. However, before the material is purchased for use in this project, its properties will be checked by testing representative samples in approved laboratories.

2.6.2.3 Transportation materials to the construction sites

Materials (soils, fine and coarse aggregates) from quarries will be transported by trucks to the construction sites. Water will be brought to the site by water boozers. Other materials like cement, timber, and reinforcement bars will be transported by Lorries to the construction site(s). The transportation activity will result in increased exhaust emissions along the roads, increase traffic congestion and may also impact road safety.

Chapter 6 (Impacts of Air Emissions) estimates expected transport-related air emissions. The estimates are based on equipment type, activity rate, emission factors, and emission reduction strategies.

2.6.3 Sustainable use of Construction materials

The DCC will, as per the requirement of ESS3, promote sustainable use of all types of construction materials, including water, energy, and raw materials. The Contractors will be required to adopt good engineering practices, careful use of construction materials, and recycling of any recyclable construction materials (including demolition wastes). The Contractor(s) will further be required to avoid or minimize adverse impacts on human health and the environment by avoiding or minimizing pollution from project activities, avoiding or minimizing project-related emissions of short and long-lived climate pollutants, avoiding or minimizing generation of hazardous and non-hazardous waste;

2.6.4 Activities during the Demobilization phase

The demobilization phase will involve the following:

- Removal of temporary structures (such as the campsite, temporary signage boards, temporary access slabs, etc.),
- Removal of construction materials and equipment from the site,
- Clearance and reinstatement of materials storage areas;
- Rehabilitation of any damaged private property;
- Cleaning of constructed stormwater drains;
- General site rehabilitation, including clearance of all sorts of wastes, including used oil, sewage, and solid wastes (plastics, wood, metal, papers, etc).
- Deposit all wastes to the authorized dumpsite.
- Termination of temporary employment.

Duration

The demobilization stage will last for 1 month.

Types, amounts, and sources of project requirements

An estimate of the types, amounts, and sources of project requirements during the demobilization phase is shown in Table 2-20:

Table 2-20: Project requirements during the demobilization phase

Requirements	Type	Specifications	Quantity	Source
Workforce	Skilled	na	12	Contractor
	Unskilled	na	60	Locals
Equipment	Wheel loaders	856 H	6	Contractor
	Dump Trucks	340HP	12	Contractor
	Compactor		6	Contractor

Source: (UWP, 2023)

2.6.5 Activities during the Operation and Maintenance Phase

The actual usage of the road is expected to commence after the construction works. The project roads are under the “street/ward” level and, therefore, will be directly managed by DCC. The design life is about 20 years, after which resurfacing will be needed. During this time, DCC will carry out routine maintenance by attending to potholes, clearing vegetation within the Col (Corridor of Impact), and monitoring.

Operation and maintenance activities will include re-installation of road signs, road marking, reinforcement and replacement of road structures, control of litter accumulation on roadsides, awareness rising on proper road use and road management to the communities, monitoring, and evaluation, management to reduce pollutant concentrations in runoff, disposal of wastes from road maintenance activities, storage and management of maintenance materials and equipment.

2.7 Waste Generation and Management

Waste management will be done in accordance with the requirements of the Solid Waste Management Act, 2007, and the ESS3, which set the requirements to address Resource Efficiency and Pollution Prevention and Management.

2.7.1 Expected waste types and sources

The activities mentioned in Section 2.4 will result in generating various waste types, which have been grouped into construction-related and non-construction-related wastes. Construction-related wastes are those generated directly from construction activities, while the latter are those generated by associated activities (i.e., domestic activities taken at the campsites/worksites).

2.7.2 Pre-construction and construction wastes

These will include both solid and liquid wastes and can be hazardous and non-hazardous materials. Construction waste is grouped based on three project implementation phases as follows:

- **Domestic wastes:** Both liquid and solid domestic wastes are expected throughout the project life cycle. Domestic wastes will be in the campsites (i.e., rooms, kitchens, and dining areas) and from sanitation facilities.
- **Liquid waste:** Wastewater is expected from sanitation facilities. It will be collected into the septic tank-soak-away system at the campsite(s).

Note: The contractor will arrange with the local bars/hotels along the project sites so that the workers can access sanitation facilities while working away from the campsites.

- **Hazardous waste:** Hazardous waste (e.g., oils and grease, contaminated rugs, and contaminated chemical containers) is expected to be generated at the vehicle and equipment workshops/garages and material laboratories.
- **Demolition waste:** Rubbles, broken materials, etc., are expected from the demolition of any unwanted structures along the roads RoW.

Note: The extent of demolition will be established once the survey report is finalized.

2.7.3 Operation Phase Waste

These include sand and silt, rubbles made during road maintenance, and litter (disposed of in stormwater drainage systems). To provide the best waste management options, the generated waste is further classified as organic (decomposable), inorganic (non-decomposable), and hazardous and non-hazardous wastes, as shown in Table 2-21.

Table 2-21: Expected waste types, sources, and composition during the project phases

SN	Waste type	Location & Source	Associated activity	Composition
1.0	Liquid waste			

SN	Waste type	Location & Source	Associated activity	Composition
1.1	Sullage (grey-water)	Campsite: Operation of the kitchens, cafeteria, and laundry facility	Food preparation Washing & cleaning	Organic Contains chemicals from detergents used, oil, and grease, having high BOD, COD, ammonia nitrogen
1.2	Sewage (black water)	Campsite and workstations: Effluents from toilets and bathrooms	Operation of sanitation facilities, mainly toilets	Organic High organic load contains chemical detergents and pathogens.
1.3	Spent water	Garage & car wash bay: effluents from the car and accessory washing activities	Washing of construction equipment and machines/ cleaning workshops	Contains waxes, solids, hydrocarbons and detergents
1.4	Residual water	Material processing area (i.e., wastewater from the batch plant)	Washing/flushing of equipment, i.e., concrete mixer trucks) after application and before each new load	Highly alkaline contains cement residue.
2.0	Solid waste			
2.1	Food wastes	Cafeteria, kitchen, and dining areas at campsite/ Construction sites	Food preparation, food serving, food storage	Organic and highly putrescible
2.2	Mixed (Office waste)	Typical office activities (papers, broken furniture, packaging materials)	Trash (paper, bottles, broken office furniture etc)	Organic and inorganic
2.3	Yard waste	Campsite	Yard sweepings	Organic
2.4	Litter	Campsite and construction sites along the roads.	paper, plastic bottles, plastic bags, glass bottles, wraps etc)	Organic and inorganic
2.5	Mixed (plastic/tin /glass)	Workshops and Construction sites	Cut pipes, damaged materials, plastic chips, clips, etc	Inorganic
		Campsite, Construction sites, dispensary	Damaged and unwanted packaging materials containers (including cement bags), containers/ drums	Organic and inorganic
		Vehicle maintenance garage	Old/damaged tires, metal parts, car furniture etc	Inorganic
2.6	Contaminated soils	Spills and effluents from garages, car washes, batch plants, material processing sites, and workstations spoil soil.	Equipment and materials processing, re-fuelling, material processing	Inorganic (hydrocarbons)
2.7	Overburden soils	Construction sites (during site clearing)	Site clearance and leveling	Organic (soils)
2.8	Biomass	Construction sites (during site clearing)	Cut/removed /uprooted vegetation)	Organic

SN	Waste type	Location & Source	Associated activity	Composition
2.9	Construction & Demolition wastes (C&D)	Actual construction works demolition of unwanted physical structure	Damaged/ debris piles; disqualified/bad concrete, demolished concrete/mason work, damaged bricks/blocks/slabs, tiles, mortars, aggregates, packages and others	Organic and inorganic
3.0	Hazardous waste			
3.1	Spent oils, grease and lubricants	Vehicle and equipment servicing at the garage and workshop	Spent oils and grease	Organic
3.2	Contaminated rugs containers	Garage and workshop	Oil Contaminated rugs	Organic and inorganic
3.3	Chemicals	Testing of materials in workshop laboratories at the campsite	Chemical containers, spills, spent/ expired paints	Mixed
3.4	Scrap metals	Workshop and garage	Metals, nails, poles, broken/damaged iron bars	Metals
4.0	Electronic waste			
4.1	Electronic wastes	Office workshops, garage, residence	Old/faulty gadgets, damaged/broken/expired test equipment, printer cartridges, etc	Inorganics (a variety of metal alloys and plastic)

The expected types, amounts, and treatment/disposal of solid and liquid wastes during the project implementation phases are presented in Table 2-22 and Table 2-23.

Table 2-22: Estimates of solid waste amounts and management during the project implementation

Sn	Waste Type	Source	Quantity/ Volume	Potential for material recovery	Proposed management Strategy
1.0	Pre-Construction Phase				
1.1	Excavated materials/overburden soils and biomass	Site clearing and Excavation works	2.694 m ³ (Based on removal of 10cm topsoil from the (6x26.94) m ²	Backfilling material in the borrow pits or for fill diversions.	Unwanted soils lacking good bearing capacity shall be dumped in designated dumping areas.
1.2	Demolition (C&D) debris	Demolition of bridges, culverts, and verandas within the RoW	To be established (m ³)	40% - 60% can be recycled (Wang et al., 2004)	-PAPs to recover materials -Rubbles can be used for fill materials (i.e., on diversion roads) -Recycled C&D*
2.0	Construction Phase				
Solid waste					
2.1	Construction wastes (steel, concrete, brick, and ast, cement bags)	Civil non-civil construction activities	6944.2 m ³ (5% of construction materials) 1% - 10% of construction materials are wasted	Recycling of valuable fractions	-Sorting, separation, and proper storage on site, -Recyclables to be collected by selected dealers. -non-recyclables to be disposed of in Pugu Dumpsite

Sn	Waste Type	Source	Quantity/ Volume	Potential for material recovery	Proposed management Strategy
			(Wang et al., 2004).		
2.2	Office waste	Office activities (filling, paperwork etc.)	2-5 kg/day /campsite (based on the experience of DMDP 1)	High potential for recycling	-Sorting separation and proper storage on site, -to be sold to local collectors -remains to be disposed of in Pugu dumpsite
2.3	Food wastes	Campsite(s) and active construction sites	56.25 kg/d (based on generation rate of 0.15kg/c/d & labour size, 375 people	-Could be sorted for use as animal feed -could be used for compost	disposal in Pugu dumpsite
2.4	Yard waste litter	Yard sweeping	To be established during the construction phase	It is 100% decomposable, thus could be used for compost	Litter shall be sorted and collected for disposal
	Hazardous Waste				
2.6	Garage and workshop wastes	Waste oils, grease, rugs, and containers	7-10 m ³ per month	None	-Stored in specialize containers on site, to be removed by subcontracted hazardous waste specialist/contractor
		Filters	1,000-1,250 kg per month	none	
		Waste tires	5,000 - 6,000 tyres per year		
		Batteries	800 -1000 batteries per year		
2.7	Chemical contaminated soils	Oils and chemical spills	Not established	None	To be removed from the site and treated as hazardous waste as required by the law.
3.0	Operation Phase				
3.1	Mixed wastes (sand and silt, rubbles from road Maintenance, and litter (plastic bottles and papers)	Road sweeping, illegal disposal into drains, littering	To be established	Plastics are 100% recyclable	-Plastics to be collected for recycling - road sweepings will be disposed of in areas identified by the DCC

*- Recycling C&D debris is highly recommended since it makes the construction industry much more sustainable.

Table 2-23: Estimates of liquid waste amounts and management during the project implementation

Sn	Waste Streams		Volumes estimated	Liquid waste management
1.0	Pre-construction and Construction Phase			
1.1	Campsite(s)	Sewage sullage from sanitation facilities in the camp(s) and offices	27 l/day (based on assumptions that 80% of water supplied becomes wastewater and a per capita consumption of 90 l/c/d), and the 375 average Nos. of workers	-disposal in septic tanks-soak away systems -in case pits become full, they shall be emptied by cesspit empties and disposed of in a nearby designated WWT Pond - Campsites will be set up for each project package; however, we do not anticipate that workers will stay overnight at these sites. Regarding liquid waste management, the initial collection point will be at the campsite. The contractor can choose to build permanent facilities on-site or use mobile toilets for longer sites and transport them to the site waste collection point.
1.2	Batch Plant	Spent water	Up to 95% of washing water becomes waste. The exact amount to be established based on the water supply	-Onsite treatment in decantation tanks. -Recycling in the batch plant or washing (studies suggest 50% dilution with fresh water) -recycle residues in concrete works (i.e., in works without structural purpose)

CHAPTER THREE

3 LEGAL AND INSTITUTIONAL FRAMEWORK

3.1 Introduction

The implementation of DMDP II subprojects will be guided by and require directives from various legislations. The project developer, i.e., the DCC, must adhere to and strictly comply with all the pertinent regulatory requirements, including national and international requirements (e.g., the WB ESF and ESSs). This Chapter aims to understand the key provisions of the regulatory framework related to the environmental and social aspects of the proposed project activities.

3.1.1 The Constitution of Tanzania

The United Republic of Tanzania Constitution of 1977 (Amended from Time to Time) is the supreme law of the country and fits in the legal framework because it plays two major roles; first, it is a grand norm, the instrument which all other laws of the country derive their legitimacy. That means all the laws enacted in the country must conform to it and should not be inconsistent with the constitution. Therefore, all the laws enacted to regulate the construction industry and the transportation sector in Tanzania derive their legitimacy from the constitution as provided in Article 64.-(1), which states that "Legislative power in relation to all Union Matters and also in relation to all other matters concerning Mainland Tanzania is at this moment vested in Parliament."

3.2 National Policy, Legal and Institutional Framework

3.2.1 The Policy Framework

Several national policies and strategies apply to the proposed road construction project under the DMDP II.

Table 3-1: Applicable National Policies and Strategies

SN	Policy	Relevant sections
1.	National Environmental Policy of 2021	To strengthen coordination of environmental management in sectors at all levels. To enhance environmentally sound management of land resources for socio-economic development. To promote gender consideration in environmental management. To ensure predictable, accessible, adequate, and sustainable financial resources for environmental management. The provisions regarding environmental protection and management of the negative impact associated with the development of the DMDP II subprojects are addressed through the environmental and social management plan (ESMP), which is an integral part of this EIA report.
2.	National Community Development Policy (1997)	The policy puts in place measures that enable communities to realize their potential through wise utilization of natural resources. The major objective of the Community Development Policy is to enable Tanzanians as individuals or in their families and groups/associations to contribute more to the government's objectives of self-reliance and, therefore, bring about development at all levels. The DMDP II subprojects have several undertakings that are directly linked to the community and their respective development, such as employment, business, improvement of infrastructure and mobility, as well as surrounding communities and township growth.
3.	National Cultural Heritage Policy (2008)	A key policy is the Cultural Heritage Policy of 2008. The policy's overall objective is to increase the cultural heritage sector's contribution to the economy through tourism by conserving and developing cultural heritage resources. Key elements of the policy include the following: • Defines the roles and responsibilities of different cultural heritage stakeholders.

SN	Policy	Relevant sections
		- An analysis of the ways in which cultural heritage activities are managed and administered by the government. - Clarifies measures by which cultural heritage resources will be protected, managed, preserved, conserved, and developed; and - An analysis of best practices for conducting research and conservation of cultural heritage resources. The development of the DMDP II subprojects will ensure the preservation of the locals' cultural heritage. This will be achieved by working closely with the local leaders.
4.	National Human Settlements Development Policy, 2000	The policy advocates that human settlements should offer equal socio-economic opportunities to all members of the society for their material, social, spiritual, and cultural advancement. Due to the blueprint nature of the Master Plans, they become inflexible and cannot be easily adapted to constantly changing social and economic circumstances. The policy addresses the need for a Master Plan to be reviewed every five years to avoid haphazard town growth with inadequate infrastructure while integrating Environmental planning issues in the early stages. This is acknowledged in the National Bureau of Statistics, 2013 report on Basic Facts and Figures on Human Settlements, 2012. Implementation of these subproject roads will improve access to socio-economic services within these areas that have developed but need more reliable road infrastructures.
5.	National Energy Policy (2003)	The overall objective of this Policy is to contribute to the development process by establishing efficient energy production, procurement, transportation, distribution, and end-user systems in an environmentally sound manner and with due regard to gender issues. The project will need energy during its construction and operation phases. The DCC will ensure energy efficiency in all project phases and adequate consultation with utility providers to avoid the destruction of any energy utilities along the Row.
6.	National Forestry Policy (1998)	The overall aim of this policy is to manage Tanzania's forest resources as a national heritage on an integrated and sustainable basis to optimize their environmental, economic, social, and cultural values. Over the past three decades, perspectives on the role of the urban forest in society have changed and broadened considerably because of social, economic, environmental, cultural, and political changes. The implementation of DMDP II subprojects will involve removing trees and vegetation within the RoW, thus highlighting the relevance of this policy.
7.	National Land Policy of 1997	The overall objectives of the policy are 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 endangering the ecological balance of the environment." The proposed development will have implications for land resources and tenure and may lead to a spiraling degradation of land.
8.	National Water Policy of 2002	The overall objective of the policy is to protect water sources against pollution and environmental degradation. As described in Chapter II, the roads cross a few natural waterways (urban Rivers). Bridge construction activities are likely to result in the degradation of water sources if not carried out appropriately. Thus, mitigation options will be developed to prevent the degradation of water sources
9.	National Employment Policy of 2003	To identify potential areas for employment. To lay down strategies of how to utilise potential areas for employment opportunities in promoting employment in the country. DMDP II subprojects are expected to provide avenues for employment opportunities and thus support the national employment

SN	Policy	Relevant sections
10.	National Transport Policy of 2003	The policy advocates for the development of safe, reliable, effective, efficient, and fully integrated transport infrastructure and operations that will best meet the country's needs for improved mobility. The DMDP II objectives are in line with the transport policy, so road construction agrees with the policy.
11.	National Health Policy of 2007	Among other objectives, the policy aims to improve the health status of citizens, especially vulnerable groups, by establishing health infrastructure that meets community expectations and increases Tanzanians' life expectancy. The policy also advocates for the prevention and control of infectious and non-infectious diseases, especially HIV/AIDS, malaria, tuberculosis, malnutrition, and workplace diseases. The proposed DMDP II subprojects may trigger health challenges among the community due to poor labour management and generated waste.
12.	National HIV and AIDS Policy of 2001	The policy advocates for prevent of transmission of HIV/AIDS. -Enhance sectoral roles through participation and financial support; and -Promote and participate in research on HIV/AIDS, including dissemination of scientific information and development of HIV vaccine. The Policy directives on the prevention of transmission of HIV/AIDS must be complied with during the implementation of the proposed implementation of DMDP II to minimise the problem.
13.	National Women and Gender Development Policy, 2000	To provide guidelines that will ensure that gender-sensitive plans and strategies in all sectors and institutions are developed. It emphasises gender equality and the equal opportunity of both men and women to participate in development undertakings and values the role played by each member of society. The project will be required to comply with the policy by providing equal opportunities to men and women in construction work and road maintenance.
14.	National Climate Change Strategy of 2012	To enable Tanzania to effectively adapt to climate change and participate in global efforts to mitigate it while also achieving sustainable development. The design of DMDP II subprojects has considered some relevant climate change strategies, including controlling erosion, preserving urban forests, and including SUDs.
15.	The National Occupational Health and Safety Policy of 2010	Prevention and control of hazards at workplaces and adaptation of work processes and environment to workers so as to increase their productivity. Implementation of DMDP II subprojects will engage unskilled and skilled workers. The selected contractor and the DCC will be required to abide by this policy.

3.2.2 Applicable National Laws

The following section describes the applicable national laws.

Table 3-2: Applicable National Laws

SN	Acts	Relevant sections
	The Environmental Management Act, 2004 (amendments) 2018	The main legislative framework provides the legal and institutional framework for sustainable environmental management. The Act outlines principles for management, impact and risk assessments, prevention and control of pollution, waste management, environmental quality standards, public participation, compliance, and enforcement to implement the National Environment Policy.

SN	Acts	Relevant sections
		Part VI of EMA (2004) expresses the need for EIA and other assessments and directs that EIA is mandatory for all development projects (Section 81(2)). This ESIA is fulfilling the requirement of the EMA of 2004
2.	Road Act. 2007 (amendments) 2021	The Road Act provide provisions on road management, including the road authority and responsibilities of each actor; road classification and declaration of roads, including required procedures and authority; execution of road works, including procedures, power and rights of landholders; road safety including required road furniture and signs; road construction access and rights of notice to affected landholders and restriction on the use of the road including during construction and weight during operation. According to the first schedule of this Act and the provisions of part III, section 11, and section 12 (b), which show road classification and reclassification, the proposed Road project is classified as a public road. It is a regional road that is a secondary national road that connects a trunk road and a district or regional headquarters and a regional headquarters and a district headquarters. The provisions of Part III, section 16 of this Act direct that where it becomes necessary for the road authority to acquire land owned by any person for this Act, the owner of such land shall be entitled to compensation for any development on such land in accordance with the Land Acquisition Act. Land Act, Village Land Act and any other written law. The proposed Road project will ensure compliance with this Act as directed in the provision of this section by conducting a Resettlement Action Plan whereby all affected parties will be fairly evaluated for their properties and compensated. RAP has been conducted to fulfil the requirements of this Act.
3.	The Occupational Health and Safety Act, 2003	The Act deals with issues related to the health and safety of workers in industrial areas, in this case, the DMDP II subprojects. Specific provisions of OSHA, namely Sections 21, 60, 61, 73-75, and 96, must be fully addressed in order to comply with this legal requirement. Moreover, the Act addresses issues of safe equipment, provision of relevant personal protective equipment and a clean and safe work environment.
4.	Explosives Act, 1963	Part V of the Act requires a permit for transporting explosives, Part VI for acquiring, possessing, and disposing of explosives, and Part VII for storing explosives. If the DMDP II Contractors need to use explosives to extract construction materials, they will have to apply for a permit from the Commoner for Mines.
5.	The Land Act, CAP 113 of 2019	The Act addresses various issues, including defining the legal framework for the land tenure system and how land could be used for social and economic development. The Act also defines issues of land acquisition and compensation to affected people. It further provides guidance to land ownership in Tanzania. The proposed roads exist and are in use, so no major land take is expected. However, space may need to be acquired for the construction of road facilities such as bus bays or to obtain the required RoW. The RAP and ESMP will address such issues.
6.	The Water Resources Management Act, 2009	The Act to ensure that the nation's water resources are protected, used, developed, conserved, managed, and controlled

SN	Acts	Relevant sections
		The requirements of this Act, namely the protection of water bodies that the DMDP Roads will traverse, will be followed.
7.	The HIV and AIDS (Prevention and Control) Act, 2008	This Act provides directives on the promotion of 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. The Act also stresses the requirement for public education and programmes on HIV and AIDS. In addition, employers must coordinate a workplace Programme on HIV/AIDS for employees, considering gender respect, as given in section 9 of the Act. This project will abide by the provisions of this Act throughout the life cycle of the project.
8.	The Employment and Labour Relations Act, 2019	The Act makes provisions for core labour rights to establish basic employment standards, including dispute prevention and settlement. Part II of the Act describes fundamental rights and protections for child labour, forced labour, discrimination, and freedom of association. At the same time, Part III provides for employment standards, which include issues like hours of work, remuneration, leave, unfair termination of employment, and other incidents of termination. The implementation of DMDP II shall ensure that the employment standards as provided for by the Act are adhered to.
9.	The Mining Act, 2010 and Amendment of 2018	The Act prohibits prospecting or mining minerals without granting mineral rights. This extends to building materials, including all forms of rock, stones, gravel, sand, clay, volcanic ash or cinder, or other minerals used for the construction of infrastructure. It should be noted that the borrow pit and quarry sites identified at this stage are only potential sites, subject to approval after material testing. The DCC shall assess the impacts and risks of the source materials sites (e.g., borrow pits and quarry sites), prepare a relevant management and rehabilitation plan (as part of the Contractor ESMP), and obtain approval/permits from TANROADS/LGA or any other relevant authority. The acquisition of construction materials for the development of DMDP II will require abiding by this act.
10.	The Valuation and Valuers Registration Act, 2016 & Regulations No: 10	38.-(1) Subject to this Act insist that a person shall only offer assistance in inspection, carrying out valuation or preparation of valuation report if the Board has enlisted the person. 50.-(1) In the course of undertaking valuation and preparation of valuation report, a registered valuer shall state the basis and method of valuation adopted and all assumptions used in arriving at values. 51.-(1) in the valuation process, a registered valuer shall apply the appropriate method of valuation and shall include- i. direct market comparative method; ii. replacement cost or contractors' test method; iii. income approach or investment method; iv. profit method, and v. residual method 52(2) Notwithstanding subsection (1), valuation conducted together with valuation reports prepared under this Act for purposes of compensation shall be valid for two years commencing from the date of endorsement of the valuation report. 52(3), the endorsement of the valuation report under subsection (2) shall be effected within six months after the valuation of interest in the property of the last person.

SN	Acts	Relevant sections
		The registered valuer led the valuation exercise of the PAPs under DMDP 2 subprojects in accordance with this act. All legal procedures for the evaluation exercise were followed as required.
11.	The Land Acquisition Act Cap 118	This Act provides for the compulsory acquisition of lands for public purposes and in connection with housing schemes. The Act empowered the President to acquire any land for any estate or term where such land is required for any public purpose. The Act (section 11) provides procedures for compensation to landowners or land users when acquired land for project development interferes with their access to or use of land. However, the Act has no provisions requiring the disclosure of the RAP or the Livelihood Restoration Plan if they are required when a project interferes with people's livelihoods. If some of the project components require the acquisition of land, international standards will apply if their properties are affected or people are displaced.
12.	The Urban Planning Act, No. 8 of 2007	The objectives of the Act, among others, include making serviced land available for shelter and human settlement development in general to all sections of the community and improving the level of infrastructure and social services provision for sustainable human settlement development. Section 29 of the Act provides for issuing planning consent and submission of EIA reports. It states that only one person shall develop land within a planning area with planning consent granted by the planning authority. The application for planning consent to develop land must be accompanied by an EIA report for all proposals concerning industrial location, dumping sites, sewerage treatment, quarries or any other development activity which is likely to have an injurious impact on the environment. The ESIA for the proposed project needs to respond to the requirement of the Urban Planning Act, particularly section 29 of the Act, and address significant impacts associated with the proposed development as well as possible mitigation measures to minimise the impacts.
13.	The Land Transport Regulatory Authority Act, 2019	The Act established the Land Transport Regulatory Authority to regulate the land transport sector. The Authority is empowered to coordinate land transport safety activities, register crew and certify drivers of regulated vehicles, certify the worthiness of rolling stock and the roadworthiness of public service vehicles and goods vehicles, and issue, renew, and cancel permits or licenses. The DCC will observe the provisions of this act.
14.	Water Supply and Sanitation Act, No.5 of 2019	The Act provides for the institutional and legal framework for water supply in urban and rural areas. It provides for the prevention and control of water pollution and the participation of stakeholders and the public in the implementation of the National Water Policy. Furthermore, the Act provides measures to control water quality and quantity for community use and protect aquatic ecosystems. Water supply and wastewater management are of paramount importance for the sustainability of the DMDP II project.
15.	The Petroleum Act, 2015 (amendments) 2021	The Petroleum Act of 2015 provides the law relating to the regulation of upstream, midstream, and downstream petroleum activities, the establishment of the Petroleum Upstream Regulatory Authority, and the

SN	Acts	Relevant sections
		provision for the National Oil Company to secure the accountability of petroleum entities. The law provides clarification related to the administration of petroleum activities in Tanzania. The proposed project implementation will involve the introduction of fuel storage facilities for project operation purposes. EWURA established under the Energy and Water Utilities Regulatory Authority Act, shall exercise regulatory powers in respect to midstream and downstream petroleum and natural gas activities under this Act.
16.	The Tanzania Investment Act, (2002)	The Tanzania Investment Act provides sections that define conditions for investing and doing business in Tanzania. Alongside stating incentives for investors, the Act also sets out immigration quotas for foreign workers, conditions for obtaining credit from domestic sources by foreign investors and procedures for technology transfer. Although investors are required to submit an environmental status report as part of the bid document to the TIC, the Act itself does not contain any provisions for ensuring that investment activities are undertaken in an environmentally acceptable manner. This project needs to adhere to the provisions of the act and other laws related to investment and local content in Tanzania.
17.	The Industrial and Consumers Chemicals (Management and Control) Act of 2003	The act provides a legal framework for the management and control of industrial and consumer chemicals throughout their life cycle. The law requires that all persons intending to produce, import, export, sell, or deal in industrial and consumer chemicals register with the Registrar of Industrial and Consumer Chemicals so that their capacities to manage chemicals can be assessed and monitored. Thus, the developer will be required to register with the Registrar of Industrial Chemicals and have the facilities inspected and regularly monitored as provided for under Parts III and IV of the Act. The carrying out of this ESIA, in part, meets the requirements of the Act.
18.	Public Health Act of 2009	The Public Health Act No.1 of 2009 provides 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. The law gives power to relevant authorities to, among others, make sure an appropriate Environmental Health Impact Assessment Study is conducted for all activities as may be provided for under the Environmental Management Act, Safeguard and promote the public health standards; Issue notices for rectification of any breach of public health standards; as well as promote public health standards in its area through the creation of awareness and educational campaigns.
19.	Child Act of 2009, revised in 2019	The primary objective is to protect and preserve children's rights. This law is related to the SGR project on the issue of child labour and violence against children. Section 12 of the law emphasises harmful employment to a child. The law states that "A person shall not employ or engage a child in any activity that may be harmful to his health, education, mental, physical or moral development." The law emphasised protecting children against all forms of exploitation, violence, and abuse. The law defines child abuse" as means a contravention of the rights of the child which causes physical, moral or emotional harm including beatings, insults, discrimination, neglect, sexual abuse and exploitative labour. This is also linked with the DMDP II project on any issue related to child abuse and protection.

SN	Acts	Relevant sections
20.	Engineers Registration Act and its Amendments 1997 and 2007	The Act regulates the engineering practice in Tanzania by registering engineers and monitoring their conduct. It establishes the Engineering Registration Board (ERB). Laws require any foreign engineer to register with ERB before practising in the country. The DCC shall abide by the Act by ensuring that foreign engineers working on this project comply with the law.
21.	The Contractors Registration Act (1997)	The Contractors Registration Act requires contractors to be registered by the Contractors Board (CRB) before engaging in practice. It requires foreign contractors to be registered by the Board before gaining contracts in Tanzania. The DCC shall comply with the law requirement during the recruitment of contractors for project implementation.
22.	Local Government Laws (Miscellaneous Amendments), No. 13 (2006)	The local government Laws (Miscellaneous Amendments) provide amendments to the local government (district authorities) Act, amendment of the local government Act (urban authorities), amendment of the local government (elections Act), and amendment of the regional administration Act. The law specifies the roles and responsibilities of every authority and related stakeholders. The provisions of Part II, section 2, of this Act give instructions that this part shall read as one with the Local Government (District Authorities) Act, in this Part referred to as the "principal Act". The principal Act is amended in section 54A (a) in Part III, section 20 (h) of this Act requires to provide and secure enabling environment for successful performance of the duties of the urban authority; paragraph (i) ensure compliance by all persons and urban authorities with appropriate government decisions, guidelines in relation to the promotion of the local government system; and paragraph (j) do such acts and things as shall facilitate or secure the effective, efficient and lawful execution by the urban authorities of the statutory or incidental duties." The proposed DCC subproject roads have complied with the provisions of this Act by ensuring consultation with all levels of local government, including Dar es Salaam City Council, ward executive officers, and Mitaa executive officers, to ensure compliance by all levels of authority in relation to promoting the local government system.
23.	The Land Disputes Courts Act, CAP.216 (2019)	Section 3 provides institutions responsible for land dispute resolutions. The Act states, "3-(1) Subject to section 167 of the Land Act and section 62 of the Village Land Act, every dispute or complaint concerning land shall be instituted in the Court having jurisdiction to determine land disputes in a given area." (2) The Courts of jurisdiction under subsection (1) include- (a) the Village Land Council, (b) the Ward Tribunal, (c) the District Land and Housing Tribunal, (d) the High Court, or (e) the Court of Appeal of Tanzania. The Act also provides for the functions and powers of these institutions, and in case of land disputes, the complainant shall follow the procedures established by this Act.

3.2.3 Regulations and Guidelines

Table 3-3: Applicable Regulations and Guidelines

Sn	Regulation/ Guideline	Description with respect to the Project
1.	Environmental Impact Assessment and Audit Regulations No. 349 of 2005, as amended in 2018	The EIA process is described under the Environmental Impact Assessment and Audit Regulations GN No. 349 of 2005 (and amendment GN 474 of 2018) ('the EIA Regulations') promulgated in terms of the EMA Sections 82(1) and 230(2) (h) and (q). The regulations provide the procedures and requirements for undertaking ESIA for various types of development projects with significant environmental impacts. In addition, the Regulations provide a list of projects that qualify for Environmental Assessment procedures in Tanzania. Regulation 4 Part III classifies projects into four types: Type A Projects requiring a mandatory ESIA; and Type B1- Borderline projects. Type B2 -Projects that are not mandatory and Special Projects category. The EMA guides environmental management and is administrated by the National Environmental Advisory Committee, the Directorate of Environment and the NEMC. The proposed DMDP II roads fall under Type A projects requiring full ESIA. At the end of the ESIA process, the Minister responsible for the environment issues an environmental certificate.
2.	The Environmental Management (Registration and Practice of Environmental Experts) Regulations, 2021	These Regulations make provisions for Environmental Experts and establish the Environmental Expert Committee. The regulation has gone further to categorise experts according to their expertise and experience. The DMDP II is a type A project that requires a mandatory ESIA. Registered experts with experience are needed to undertake the ESIA, and this EIA is being carried out in relation to that.
3.	The Environmental Management (Hazardous Waste Control and Management) Regulations, 2021	The Regulations for the control of all categories of hazardous waste cover the generation, collection, storage, transportation, treatment, recycling, reuse, recovery, and disposal of hazardous waste and its movements in, into, and out of Mainland Tanzania. The DMDP II activities have the potential to generate hazardous waste in the garages and workshops. The contractor will be obliged to adhere to the regulations' requirements for managing the generated hazardous waste.
4.	The Environmental Management (Control and Management of Electrical and Electronic Equipment Waste) Regulations, 2021	This applies to all categories of electrical and electronic equipment waste with respect to generation, collection, storage, transportation, importation, exportation, distribution, selling, purchasing, recycling, refurbishing, assembling, dismantling, and disposal of electrical and electronic equipment waste or components and their movement into or outside Mainland Tanzania. A number of activities in DMDP II implementation have the potential to generate electrical and electronic equipment waste. The contractor will be obliged to adhere to the regulation's management requirements.
5.	The Environment Management (Prohibition of Plastic Carrier Bags) Regulations, 2019	The Act's objective is to impose a total ban on the import, export, manufacturing, sale, and use of plastic carrier bags, regardless of their thickness. The DMDP II contractors and subcontractors shall restrain from the use of the banned plastic carrier bags.
6.	the Urban	The regulations describe urban space standards for various amenities, i.e. regulation 3: In these Regulations, unless the context requires otherwise:- "Urban Planning Space Standards" include standards for residential areas, unplanned

Sn	Regulation/ Guideline	Description with respect to the Project
	Planning (Planning and Space Standards) Regulations, 2018.	settlements, parking and road width, building height, building lines and setbacks, floor area, plot coverage and plot ratio, health facilities, education facilities, recreation facilities, beach facilities, golf course, passive and active recreation, public facilities by planning levels, public facilities by population size, and agricultural show grounds. The schedule made under regulation 4(1) provides Parking Lots (Table 12.3) and Space Standards for Carriageways and Right of Way (Table 13.1). The design has followed these requirements.
7.	The Land (Compensation Claims) Regulations 2001	The Land Regulations 2001 were promulgated in terms of the Land Act, Act No. 4 of 1999, sections 12 & 179. The form of compensation is stipulated in Section 10(1) of the Land Regulations 2001. Furthermore, the Regulations list the entities that are eligible for compensation or resettlement. If the person does not agree with the amount or method of payment or is dissatisfied with the time taken to pay compensation, he /she may apply to the High Court. The High Court shall determine the amount and method of payment and determine any additional costs for inconveniences incurred. The proponent will comply with this Act throughout the project's lifetime.
8.	The Environmental Management (Air Quality Standards) Regulations, 2007	The objectives of these regulations are to set baseline parameters on air quality and emissions and enforce minimum air quality standards. They are also meant to help developers, including industrialists, to keep abreast with environmentally friendly technologies and ensure that public health, as well as the environment, is protected from various air pollution emissions sources. These Regulations stipulate the role and powers of the National Environmental Standards Committee. According to the regulations, the approval of a permit for the emission of air pollutants shall be guided by ambient, receptor, emission and specification standards approved by the Minister. Offences and penalties for contraveners are also provided for in the regulations. Emission limits of SO _x and NO _x , CO ₂ ozone, black smoke and suspended particulate matter, together with their test methods, are specified. All these tolerance limits will be complied with during the mobilisation phase of the DMDP II.
9.	The Environmental Management (Water Quality Standards) Regulations, 2007	Among others, the object of the regulations is to enforce minimum water quality standards prescribed by the National Environmental Standards Committee, enable the Committee to determine water usage for purposes of establishing environmental quality standards and values for each usage and ensure all discharges of pollutants take into considerations the ability of the receiving water to accommodate contaminants for protection of human health and conservation of marine and aquatic environments. The Regulations elucidate the role of the National Environmental Standards Committee of TBS in setting minimum quality standards for water, sewerage, etc. Water quality and discharges emanating from the campsite and construction sites shall be monitored to ensure compliance with standards.
10.	Solid Waste Management Regulations, 2009 GN. NO. 263	The regulation has been made under sections 114, 115, 116, 117, 118, 119, 120, 121, 122 and 230 of the Environmental Management Act, 2004. These regulations apply to all matters pertaining to solid waste generation and management. They aim at, among other things, setting standards for permits to dispose of solid waste and licenses to own or operate solid waste disposal sites. DMDP II is likely going to generate a significant amount of solid waste, and its management must comply with these regulations.
11.	The Environmental Management	These regulations have been made under sections 110(4) and (5), 128, 133 (4), 135 and 130 of the Environmental Management Act, 2004. These regulations apply to all categories of hazardous waste and from generation, storage, disposal

Sn	Regulation/ Guideline	Description with respect to the Project
	Regulations (Hazardous Waste Control), 2009	and their movement into and out of mainland Tanzania. These regulations require that the following principles of environment and sustainable development guide any person dealing with hazardous waste in Tanzania: The precautionary principle Polluter pays principal, and The producer extended responsibility Hazardous waste, such as petrochemicals, metals, etc., is likely to be generated from the DMDP II, and it must be managed according to these regulations.
12.	Environmental Management (Soil Quality Standards) Regulations (2007)	These Regulations require the project proponent: To comply with soil quality standards that may be prescribed by the National Environmental Standards Committee (Part II, Section 5). To abstain from polluting soils (Part III, Section 15) To abstain from discharging hazardous waste, materials, and chemicals on soils (Part III, Section 16) Soil quality at the campsite and construction sites shall monitored to ensure compliance with standards.
13.	Environmental management (Quality Standards for Control of Noise and Vibration Pollution) Regulations (2011)	These Regulations require the project proponent to: Make or cause to be made any loud, unreasonable, unnecessary, or unusual noise that annoys, disturbs, injures, or endangers the comfort, repose, health, or safety of others and that of the environment (Part III, Section 6). Use the best practicable means to ensure that the emission of noise from that machinery, facility or premises does not exceed the permissible noise levels as specified in Schedule 1 (Part V, Section 8). The DCC will ensure that the contractors operate under minimum noise levels.
14.	The Petroleum (waste oils recycling operations) rule, 2017	The rule applies to the regulation of activities related to petroleum waste oil recycling operations and related issues in Tanzania. The construction phase will require petroleum products to run construction equipment. The project is expected to produce several types of petroleum waste. Under this rule, the contractor shall require the service of a licensed agent.
15.	National Strategy for Growth and Reduction of Poverty (2005)	One of NSGRP's objectives is to improve the quality of life and social well-being. This can be achieved through improving passable (good/fair condition) rural roads from 50% in 2003 to at least 75% in 2010. The DMDP 2 aims to improve accessibility within the city, reduce traffic congestion, and create employment. Therefore, the project is in agreement with the strategy.
16.	The Tanzania 2025 Development Vision	A Tanzanian who is born today will be fully grown up, will have joined the working population and will probably be a young parent by the year 2025. Similarly, a Tanzanian who has just joined the labour force will be preparing to retire by the year 2025. What kind of society will have been created by such Tanzanians in the year 2025? What is envisioned is that the society these Tanzanians will be living in by then will be a substantially developed one with a high-quality livelihood. Abject poverty will be a thing of the past. In other words, it is envisioned that Tanzanians will have graduated from a least-developed country to a middle-income country by the year 2025 with a high level of human development. The economy will have been transformed from a low-productivity agricultural economy to a semi-industrialized one led by modernised and highly productive agricultural activities that are effectively integrated and buttressed by supportive industrial and service activities in the rural and urban areas. A solid foundation for a competitive and dynamic economy with high productivity will have been laid.

Sn	Regulation/ Guideline	Description with respect to the Project
		Consistent with this vision, Tanzania of 2025 should be a nation imbued with five main attributes. 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.
17.	Environmental Assessment and Management Guidelines for the Road Sector (2011)	The Environmental Assessment and Management Guidelines for the Road Sector (EAMGRS) were developed in December 2004 (Signed in 2011), just after EMA (2004) was enacted. The guidelines provide procedures for the EIA process, as briefly explained in the following table.

3.2.4 The EIA procedures in the road sector

Administrative Procedures:

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

Environment Application and Screening Process:

EA procedures in the road sector are initiated when the Road Implementing Agency (RIA) submits an Environment Application Form to the RS-ES during the Project 60 Identification or Project Planning/Feasibility Study Phase. An environmental screening of the proposed project will determine whether it will require An Initial Environmental Examination (IEE), a Limited Environmental Analysis (LEA), or a detailed Environmental Impact Assessment (EIA).

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

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

3.3 International Standards and Guidelines

3.3.1 The World Bank Environmental and Socio Framework (ESF)

The World Bank Environmental and Social Framework (ESF) sets out the World Bank's commitment to sustainable development. The ESF protects people and the environment from potential adverse impacts that could arise from Bank-financed projects and promotes sustainable development. Launched on October 1, 2018, and effectively replacing the Bank's Safeguards Policies, the ESF enables the World Bank and Borrowers to better manage projects' environmental and social risks and improve development outcomes. The ESF also places more emphasis on building the Borrower government's capacity to deal with environmental and social issues. The ESF, made of 10 Environmental and Social Standards (ESSs), together with their annexes, sets out the requirements for Borrowers relating to the identification and assessment of environmental and social risks and impacts associated with projects supported by the Bank through Investment Project Financing. The Bank believes that the application of these standards, by focusing on the identification and management of environmental and social risks, will support Borrowers in their goal to reduce poverty and sustainably increase prosperity for the benefit of the environment and their citizens.

3.3.2 The World Bank Environmental and Social Framework Environmental and Social Standards (ESSs)

The World Bank ESSs set out the requirements for the Government of Tanzania (GoT) relating to the identification and assessment of E&S risks and impacts associated with projects supported by the Bank through Investment Project

Financing. The standards: (a) support GoT in achieving good international practice relating to E&S sustainability; (b) assist GoT in fulfilling their national and international E&S obligations; (c) enhance non-discrimination, transparency, participation, accountability and governance; and (d) enhance the sustainable development outcomes of projects through ongoing stakeholder engagement.

The following table summarizes the Environmental and Social Standards (ESSs) triggered by the proposed DMDP II project that the DCC must adhere to.

Table 3-4: Environmental and Social Standards (ESSs) relevant to the project

ESSs	Requirement	Relevance	Application
ESS1: Assessment and Management of E&S Risks and Impacts	ESS1 requires Borrowers to identify, evaluate and manage the environmental and social risks and impacts of the project; adopt a mitigation hierarchy approach (avoid, minimise, reduce, mitigate, offset); adopt differentiated measures so that adverse impacts do not fall disproportionately on the disadvantaged or vulnerable, and they are not disadvantaged in sharing development benefits and opportunities resulting from the project; utilise national environmental and social institutions, systems, laws, regulations and procedures in the assessment, development and implementation of projects, whenever appropriate; and to promote improved environmental and social performance, in ways which recognise and enhance Borrower capacity.	Yes	The ESIA study responds to the requirement of ESS1. The ESIA will prepare an Environmental and Social Management Plan (ESMP),
ESS 2: Labor and Working Conditions	ESS2 requires Borrowers to promote safety and health at work; promote the fair treatment, non-discrimination, and equal opportunity of project workers; protect project workers, with emphasis on vulnerable workers; prevent the use of all forms of forced labour and child labour; support the principles of freedom of association and collective bargaining of project workers in a manner consistent with national law; and provide project workers with accessible means to raise workplace grievances.	Yes	The project's implementation will involve direct workers, contracted workers, and primary supply workers. Workers will be engaged during the project's implementation. Health and safety standards for workers and fair working conditions will be promoted.
ESS 3: Resource Efficiency and Pollution Prevention and Management	ESS3 requires Borrowers to promote the sustainable use of resources, including energy, water and raw materials; avoid or minimise adverse impacts on human health and the environment by avoiding or minimising pollution from project activities; avoid or minimise project-related emissions of short and long-lived climate pollutants, avoid or minimise generation of hazardous and non-hazardous waste; and to minimize and manage the risks and impacts associated with pesticide use.	Yes	This standard is relevant. Construction materials shall be extracted and used, and waste and materials shall be handled in accordance with the ESS3 requirements, Good International Industrial Practice (GIIP), and the WBG Environmental, Health, and Safety Guidelines.
ESS 4: Community Health and safety	ESS4 requires Borrowers to address the health, safety, and security risks and impacts on project-affected communities and the corresponding responsibility of Borrowers to avoid or minimize such risks and impacts, with particular attention to people who, because of their particular circumstances, may be vulnerable	Yes	The development of Road infrastructure in the DCC will likely pose risks to health, safety, and security in the community, and therefore, the ESS4 is applicable.

ESSs	Requirement	Relevance	Application
ESS 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	ESS5 requires Borrowers to avoid involuntary resettlement or, when unavoidable, minimize involuntarily resettlement by exploring project design alternatives; to avoid forced eviction; to mitigate unavoidable adverse social and economic impacts from the land acquisition or restrictions on land use; to improve living conditions of poor or vulnerable persons who are physically displaced through the 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; and to ensure that resettlement activities are planned and implemented with appropriate disclosure of information, meaningful consultation, and the informed participation of those affected.	Yes	Resettlement may be necessary, especially for the Migombani, T/Mawenzi-Kisiwani, Vingunguti, Kiwalani, Barakuda-Majichumvi, and Majumbasita-Segerea roads. For this, RAP has been prepared. ESS 5 is applicable and The Land Acquisition Act Cap 118, The Land Act, CAP 113 of 2019; The Valuation and Valuers Registration Act, 2016 & Regulations No: 10
ESS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	ESS6 requires Borrowers to protect and conserve biodiversity and habitats, apply the mitigation hierarchy and the precautionary approach in the design and implementation of projects that could impact biodiversity, promote the sustainable management of living natural resources, support the livelihoods of local communities, and promote inclusive economic development through the adoption of practices that integrate conservation.	Yes	A few trees and vegetation will be cleared along the roads, with minimal impacts on habitat and ecosystem services (such as shade and fruit provisioning). Only necessary trees and vegetation will be removed. Removals will be done using light equipment and when it is dry to avoid habitat disturbance and biodiversity loss. Therefore, ESS 6 is applicable.
ESS 8: Cultural Heritage	ESS8 covers tangible cultural heritage (may be in urban or rural settings, be above or below land or underwater, and include natural features and landscapes) and intangible cultural heritage (includes practices, representations, expressions, knowledge, and skills). It recognizes the need for confidentiality and access. It includes specific provisions on archaeological sites and materials, built heritage, natural features with cultural significance, and movable cultural heritage. It includes requirements where use of cultural heritage is for commercial purposes.	Yes	There are cultural sites within the RoW. However, there are 2 graveyards adjacent the Msongola Road. Further, some unknown sites with local heritage values (e.g. historical and archaeological sites) may be discovered. There is a potential for chance to find such areas, and therefore, the ESS 8 is applicable.

ESSs	Requirement	Relevance	Application
ESS 10: Stakeholders Engagement and Information Disclosure	ESS10 emphasizes stakeholder engagement throughout the project life cycle and requires a Stakeholder Engagement Plan (SEP). It encourages early identification of stakeholders, both project-affected parties and other interested parties. Under ESS10, engagement must be proportionate to the nature, scale, risks and impacts of the project and appropriate to stakeholders' interests. It specifies processes and criteria for information disclosure and meaningful consultation and requires an accessible and inclusive grievance mechanism proportionate to risks and impacts.	Yes	The DMDP II project covers areas of public interest. It has developed a Stakeholder Engagement Plan (SEP) to ensure the stakeholders receive timely, relevant, understandable, and accessible information. The developed SEP was adopted and used in stakeholder consultation during the ESIA study.

3.3.3 World Bank Group Environmental, Health, and Safety (EHS) Guidelines

The WBG Environmental, Health, and Safety (WBG-EHS) – General Guidelines are technical reference documents with general and industry-specific examples of Good International Industry. The Environmental, Health, and Safety (EHS) Guidelines are technical reference documents with general and industry-specific examples of Good International Industry Practice (GIIP). The applicability of the EHS Guidelines for DMDP II roads was tailored to the impacts and risks identified along the roads on the basis of the results of an environmental assessment in which site-specific variables, such as the assimilative capacity of the environment and other project factors, were considered.

In this ESIA, relevant EHS guidelines on the Environment (e.g., emissions, noise, and construction waste management), Occupational Health and Safety, and Community Health and Safety have been adopted in the mitigation measures provided for this project.

Other Relevant World Bank Guidelines

A few other WB guidelines adopted in this ESIA include the World Bank Group Environmental, Health, and Safety General Guidelines (EHSGs), the WB Good Practice Note on Road Safety, the WB Managing the Risk of Adverse Impacts on Communities from Temporary Project Induced Labor Influx, the Use of Security Forces: Assessing and Managing Risks and Impacts, 2017, and the WB EHSG for Construction Materials Extraction.

3.3.4 Relevant International Conventions and Treaties.

These conventions and treaties have been ratified by the Government of the United Republic of Tanzania and are relevant to this project

- The Paris Agreement

The Paris Agreement's central aim is to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius. The proposed project design has taken into consideration the three main objectives of the Paris agreement. The roads designs have included features that mitigates climate change, strengthen the roads resilience to climate change and enhance their abilities to adapt to climate impacts such as flood and storms. Further, the ESMP has taken into consideration measures to reduce emission from Construction equipment and machines.

- Convention on Elimination of all forms of Discrimination Against Women (CEDAW) 1979

The Convention is an international legal instrument that requires countries to eliminate discrimination against women and girls in all areas and promotes women's and girls' equal rights. The ESMP contains instructions to guide the contractor in preventing any form of discrimination against women.

- Convention on the Rights of Persons with Disabilities, 2006

Reaffirms that all persons with disabilities must enjoy all human rights and fundamental freedoms.

- UN Convention on the Rights of a Child, 1990
- The African Convention on the Conservation of Nature and Natural Resources, 1968
- The Stockholm Declaration, 1972

- East African Community Protocol on Environment and Natural Resources, 2006.
- International Labor Organization conventions

3.4 Institutional Framework

3.4.1 Overall Management Responsibility

The institutional arrangement for environmental management in Tanzania is well spelled out in the EMA (2004). There are seven (7) institutions mentioned by the act, of which the Minister responsible for the environment is the overall in-charge for administration of all matters relating to the environment.

Part III, Section 13(1) of EMA (2004) states that the Minister responsible for the environment shall be overall in charge of all matters relating to the environment and shall in that respect be responsible for the articulation of policy guidelines necessary for the promotion, protection and sustainable management of the environment in Tanzania. The legal institutions for environmental management in the country include:

- Vice President's Office - Minister responsible for Environment;
- National Environment Management Council (NEMC); and
- Local Government Authorities

3.4.2 Summary of institutions and their responsibilities

The outline of the responsibilities of different institutions and personnel at national and local levels in the implantation of the Environmental Management and Monitoring Plans for the road project is presented in Table 3.7.

Table 3-5: Summary of institutions and their responsibilities

SN	Institution and personnel designation	Responsibilities
1.	President's Office, Regional Administration and Local Government Tanzania (PO-RALG)	• To coordinate and monitor closely the implementation of the proposed DMDP II project.
2.	District Level The DCC	• To ensure that the proposed road is designed in accordance with existing national legislation, policies, guidelines and regulation: • To coordinate and implement RAP • To ensure that Contractors are implementing the proposed road project in compliance to ESMP for the project and the conditions of EIA Certificate • To ensure that environmental monitoring and internal auditing are carried out regularly.
3.	Ministry of Works	• Formulation of policies, plans and strategies towards development, upgrading and Management of the Construction Sector covering short, medium and long term. • Setting standards and Monitoring of quality compliance in Construction, Rehabilitation and Maintenance of Roads • To promote and foster capacity building in road sector • Monitoring & Supervision of Construction, Rehabilitation and Maintenance of Roads and preliminary and detailed designs of Trunk and Regional Roads. • Monitoring, supervision and coordination of various activities of Agencies/Parastatals, Boards and Institutions which are under the Ministry of Works • To issue guidance on development and management of Infrastructures in the country
4.	Ministry of Works (Department of Safety and Environment, DSE).	• To advise on and, in collaboration with other bodies, prepare and review the government's policies on the protection and management of the environment. • To ensure compliance by the Ministry with the requirement of EMA 2004.

		- To coordinate all activities related to the environmental implementation of road project - To develop and review the environmental standard for road sector - To oversee the preparation and implementation of an EIA for investments in the infrastructure development sector, including development and maintenance projects. - To undertake the analysis of the Environmental Impact of the sector legislations, regulations, policies, plans, strategies and programs through a strategic environmental assessment.
5.	Minister responsible for Environment- Director of Environment	- Responsible for matters relating to the environment and articulation of policy guidelines necessary for the promotion and sustainable management of the environment in Tanzania. - Advise the Government on Legislative and other measures for the management of the environment. or the implementation of the relevant international agreements in the field of environment
6.	Director General - the National Environment Management Council (NEMC)	- To review the EIA reports - To recommend for project approval to the Minister of Environment and issuance of EIA Certificates. - To ensure EMA Act 2004 enforcement and compliance by development projects - To monitor project environmental compliance
7.	Occupational Safety and Health Authority (OSHA)	- Advise the Proponent on all Occupation, Health, and Safety matters of the projects. - To issue compliance certificates - To monitor project Occupation, Health, and Safety compliance - To ensure OSHA Act 2003 enforcement and compliance by development projects
8.	The DCC Environmental and Social Experts DEMO	- To provide information on the local situation, available social services, and socio-economic profiles for baseline data on Land use planning, health, and social and economic conditions of the project area. - To ensure a conducive working environment for the road contractors during project implementation. - To provide the required technical support & advice and participate in road surveys and design - To participate in environment management and project monitoring during project implementation; - To provide expertise on HIV/AIDS prevention awareness and testing to the project workers and communities: - Enforcement of laws and regulations relevant to the road project: - Ensure enforcement of the Environmental Management Act in their respective areas, - Advise the Environmental Management and committee on all environmental matters, - Prepare periodic reports on the state of the local environment, - Monitor the preparation, review and approval of EIAs and implementation of ESMP.
9.	Local Leaders (Ward and Mtaa leaders)	- To assist in the recruitment of project construction workers locally: - To assist in project monitoring as a watchdog for the environment, ensure the well-being of residents and participate in project activities: - To ensure a workable environment for the contractor by providing reliable support and security to the Contractor:

		• To participate in HIV/AIDS awareness campaigns to be conducted by the project: • To provide a link between the project developer and the community by providing information on the local social, economic, and environmental situation • To view the socio-economic and cultural value of the sites and on the proposed road operations. • To render any required assistance and advice on the implementation of the project • Ensure enforcement of the Environmental Management Act in their respective areas, • Advise the Environmental Management Committees on all environmental matters

CHAPTER FOUR

4 BASELINE ENVIRONMENTAL AND SOCIAL CONDITIONS

4.1 The Physical Environment

4.1.1 Introduction

This chapter provides the baseline environmental condition of the project area that will make a reference frame to mark out the potential environmental and social impacts that might arise during and after implementing the proposed project. The proposed development will have impacts on, or be affected by the social, economic and physical environment settings where the roads traverse, service or feed into. This chapter will describe the mentioned environmental settings.

4.1.2 The Dar es Salaam City Council and Topography

The Dar es Salaam region is located between Latitudes 6.36 degrees and 7.0 degrees south of the Equator and Longitudes 39.0 and 33.33 degrees East of Greenwich. The Indian Ocean borders it on the East and the Pwani Region on the other side.

The topography in the city is characterized by mixed residential, commercial and industrial buildings, as well as infrastructure and a high concentration of trade and other services and manufacturing activities. The lowland areas in Dar es Salaam City Council (DCC) start where the municipality borders with the Indian Ocean (Kivukoni ward) and extends up to Segerea, Ukonga and Kitunda wards. Beyond these wards, the small upland areas emerge as small hills of plateaus of Pugu, Kinyerezi, Chanika and Msongola wards. Most of the lowland areas constitute the urban part of the city. The upland areas are predominantly agricultural and rural.

The DCC remains the major hub of commercial activities. It has more than 575 major industrial establishments, the central bank, commercial banks, foreign exchange bureaus, insurance companies and transportation networks (www.dcc.go.tz/city-profile). It is worth mentioning that the majority of the people from various areas work in the city Centre and return to their homes in the late evenings. The development of the proposed subprojects will facilitate people's mobility and linkage to other major infrastructure investments. The proposed project will also reduce traffic congestion in the city, which is one of the major challenges facing the DCC.

4.1.3 Project location

The proposed subprojects transverse several wards and Mitaa in the DCC, including the Kariakoo, Upanga and Ilala CBD, and some wards away from the City Centre. The project is located in urban wards. Namely: the Kipawa, Kitunda, Msongola, Kivule, Segerea, Kimanga, Liwiti, Kisukuru, Tabata, Kiwalani, Ilala, Kariakoo, Gerezaani, Mchikichini, Jangwani, Upanga Magharibi, Upanga Mashariki and Vingunguti (see Figure 4-1). However, the prioritized roads for packages 1, 2, 3, 4, 5, 6 & 7 are those passing in Kariako CBD, Upanga CDB, Ilala CDB, Kiwalani, Kipawa, Kitunda, Kivule, Msongola, and Segerea. Kimanga, Liwiti, Kisukuru, Vingunguti and Tabata wards.

DAR ES SALAAM CITY COUNCIL 30% PRIORITY DMDP PHASE 2 SUB-PROJECTS

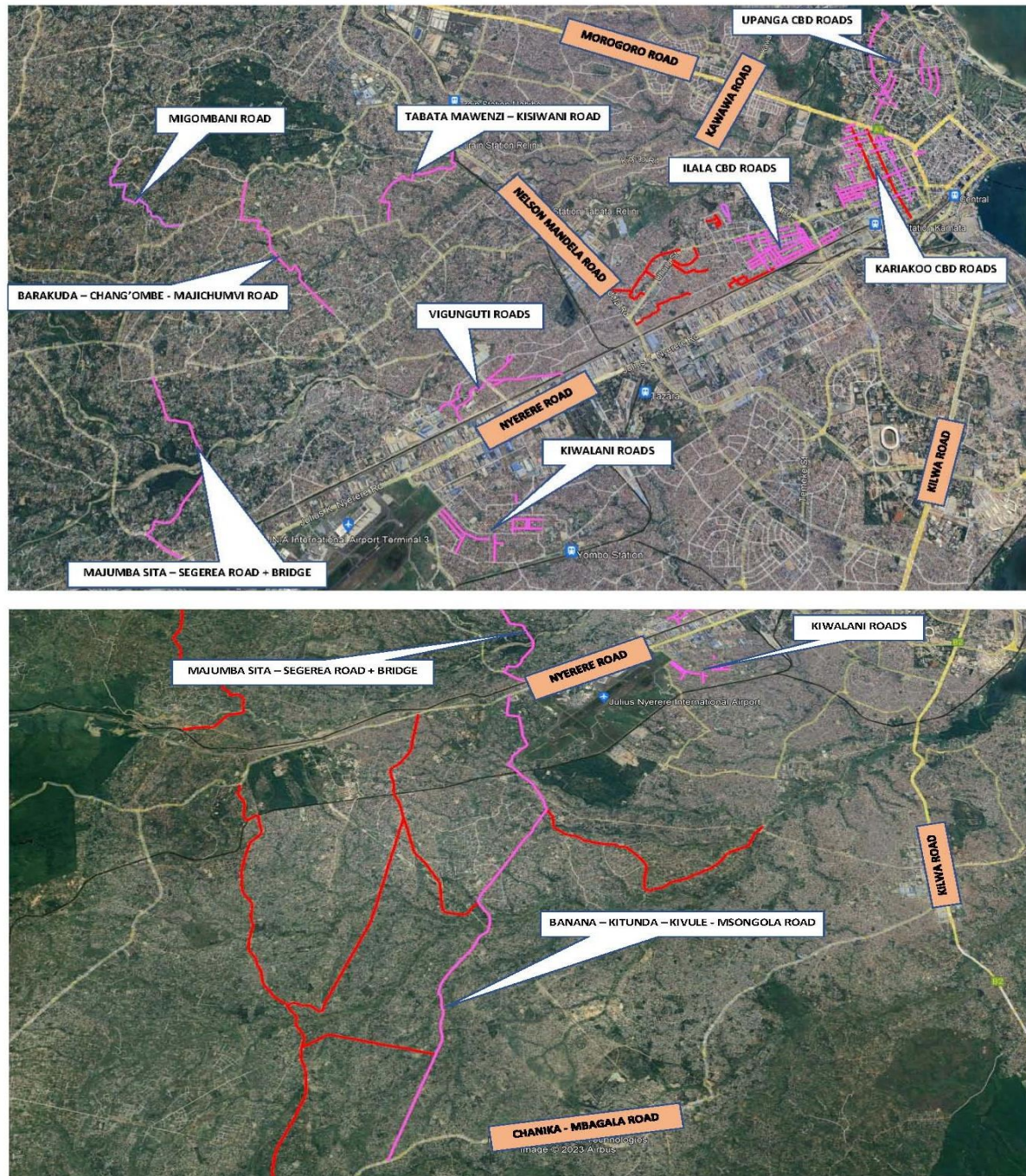


Figure 4-1: Locations of the project Components in the DCC

4.1.4 Administrative setup

The Dar-es-Salaam region has five (5) Municipal Councils, and by their embedded administrative functions, they form the Municipals of the Dar-es-Salaam Region. The 5 Municipals are Temeke Municipal Council, Kinondoni Municipal Council, Ubungu Municipal Council, Kigamboni Municipal Council, and Dar es Salaam City Council (previously known as Ilala Municipal Council). The DCC has thirty-six (36) wards. The proposed roads traverse 50% of the DCC wards. The Ward authorities and Mitaa leaders have been adequately engaged from the early stages of the project and shall be continuously engaged throughout the project implementation.

4.1.5 Area and population

Currently, the DCC covers an area of 1,393 square Kilometres and has a human population of 1,649,912 (NBS, 2022). Compared to the other four councils of the Dar es Salaam Region, the Dar es Salaam City Council has a high population and average household size (3.6).

4.1.6 Climatic condition of the council

4.1.6.1 Temperature

The City experiences a modified type of equatorial climate. It is normally hot and humid throughout the year, with an average temperature of 29°C. The hottest season is from October to March, during which temperatures may be up to 35°C. It is relatively cool between May and August, with temperatures around 25°C (2023).

The average monthly temperatures (day and night) in Dar es Salaam. Average yearly precipitation (rain and snow) and days of wet weather per month in Dar es Salaam are presented in Figure 4-2.



Figure 4-2: The average monthly temperatures and yearly precipitation for Dar es Salaam City

4.1.6.2 Rainfall

There are two main rain seasons: a short rain season from October to December and a long rain season between March and May. The average rainfall is 1000mm (lowest 800mm and highest 1300 mm) (www.dcc.go.tz/city-profile). Rainfall patterns influence road construction. Carrying out construction activities during the rainy seasons presents a major challenge, especially in flood-prone areas such as the CBD and the Msimbazi Valley (i.e., the Majumbasita-Segerea component). The City Centre is the most flooded area in the DCC (<https://www.iied.org/sites/default/files/pdfs/migrate/G02388.pdf>). The proposed road constructions aim to improve stormwater management and flood resilience in flood-prone areas.

4.1.7 Hydrology

Resting within the Wami/Ruvu Basin, the project location (DCC) and Dar es Salaam region, in general, rest within the Wami/Ruvu Basin with watersheds of 4 major rivers. Mpiji River forms the northern boundary of Dar es Salaam. On the other hand, the Msimbazi River flows to the north of the city center, and the Kizinga and Mzinga Rivers flow into the harbor area of the city. In any case, the hydrology in areas of the proposed subprojects in DCC is dominated by the Msimbazi River, which is a major River in the city with a very large floodplain. Flooding is a chronic problem in many parts of the city and generally occurs in lower-lying areas, especially in Msimbazi Valley. Apart from other small rivers in the project area, the major rivers area of Msimbazi and Mzinga.

DMDP phase two will construct a bridge across the Msimbazi River. The project will enhance accessibility across the Msimbazi Valley and connect the Majumbasita and Segerea areas (See Figure 4-3).

MAJUMBA SITA – SEGEEA ROAD + BRIDGE



Figure 4-3: The proposed Bridge at the Msimbazi Valley across the Majumba Sita-Segerea Road

4.1.8 Hazard Classification for the DCC

4.1.8.1 Urban heat hazard

The extreme heat hazard for the DCC is classified as **the medium based on modeled** heat information currently available in the *thinkhazard* tool (<https://thinkhazard.org/en/report/48358-united-republic-of-tanzania-dar-es-salaam>). This means that there is more than a 25% chance that at least one period of prolonged exposure to extreme heat, resulting in heat stress, will occur in the next five years. The Intergovernmental Panel on Climate Change (IPCC, 2013) predicts that continued emissions of greenhouse gases will cause further warming, and it is virtually certain that there will be more frequent hot temperature extremes over most land areas during the next fifty years. According to the IPCC, for the DCC, the temperature increase in the next fifty years will be slightly lower than the worldwide average but still significant. This calls for the designs of the DMPD 2 subprojects to be robust to global warming in the long term.

The DMDP 2 planning decisions, project design, and construction methods have considered the level of hazard. The project design has tried to minimize grey structures and control air emissions (i.e., exhaust emissions from the construction equipment).

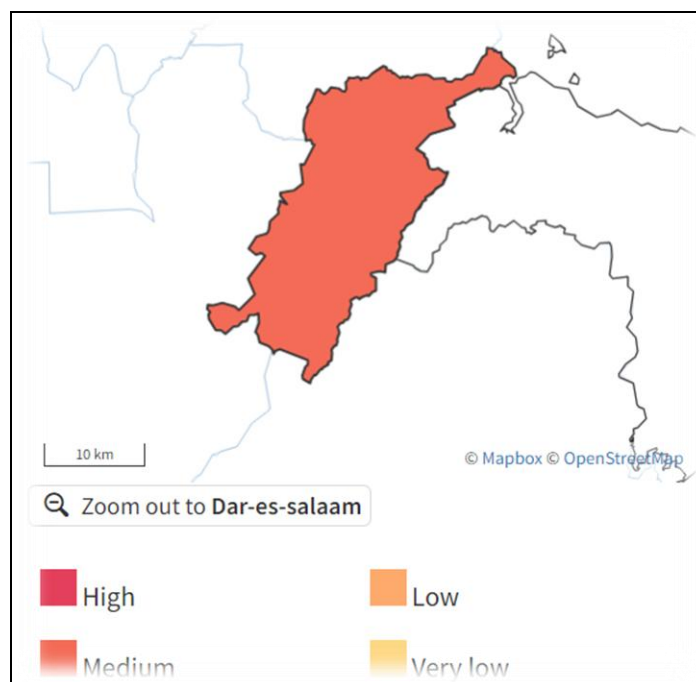


Figure 4-4: Urban heat hazard Map of the Dar es Salaam City Council

Source (<https://thinkhazard.org/en/report/48358-united-republic-of-tanzania-dar-es-salaam>)

4.1.8.2 Flood Hazard for the DCC

Dar es Salaam often faces significant flooding, which severely disrupts the lives of its approximately 4.5 million residents. For instance, in May 2019, relentless rainfall forced the evacuation of 1,215 households, destroyed roads and bridges, and resulted in the loss of 1,560 homes. A recent study categorized the flood hazard levels for the Dar es Salaam City Council (DCC) as “extra high risk” in its coastal wards, with “high” and “medium” risk levels varying across other areas, affecting the community both directly and indirectly. The combination of rapid population growth, climate change, and rising sea levels has intensified flood risks, with projections suggesting that an increasing number of residents will be at risk (Erman et al., 2019).

This project focuses on enhancing urban infrastructure, including the construction of 66.41 kilometers of roads throughout the council. These improvements aim to strengthen resilience against flooding by upgrading drainage systems and reducing surface runoff, ultimately lessening the negative impacts of future flood events on the city's population.

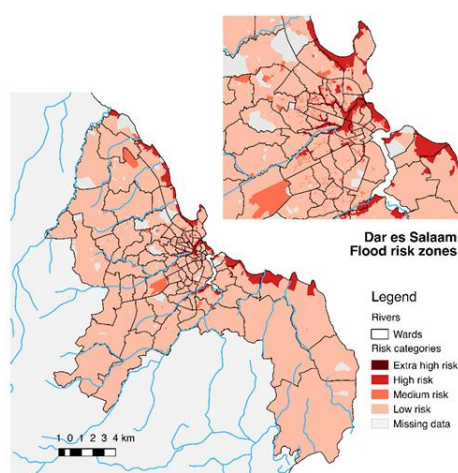


Figure 4-5: The urban flood hazard for the Dar es Salaam

Source: (Erman et al., 2019)

Other Hazards are summarized in Table 4-1

Table 4-1: Hazards classification for the DCC

Sn	Potential Hazard	Hazard Classification	Recommendation
1	Earthquake hazard	According to current information, earthquake hazard is classified as medium. This means that there is a 10% chance of a potentially damaging earthquake shaking the DCC in the next 50 years.	Based on this information, the impact of an earthquake should be considered in all phases of the project, particularly during design and construction.
2	River flood hazard	Based on modeled flood information currently available, river flood hazard is classified as low. This means that there is a chance of more than 1% that potentially damaging and life-threatening river floods will occur in the DCC in the coming 10 years (return period of c. 1 in 1000 years).	The level of river flood hazard should be considered in project planning decisions, design, and construction methods.
3	Wildfire hazard	The wildfire hazard is classified as high according to the information that is currently available. This means that there is a greater than 50% chance of encountering weather that could support a significant wildfire that is likely to result in both life and property loss in any given year. Based on this information, the impact of wildfire must be considered in all phases of the project, in particular during design and construction.	Project planning decisions, project design, construction, and emergency response planning methods should take into account the high level of wildfire hazard. Note that damage can not only occur due to direct flame and radiation exposure but may also include ember storms and low-level surface fire. In extreme fire weather events, strong winds and wind-borne debris may weaken the integrity of infrastructure. It would be prudent to consider this effect in the design and construction phase of the project.

Source: (<https://thinkhazard.org/en/report/48358-united-republic-of-tanzania-dar-es-salaam>)

4.1.9 Infrastructure and Utility

4.1.9.1 Road network

According to the road classification in Tanzania, Dar es Salaam has a total road length of 1,150 km, with 148 km of trunk roads, 65 km of regional roads, and 933 km of local roads. Of the 1,150 km road network in Dar es Salaam, 450 km are paved, while the remaining 700 km are gravel or earth. According to the DCC road network data, the current road network is shown in Table 4-2.

Table 4-2: Road network in the DCC

Sn	Total Roads Length	1139.9km
1	Paved Road Length	162.5km
2	Unpaved Road Length	977.4km
3	Proposed DMDP Phase 2 roads (for packages 1, 2, 3, 4, 5, 6& 7)	Roads Length 66.41Km

The road condition is good for paved roads, about 39.15km; fair for 93.77km, and poor for 9.19 km; good for gravel roads, about 57.97km; fair for 266.73km, and poor for 21.55 km; and poor for earth roads, about 14.25km, fair for 482.52km, and poor for 151.11 km (Source: <https://tarura.go.tz/#/tr/council-roads>).

Therefore, the proposed development will cover about 18% of the total road length in the DCC. DMDP phase 2 will involve upgrading earth roads to asphalt standards and reconstructing some that were previously paved.

4.1.9.2 Railway transport

There are two railway stations in DCC. The Dar es Salaam City Council is connected to the Uhuru railway (TAZARA) line to Kapiri Mposhi Zambia, and the central railway line to the Kigoma and Mwanza regions, which is currently being upgraded to standard gauge railway (SGR). One of the train terminals will be Dar es Salaam City, which is the center of business in the region.

One of the proposed DMDP roads, i.e., Majumbasita-Segerea road, is planned to be upgraded in order to increase connectivity with the SGR. The proposed road will bring traffic and goods close to the SGR while providing linkage to future BRT. The project will also have impacts on the existing railway. One of the project components, i.e., the Kitunda-Kivule-Msongola road, crosses a railway at Kitunda relini. Construction activities will definitely affect the railway (see Figure 4-6).

Communication between the TRC's technical teams and the Consultants is underway to develop the most sustainable design. Once the design is completed, this report will update the information.



Figure 4-6: Railway crossing Kitunda-Kivule-Msongola road

Source: (Site survey, 2023)

4.1.9.3 Air transport

The main airport in Dar es Salaam is the JNIA

DCC has good transportation infrastructures, including air transport through the Julius Nyerere International Airport (JNIA), which is within the stud area at Kipawa ward. JNIA is the only airport in Dar es Salaam. The proposed Banana-Kitunda Road traverses the Boundary of the air airport. The upgrading of the road will enhance the accessibility of the airport from Kivule/Kivule/Msongola to the Kitunda area. There is no identified airport infrastructure at risk of damage by the proposed the proposed project.

4.1.10 Telecommunication services

The Dar es Salaam City Council (DCC) has good internet connectivity, telephone services (both cellular and landline), radios, and postal services. Telecommunication service providers include Tanzania Telecommunication Company Limited (TTCL), Vodacom, Airtel, Tigo, Zantel, and Halotel.

During stakeholder engagement at Kipunguni Mtaa, in Kipawa Ward, it was mentioned that newly Constructed underground telecommunication fiber cables cross the Banana-Kitunda-Kivule-Msongola road. Communications are underway with the owners of communication company infrastructures to identify other areas that the project may impact and plan to implement the project with minimum impacts on other infrastructures.

4.1.11 Water supply

The main sources of water supply in DCC are the boreholes and the Ruvu River. The groundwater potential is high, but the quality is affected by high salinity levels, so the water supply schemes constructed on lower Ruvu provide water in Pwani Dar es Salaam regions, which have increased to 77%, DAWASA being the leading in the number of water kiosks (EWURA, 2022).

DAWASA water pipelines supply treated water from the Lower Ruvu River to the Dar es Salaam region runs along the road reserves. Thus, there is a high risk of the project to cause damage to these infrastructures. Some of the infrastructures run across the roads, while others run parallel to the roads. A good example was observed along the Barakuda-Chang'ombe-Majichumvi road, where a relatively large water supply pipe runs along and crosses the road twice, as shown in Figure 4-7.

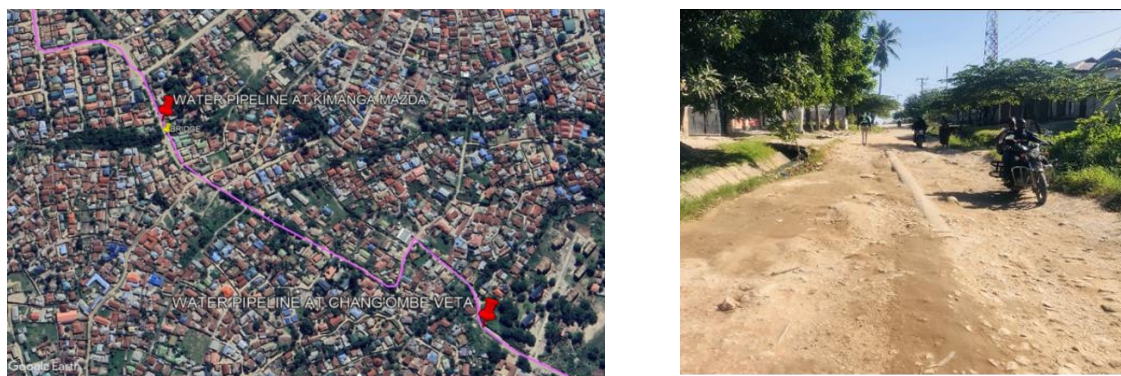


Figure 4-7: Water supply Infrastructure along the Barakuda-Chang'ombe-Majichumvi road

This infrastructure will be relocated and/or reinstalled within the service ducts within the *Barakuda-Chang'ombe-Majichumvi road*. There is a high chance that the relocation will interfere with the water supply service, causing grievances to DAWASA customers.

4.1.12 Energy infrastructures

DCC is well served with hydro-electric power electricity supplied by TANESCO. The largest part of electricity is consumed by medium and light industries that are distributed all over the region. All areas within the City Council are connected to the National grid. The proposed subprojects traverse commercial and residential areas in which the Electricity power line runs along the road reserves. To have adequate space for the proposed project, some of the electric poles will need to be reallocated. This will, in return, cause power cuts in some areas that affect business in a short time of reallocation.

A few households and businesses also rely on diesel generators, which are often utilized as backup power sources during times of high demand or in case of interruptions in the primary power supply. Most families use candles, battery torches, or solar lighting at night when they experience power cuts.

Solar energy is also increasingly being harnessed in Dar es Salaam City Council, which is privileged with abundant sunlight throughout the year. Solar power projects and installations, including rooftop solar panels, contribute to the project area's energy mix.



Figure 4-8: Electricity line along one of the proposed roads

4.1.13 Solid Waste management

The Dar es Salaam City Council recognizes the increase in different types of solid waste, including household waste, industrial waste, and hospital waste, which are dumped in various places and thus can cause environmental pollution (air, water, and land). The city of Dar es Salaam is estimated to produce more than 4,600 tons of waste per day; of those, only 45 to 50 percent are received in Pugu Dumpsite, equivalent to 1,200 - 2,000 tons of waste estimated to be produced per day, while the remaining waste ends up in open areas, water ditches, roads and residences (Source: <http://www.dcc.go.tz/urejelezaji-wa-taka-ngumu>). The Dar es Salaam Master Plan (2016-2036) indicated that the DCC has a per capita waste generation rate of 1kg. This implies that the City Council currently generates 1581 tons per day (Dar es Salaam Master Plan, 2016- 2036).

Baseline surveys indicated that less than 50% of solid waste generated is collected. Omar (2020) reported that data from the DCC indicates that 33 percent of the generated waste per day is collected, while the waste Contractors (service providers) have shown that 46 percent of the generated waste is collected per day.

Waste Collection: Waste collection in the project area, especially in the CBD, is done by private Contractors licensed by the DCC. The service is reported to be of high efficiency in the CBD, where the residents are more willing to pay for the service, as compared to low-income areas such as Tabata, etc. The DCC lacks reliable data on the amount of waste collected by informal service providers. However, based on per capita waste generation, 54 percent of the generated waste is managed informally. This may include informal collection, burying, dumping in drains, or open burning.

Waste recycling: No organized system tracks the amount of recyclable waste collected. The practice shows that recyclable waste is informally collected and sold to waste collection agents spread all over the City Council. The waste collection agents sell the recyclable waste to the recycling industries. However, only a few organized formal companies involved in waste recycling have statistics on the amount of recyclable waste collected.

Illegal dumping: The cleanliness of the city of Dar es Salaam, especially solid waste management, is a long-term problem that has many challenges. The common behavior among the community of dumping waste in inappropriate places (including waterways and stormwater drainage systems) has contributed to the city becoming dirty, waterways clogging, and accelerating floods. Further, the illegal dumping of waste can be a catalyst for outbreaks of diseases such as cholera and other diseases of diarrhea and vomiting. Illegal waste dumping is done by industries in the DCC.

4.1.14 Drainage System

Some streams characterize the drainage system in the project area without continuity in some sections and rectangular/trapezoidal open channels (along the roads) with a general undersized cross-section. The drainage systems are, in many areas, constrained by existing walls, informal constructions, and other obstacles. The drainage systems are affected by siltation and solid waste disposal, causing wastewater stagnation in some parts of the project areas.

Before DMDP, some parts of Ilala were facing serious flooding, especially in the unplanned settlements and the City Centre. Some of the major drainage systems in Kiwalani were constructed during DMDP one, solving the impacts of floods in Kiwalani and its downstream. These drains include the Kiwalani Drain, Food Security Drain, Kigilagila Drain, and IL5 and IL7. Most of the selected roads have no side drainage. The available drainage systems were found to be clogged by waste and silt, and even wastewater from the adjacent residential houses/commercial facilities couldn't pass, see.



Figure 4-9: Condition of some of the existing drainage systems along the proposed roads in the DCC

4.1.15 Soil erosion

Soil erosion in urban areas occurs primarily at the slopes of river valleys, where no vegetation is left to hold the soil in place. It is intensified by human activities such as the extraction of construction materials. The geology of Dar es Salaam has two major geological units: i) the underlying substratum of (semi-) consolidated formations and outcropping rocks and ii) superficial, mainly loose sediments. *Figure 4-10* indicates the potential soil erosion area along Migombani Road.



Figure 4-10: Erosion of the roadsides along the Migombani road

4.1.16 Air Quality Baseline Condition

An air quality study was done in fifteen different locations at the site. The results of Air Quality measurements taken along the proposed priority roads for Packages 1, 2, 3, 4, 5, 6, and 7 are discussed hereunder.

Ambient Dust Levels

The average measured concentration of $PM_{2.5}$ levels was found to range between $15 \mu g/m^3$ to $112 \mu g/m^3$, which is above the WHO guideline. The highest levels of concentrations were measured at Majichumvi, Obama Club, and SGR Bridge near the petrol station site and are associated with emissions from moving vehicles. PM_{10} , on the other ranges between $19 \mu g/m^3$ to $272 \mu g/m^3$ and is above the WHO AQG Level, but some are within local standards. The sampling locations for PM_{10} , which exceeded local standards, were Kitunda Relini, Kivule Fremu Kumi/bus stop, Majichumvi, and SGR Bridge near the petrol station (Table 4.3).

These results are in agreement with the reported air quality index for Dar es Salaam, where $PM_{2.5}$ is reported as the main pollutant (<https://www.igair.com/tanzania/dar-es-salaam>). The Air Quality Index for Dar es Salaam is around $79 \mu g/m^3$.

Table 4-3: The recorded $PM_{1.0}$, $PM_{2.5}$ and PM_{10} concentrations levels

s/n	Road Name	Sampling location	Coordinates	Respirable dusts		
				PM _{1.0} ($\mu g/m^3$)	PM _{2.5} ($\mu g/m^3$)	PM ₁₀ ($\mu g/m^3$)
WHO Air Quality Guideline 2021 (AQG level)				-	5	15
Tanzania air quality standard (TZS 845: 2019)				-	-	60 to 90
1.	Banana-Kitunda Road	Banana bus stand	L: 6°52'17.62"S; LG: 39°11'21.08"E	19	32	44
2.	Kitunda-Kivule-Msongola road	Kitunda Relini	L: 6°53'30.57"S; LG: 39°11'28.99"E	59	60	272
		Kitunda shule /njia panda	L: 6°54'3.79"S; LG: 39°11'48.41"E	28	42	67
		Kivule sokoni	L: 6°56'0.03"S LG: 39°11'2.23"E	27	62	75
		Kivule Fremu kumi/bus stop	L: 6°57'7.54"S; LG: 39°10'40.88"E	42	72	158
3.		Chang'ombe bus stand	L: 6°50'10.01"S; LG: 39°12'19.84"E	13	22	27

s/n	Road Name	Sampling location	Coordinates	Respirable dusts		
				PM _{1.0} ($\mu\text{g}/\text{m}^3$)	PM _{2.5} ($\mu\text{g}/\text{m}^3$)	PM ₁₀ ($\mu\text{g}/\text{m}^3$)
	Barakuda-Chang'ombe-Majichumvi	Mazda	L: 6°49'41.83"S LG: 39°11'57.56"E	50	72	82
		Majichumvi	L: 6°49'18.18"S; LG: 39°11'45.41"E	78	107	181
4.	Majumbasita-Segerea	SGR Bridge near a petrol station	L: 6°52'2.52"S; LG: 39°11'30.99"E	66	112	165
5.	Migombani	Kwa Mkuwa	L: 6°49'5.86"S; LG: 39°10'47.71"E	15	20	33
		Nearby ward office	L: 6°49'22.43"S LG: 39°10'59.04"E	17	30	32
		Obama Club	L: 6°49'37.22"S; LG: 39°11'17.98"E	41	92	67
6.	Tabata-Mawenzi-Kisiwani	Twiga/Padre pio	L: 6°49'13.45"S; LG: 39°12'54.66"E	9	15	19
		Savanna	L: 6°49'36.01"S LG: 39°12'45.89"E	14	22	31
7.	Kiwalani community roads	Behind Kigilagila market	L: 6°51'56.48"S LG: 39°13'25.99"E	22	38	50
8.	Ilala CBD	Ilala market	L: 6°49'38.76"S LG: 39°15'45.68"E	15	8	24
		Mwanza Road, nearby Amana Hospital	L: 6°49'40.38"S LG: 39°15'38.56"E	17	10	20
9.	Kariakoo CBD	Narung'ombe	L: 6°49'16.45"S LG: 39°16'24.42"E	53	33	66
10.	Upanga CBD	Mindu Road near IST	L: 6°47'54.97"S LG: 39°16'37.39"E	19	11	15
11.	Vingunguti	Zahanati Road	L: 6°50'52.24"S LG: 39°13'32.47"E	71	148	114
12.		Pelapela Mosque	L: 6°50'37.08"S LG: 39°13'46.45"E	23	41	45

Source: Field Results, 19th October 2023

Ambient Gaseous Pollutants levels

The average measured concentrations of H₂S, CO₂, SO₂ and TVOC from the selected sampling stations are presented in Table 4-4. All the measured parameters reflect where there are no significant sources of air pollution. Existing sources are routine moving vehicles and ongoing construction activities along some of the roads, i.e., BRT at Banana.

In general, the baseline air quality study has established that the proposed roads have relatively clean air. Most of the measured pollutants were found below respective standards stipulated by International (WHO) and Tanzanian Emission standards.

Table 4-4: Average values of measured parameters compared with local and/or International standards

s/n	Road Name	Sampling location	Coordinates	Gaseous Emissions				
				H ₂ S (mg/m ³)	CO ₂ (ppm)	SO ₂ (ppm)	TVOC (mg/m ³)	Temp (°C)
Local standard: TZS 837 (EMR, 2007)				-		0.5 mg/Nm ³ for 10 minutes	-	-
1.	Banana-Kitunda Road	Banana bus stand	L: 6°52'17.62"S; LG: 39°11'21.08"E	0.2	528	0.4	110	34
2.	Kitunda-Kivule-Msongola roads	Kitunda relini	L: 6°53'30.57"S; LG: 39°11'28.99"E	0	918	0	75	34
		Kitunda shule /njia panda	L: 6°54'3.79"S; LG: 39°11'48.41"E	0	547	0	134	35
		Kivule sokoni	L: 6°56'0.03"S LG: 39°11'2.23"E	0	413	0	91	35
		Kivule Fremu kumi/bus stop	L: 6°57'7.54"S; LG: 39°10'40.88"E	0	413	0	0.412	36
3.	Barakuda-Chang'ombe-Majichumvi	Chang'ombe bus stand	L: 6°50'10.01"S; LG: 39°12'19.84"E	0	420	0	95	36
		Mazda	L: 6°49'41.83"S LG: 39°11'57.56"E	0	543	0	151	36
		Majichumvi	L: 6°49'18.18"S; LG: 39°11'45.41"E	0	618	0	148	33
4.	Majumbasita-Segerea	SGR Bridge nearby shell	L: 6°52'2.52"S; LG: 39°11'30.99"E	0.1	413	0.2	0.414	31
5.	Migombani	Kwa Mkuwa	L: 6°49'5.86"S; LG: 39°10'47.71"E	0	413	0	0.214	32
		Nearby ward office	L: 6°49'22.43"S LG: 39°10'59.04"E	0	413	0	30	33
		Obama Club	L: 6°49'37.22"S; LG: 39°11'17.98"E	0.1	413	1.2	0.417	35
6. 34	Tabata-Mawenzi-Kisiwani	Twiga/Padre pio	L: 6°49'13.45"S; LG: 39°12'54.66"E	0	413	0	44	34

s/n	Road Name	Sampling location	Coordinates	Gaseous Emissions				
				H ₂ S (mg/m ³)	CO ₂ (ppm)	SO ₂ (ppm)	TVOC (mg/m ³)	Temp (°C)
		Savanna	L: 6°49'36.01"S LG: 39°12'45.89"E	0	497	0	82	34
7.	Kiwalani	Behind Kigilagila market	L: 6°51'56.48"S LG: 39°13'25.99"E	0	505	0.3	156	35
8.	Vingunguti	Zahanati Road	L: 6°50'52.24"S LG: 39°13'32.47"E	0	413	0	47	35
9.		Pelapela Mosque	L: 6°50'37.08"S LG: 39°13'46.45"E	0	551	0	96	35

Source: Field Results, 19th October 2023

4.1.17 Noise level

Measured noise levels are presented in Table 4.5. Noise level at the site ranged from 40.2 to 67.1 dBA for minimum, and maximum ranged between 69.1 to 112.9 dBA. Banana bus stand, Kivule Fremu kumi/bus stop, Chang'ombe bus stand, Kwa Mkuwa, Obam Club and behind Kigilala market were identified to have high noise levels ranging 86.3dBA to 112dBA implying that noise level is above the standard (i.e. 75 dBA day) described in the first schedule of the Environmental Management (Standards for the Control of Noise and Vibrations Pollution) regulations, 2015.

Table 4-5: Noise Levels along the proposed roads

s/n	Road Name	Sampling location	Coordinates	Noise Level (dBA)	
				Min	Max
1.	Banana-Kitunda Road	Banana bus stand	L: 6°52'17.62"S; LG: 39°11'21.08"E	63.7	112.9
2.	Kitunda-Kivule-Msongola	Kitunda relini	L: 6°53'30.57"S; LG: 39°11'28.99"E	47.6	72.5
		Kitunda shule /njia panda	L: 6°54'3.79"S; LG: 39°11'48.41"E	54.1	71.7
		Kivule sokoni	L: 6°56'0.03"S; LG: 39°11'2.23"E	59.3	74.9
		Kivule Fremu kumi/bus stop	L: 6°57'7.54"S; LG: 39°10'40.88"E	48.8	80.1
3.	Barakuda-Chang'ombe-Majichumvi	Chang'ombe bus stand	L: 6°50'10.01"S; LG: 39°12'19.84"E	67.1	89.1
		Mazda	L: 6°49'41.83"S; LG: 39°11'57.56"E	49.2	73.6
		Majichumvi	L: 6°49'18.18"S; LG: 39°11'45.41"E	50.2	71.8

s/n	Road Name	Sampling location	Coordinates	Noise Level (dBA)	
				Min	Max
4.	Majumbasita-Segerea	SGR Bridge nearby shell	L: 6°52'2.52"S; LG: 39°11'30.99"E	55.1	69.1
5.	Migombani	Kwa Mkuwa	L: 6°49'5.86"S; LG: 39°10'47.71"E	51.0	90.6
		Nearby ward office	L: 6°49'22.43"S LG: 39°10'59.04"E	40.2	74.5
		Obama Club	L: 6°49'37.22"S; LG: 39°11'17.98"E	54.2	87.7
6.	Tabata-Mawenzi-Kisiwani	Twiga/Padre pio	L: 6°49'13.45"S; LG: 39°12'54.66"E	53.9	69.3
		Savanna	L: 6°49'36.01"S; LG: 39°12'45.89"E	57.3	70.2
7.	Kiwalani	Behind kigilagila market	L: 6°51'56.48"S; LG: 39°13'25.99"E	46.8	86.3
8.	Ilala CBD	Ilala market	L: 6°49'38.76"S; LG: 39°15'45.68"E	70.6	87.6
		Mwanza Road, nearby Amana Hospital	L: 6°49'40.38"S; LG: 39°15'38.56"E	61.8	85.1
9.	Kariakoo CBD	Narung'ombe	L: 6°49'16.45"S LG: 39°16'24.42"E	69.3	86.1
10.	Upanga CBD	Mindu Road near IST	L: 6°47'54.97"S LG: 39°16'37.39"E	51.0	63.4
11.	Vingunguti	Zahanati Road	L: 6°50'52.24"S LG: 39°13'32.47"E	60.3	70.9
12.		Pelapela Mosque	L: 6°50'37.08"S; LG: 39°13'46.45"E	53.5	76.5

Source: Consultant Analysis, 19th October 2023

4.1.18 Surface water and soil quality

There are several rivers across some of the proposed roads. To establish baseline conditions, water, and soil samples were taken in river(s) crossing Kitunda-Kivule-Msongola road, Majumbesita-Segerea road, and Barakuda-Chang'ombe-Majichumvi road. The sampling locations for water and soil, parameters, and results are illustrated in **Water**: Sampling locations and parameters are indicated in Figure 4.11 below. Turbidity for Msimbazi and Mzinga was above the standard, while other parameters were within the standard (TZS 789:2018).

Soil: In all sampling locations, pH and heavy metals were found to be below the local regulatory standards (TZS 972:2005) except for the Mzinga River, which had an elevated Cadmium level.

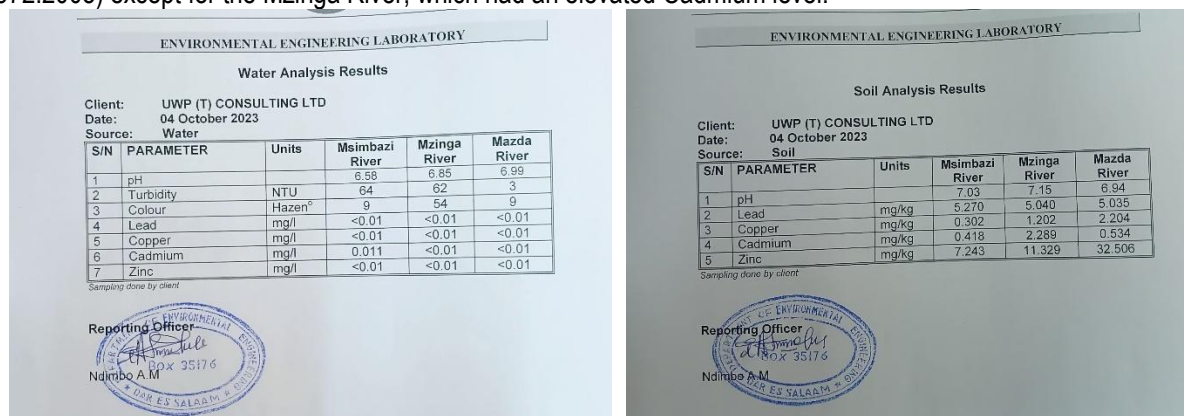


Figure 4-11: Results of water (L) and soil (R) from rivers along the proposed priority road under packages 1, 2, 3, 4, 5, 6 & 7

4.2 The Social Environment

4.2.1 Area and Population

The subprojects are located in Dar es Salaam Region, specifically in Dar es Salaam City Council, which is bordered to the North and Northeast by Kinondoni and Ubungo Districts, respectively, to the East by the Zanzibar Channel, the West by Pwani Region, and to the South by Tembeke District. It covers an area of 1,393 km². The administrative Wards of the project include Tabata, Kimanga, Liwiti, Segerea, Kisukuru, Kipawa, Kiwalani, Kitunda, Kivule and Msongola, Upanga Magharibi, Upanga Mashariki, Jangwani, Mchikichini, Gerezani, Kariakoo, and Ilala.

According to the National Bureau of Statistics (2022) Population and Housing Census Report, the Dar es Salaam Region has a population of 5,383,728 people (2,600,018 Males; 2,783,710 Females) with a sex ratio of 93. The average annual intercensal population growth rate for the region decreased from 5.6% in 2012 to 2.1% in 2022. The number of households in the region is 1,550,066, with an average household size of 3.5.

Dar es Salaam City Council has a larger population than the other councils in the region. The City Council hosts 1,649,912 people, including 793,731 males (48%) and 856,181 females (52%), with a sex ratio of 93. The number of households in the city is 458,614, with an average household size of 3.6. The number of people and households in the Wards covered by the project is presented in Table 4-7. Therefore, the population in the served community is equivalent to 35 % of the DCC population. Out of these, 552 people (i.e., PAPs) will be directly affected by the project activities, i.e., PAPs.

Table 4-6: Population distribution in project area

Ward	Subproject name	Road	Total	Male	Female	Sex ratio	Number of households	Average HH size
Tabata	T/Mawenzi-Kisiwani		59,555	28,486	31,069	92	19,102	3.1
Kimanga	T/Mawenzi-Kisiwani & Barakuda-Chang'ombe-majichumvi		50,340	23,602	26,738	88	15,440	3.3

Ward	Subproject name	Road	Total	Male	Female	Sex ratio	Number of households	Average HH size
Liwiti	Barakuda-Chang'ombe-Majichumvi		40,399	19,070	21,329	89	12,234	3.3
Segerea	Majumbasita-Segerea		44,831	21,404	23,427	91	12,351	3.6
Kisukuru	Migombani		40,279	18,983	21,296	89	10,989	3.7
Kipawa	Majumbasita-Segerea & Banana-Kitunda		72,577	35,175	37,402	94	21,089	3.4
Kiwalani	Kiwalani community roads		40,049	19,796	20,253	98	12,509	3.2
Kitunda	Kitunda-Kivule-Msongola & Kivule-Majohe jct		42,259	20,142	22,117	91	11,470	3.7
Kivule			88,273	41,632	46,641	89	22,013	4.0
Msongola			94,923	44,947	49,976	90	23,719	4.0
Upanga Magharibi	Upanga CDB		11,845	5,593	6,252	89	2,946	4.0
Upanga Mashariki			9,317	4,467	4,850	92	2,531	3.7
Jangwani	Ilala CDB		13,793	7,326	6,467	113	3,553	3.9
Mchikichini			19,076	10,260	8,816	116	6,141	3.1
Gerezani	Kariakoo CDB		5,786	2,869	2,917	98	1,337	4.3
Kariakoo			10,246	5,276	4,970	106	2,314	4.4
Ilala	Ilala CDB		23,787	11,858	11,929	99	5,967	4.0
Vingunguti	Vingunguti Roads		66,342	33,704	32,638	103	21,084	3.1

Source: Population and Housing Census, 2022

4.2.2 Ethnic Groups and Language

Ethnic groups: The project area was originally dominated by the Zaramo tribe. However, due to rapid population growth, other tribal groups are now dominant in the project area. These groups include Haya, Nyakyusa, Pare, Sukuma, Nyamwezi, and Chaga.

Language: Swahili is the most commonly spoken language in the project area. Native languages are not commonly spoken in addressing the public, and their usage is discouraged in education, political gatherings, religious meetings, and broadcasting media or digital media.

4.2.3 Employment

The majority of households residing in the project area are employed in the formal and informal sectors, relying on wages and salaries from the Government, development agencies, and the private sector. Very few people depend on small-scale farming.

The main economic activities include retail businesses such as small and medium-sized shops, bars, restaurants, transportation services, medical services, handcraft, banking, and construction businesses. The proposed project is expected to provide employment opportunities as well as improve people's access to their offices and trading areas.

4.2.4 Education Services

Dar es Salaam City Council hosts several Government and Private kindergartens, pre-primary, primary, secondary, and high schools, vocational training centers, and colleges that serve students from all across the Dar es Salaam Region. The education awareness within the Council is very intensive where by every ward and some mitaa has a primary school, and almost every ward has a secondary school. The key education Institutions in the project area comprise of primary schools with pre-primary classes, Secondary schools, and Vocational Training Centres. The project roads are expected to improve access to education services within the project Wards and beyond. For instance: Barakuda-Chang'ombe-Majichumvi Rd will improve access to Precious Day Care School and VETA;

Majumba sita-Segerea Rd will improve access to Queen's Pre and Primary School; Migombani Rd will improve access to Mount Zion Pre and Primary School, Anuarite Primary and Secondary School; Tabata Mawenzi-Kisiwani Rd will improve access to Moravian Primary School; Kitunda-Kivule-Msongola will improve access to Heaven daycare and nursery, Daddy's Nursery and Primary School, Misitu, Mbonea, and Kerezange Secondary Schools, Click Nursery and Primary School, Faraja Islamic pre and Primary School and Benhubert Secondary School; Upanga CBD will improve International School of Tanganyika, and Tambaza Secondary School; Ilala CDB will improve Ilala Kasulu Primary School, Ilala Islamic Secondary School, and Ilala Little Star Nursery School.

Construction activities could potentially block the access gate to the schools and cause noise and dust issues. The developed ESMP will guide the construction activities near the schools to ensure the health and safety of children in schools adjacent to the project.

Table 4-7: Education services along the subproject roads under packages 1, 2, 3, 4, 5, 6 & 7

Road Name	Ward name	Population	Education services along the proposed road
T/Mawenzi-Kisiwani	Tabata	59,555	Moravian Primary School
T/Mawenzi-Kisiwani & Barakuda-Chang'ombe-Majichumvi	Kimanga	50,340	Precious DayCare School
Barakuda-Chang'ombe-Majichumvi	Liwiti	40,399	Chang'ombe VETA, Set Ready Daycare School
Majumbasita-Segerea	Segerea	44,831	Segerea seminary school, Holy trinity nursery & primary, segerea Adventist primary school
Kiwalani community roads	Kiwalani	40,049	-
Migombani	Kisukuru	40,279	Mount Zion Pre and Primary School, Anuarite Primary and Secondary School & VETA
Majumbasita-Segerea & Banana-Kitunda	Kipawa	72,577	Queen's Pre and Primary School,
Kitunda-Kivule-Msongola & Kivule-Majohe Jct	Kitunda	42,259	Heaven daycare and nursery, Kitunda primary, and Jitihada primary
	Kivule	88,273	Daddy's nursery and Primary, Kerezange Secondary, Misitu secondary, Mbonea Secondary School, Benhubert Secondary School, Click Nursery and Primary School, Kivule secondary and Abuu Jumaa secondary.
	Msongola	94,923	Faraja Islamic Pre and Primary School, Yangeyange Primary, Msongola Secondary, Good Vision Daycare
Ilala CBD	Ilala	56,656	Ilala Kasulu Primary School, Ilala Islamic Secondary School, and Ilala Little Star Nursery School
Upanga CBD	Upanga Magharibi	11,845	International School of Tanganyika, Tambaza Secondary School, Hindu Mandal Nursery School
Kariakoo CBD	Gerezani	10,246	Benjamin Mkapa Secondary School, Uhuru Primary School
Vingunguti	Vingunguti	66,342	Vingunguti Sec. School, Ian Day Care Center, ,Blessing Day Care Centre

4.2.5 Health Services

Health services delivered in Dar es Salaam City Council are better compared to other parts of the Dar es Salaam region as the city hosts the Country's Referral Hospital, Muhimbili National Hospital, and other prime Private and Government health facilities that communities within the project areas can easily access given their proximity to

the facilities and improved road infrastructures and transportation. The common 10 top diseases in the project area are as follows:

1. Urinary Tract Infection
2. Upper Respiratory Infection
3. Skin Infection
4. Bacterium Septicemia
5. Gastroenteritis
6. Malaria
7. Hypertension
8. Nutritional Disorder
9. Anaemia
10. Diabetes

The project area has a number of human laboratories, dispensaries, pharmacies, and medic shops that serve the communities with normal routine clinics and health services required at such levels. Locally, Banana-Kitunda and Kitunda-Kivule-Msongola Road are expected to improve access to such health facilities, including One Health Hospital, ICS Ufunuo, Chapakazi, Meru, and Chang'ombe dispensaries; Migombani Road will improve access to a Catholic Church Clinic Laboratory; Majumbasita-Segerea Rd will improve access to Decent Dispensary as summarized in table 4.8. Apart from improving access to nearby medical services, the roads will also help patients to safely reach other health facilities in the city as they link to DMDP I External Rd, Tabata Regional Rd, Majumbasita Rd, Nyerere Rd, future BRT network, and Daladala routes.

Table 4-8: Health Services along the proposed roads

Road Name	Ward name	Population	Health services along the proposed road
Migombani	Kisukuru	40,279	Catholic Church Clinic Laboratory
Majumbasita-Segerea & Banana-Kitunda	Kipawa	72,577	Arafa dispensary
	Kivule	88,273	Kivule District Hospital, One Health Hospital, ICS Ufunuo, Chapakazi, Meru, and Chang'ombe dispensaries
Kwa Simba	Vingunguti	66,342	Arafa Dispensary
Zahanati road			Vingunguti Health care

4.2.6 Urban Agriculture

Urban agriculture is practiced at a minimal by several households in the project Wards. The main cash crops farmed include a range of vegetables such as amaranthus, Chinese cabbages, eggplants, okra, kale, leek, and fruits such as citrus, passion, papayas, pineapples, mangoes and cucumbers. Few dwellers own livestock for milk production, meat, poultry, and poultry products. Types of livestock kept include cattle, goats, sheep, pigs, donkeys, and chickens. The market for crops, livestock, and livestock products is reliable as some of the project Wards host big markets or are close to the busy markets in the Dar es Salaam Region. The road subprojects are expected to facilitate easy reach of agro-products to the Kivule and Kigilagila markets.

4.2.7 Quarrying and mining

The project area has very low quarrying and mining activities, such as the small-scale extraction of stone, sand, and gravel to meet local construction needs, mostly in and near the rivers.

4.2.8 Markets

DCC hosts the largest market in the Dar es Salaam Region, the Kariakoo market, which takes in goods and food products from across the country and beyond. Other local markets highly depend on goods from Kariakoo to sell in their areas. There is a presence of big local markets within the project area, including the Kigilagila Market in Kiwalani Ward. Proposed roads within and towards the markets are expected to improve trade and businesses. The roads include Kitunda-Kivule-Msongola Rd, which is expected to improve access to Kivule market; Bombom

Market Rd, Community Park roads, and Kigilagila market roads that link with DMDP I Roads and will improve access to and social services at Kigilagila market and community parking (also constructed by DMDP 1).

4.2.9 Security services

The Police force ensures that people and their assets are safe while also protecting the country's peace. Police stations in each project Ward also host gender desks that attend to GBV/VAC incidents. The proposed road project will facilitate easy access to the police stations. For instance, Kitunda-Kivule-Msongola Road will improve access to Kitunda Police Stations, and Majumbasita-Segerea Road will improve access to Sitakishari police station.

The proposed roads are also expected to install street lighting systems, making them safer during nighttime or low-light conditions. Well-lit roads deter criminal activities, increase visibility for motorists and pedestrians, and provide a sense of security, particularly for women and children who might happen to use the road at night.

4.2.10 Social and cultural sites in the project area

Graveyards were the only sociocultural sites identified in the project area. Two graveyards were observed adjacent to the Kivule-Msongola road. The site is outside the road RoW, and there is minimal risk that the construction activities will damage it.

4.3 BIOLOGICAL ENVIRONMENT

4.3.1 Flora

This section provides details on the baseline biodiversity conditions of the project areas. The DCC is found within the iconic coastal forests of East Africa, rich in endemic, rare, and unique flora and fauna. Still, because of human activities and settlement development, it is deprived of natural vegetation and wildlife, just like many other urban areas. Based on the rapid biodiversity surveys conducted, the target project areas generally have less plant biodiversity. In some cases, especially in more urban areas, there are either very little or no plants, especially along the roads, with the potential to be affected by the project. The areas with more biological resources, including socio-economically and climate amelioration important vegetation, were Barakuda – Chang'ombe – Majichumvi; Majumbasita – Segerea – Stakishari roads and Kiwalani areas.

Fabaceae family was the most abundant (34.9%), with species like *Pithecellobium dulce*, *Senna siamea*, and *Tamarindus indica*. In contrast, *Muntingiaceae*, with only one species, *Muntingia calabura*, was the least abundant (2.3%), particularly along the roads. The most abundant tree species was *Senna siamea* (14%), while the least were several species, including *Anacardium occidentale*, *Delonix regia*, and *Syzygium cumini*, with each having 2.3% abundance along the road. A few shrub species were scored, including an invasive species, *Mimosa pigra*, at the left bank of the downstream river Msimbazi, close to where the bridge will be constructed. Along the river banks, there were also several grass species, such as *Setaria* species, *Cynodon nlemfuensis*, *Oxytenanthera Abyssinia* (green bamboo), *Pennisetum purpureum*, and *Panicum maximum* (Figure 4-12). Others were *Eucalyptus* species, *Syzygium cumini*, and *O. abyssinica*.



Figure 4-12: Plant biodiversity assessments at the upper side (left bank) of River Msimbazi, the very point where the bridge will be constructed.

Plant species that were found in potential areas for pavement or walkaway path construction included *Polyalthia longifolia*, *Muntingia calabura*, *Trichilia emetica*, and *Senna siamea*, which were commonly found in Barakuda – Chang'ombe – Majichumvi and Majumba sita – Segerea – Stakishari roads (Table 4-9). In public spaces, plant species scored included herbaceous vegetation such as *Cynodon nlemfuensis*, *Digitaria abyssinica*, and *Commelina benghalensis*, while trees included *T. mantaly* and *Azadirachta indica*.

Table 4-9: Plant biodiversity sampled at different locations within the project focus area

Sampling Point	Kiswahili Name	Scientific Name	Location	Habit	Origin	Family
A		<i>Pithecellobium dulce</i>	37M 0521631	Tree	Exotic	Fabaceae
			UTM 9245577			
B	Muashoki	<i>Polyalthia longifolia</i>	37M 0521630	Tree	Exotic	Annonaceae
			UTM 9245561			
C	Mkorosho/ Mbibo	<i>Anacardium occidentale</i>	37M 0521622	Tree	Exotic	Anacardiaceae
			UTM 9245548			
D	Haradali	<i>Muntingia calabura</i>	37M 0521621	Tree	Exotic	Muntingiaceae
			UTM 9245525			
E	Mjohoro	<i>Senna siamea</i>	37M 0521621	Tree	Exotic	Fabaceae
			UTM 9245511			
F	Pangauzazi	<i>Terminalia mantaly</i>	37M 0521669	Tree	Exotic	Combretaceae
			UTM 9245460			
G	Haradali	<i>Muntingia calabura</i>	37M 0521695	Tree	Exotic	Muntingiaceae
			UTM 9245462			
H	Haradali	<i>Muntingia calabura</i>	37M 0521730	Tree	Exotic	Muntingiaceae
			UTM 9245458			
I	Mkwaju	<i>Tamarindus indica</i>	37M 0521873	Tree	Native	Fabaceae
			UTM 9245416			
J	Mjohoro	<i>Senna siamea</i>	37M 0521873	Tree	Exotic	Fabaceae
			UTM 9245385			
K		<i>Pennisetum purpureum</i>	37M 0520442	Grass	Native	Poaceae
		<i>Panicum maximum</i>	UTM 9245115	Grass	Native	Poaceae
L	Mwarobaini Mjohoro	<i>Azadirachta indica</i>	37M 0522177	Tree	Exotic	Meliaceae
		<i>Senna siamea</i>	UTM 9244912	Tree	Exotic	Fabaceae
M	Mwarobaini	<i>Delonix regia</i>	37M 0522211	Tree	Exotic	Fabaceae
		<i>Azadirachta indica</i>	UTM 9244872	Tree	Exotic	Meliaceae
N	Mkwaju	<i>Tamarindus indica</i>	37M 0522373	Tree	Exotic	Fabaceae
			UTM 9244749			
O	Mwembe	<i>Mangifera indica</i>	37M 0520734	Tree	Exotic	Anacardiaceae
			UTM 9243021			
P	Mlusina	<i>Leucaena leucocephala</i>	37M 0520799	Tree	Exotic	Fabaceae
			UTM 9242892			
Q	Mkuyu	<i>Mangifera indica</i> , <i>Ficus lutea</i>	37M 0520837	Tree	Exotic	Anacardiaceae
			UTM 9242792	Tree		Moraceae
R	Mwembe Mdogoma/ MtiMaji	<i>Mangifera indica</i>	37M 0520943	Tree	Exotic	Anacardiaceae
		<i>Trichilia emetica</i>	UTM 9242646	Tree	Native	Meliaceae
S	Mjohoro	<i>Senna siamea</i>	37M 0521033	Tree	Exotic	Fabaceae
			UTM 9242638			
T	Mwarobaini	<i>Azadirachta indica</i>	37M 0521225	Tree	Exotic	Meliaceae
			UTM 9242487			

Sampling Point	Kiswahili Name	Scientific Name	Location	Habit	Origin	Family
U	Mwembe	<i>Mangifera indica</i>	37M 0521230	Tree	Exotic	Anacardiaceae
			UTM 9242451			
V	Mkaratusi	<i>Eucalyptus camaldulensis</i>	37M 0521386	Tree	Exotic	Myrtaceae
			UTM 9242153			
W	Mjohoro	<i>Syzygium cumini</i> <i>Senna siamea</i>	37M 0521384	Tree	Exotic	Myrtaceae
			UTM 9242149	Tree	Exotic	Fabaceae
X	Mwanzi	<i>Oxytenanthera abyssinica</i>	37M 0521385	Grass	Native	Poaceae
			UTM 9242146	Grass		Poaceae
Y	Mimosa	<i>Mimosa pigra</i> <i>Pennisetum purpureum</i>	37M 0521401	Shrub	Exotic	Fabaceae
			UTM 9242142	Grass	Native	Poaceae
Z	Mkungu Pangauzazi	<i>Terminalia catappa</i> <i>Terminalia mantaly</i>	37M 0525159	Tree	Exotic	Combretaceae
			UTM 9240897			
Z1	Mwarobaini	<i>Azadirachta indica</i>	37M 0523132	Tree	Exotic	Meliaceae
			UTM 9240897			
Z2	Haradali Mkungu	<i>Muntingia calabura</i> <i>Terminalia catappa</i>	37M 0521521	Trees	Exotic	Muntingiaceae
			UTM 9242332			Combretaceae
Z3	Muashoki	<i>Polyalthia longifolia</i>	37M 0521723	Tree	Exotic	Annonaceae
			UTM 2407697			

Source: UWP, 2023

Trees that were found along roads, pavements, river banks, and public spaces were, in most cases, intentionally planted or retained by locals or LGA for certain purposes. For example, those found along the roads and pavements are used to provide shade, urban cooling effects, boundary marking, amenities, and protection of houses from, e.g., vehicles. It is widely known that plants can prevent soil erosion through a dense network of roots, so plants retained or planted along the river/stream banks and bridges aimed to protect the banks/bridges from soil erosion, thus stabilizing the banks and maintaining river courses. Also, some plant species in lowlands and rivers are sources of food and habitats for aquatic macrofauna.

On open public spaces and parks, herbaceous vegetation aimed to reduce dust and provide comfort, while trees provided shade and microclimate important for leisure and recreation, particularly for urban areas. All in all, some of these species are important sources of food for human beings and birds by providing delicious fruits, e.g., *T. catappa*, *S. cumini*, and *M. calabura* (Mbuya *et al.*, 1994). None of the plant species recorded on site is of concern. Therefore all species found on site are of Least Concern (LC) category according to the International Union for Conservation of Nature (IUCN). This means all the plant species recorded on site have viable good populations and no likelihood that they will perish in the near future.





Figure 4-13: Random picture showing the nature of vegetation along the proposed roads

4.3.2 Fauna

As the project is located in an urban area, there are no existing wild animals. On the contrary, the existing animal species include domesticated terrestrial (livestock) such as cattle, chicken (poultry), and other types of birds around the project. Some of the birds observed during the field visit were bitterns, hens, and crows.

4.4 Summary of Baseline Conditions in each Road

There are 17 stretches of subproject roads within the Dar es Salaam City Council (DCC) that are included in the DMDP II package 1 to 7 priority roads with a total length of 66.41km. All the subproject roads within Dar es Salaam City are presently earth roads (except some parts of the Banana-Kitunda (3.95km) road and Kitunda-Kivule-Msongola (9.95km) road that are to be constructed to bitumen standard. Generally, there is neither flora nor fauna of ecological importance in the project area. Typical of Cities, the project sites are characterized by the presence of commercial and residential buildings and physical infrastructures such as underground telecommunication cables, electricity power lines, and water supply systems. Detail description of the current environmental status of the subprojects is given in Table 4-12.

4.5 Sensitive receptors of Impacts along the roads

A number of sensitive receptors of the project impacts were identified along the roads. These were divided into 5 categories of VECs, including the biological environment (flora and fauna), the socio-cultural environment, air quality; physical infrastructure (utility infrastructure); Occupational health and safety (workers; Community health and safety (people in residential houses adjacent the roads and approximately 500m distance on both sides of the roads); and land resources (land, soil and water quality). Some of the identified VECs along the roads are presented in Table.

Table 4-10: Sensitive receptors along some of the proposed roads



Kivule District Hospital under construction along /Kivule-Majohe Jct road



RGC Church beside Barakuda Chang'ombe Road



Msimbazi River/Majumbasita-segerea road



River/Stream /Barakuda-Majichumvi road



Mature trees along barakuda - Chang'ombe Road



Mature Trees along Migombani Road

The affected communities include residential, institutional, and commercial areas, with 552 affected people in the proximity of the roads. Environmental quality data were collected at the sensitive receptors. These included

- i) Learning institutions and health facilities
- ii) Residential sensitive receptors
- iii) Mixed (residential, commercial, and small industrial production) sensitive receptors
- iv) Water bodies

Table 4-11: Summary of the status of the proposed roads

S n	Road Name	Adjacent Land use	Road status	Sensitive receptors	Associated Risks	Side drain/ River	Traffic /Activities along the roadside	Public utilities present	Need for compensation
1.	Barakuda-Chang'ombe-Majichumvi(3.27km)	Residential	Earth road	- Precious Daycare School - RGC Church at Chang'ombe - Mbuyuni - Mazda (Luhanga River) - Majichumvi (Tenge River) - Water catchment at sundown - VETA and Chang'ombe Bus stand	- Contamination of river water - Risk of increased road accidents - Risk of damage to properties such as house walls and fences - Risk of destruction of public infrastructures such as water transmission pipes and electric poles - Social Disruption from increased noise, dust, traffic congestion, etc.	Some sections have obsolete drains, and others have no drains at all	Moderate during noon but high during morning and evening	→ Electric transmission line → Water supply pipeline crossing the road at various road sections → Underground telecommunication fiber	70 PAPs

S n	Road Name	Adjacent Land use	Road status	Sensitive receptors	Associated Risks	Side drain/ River	Traffic /Activities along the roadside	Public utilities present	Need for compensation
2.	Tabata Mawenzi – Kisiwani(Mwananchi)(2.12km)	Residential/Institutional	Earth road	• Padre Pio Catholic Church • River close to Mwananchi newspaper publication • Ngunge mosque • Sayuni Pentecost church • Moravian Primary school	• Risk of increased road accidents • Risk of damage to properties such as house walls and fences • Social Disruption from increased noise, dust, traffic congestion, etc.	No side drains The river crosses near the Mwananchi railway	Moderate during noon but high during the evening	→ Electric transmission line → Telephone wire	165 PAPs
3.	Majumbasita-Segerea(3.31km)	Residential	Earth road	• Sitakishari Police station • Segerea Catholic Seminary • Ambassador seminary • Decent dispensary • Spirit world ministry • TAG Majumbasita Church • Queen's pre-& primary school • Msimbazi River	• Contamination of river water • Risk of increased road accidents • Social Disruption from increased noise, dust, traffic congestion, etc.	No	Minimum	→ Electric transmission line	37 PAPs

S n	Road Name	Adjacent Land use	Road status	Sensitive receptors	Associated Risks	Side drain/ River	Traffic /Activities along the roadside	Public utilities present	Need for compensation
4.	Migombani (1.57km)	Residential	Earth road	• Mount Zion Primary School • Mwenyeheri Anuarite prim&Secondary and catholic church • Clinic Laboratory • EAGT and Anglican Churches • River closing Banyenza bridge	• Contamination of river water • Risk of increased road accidents • Risk of damage to properties such as house walls and fences • Risk of destruction of public infrastructures such as water transmission pipes and electric poles • Social Disruption from increased noise, dust, traffic congestion, etc.	Not continuous	Moderate	→ Electric transmission line	205 PAPs

5.	Banana-Kitunda (3.95km); Kitunda-Kivule-Msongola (9.95km) and Kivule-Majohe Jct (2.79km)	Residential	Earth road	<u>Schools</u> • Heaven Daycare and Nursery • Daddy's nursery and primary school • Misitu secondary school • Mbonea secondary school • Kerezange Secondary School • Zawadi nursery and primary school • Click nursery and primary • Faraja Islamic pre & primary school • Benhubert secondary <u>Religious institutions</u> • Al masjid I huda (mosque yangeyange msongola) • Moravian church, • EAGT church, • KKKT churches, • TAG and Anglican church, Ndambwe mosque, Efatha church, Masjid Taqwa Silali mosque, Efatha, TAG (4) churches, WRM, KKKT <u>Institutions and health centers</u> • Kivule District Hospital • Msongola Orphanage Trust Fund,	• Contamination of river water • Risk of increased road accidents • Risk of destruction of public infrastructures such as railway and electric poles • Social Disruption from increased noise, dust, traffic congestion, etc.	Not continuous	High	→ Electric transmission line → Airtel underground cables	1 PAP

S n	Road Name	Adjacent Land use	Road status	Sensitive receptors	Associated Risks	Side drain/ River	Traffic /Activities along the roadside	Public utilities present	Need for compensation
				• Ufunuo and Chapa Kazi dispensaries, • One health hospital, • Msongola market, • Meru dispensaries • Chang'ombe dispensaries, • Kivule police station • Kivule Mtaa and ward offices • Kitunda police station, • Tanzania Civil Aviation Authority (TCAA), • Banana bus stand, • JNIA (Airport area)					

S n	Road Name	Adjacent Land use	Road status	Sensitive receptors	Associated Risks	Side drain/ River	Traffic /Activities along the roadside	Public utilities present	Need for compensation
6.	Kiwalani community roads (10 roads) (3.22km)	Residential	Earth roads	- Adventist Church - Kiwalani mosque, - Bethel Church - Community Park - Kigilagila market - Fieldaus mosque, - Simba Sports Club branch	- Risk of increased road accidents - Risk of damage to properties such as house walls and fences - Risk of destruction of public infrastructures such as electric poles - Social Disruption from increased noise, dust, traffic congestion, etc.	No drains	Low	- Electricity poles - Clean water distribution network	74 PAPs
7.	Upanga CBD	Commercial, residential, and Institutional	Earth road, damaged tarmac	- Muhimbili National Hospital - JKCI - Sickle Cell Hospital - HASAFA - Lancet Lab - Mkutu Pharmacy - Lifeline Pharmacy - International School of Tanganyika - Tambaza Secondary School - Hindu Mandal Nursery School	- Risk of destruction of public infrastructures such as electric poles - Risk of increased road accidents - Social Disruption from increased noise, dust, traffic congestion, etc. - Limited access	No drains	Low	- Electricity poles - Telecommunication cables - Sewer line - Clean water distribution network	

S n	Road Name	Adjacent Land use	Road status	Sensitive receptors	Associated Risks	Side drain/ River	Traffic /Activities along the roadside	Public utilities present	Need for compensation
8.	Kariakoo CBD	Commercial, residential,	Earth road, damaged tarmac	- Benjamin Mkapa Secondary School - Uhuru Primary School	- Risk of destruction of public infrastructures such as electric poles - Risk of increased road accidents - Social Disruption from increased noise, dust, traffic congestion, etc.	Both sides	Moderate	→ Electricity poles → Telecommunication cables → Clean water distribution network	
9.	Ilala CBD	Commercial, residential, and Institutional	Earth road	- Ilala Kasulu Primary School - Ilala Islamic Secondary School - Ilala Little Star Nursery School - Ilala Market - TAG Imani Community Church - Madras at Yegeyege - Sharif Shamba Mtaa Office - Masjid at Ngoma	- Risk of destruction of public infrastructures such as electric poles - Risk of increased road accidents - Social Disruption from increased noise, dust, traffic congestion, etc.	No drains	Low	→ Electricity poles → Clean water distribution network → Sewer line	

S n	Road Name	Adjacent Land use	Road status	Sensitive receptors	Associated Risks	Side drain/ River	Traffic /Activities along the roadside	Public utilities present	Need for compensation
10	Vingunguti		Earth road	- Vingunguti Health Care - Arafa Dispensary	- Risk of damage to properties such as house walls and fences - Social Disruption from increased noise, dust, traffic congestion, etc. - Increased floods downstream	No drains/continuous	Low	→ Transformer → Water supply → Electric poles	

CHAPTER FIVE

5 STAKEHOLDER IDENTIFICATION AND PUBLIC PARTICIPATION

5.1 Introduction

5.1.1 Aims and Objectives of the Public Consultation

The purpose of public consultation is to ensure that the views, interests, and concerns of project stakeholders are taken into account in assessing the potential impacts of the project and in project decisions, particularly in the project design and development of mitigation measures. In addition, the public consultation aims to improve communication between the project and impacted or interested groups.

In the course of preparing for the stakeholders' consultation, the following activities were undertaken:

- Stakeholder identification and analysis;
- Determine the type of consultation activities to be undertaken with each category of stakeholders;
- Information disclosure, specifically the provision of timely and meaningful information that is accessible to all stakeholders;
- Prepare the approach to and mechanisms for obtaining stakeholder feedback on the information disclosed;
- Prepare principles and ground rules guiding consultation with local communities and a consultation program to ensure timely notification of consultation activities and tie in with key stages in the EIA process.

5.2 Stakeholders Identification

Stakeholder identification and consultation for the proposed DMDP Phase II sub-projects respond to Section 89 of the Environmental Management Act (EMA, 2004) and EIA Regulation¹⁷ (URT, 2005), which provide details and procedures for public participation in the EIA process: the WB ESS 10: Stakeholder Engagement and Information Disclosure and ESS 1 (on Environmental Assessment).

The stakeholders for the DMDP Phase II for the DCC infrastructure investments project as guided by ESS1 and ESS 10 are individual groups who:

- c) Are affected or likely to be affected by the project (project-affected parties); and
- d) May have an interest in the project (other interested parties).

The project-affected parties include those likely to be affected by the project because of actual impacts or potential risks to their physical environment, health, security, cultural practices, well-being, or livelihoods. The stakeholders identified under this group included communities living close to the proposed roads. These institutions will be impacted by the construction activities (schools, health facilities, and religious institutions), markets and businesses that the project would directly impact, and utility companies with infrastructure that would undergo relocation during the construction phase.

Other interested parties include individuals, groups, or organizations with interest in the project, which may be because of the project location, its characteristics, impacts, or matters related to the public interest. For this project, these included government agencies such as TARURA, Wami/Ruvu Basin Water Board, LATRA, DART, and OSHA, NGOs/CSOs working closely with affected communities, and Local authorities and committees responsible for identified grievance redress mechanisms in the project.

Individuals at risk of being excluded from sub-project engagement received particular attention. These included elders, women, and youth with specific jobs depending on road infrastructure, such as Bajaj and Bodaboda drivers. As part of the process, it was particularly important to identify individuals and groups who may find it more difficult to participate and those who may be differentially or disproportionately affected by the project because of their marginalized or vulnerable status, as stated in ESS 1 and ESS 10.

Stakeholder analysis determines the likely relationship between stakeholders and the project and helps to identify the appropriate consultation methods for each stakeholder group during the life cycle of the project. The analysis also shapes the design of stakeholder consultation events and which stakeholders to engage and when. The identification of stakeholders with their importance to the project is presented in **Table 5-1 and the Stakeholder Engagement Plan**, which is a living document that will be updated throughout the project lifecycle.

Table 5-1 lists identified stakeholders. Consultations were conducted in groups of stakeholders with the same influence on the project. For example, meetings were held with a group of utility providers and other meetings with regulatory authorities. Wards and Mtaa leaders were consulted at their respective offices. Community meetings were held at the Mtaa or Ward level, depending on advice from the local government authority.

5.2.1 Stakeholders Engagement

The stakeholders' engagement processes for the DMDP II project are conducted throughout the project cycle, from the identification of the road packages and their development, including economic, financial, environmental, and social assessment, to the closure of the project. This ESIA is at the project's preliminary stages. Stakeholders will continue to be engaged as necessary in line with ESS 10 requirements, and the Stakeholders Engagement Plan submitted to DCC at the early stages of the project.

The ESS 10 requires that:

- Borrowers will engage with stakeholders throughout the project cycle, commencing such engagement as early as possible in the project development process and in a timeframe that enables meaningful consultations with project stakeholders on project design;
- Borrowers will engage in meaningful consultations with all stakeholders;
- The process of stakeholder engagement will involve stakeholder identification and analysis, planning how the engagement with stakeholders will take place, disclosure of information, consultation with stakeholders, addressing and responding to grievances, reporting to stakeholders, and
- The borrower will maintain and disclose, as part of the environmental and social assessment, a documented record of stakeholder engagement, including a description of stakeholders consulted, a summary of the feedback received, and a brief explanation of how the feedback was taken into account, or the reasons why it was not.

The Project Coordination Team (PCT) has had several contacts and meetings with concerned representatives of public and private organizations in Dar es Salaam. The recent engagement is the sensitization and awareness of the proposed DMDP II project. A sensitization meeting was held at the Millennium Towers Hall in July 2023. The participants included the Dar es Councilors, Regional and district leaders, technical staff from five Dar es Salaam districts, and relevant institutions. The relevant institutions include the directors of all utility providers in Dar es Salaam. The Project Coordination Team also attended the meeting.

5.2.1.1 Outcomes of the meeting

- The Councilors were very much pleased with the project and agreed to collaborate with the project implementers in all matters requiring community sensitization;
- It was agreed that once the surveys and preliminary engineering drawings are completed, the Consultant will engage the institutions' technical personnel. The drawings will be adjusted as needed to minimize impacts on utility infrastructure while achieving the project objectives. This is ongoing, and the outcomes will be incorporated and updated in this ESIA.

5.3 Stakeholder's Consultations

The Consultant conducted consultations with key identified stakeholders at National, Regional, City Council, Ward, and Mtaa levels. These included institutions, government agencies, community leaders, and the general community. Consultations with institutions and government agencies are ongoing. Consultations with identified PAPs are scheduled

to be done once the evaluation is completed and surveys and preliminary engineering drawings are produced. Table 5-1 presents the identified stakeholders and means of engagement and 5-2 presents the comments and issues raised from the consultative meetings at Ward and Mitaa levels.

Table 5-1: Identified Stakeholders and engagement

Key stakeholder		Connection to the Project	Method of Engagement
Departments and Agencies (DAs)	TANROADS	Interested party - Develops, maintains, and manages the Trunk and Regional Roads Network.	Consultative meetings
	TARURA (Ilala District)	Interested party - Responsible for managing the development, rehabilitation, maintenance, axle load control, environmental, and road reserve management of rural and urban road networks for socio-economic development.	
	Tanzania Railways Corporation (TRC)	Project Affected Party—Owns and operates railway lines and crossings infrastructure, including Meter Gauge Railway (MGR) and Standard Gauge Railway that runs parallel from Dar—Morogoro and other Dar commuter rail crossings that operate between Pugu—Tazara-City center—Tabata -Vingunguti and Ubungu.	
	WAMI Ruvu Basin Authority	Interested Party - Responsible for managing and monitoring water resources in the basin, including groundwater, the streams, and rivers that run across the City, such as Msimbazi, Kizinga, and Other Rivers	Consultative meetings
	Land Transport Regulatory Authority (LATRA)	Interested party - Regulating/monitoring the safety of the public bus operations, public fare rates/adjustment (consumers), including Dar es Salaam.	
	DART	Interested party - DART establishes and operates BRT systems currently in operation and some in construction.	
	OSHA	Interested party – monitors occupational health and safety at project sites, enforces the legal requirements, and formulates regulations, standards, and safety procedures.	
City & Municipalities	Dar Es Salaam City Council-DCC (Director and Technical Departments)	Interested party - Oversee and facilitate implementation of the project, including monitoring, facilitating land acquisition, compensations, access to ward and Mtaa levels	Consultative meetings and involvement in project stakeholder engagement processes
Member(s) of Parliament	Ilala, Segerea, and Ukonga constituencies	Interested party - Promotes socio-economic development of the constituency. Attract public support to the project.	Community and public meetings

Key stakeholder		Connection to the Project	Method of Engagement
Ward(s)	All wards traversed by the project corridor Wards/13+)	Project affected party - Directly affected communities/project beneficiaries	
Community	Community members in the respective <i>Mitaa</i> traversed by the project	Project affected party - Directly affected communities/project beneficiaries.	
Utility Services Firms/Companies	TANESCO	Project Affected party - Power supply agency with infrastructure in proposed roads	Consultative meetings and site visits
	DAWASA	Project affected party - Water supply agency with infrastructure in proposed roads.	
	TTCL	Project affected party - National Telecommunication company with infrastructure in proposed roads	
	AIRTEL, TIGO, VODA, HALOTEL	Project affected party - Mobile Telecommunication Companies with infrastructure in proposed roads	
Interested and Affected Parties (I&AP)	Project Affected Persons (PAPs) along the project corridor	Project affected party - Directly affected individuals (requiring resettlement), compensations, and relocation to pave the way for the project	Community and RAP sensitization meetings
	Tanzania Drivers Association (TDA)	Interested party - Safeguarding and promoting the interests of drivers in Tanzania	Consultative meetings
	Tanzania Bus Owners Association –TABOA	Interested party - Safeguarding and promoting the interests of bus owners in Tanzania	
Vulnerable groups	Vulnerable groups identified along the core project area included people with disabilities and the association	Project affected party - Likely to suffer more from the project resettlement	Focus Group Discussions and Socioeconomic Survey for RAP

Key stakeholder		Connection to the Project	Method of Engagement
	disabled, women groups, single-parents /children/elderly-headed households, and orphans.		
	Informal sector traders and hawkers (static and active)	Project affected party - Livelihood activities along the route	Focus Group Discussion
Other I&AP	Existing NGOs and CSOs along the 5 Corridors	Interested party - Advocacy groups, Human rights supporting project implementation, monitoring issues	Consultative meetings
	Ilala Traffic Police	Interested party - Promotes and enforces the rule of law, especially for road users. Provides support on traffic management during project construction and operations.	Consultative meetings

5.3.1 Identified Key Issues and Concerns

A number of issues were identified by various stakeholders, as presented in the following table 5.2.

Table 5-2: Stakeholders and comments raised by leaders at Mtaa and Ward level

DATE	STAKEHOLDER	COMMENTS/ISSUES RAISED BY STAKEHOLDERS	RESPONSE RAISED
09/08/2023	LUHANGA Mtaa – Migombani Road	Community members are aware of the proposed project, which was introduced at a community meeting held on June 11, 2023. They welcomed the proposed project and will appreciate the upgrade of Migombani Road.	Adopted Positive Opinion

DATE	STAKEHOLDER	COMMENTS/ISSUES RAISED BY STAKEHOLDERS	RESPONSE RAISED
	Mount Zion Nursery & Primary School – Migombani Road	They welcomed the proposed project and will cooperate if needed during implementation.	Adopted Positive Opinion
	Mwenyeheri Anuarite Secondary School – Migombani Road	Appreciate the proposed project as the road condition is bad and has caused many accidents. Furthermore, the upgrade of Migombani Road shall help to minimize accident rates. In case the implementation of the proposed project requires significant space, resulting in the resettlement of the school wall, they are willing to allow that with a condition to compensate them.	Consultant: Noted, the issue will be presented to the RAP Team.
	Mwenyeheri Anuarite Nursery and Primary School – Migombani Road	Appreciated the proposed project and requested that, during the project construction phase, the contractor provide them with good backfilling materials for the school premises as part of Corporate Social Responsibility (CSR) Furthermore, the contractor should install proper road signage during the project's construction and operation phase to reduce the risk of accidents.	Client: Request under CSR will be considered Consultant: Road signage will be included in the ESMP for compliance by the Contractor
	Kisukulu Ward – Migombani Road	They are positive about the proposed project and appreciate the upgrade of Migombani Road, which will improve the community's livelihood.	Adopted Positive Opinion
		The Contractor should give priority to the local labor force during construction. The Contractor to maintain good communication with the Mtaa leaders	Client: The local labor force will be considered under the local content policy and in collaboration with the Mtaa and Ward Offices, and Communication with Mtaa Leaders will be ensured.
	Segerea Ward	They are aware of the proposed project and have accepted its implementation, as it will benefit their community.	Adopted Positive Opinion

DATE	STAKEHOLDER	COMMENTS/ISSUES RAISED BY STAKEHOLDERS	RESPONSE RAISED
		The Contractor should give priority to the local labor force	Client: The local labor force will be considered under local content policy and in collaboration with the Mtaa and Ward Offices
	Kimanga Ward	The community is aware of the proposed project and has accepted its implementation. Hence, all benefit their community. They hope for timely implementation of the project	Adopted Positive Opinion
21/08/2023	KIVULE WARD (Kerengazi and Kivule Mtaa) – Banana-Kitunda- Kivule-Msongola Road	- Demanded clarification of current road construction to understand whether they are part of the DMDP roads package, and if the package covers other mtaa roads - Will the project demolish the already constructed section between the proposed Banana to Msongola Road? - Wished to understand whether the installation of street lights will start from Kivule to Msongola	Client: The first phase of 30% funding is for rehabilitating projects without PAPs 70% second phase may consider other roads Only unpaved roads will be constructed, with all facilities, including streetlights
		Required knowledge on the design details regarding the zebra cross/pedestrian bridge, especially in populated areas, particularly at Njia panda ya Shule, as there are over 10,000 students from the three schools crossing the road?	Consultant: The issue will be presented to the design team for technical amendments. Moreover, the community (Environmental) committees shall be consulted before road marking for zebras crossing.
		Moshi Bar Road is also an important road. Is it part of the package?	Client: The project is currently focusing on the 30% first phase. This will be considered in the upcoming phases.
		The Community expects to benefit from employment opportunities, particularly residents along the project.	Consultant: The residents will be given the priority CDO: Special groups will be given special attention during construction

DATE	STAKEHOLDER	COMMENTS/ISSUES RAISED BY STAKEHOLDERS	RESPONSE RAISED
		The community was eager to learn whether construction and improvement of markets were linked to the ongoing Projects	CDO: To be implemented during the second phase of DMDP
		The community wanted to know if people affected by the project would be compensated.	Client: Compensation procedures will be carried out effectively in line with the RAP.
		When will the 70% package roads project commence?	Client: The other 70% will commence before implementation of the 30%
		Commended the project team efforts at large and requested early implementation of the projects	Client: As per the schedule, the contractor shall be at the site by December 2023 for mobilization and commence works by April 2024
21/08/2023	KITUNDA WARD (Kitunda and Relini Mtaa) - Banana-Kitunda-Kivule-Msongola Road	Acknowledged the proposed project road construction in their area and advised those living adjacent to the road to freely comply and leave a few meters for vehicle parking as their businesses will grow faster whilst also improving safety.	Adopted Positive Opinion
		The completion of the project will be attributed to high traffic; therefore, a request for bus stops and improving the quality of roads should be highly considered.	Consultant; Bus stands are components that will depend on the nature of the site and design, but quality roads will also require extensive engineering studies and efficiency.
		Recommends a roundabout at Kitunda-Shule corner, which connects the other two major roads	Consultant: To be considered by the design team
		The major concern for PAPS was that compensation should be considered before the project commences.	Client: Compensation procedures will be carried out effectively in line with the RAP.

DATE	STAKEHOLDER	COMMENTS/ISSUES RAISED BY STAKEHOLDERS	RESPONSE RAISED
		Road bumps were suggested to be of a normal standard based on the type of vehicle that use the road. The bridge area near the airport fence and the new petrol station (ongoing construction) are normally flooded during the rainfall season, causing road emergencies.	Consultant: To be communicated to the design team for observation
		Environmental monitoring was encouraged during the construction phase whereby dust suppression should be observed for the protection of human health and businesses adjacent to the road. Emphasis on the construction phase, contractor to consider diversion routes to avoid heavy traffic	Consultant: Adopted Positive Opinion, the ESIA will include an ESMP that will guide the Contractor.
		The community demanded continuous consultative meetings for updates about the project and providing room for raising concerns as they emerge.	Consultant: Meetings will continue throughout the design phase to the implementation stage.
		Road safety measures such as road symbols should be applied to prevent accidents. The community promised to cooperate to make sure the project was successful.	Consultant: The road symbols will be mounted at approximately Right angles that are effectively applicable but in coordination with Local Government committees.
		Proposed closed drains for the availability of vehicle parking. Local community to be given priority during recruitment of workers.	Consultant: To be revised by the design team The residents will be given the priority
23/08/2023	KIMANGA WARD (Twiga and Darajani Mtaa) – Tabata Mawenzi-Kisiwani Road	Community concerned about compensation procedures- when and how will they be compensated? Requested for an appropriate and capable contractor to implement the project well and within the contractual period.	Consultant: Compensation procedures will be carried out effectively in line with the RAP. Client: Capable and qualified contractors will be engaged.

DATE	STAKEHOLDER	COMMENTS/ISSUES RAISED BY STAKEHOLDERS	RESPONSE RAISED
		Requested for construction of bus stop at the market area.	Client: Component to be included in the design
		Communication with other social service providers such as DAWASA and TANESCO so that during project implementation, their infrastructures are not disturbed or destroyed, resulting in the loss of some social services in their area.	Consultant: Organizing a stakeholder engagement meeting with all relevant Agencies, including utilities, to inform them about the project and get their insights.
		Proposed a closed drainage system to help reduce the risk of dumping solid waste into the drains Requested the entire community not to connect their wastewater pipes to the road drainage systems.	Consultant: To be observed by the design team, as it will depend on the nature of the site and design
		The team was asked about the perfect time for the Removal/(demolishing) of properties within the Right of Way.	Consultant: The community will be addressed through the Mtaa Leader or another community consultation.
		Employment opportunities to be considered for residents along the project areas	Client: Employment opportunities are to be prioritized for the community, particularly Youth, but also gender equality is to be observed
		Positive acknowledgment of the project and the project developer.	Adopted Positive opinion
		Problems with the existing culverts cause trouble for vehicles due to the construction nature	Consultant; The design team will consider the issue.
		Demanded fair evaluation and compensation for any affected person's property, as the Law requires	Consultant; Compensation procedures will be carried out effectively in line with the RAP.
		The Community leaders acknowledged the project and requested the community accept and protect it throughout the entire operational phase. Residents should be ready to maintain environmental cleanliness, i.e., the drainage system by not dumping solid wastes, caring for the planted trees, and enhancing security for street lights that will be installed.	Adopted Positive Opinion

DATE	STAKEHOLDER	COMMENTS/ISSUES RAISED BY STAKEHOLDERS	RESPONSE RAISED
23/08/2023	TABATA WARD (Kisiwani Mtaa) – Tabata Mawenzi- Kisiwani Road	Requested for knowledge whether the bridge connecting Kisiwani mtaa to Mwananchi Ltd will be constructed.	Consultant: The design team will improve the structure (bridge)
		Raised an opinion that on rainy days, the existing bridge floods, blocking traffic and other communications, causing damage to the community and relevant infrastructure. Request for the design to include speed limit humps and zebra crossing in populated areas, especially at Padri Pio Catholic Church and Daycare schools. Request the contractor to prepare a good traffic management plan that will allow a continuous flow of vehicles while construction is ongoing and also without blocking residential access roads.	Consultant: The design team will improve the structure and the drainage system across the bridge and also consult the LGAs on road safety matters Adopted positive Opinion
		Urges the contractor to provide service ducts as water supply infrastructures cross the road	Adopted positive Opinion
		Argued that the road design should not be higher than the houses along the project to avoid floods to the neighboring houses.	Consultant: To be observed by the design team
		Request for the design to include Bus stops at Msikiti and Madukani areas	Consultant: To be considered by the design team, depending on the nature of the site and design
		Acknowledged the proposed project and shall provide cooperation during all phases so that the project objectives are met.	Adopted positive Opinion
		Request for grievance committee to be established early	Adopted positive Opinion
		Alerted the team that the project area has a high-water table and has been challenging for years Request for construction of diversion roads	Consultant: Design Team shall make a specific study on the area
		Argue for fair compensation as the law requires, as many people will be affected, especially at Mama Moyo, Modern Bar Corner, Mzee Kware Corner, and Mrangi Corner.	Client: Compensation procedures will be carried out effectively for all PAPs. Consultant:

DATE	STAKEHOLDER	COMMENTS/ISSUES RAISED BY STAKEHOLDERS	RESPONSE RAISED
		They have accepted the proposed project and requested a closed channel drainage system and shall provide support to the contractor in all phases. Furthermore, they will be responsible for caring for the project components, including trees and street lights, and are ready to clean the drainage system during the operation phase.	To be considered by the design team, depending on the nature of the site and design
23/08/2023	LUHANGA and MIANZINI Community - Migombani Road	Acknowledged the proposed project, appreciated the efforts made and promised to cooperate	Adopted Positive Opinion
		Demanded a transparent compensation process in case their land or properties will have to be removed for road construction while promising to cooperate so that construction takes off soon Road signs indicating/instructing vehicle weight should be placed at various locations of the road to avoid damage to the infrastructure. Reminded bus stops to be incorporated into the design Proposed to have closed drains and committed themselves to cleaning up the infrastructure	Client: Compensation procedures will be carried out effectively for all PAPs. Consultant: The Design Team shall conduct a specific study of the area and engage with the LGA's committees to propose all road safety issues.
		Banyenza Bridge is a flood-prone area. During the wet season, water overflows the current bridge, so a better bridge should be constructed. Mr. Banyenza volunteered to give his area for storing construction materials for free. The area is close to the proposed road and accessible, but worker's shelter agreements can be made. He also volunteered to provide access to toilets for free but the contractor should pay for toilet water bills.	Consultant: The Design Team shall conduct a specific study on the area, and a positive opinion was adopted on storage keeping for contractors 'construction materials.
		The contractor should ensure environmental management in line with dust suppression in the contract to avoid respiratory diseases.	Consultant; Environmental management will be emphasized to the contractor
		Local youth and women should be given priority in job opportunities in the project.	Client:

DATE	STAKEHOLDER	COMMENTS/ISSUES RAISED BY STAKEHOLDERS	RESPONSE RAISED
			Employment opportunities are to be prioritized by the community. Special groups and gender equality will be observed.
		Mr. Michael Mhando volunteered to provide a piece of land for storing construction materials for free, but shelter for workers will have to be paid with an agreed amount.	Adopted positive Opinion
		Mr. Mwakikao volunteered to give his piece of land for free to store the construction materials. The area is about 100m from the proposed Migombani road and is easily accessible.	Adopted positive Opinion
		Residents agreed to protect trees and clean the drains and other road infrastructures as necessary.	Adopted positive opinion
.24/08/2023	MSONGOLA WARD Yangeyange Mtaa- Banana-Kitunda- Kivule-Msongola Road	The design should consider Bodaboda parking at the beginning of Msongola Road, Market Road, Kigocha area, and Frame 10 area	Consultant: Design team to carry out significant studies for final parking stops
		They are expecting to benefit from employment during construction because contractors will employ them as workers in the project. Also, after construction, employment will be created due to the influx to the project area as people can invest in that area	.Client: Employment opportunities are to be prioritized by the community. Special groups and gender equality will be observed.
		Request for installation of pedestrian zebra crossing and speed limit humps at Njiapanda area and other populated areas.	Consultant: The design team shall conduct a specific study on the area and engage with the LGA's committees in proposing all road safety issues
		Argued for consideration and communication between utilities such as DAWASA and TANESCO so that during project implementation, their infrastructures are not disturbed or destroyed, resulting in the loss of some social services in their area.	Consultant; All stakeholders at the site from the district level shall be engaged. The design will carry service ducts for future social service maintenance.
		Request for construction of a Roundabout at the junction area between the proposed Banana to Msongola road and Chamazi road and speed limit humps to reduce accidents in the area.	Consultant: Design Team shall make a specific study on the area.
		They have accepted the proposed project and requested a closed channel drainage system and shall provide support to the contractor	Adopted positive opinion

DATE	STAKEHOLDER	COMMENTS/ISSUES RAISED BY STAKEHOLDERS	RESPONSE RAISED
		in all phases. Furthermore, they will be responsible for caring for the project components, including trees and street lights, and are ready to clean the drainage system during the operation phase.	
		Requested to understand the construction timing of the project (How long will it take?) Requested for more sensitization meetings with the community during project implementation.	Client: Construction is expected to take 18 months contract period Sensitization to continue until the project implementation.
24/08/2023	LIWITI, AMANI, and MFAUME Community- Barakuda- Chang'ombe- Majichumvi Roads	Appreciate and welcome the project as it will improve transportation infrastructures and social services along the road. There is no native plant that is used as medicinal; most of the trees are planted. The area known as Sundown is flood-prone, as it collects large volumes of water that scatter in residential houses. Requested to consider constructing a bus stand because the Chang'ombe Daladala route has no designated bus stand	Adopted positive opinion Consultant: The design team will make observations and appropriate considerations.
		The community along the proposed road chose a closed drainage system as it offers other uses of the road, such as parking space for the safety of kids, reducing accidents, and avoiding littering of solid waste	Consultant: The design team will observe and consider the possibility
		The community agreed to participate in cleaning the stormwater drainage.	Adopted positive opinion
		The community agreed that everyone would use their water to water the trees to be planted along the constructed road, but the selected plant species had to align with the local environment.	Adopted positive opinion
		Constructing the Daladala stop bay has to be integrated into the design.	Consultant:

DATE	STAKEHOLDER	COMMENTS/ISSUES RAISED BY STAKEHOLDERS	RESPONSE RAISED
			The design team shall make a specific study on the proposed areas with the LGA's committees.
		After construction, traffic signs and symbols indicating allowable vehicle weight to pass must be installed at a strategic place.	Consultant: The Design Team shall conduct a specific study of the area and engage with the LGA's committees to propose all road safety issues.
		The contractor should observe dust suppression during the construction phase Residents along the proposed subproject roads should be prioritized during the recruitment of the workforce	Consultant: Environmental management will be emphasized to the contractor
		The PAPs with pieces of land that will fall under the RoW should be compensated early to avoid a project delay.	Client: Compensation procedures will be carried out effectively for all PAPs.
		Request for employment to first consider the community members as there are unemployed youth and women who can benefit from job opportunities from the project	Client: Employment opportunities are to be prioritized by the community. Special groups and gender equality will be observed.
		People must be informed about the diversion route before the construction of the particular road section to avoid disturbance.	Consultant; The Contractor's safeguarding team will be responsible to share updates and such information to the community during the construction phase, through public consultation meetings and other relevant avenues such as through leaders.
24/08/2023	KIPUNGUNI Mtaa-Banana-Kitunda-Kivule-Msongola Road	Citizens are ready to protect trees, drains, and solar lights to be installed along the road.	Adopted Positive Opinion
		The community chose the closed drain because of children's safety and elders but also to reduce accidents	Consultant: The design team will observe and consider the possibility
		There are various safe areas close to the proposed road and accessible locations for storing construction materials.	Adopted Positive Opinion
		Toilets that can be rented to contractors for workers' use are available	Adopted Positive Opinion

DATE	STAKEHOLDER	COMMENTS/ISSUES RAISED BY STAKEHOLDERS	RESPONSE RAISED
		Thanked the government (URT) for the proposed project Youth must be employed in the project where the road traverse Dust must be suppressed frequently to avoid respiratory diseases	Client: Employment opportunities are to be prioritized by the community. Special groups and gender equality will be observed. Consultant: The environmental and social management plan will be developed for adherence by the contractor.
		If the existing road section along the TCAA area is to proceed, the community proposed the new drainage design to incorporate the existing local drains present in this old route.	Consultant: Design team to apprehend
		Chiwata area is normally flooded because it is a flat area, so the new drain must ensure stormwater flows towards Chineneko (bridge area close to the Airport wall)	Consultant; Design team to apprehend
		Daladala stop bay should be integrated into the Design The contractor must observe local ethics	Consultant: Design team to carry out more significant studies for final bus stops
25/08/2023	UPANGA MAGHARIBI (Fire & Mfaume Mtaa) and MASHARIKI WARD (Kitonga Mtaa) Community- Upanga CBD Roads	Propose the drainage to be closed channel and adjustable for the safety of road users	Consultant: Design Team to apprehend
		Excited with the proposed project and request after construction completion, the 'banda' should not return as they tend to reduce pedestrian paths, resulting in increased accidents. Urges for timely pruning of the trees to be planted along the proposed roads. Requested the design to include parking yards in all institution areas as parking is a challenge for most people in Upanga Proposed for the Bodaboda, taxis, and Bajaji parking yard to be accommodated in the design. Proposed consideration and communication between other agencies such as DAWASA and TANESCO so that during project	Client: Opinion to be apprehended about the kiosks and small retail groups along the roads Consultant: Design Team shall make a specific study on the area. Consultant: The contractors shall communicate all community engagement during the

DATE	STAKEHOLDER	COMMENTS/ISSUES RAISED BY STAKEHOLDERS	RESPONSE RAISED
		implementation, their infrastructures are not disturbed or destroyed, resulting in the loss of some social services in their area.	construction phase and after through LGA's committees regarding all supporting subprojects, like tree planting. Consultant: All stakeholders at the site from the district level shall be engaged. The design will carry service ducts for future social service maintenance.
		Parking yards should not be provided in such a way it closes the business area. Excited about the engagement regarding the proposed DMDP Phase II project.	Adopted positive opinion
		The design should provide ducts for other institutes' infrastructures to cross the roads without causing damage. The installed street lights should have high efficiency and long durability to obtain value for money. After every 10 meters, there should be an opening in the closed drainage system to facilitate easy cleaning of the drains. The design should provide for the installation of speed limit humps and proper signage.	Consultant: All stakeholders at the site from the district level shall be engaged. The design will carry service ducts for future social service maintenance. Design team to apprehend
		A proper feasibility study should be done as stormwater drainage is a big problem in Upanga. Argue for the installation of solar-powered street lights to minimize operation costs. Also, request to be engaged once the detailed preliminary design is completed.	Consultant: Design Team shall make a specific study on the area. Consultant: All street lights that will be installed will be generated by solar power.

DATE	STAKEHOLDER	COMMENTS/ISSUES RAISED BY STAKEHOLDERS	RESPONSE RAISED
25/08/2023	JANGWANI WARD (Mtambani A, Mtambani B, Ukombozi, Mnazi Mmoja Mtaa)	Acknowledged and accepted the proposed DMDP phase II roads as it will improve the livelihood of Jangwani community members. Requested for the construction of an open channel drainage system as it will be easier to clean during operation and maintenance. Additionally, experience shows that the closed channel drainage system has not worked well on their ward roads.	Consultant: Design Team shall make a specific study on the area.
		The design should provide for open channel drainage systems for easier cleaning.	Consultant: Design Team shall make a specific study on the area
		Urges for continuous engagement regarding the proposed project progress.	Consultant: All community engagement shall be continuous before, during, and after the construction phase and shall be communicated through LGA's
		Speed limit humps and pedestrian zebra crossing should be included in the design to regulate accident rates during the construction and operation phases.	Consultant The Design team shall conduct a specific study on the area and engage with the LGA's committees in proposing all road safety issues.
		Acknowledgment for engagement on the project at this early stage and hope for more involvement as much as possible and shall provide maximum cooperation. There are Toilets to let if needed by the contractor, for workers' use. The community is ready to care for the trees, protect the constructed components, including road signs and street lights, and clean the drainage systems.	Consultant: All community engagement shall be continuous before, during, and after the construction phase and shall be communicated through LGA's Adopted positive opinion.

DATE	STAKEHOLDER	COMMENTS/ISSUES RAISED BY STAKEHOLDERS	RESPONSE RAISED
25/08/2023	KASULU, AMANA, and KARUME Community- Ilala CBD Roads	Some roads will need to be closed during construction so information will have to be communicated earlier on.	Consultant: All community engagement during the construction phase and after shall be communicated by the contractors through LGA's committees regarding all supporting subprojects like tree planting
		Appreciate the road project	Adopted positive opinions.
		The community agreed to protect road lights, drains, and trees.	Adopted positive opinions.
		The community proposed shade trees, and every citizen living close to the planted tree will be responsible for watering.	Adopted positive opinions.
		Toilets for rent to contractors for workers' use are available.	Adopted positive opinions.
		Areas for storing construction materials are available	Adopted positive opinions.
		Dust suppression must be highly observed.	Consultant: The environmental and social management plan will be developed for adherence by the contractor.
		Traders must be informed earlier because some roads pass in the marketplace	Consultant: All community engagement during the construction phase and after shall be communicated by the contractors through LGA's committees regarding all supporting subprojects like tree
25/08/2023	VINGUNGUTI WARD (Mtakuja, Miembeni Mtaa) – Pelapela, Pande, Trump, Zahanati, Becco and Miembeni Roads	Appreciate government efforts and intention to improve road infrastructures in Vingunguti	Adopted positive opinions.
		There should be manual traffic lights in areas close to schools and high population density but also road signs indicating allowable vehicle weights	Consultant:

DATE	STAKEHOLDER	COMMENTS/ISSUES RAISED BY STAKEHOLDERS	RESPONSE RAISED
			The Design team shall conduct a specific study on the area and engage with the LGA's committees in proposing all road safety issues.
		The community agreed to have shade trees.	Adopted positive opinions.
		Concerned about floods, as most of the areas are flood-prone, especially Kwa Martha	Consultant: Design Team shall make a specific study on the area.
		The community suggested the drainage to direct water into the Msimbazi River.	Consultant: Design Team shall make a specific study on the area.
		The community felt that some of the houses would have to be removed to acquire enough space for the proposed roads. The compensation process should be quick and transparent to ensure timely construction activities.	Client: Compensation procedures will be carried out effectively for all PAPs.
		The community agreed to have closed drains to reduce accidents and use the area as a packing space.	Adopted positive opinions.
		Areas for the storage of construction materials are available and accessible	Adopted positive opinions.
		Residents promised to cooperate and protect the road infrastructure.	Adopted positive opinions.
		Requested to be given spoil soils to backfill street roads that are currently damaged	Adopted positive opinions
		Insisted on being continually engaged in the project to enhance the security of the material and construction facilities	Adopted positive opinions

DATE	STAKEHOLDER	COMMENTS/ISSUES RAISED BY STAKEHOLDERS	RESPONSE RAISED
		During the compensation process, residents should be educated to avoid middlemen who deceive the beneficiaries that they will be given a higher amount than the rated amount	Client: Compensation procedures will be carried out effectively for all PAPs. The Client will carry out the activity as guided by law and policy.
26/08/2023	GEREZANI WARD Kipata and Livingstone Roads	Employment opportunities must be given to local people. This will enhance the security of construction materials on the construction site	Client: Employment opportunities are to be prioritized to the community. Special groups and gender equality will be observed.
		Bodaboda requested for alternative area during the construction period	Consultant: Economic displacements to be addressed and considered through RAP.
		Reminded the importance of involvement of other government institutions like DAWASA to avoid cutting off the road for them to pass their infrastructures	Consultant: All stakeholders with infrastructure at the site shall be engaged. The design will carry service ducts for future social service maintenance
		Construction vehicles should not be parked in narrow spaces to avoid accidents	Adopted positive opinion.
		During the construction phase, workers must be supervised thoroughly because in some areas, in the past, residents bribed workers to connect toilet pipes in the stormwater drain The community insisted that construction be done according to the schedule to reduce disturbance to residents and traders	Consultant: Consistency and proper Labour ethics and code of conduct shall be monitored
		Contractors should work day and night because some shops will be closed due to construction activities.	Consultant: Economic displacements are to be addressed and considered before and during the construction phase.
		With one voice, the community agreed to protect the road infrastructures and to ensure cleanliness.	Adopted positive opinion.
		The community appreciated the coming of the project	Adopted positive opinion.

DATE	STAKEHOLDER	COMMENTS/ISSUES RAISED BY STAKEHOLDERS	RESPONSE RAISED
26/08/2023	MISHENI KOTA Community – Kariakoo CBD Roads	Appreciated the government's efforts to improve road infrastructures in the city and promised to cooperate during the implementation Requested for trees to be planted in an area with enough space	Adopted positive opinion.
		The community agreed to have closed drainage because the area is narrow, for safety but also the use of the area as parking space.	Consultant: Design team to apprehend
		Traders insisted on commissioning contractors with the capacity to accomplish the work on time because, during construction, their businesses will be affected as some roads will have to be closed, but they will continue to pay rent and taxes. If possible, contractors have to work day and night.	Consultant; Adopted positive opinion. Also, economic displacements are to be addressed and considered before the construction phase.
		Insisted that during construction, information about the road to be constructed at the moment should be given earlier for traders to make preparations to cope with the situation	Consultant: All contractors' works shall be communicated through LGA's committees.
		The community agreed to have a closed drainage	Consultant: Design team to apprehend
		Employment opportunities should be announced at least three weeks before the work begins.	Client: Employment opportunities will be prioritized to the respective community. Special groups and gender equality will be observed. All communications will be done via the LGA to the lowest level to reach more people.
		The proposed roads should take the legal width space; some building ladders must be removed because they have been extended to the road reserve.	Client: The RAP Team will consider this
		Food vendors have to be allowed to sell food to construction workers	Client:

DATE	STAKEHOLDER	COMMENTS/ISSUES RAISED BY STAKEHOLDERS	RESPONSE RAISED
			Employment opportunities are to be prioritized by the community. Special groups and gender equality will be observed.
07/09/2023	Bodabodas Association – Tabata Kisiwani Rd	The design should consider setting up parking spaces with shades for Bodabodas and Bajajis on proposed roads. There are five informal parking points from Savanna to Mwananchi.	Consultant: To be observed and considered by the design team
		Road lighting is important as it will improve security and help Bodaboda drivers work 24 hours, as they currently work only 16 hours, and darkness risks their safety in business.	Adopted positive opinion
		Road humps should be installed in areas with many movements and high population, and after sharp corners to avoid accidents and limit the Drivers with high speeding behaviors that are common among most of them.	Consultant: To be observed and considered by the design team
		The presence of DAWASA pipes destroys the existing road when damaged and causes floods during the rainy season. The design should consider this and plan for mitigation. Currently, daladalas are usually forced to diverge and use the Kimanga-Kisiwani Roads, causing difficulties and traffic for other road users.	Consultant: To be observed and considered by the design team
Key Issues from Additional Roads			
23/04/2024	WEO – UPANGA MAGHARIBI –	The program should be implemented according to the timeframe given. Road diversions should be available.	Consultant: To be considered in the ESMP and during implementation
	Environmental Officer – UPANGA MASHARIKI	The design should consider favorable drainage systems. Parking areas should be considered, particularly during construction, as many vehicles rely on parking spaces along the road. The project should consider safety issues along Residential and social service areas.	Consultant: Design team to work on viable drainage systems ESMP to consider the other raised issues.

DATE	STAKEHOLDER	COMMENTS/ISSUES RAISED BY STAKEHOLDERS	RESPONSE RAISED
		Requested the beautification of the Road after construction. Health, safety, and hygiene for workers should be maintained during the implementation of the project.	
24/04/2024	CDO – KARIAKOO WARD	Easy transportation and connectivity to market areas and business areas Damage to utilities – water pipes and electricity shortage are expected during construction. Environmental issues- Air pollution should be minimized during construction Access roads - business and residential areas should be provided with access roads. Safety measures in Sensitive areas such as Mosques and highly populated areas should be mitigated. HIV/AIDs awareness should be considered in this project Drainage designs to be considered in flood prone areas.	Consultant: An ESMP will be developed to ensure that raised environmental and social concerns, including HIV/AIDS awareness, are addressed before and during the construction phase. Design Team to keenly observe flood-prone areas and make specific recommendations/appropriate design
	CDO – GEREZANI WARD	Air pollution during construction should be mitigated. HIV/AIDS awareness and GBV awareness are important for this project	Consultant: Watering should be done often during implementation. HIV/AIDs and GBV awareness will be included in ESMP Design Team to observe the flood prone areas.

DATE	STAKEHOLDER	COMMENTS/ISSUES RAISED BY STAKEHOLDERS	RESPONSE RAISED
		Drainage designs to be considered in flood-prone areas-i.e., Lindi Road Businesses might shut down during construction, which will affect the owners and those employed to run them. Access to these businesses and a well-defined implementation Timeline and its adherence are important. This should be well communicated to the businesses.	Client: Will ensure close supervision for timely project implementation and liaise with the Contractor and affected parties to ensure the continuation of the business.
25/04/2024	CDOs – ILALA WARD	Limited access to traders/business owners during project implementation is expected. The project should consider construction timings and alternative routes to access the businesses. Traffic jams during project implementation. Safety measures and road diversions should be available.	Consultant: During implementation, road safety will be considered Client: Traffic police will be engaged during the implementation of the works. Road signs should be available after and during implementation.

(Source: UWP, 2023)

Luhanga Mtaa



Kisukuru Ward



Mount Zion Nursery & Pri. School



Segerea Ward

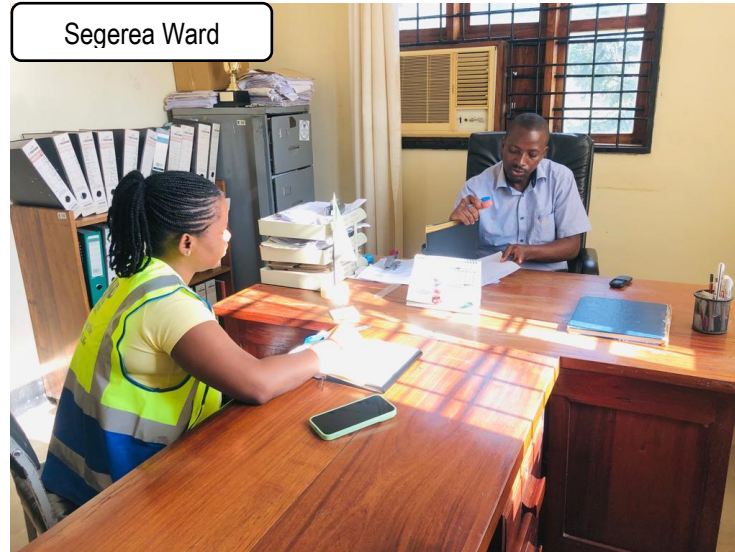


Figure 5-1: Pictures showing engagement with Ward and Mtaa leaders



Kivule Mtaa)



Kitunda Relini



Darajani Mtaa



Mawenzi kisiwani

Figure 5-2: Some of the photos taken during public meetings

5.3.2 Stakeholders workshop

A second stakeholder workshop, after the one conducted by PORALG, was conducted on September 26th, 2023, at the Ilala DMDP office conference Centre. Tables 5-3 present their identification and concerns raised.

Table 5-3: Comments raised during the stakeholder's workshop

Stakeholder	Stakeholder category	Comment/concerns
TABOA	Business association - Interested party	The design should consider setting bus stops to avoid daladalas creating their own informal stops, which usually lead to unnecessary traffic.
Kivule Market	Local institution – Project Affected Party	- Commends the involvement and engagement process - Informed the Consultant of 2 planned bus stops by DCC that had experienced a delay in implementation and caused people to use the space for small businesses; suggested that the design should consider bus stops and linkage with the market, which has a space of about 0.75 acres. - The project should consider initiating roads from Banana-Kipunguni-Moshi Bar, Njia Panda Kitunda-Mwanagati-Kilungule-Buza, and Kivule-Bombambili-District Hospital, as these roads serve a large population of more than 85,000 people and connect to many schools and key health facilities.
Ilala/Kilwa Market	Local institution – Project Affected Party	- The Consultant was informed of floods resulting from the SGR project due to the lack of proper drainage systems, which negatively affected sculptures and food vending businesses. There are also no drainage systems in Lindi and Kilwa Mitaa, adding to the challenging business environment around the market. 2 roads within the market should be considered in the design - Requested for further engagement throughout the planning as there is a planned market construction project in Ilala that is expected to accommodate the businesses currently operating within the roads.
TRC	Government Agency – Project Affected Party	- The project design should consider rail-road interface infrastructures. Design for road infrastructure is more flexible compared to rail infrastructure, as rail is permanent. There is the presence of SGR-Dar-es Salaam-Morogoro and Central Rail, the latter having more issues with new road construction as they had not been considered in the rail's design by then, as the design only considered old planned roads. - Kitunda-Msongola Rd will impact the Central Rail. TRC requested that the project design be shared with them early to allow for design coordination and avoid high project costs in the future.
Police Tanzania	Government Institution – Interested party	- The road's design will benefit pedestrians, bicycle riders, and joggers and reduce accidents. Where possible, the design should also consider space for bodabodas in areas with adequate road space. - The current road light design only considers lighting the roads and a small space for pedestrians. If possible, consider a design that will extend the light further across the roads to help improve security.
Julius Nyerere International Airport - TAA	Government Agency – Project Affected Party	The project should consider closed channels along the roads, as open channels are usually huge and lead to the presence of solid waste litter.

Stakeholder	Stakeholder category	Comment/concerns
TPDC	Government Agency – Project Affected Party	- The design should consider corridors for service providers such as TPDC, DAWASA, TTCL, and the like; it is usually very challenging to provide services with the existing roads leading to damaging the road infrastructures after construction. - The design should consider the presence of a high-pressure gas pipeline. Further consultations with TPDC are required to identify possible areas that might be affected and provide room for proposing slips in such pipelines.

Source (UWP, 2023)

The consultant visited other consulted stakeholders who could not make it to the stakeholders' workshop on 31st October. These included TANESCO and TTCL. Their issues are presented in Tables 5-4 below.

Table 5-4: Issues raised by TANESCO and TTCL

Stakeholder	Stakeholder category	Comment/concerns
TANESCO	Government Agency – Project Affected party	- Positive about the project but insists on working together with TANESCO to ensure proper handling of infrastructure that will be impacted and ensure that the community does not miss power supply services during the road construction. - The developer/contractor has to cover the fund for relocation and rehabilitation of impacted infrastructure. The fund should be allocated to TANESCO, which usually hires a contractor to implement the relocation work. - The Road Contractor has to prepare a BOQ for relocating the impacted infrastructure, but TANESCO also prepares one for comparison and quality assurance. - TANESCO should handle demolished waste - TANESCO is ready to visit the site with the Design team to show all infrastructure that will be impacted so that the road design can accommodate such infrastructure.
TTCL	Government Agency – Project Affected Party	- Appreciated being consulted and involved in the early stages of the project, as they had been previously ignored in some other projects, which led to future unnecessary costs that could have otherwise been avoided with early planning before construction works. - Most TTCL and other communication network cables are made of fiber material. Most contractors leave the fibers scattered along the roads, harming the environment and potentially humans, who are at risk of cancerous diseases. - The communication infrastructure that will be impacted should be relocated first before the old infrastructure is removed to avoid a lack of communication services in such areas of impact. - TTCL shall act as the main supervisor, also executing an advisory role during the relocation of the communication infrastructures. - TTCL handles all relocation materials. They are usually recovered (reused) or disposed of, and people are not allowed to own such materials. - The road design has to consider setting the network areas even when the cables are not yet in place to avoid destroying the road infrastructure in the future. - TTCL is ready to go to the site with the design Consultant to show all the areas with infrastructures that will be impacted and share their plans so that the road design can integrate them. - The Consultant was informed that Livingstone and Kipata roads were already under construction.

5.4 SYNTHESIS OF STAKEHOLDERS' CONSULTATIONS

Stakeholder consultations for the subprojects were conducted in line with ESS 10 and the stakeholder engagement plan. The stakeholders included individuals or groups who were affected or likely to be affected by the project (project-affected parties) and those who may have an interest in the project (other interested parties). The engagement process has also been conscious of the legal requirements in relation to stakeholder engagement during the ESIA study. To ensure compliance, the stakeholder engagement also covered wider stakeholder groups to ensure that the concerns of the directly and indirectly impacted stakeholders were adequately captured during the planning process.

5.4.1 Stakeholders consulted

A total of 570 (consisting of 231 males and 339 females) were engaged through multiple platforms: key informant interviews at Municipal, Ward, and Mtaa levels, community meetings, and Focus Group Discussions. These stakeholders belonged to government offices, civil society organizations, the private sector, and community members residing or with businesses within the subproject areas.

5.4.2 Stakeholder engagement goals and objectives

The goal of this process was to enhance stakeholder engagement throughout the design process for meaningful decisions on the design attributed to informed considerations of key environmental and social issues and impacts, with specific objectives being to ensure key stakeholders:

- are aware of the DMDP II subproject design process and issues and how these are relevant to their interests;
- give feedback on their perspectives and priorities to support the design and ESIA teams with relevant information;
- Build ownership of the DMDP II planning process and readiness for the project and give room for managing their expectations from the project.

5.4.3 Key Findings on Stakeholder Perspectives

Key findings synthesized from stakeholder input via the consultative meetings, focus groups, and interviews are presented below:

General stakeholder's perspectives

a) Engagement in the process

There seemed to be general confusion regarding an understanding of the project phase I and II, including the prioritization of the subprojects, the rationale for prioritizing, and whether the other identified subprojects under the 70% package would still be considered in the future. The stakeholder engagement plan has ensured a continued stakeholder communication process that allows for stakeholder involvement at all planning stages and ESIA processes so that awareness of each stage of the design and feedback mechanism is well captured and stakeholder issues taken into account.

b) Scope

Defining the scope of the design of the road on actual distances, linkage with services such as markets and other roads, road humps, bus stations, lights, and shades for specific points, eg. For Bodabodas and bajaji was deemed crucial by various stakeholders. It will be important to provide feedback to stakeholders on the decisions of the agreed designs to manage stakeholder expectations. There is also a need for coherence and interlinkages among work packages for the project design and implementation.

c) Environmental and social impacts assessment

ESIA was recognized as a useful guiding tool and an essential instrument to facilitate the other aspects of the design of DMDP II priority subprojects since it paves the way for important baselines to inform the design and future decisions and processes. Regarding stakeholder involvement in the ESIA process, there was a broad agreement that all stakeholders were equally important (i.e., government stakeholders (both national and local), community, CSOs, police authority, and private entities).

The process has also considered inclusivity and ensured the interests of specific groups, such as Youth (e.g., road user groups (bodaboda)) and vulnerable groups, including women, the elderly, and people living with disabilities, have been well documented. Further consultations with such groups will continue as needs arise throughout the design process. Issues related to RAP were identified during the consultations and were addressed through a resettlement action plan for the project.

Stakeholders called for urgent collective actions by respective agencies/institutions on disrupted social services during project construction to effectively and efficiently ensure timely refurbishing of such services. These services include water supply and sanitation, power, and communication services.

d) Project opportunities

The majority of the stakeholders urged the need to prioritize local content in terms of employment opportunities that come with the project, especially at the Mtaa levels, to reduce unemployment difficulties, particularly for youth and women. The ESIA's ESMP has included such aspects that enhance the project positivity course. Further stakeholder engagement processes will create new opportunities for the community and businesses and provide an enabling environment for new endeavors for vulnerable groups from aspired improved social services that might benefit from the project.

e) Decision-making

Decision-making should be multi-tiered and based on meaningful stakeholder engagement of relevant actors from national to local level, taking into account the interests of the community.

f) Compliance

Stakeholders reiterated the importance of monitoring and complying with the environmental and social standards, which are well captured in the ESMP.

g) Best practices for management of GBV/VAC issues

A channel of mechanism is needed to ensure gender issues are articulated in the project design. GBV issues related to the project will utilize the available institutional arrangement from Mtaa to the Municipal level and the involvement of Police Gender Desks.

h) Capacity building

Capacity building and knowledge transfer through awareness programs during project design, planning, and implementation were seen as potential incentives to facilitate effective project delivery. The stakeholder engagement plan and the ESMP have provided room for capacity building to enhance stakeholder participation and inclusivity in the project.

Synthesis of consultations for specific road sub-projects

Key findings synthesized from stakeholder consultations for the road sub-projects are presented below:

I. Banana-Kitundaroad and Kitunda-Kivule-Msongola roads

Key issues raised by stakeholders include the following:

- Adherence to health and safety during construction to protect human health
- The design should consider zebra cross/pedestrian bridges in populated areas, with special consideration at Njia Panda ya Shule, with over 10,000 students crossing the road from three different schools.
- The design should consider bus stops, as the road project completion would attract high traffic. Moreover, bodaboda parking should be considered at the beginning of Msongola Road, Market Road, Kigocha, and Frame 10 areas.

- The design to consider having a roundabout at Kitunda Shule corner, which connects with two other major roads to reduce high traffic, and another one at the Junction area between the proposed Banana to Msongola road and Chamazi road.
- The design should observe floods, which usually occur during heavy rains, at the bridge near the airport fence and the new petrol station.
- Consultative meetings with the community should be continuous to ensure the smooth operation of the project and awareness of project opportunities and outreach programs.
- The project should observe compensation procedures to allow for compensation before construction begins.
- Timely relocation of DAWASA and TANESCO infrastructures should be observed during construction.

II. Kiwalani Community roads

- Adherence to health and safety during construction, especially in installing road signs to reduce the risk of accident occurrence
- The Contractor should promote local content by prioritizing employment opportunities for local labor force.
- Mtaa and Ward Leaders are ready to cooperate with project Staff and contractors and have requested two-way communication between them and DCC for easy management of Contractors.
- The community wishes the design to consider closed drains for safety reasons, particularly benefitting children and the elderly.
- The design should observe flood-prone areas such as Chiwata and suggest that the new drain should ensure stormwater flows towards Chineneko (bridge area close to airport wall)
- Daladala stops should be integrated into the design with the observation of local ethics.

III. Tabata Roads

- The project should consider the presence of bodaboda and bajaj users and provide them with a business-friendly environment by designing shades that will support them during rainy and hot seasons.
- DCC should coordinate and liaise with Mtaa and Ward leaders to ensure that DAWASA, TTCL, and TANESCO's infrastructure relocation processes do not disrupt community accessibility to their services for a long time during the construction phase.
- Employment opportunities should benefit residents along the project sites, with priority to women and youth.
- The project must demonstrate a transparent resettlement process to ensure PAPs receive fair valuations and compensation for their property losses.
- The design should consider speed limit humps and zebra crossing in populated areas, with special attention to Padre Pio Catholic Church and Daycare schools, and include bus stops at Msikiti and Madukani areas.
- The project should observe flood-prone areas, such as the Banyenza bridge and Sundown area, to develop better, more sustainable construction solutions.
- The Contractor should adhere to health and safety measures during the mobilization and construction phases.
- The community proposed a road-closed drainage system to provide them with parking space, avoid solid waste littering, and reduce the risk of accidents for children.
- Diversion routes should be confirmed and communicated to the community earlier, before construction, to avoid mobility disturbances.

IV. UPANGA CBD

- Adherence to health and safety during construction to protect human health

- The design should consider viable drainage systems that promote other uses and safety for road users. Stormwater drainage should also be observed.
- The design should consider access to parking spaces for vehicles during construction, as residents, businesses, and people accessing services usually rely on available parking outside residents' homes, buildings, and spaces along the roads.
- The design should consider access to education and health facilities during construction.
- The design should provide service ducts for other institutions/utilities' infrastructure and ensure close collaboration and communication with utilities to plan for the relocation of affected infrastructure during construction.
- Timely implementation of the project should be observed to minimize socio-economic impacts.
- Engage the community to provide project updates after the completion of the preliminary design.

V. KARIAKOO CBD

- The design should consider an open channel drainage system for easy cleaning and maintenance.
- Speed limit humps and pedestrian zebra crossing should be included in the design to regulate accident rates during construction and operation.
- Adherence to health and safety during construction to protect human health
- Continued community/stakeholder engagement throughout the project is highly encouraged, with a special focus on affected businesses along the proposed roads
- Utilities should be consulted to ensure their services are provided even during the construction phase
- Construction vehicles should not be parked in narrow spaces to avoid accidents during the construction phase
- Bodabodas requested for alternative parking points during construction
- Timely implementation of the project should be highly considered, given the economic importance of the areas.
- Access roads to businesses, social services, and residential buildings should be considered during construction.

VI. ILALA CBD

- Adherence to health and safety during construction to protect human health
- The community and other road users should receive consistent updates about roads that will be closed during construction and all the proposed diversion routes to avoid transport chaos in such areas.
- The design and implementation phases should consider timing and impacts in sensitive areas such as the Ilala market, which is a big market relied on by communities and small businesses in Ilala.
- Consultative meetings with the community should be continuous to ensure the smooth operation of the project and awareness of project opportunities and outreach programs.
- Timely relocation of DAWASA and TANESCO infrastructures should be observed during construction.

VII. VINGUNGUTI

- Adherence to health and safety during construction to protect human health
- The design should consider manual traffic lights in areas close to schools and with high mobility.
- The design should consider floods, as most areas are flood-prone. Special attention is required in the Kwa Martha area.
- The design should consider directing drainage water into the Msimbazi River. The community proposed closed drains to prevent accidents and to benefit from the parking spaces that would be available.

- The project should observe compensation procedures to allow for compensation before construction begins.
- The community requested to be given spoil soils to backfill street roads that are currently damaged.

5.4.4 Next Steps for Stakeholder Engagement

In liaison with the Client, the Consultant has conducted a series of stakeholder consultations. It is important to continue engaging stakeholders throughout the project lifecycle. Here are some next steps for future stakeholder engagement:

- i. **Feedback Consolidation:** The Consultant will review and analyze the feedback received during consultations, identifying common themes, concerns, and suggestions as they continue to flow to gain a comprehensive understanding of stakeholder perspectives.
- ii. **Update the Stakeholder Engagement Plan:** The Consultant will update the Stakeholder Engagement Plan for the Design phase based on the feedback received.
- iii. **Develop a Communication Strategy:** The Consultant will advise the Client to develop a clear and concise communication strategy to effectively communicate project updates, progress, and decisions to stakeholders and review the appropriate channels and methods of communication in the SEP to reach different stakeholder groups.
- iv. **Continuous Stakeholder Engagement:** Implement the SEP by initiating regular and meaningful interactions to keep stakeholders informed to ensure that key stakeholders have the opportunity to provide input, ask questions, and contribute to decision-making processes
- v. **Address concerns:** The Consultant, in liaison with the Client, will provide clear and transparent information to address any misconceptions or misunderstandings throughout the design process and offer opportunities for dialogue and collaboration to build trust and maintain positive relationships with stakeholders, particularly those that would require compensation for loss of property under the resettlement action plan.
- vi. **Monitor and Evaluate:** The SEP has provided room for continuous monitoring of stakeholder engagement in project activities and evaluation of their impact on the project. The project team will solicit feedback from stakeholders on their experience of engagement efforts and use this information to improve future engagement strategies.

CHAPTER SIX

6 IDENTIFICATION OF POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS/RISKS

6.1 INTRODUCTION

The purpose of this Chapter is to identify and, where appropriate, quantify environmental and social impacts expected to result from the proposed subprojects in the DCC under DMDP II. The Chapter discusses the general assessment of the potential environmental and social impacts and risks that the construction, operation, and maintenance of the roads could generate based on:

- i). the described overall environmental and social conditions of the general project areas in the baseline information as presented in Chapter 4;
- ii). the nature of the project activities in the different project phases;
- iii). the extent and duration of change, the potential number of people or resources affected; and
- iv). The sensitivity to the changes.

Typically, the development of urban roads leads to environmental and social impacts on a number of receptors (here referred to as Valued Environmental Components, VECs). The impacts are often spread over the entire project area. The impacts may be direct or indirect, positive or negative, short-term or long-term, and irreversible. The described impacts are associated with the implementation of particular project activity in particular environmental settings. In assessing identified potential Project impacts, consideration and attention were paid to establishing the cumulative nature of each impact. The overall impact assessment of the proposed road development in the DCC reveals that most of the likely adverse impacts are ranked as High to Low, and these can be avoided, prevented, mitigated, or compensated by implementing the measures and action plans proposed in the ESMP.

6.2 SPATIAL, INSTITUTIONAL, AND TEMPORAL BOUNDARIES OF IDENTIFIED IMPACTS

6.2.1 Spatial Boundaries

The spatial dimension encompasses the geographical spread of the impacts regardless of whether they are short-term or long-term. The spatial scale considers the receptor/ Valued Environmental Components (VECs) and can be local or broader. Following this, three zones of impact were considered;

The core impact zone: This is the core impact zone where the construction works will concentrate. The site of the construction is the Right of Way of the total length of Banana Kitunda Kivule Msongola Road (16.31km), Barakuda Chang'ombe Majichumvi Road (3.27km), Majumbasita – Segerea Road (3.31km), Migombani Road (1.93km) and Tabata Mawenzi – Kisiwani Road (2.12km), Upanga CDB roads (4.63km), Kariakoo CDB roads (7.79km), Ilala CDB roads (8.55km), and Package 6 with Vingunguti roads which are Vingunguti Mnyamani(1.91km), Trump Road(1.01km), Zahanati Road(0.49km), Kwa Simba Rd(0.48km), Kituo Cha Yatima(0.34km) and Pande Road (0.17km).. This will also include areas immediately bordering these DMDP phase II roads.

Immediate impact area: These are off-site locations linked to the project activities, including borrow pits and other sources of materials like sand, gravel, aggregates, fill materials, water, etc., involving civil works/extraction activities done by/or on behalf of the project. These will probably extend to the Pwani Region, where most of the sand and aggregate sources are found. Other sites will be waste disposal sites, campsite(s) if so required, or other locations chosen for accommodation of crew and equipment and material storage.

The zone of influence: This includes a wider geographical area that is influenced by the project in the City and beyond, including areas in the near vicinity within a 5km radius and transportation routes from sources of material to the project locations. (E.g. Dar es Salaam City Council).

6.2.2 Institutional Boundaries

Institutionally, the Dar es Salaam City Council (under PO_RALG) has the mandate to develop and maintain the urban infrastructures in the Dar es Salaam City Council. Its primary function includes the maintenance and development of the infrastructures to support the economic and social development of the Municipality. They will also be responsible for addressing the environmental issues posed by the subprojects. The proposed Infrastructures will be under the municipal engineer while solid waste collection and disposal will be under the Municipal health officer. From the central

government line of administration, by virtue of their location, the urban infrastructures to be developed by this project in the Dar es Salaam region are under the jurisdiction of the Regional Commissioner for the Dar es Salaam region.

6.2.3 Temporal Boundaries

Temporal boundaries refer to the lifespan and reversibility of impacts. For example, the impact of road construction works may be short-lived, but the presence of this infrastructure may have implications that stretch far into the future. Therefore, some of the impacts that may occur during construction, e.g., noise caused by bulldozers, will disappear as soon as the construction phase is completed. The construction period will last for not more than 3 years, while the operational phase is designed for 20 years unless an unforeseen event occurs.

Also, for a number of reasons, the DCC may wish to make one or several decisions. For instance, it may abandon a portion of the infrastructure and create another one or an alternative portion and divert the original course and substitute it with a new one. Other measures include expanding the infrastructure. If the decision is to close the road infrastructure permanently, then the required activities for the decommissioning process will be obligatory.

6.3 METHODOLOGY FOR IMPACT IDENTIFICATION

The environmental and social impact assessment was carried out at different levels to reach accurate results about the project impacts and the suitable mitigation measures to minimize negative impacts and maximize positive impacts resulting from the project. Cumulative effects were also addressed, taking into account other development projects existing in the project area, including the BRT and SGR projects. Each potential positive and negative impact resulting directly or indirectly from the project was categorized based on the **Magnitude and Sensitivity of the Receptor**.

The magnitude of impact: The impact resulting from the project was categorized as a positive or negative impact; the latter was further analyzed, and its magnitude was assessed as Low, Medium, or High. Various considerations come into play as the consultant and experts assessed the impacts; the main parameters were:

- **Duration** - The longer the impact, the more heavily it is weighed. Special consideration is given to impacts that go beyond the project's anticipated life expectancy.
- **Time** – The time at which an impact commences or occurs can be vital to construction and maintenance operations.
- **Spatial** - The area impacted must be considered, as some impacts may extend beyond the project's boundaries or interfere with land regulations, etc.
- **Probability** – The chance of an impact occurring and its frequency is to be assessed
- **Reversibility** - The possibility and extent to which an impact can be intervened or mitigated for a factor to return to the Baseline environment
- **Compliance** – National and international standards and regulations may dictate an impact's maximum allowable consequence.

The analysis and assessment of the identified impacts utilized the baseline information and collected data to establish the significance of each impact.

The approach to impact prediction was to give ratings (quantification) for each identified potential impact and produce a matrix of impacts against Project activities that will be undertaken during the mobilization, construction, operation, and decommissioning phases of the Project. Determination of the "significance" of a particular impact is a key aspect in the analysis and classification of these impacts. In order to determine the significance of an impact, various approaches, including professional judgment, quantitative mathematical models, experiments, physical models, and case studies, may be used.

Since the proposed project is not on a single site and with other activities, some of the potential impacts of the development will likely have cumulative effects. A number of criteria were considered in combination to assess the impact's significance. The chosen criteria include the impact's magnitude, scale, duration, exposure, and probability of occurrence. These criteria were assigned scores, which will then be combined to determine the impact's "consequence and likelihood."

The impact score magnitude is determined as “high,” “substantial,” “moderate,” or “low” (Table 6-1). Whereas the score allocates from 3 for “high” to 1 for “low.” The scoring for the scale of the impact intends to establish the indication of the geographical extent of the impact. As such, the scoring is determined by whether the scale is “national,” “regional,” “district,” “local,” and “site-specific or unknown”. The scoring is again assigned 3 to 1, respectively. On the other hand, the scoring for the impact duration seeks to establish an indication of the duration or time over which the impact will be experienced. It is scored on a scale of 3 to 1, whether the duration is “long-term,” “medium-term,” or short-term.” The exposure of the impact seeks to establish an indication of the frequency of the activity that may cause the impact or the continuity of the exposure. It is also scored 3 to 1 if it is “high,” “moderate” or “low.” It should be noted that in assessing the exposure the impact is also assessed on whether it is a discrete event or a prolonged exposure from a single activity or event.

The probability of the impact's occurrence seeks to assess the degree of certainty associated with a potential impact. The assessment was carried out by establishing whether the impact's occurrence is “likely,” “possible,” or “unlikely.” The scoring was based on a scale of 3 to 1, respectively.

In carrying out these assessments, data and various information were used to establish a level of public concern and expert judgment. The significance of each impact was assessed through a scoring system that looks at the impact's “magnitude,” “scale,” and “duration.” Also, the assessment of the significance of the impact in terms of “exposure” and “probability” of occurrence is carried out through a scoring system as outlined in Table 6-1:

Table 6-1: Significance of Impact Assessment

Criteria	Description	Possible Results		
		Term	Description	Score
Impact Magnitude	An indication of the severity of the impact , either positive or negative	High	Where natural, cultural, or social functions or processes permanently	4
		Substantial	Natural, Cultural, or Social functions are altered to the extent that they temporarily cease.	3
		Moderate	The affected environment is altered, but natural, cultural, or social functions continue, albeit in a modified way	2
		Low	The environment is impacted in a way where the natural, cultural, and social functions and processes are not affected	1
The scale of the Impact	An indication of the geographical extent of the impact	National/Regional	Affects the resources of the region or country	3
		District	Affects the resources of the district	2
		Local/Site-specific	Localized, confined within the mtaa/ward/ project area	1
Duration of the Impact	An indication of the duration or time over which the impact will be experienced	Long term	The impact will extend into the post-closure of the project	3
		Medium-term	During the operational life of the Project	2
		Short term	Shorter than the operational life of the project	1
Exposure to Impact	Indication of frequency of the activity that may cause the impact	Term	Discrete Events	Prolonged Exposure from a single activity
		High	Daily or Continuous	Exposure in perpetuity
				Score
				4

Criteria	Description	Possible Results			
		Term	Description		Score
	or the continuity of exposure	Substantial	Weekly/once per week	Continuous exposure to closure or post-closure	3
		Moderate	Monthly/once per month	Continuous exposure during construction and operations Phases	2
		Low	Bi-annually	Prolonged exposure yet finished before the end of a phase	1
Probability of the occurrence	Assessment of the degree of certainty associated with a potential impact	Definite	The impact will certainly occur		3
		Possible	May occur		2
		Unlikely	Very unlikely to occur, or almost impossible		1

(Source: UWP, 2023)

Table 6-2: Significance of Impact Assessment

Consequence	Magnitude + Scale + Duration	3-4	5-6	7-8	9-10
		Low	Moderate	Substantial	High
Likelihood	Exposure + Probability	2-3	4	5	6-7
		Low	Moderate	Substantial	High

The consequence of the impact was determined by adding the scores for “the magnitude,” “scale,” and “duration” of a particular impact (Table 6-2). The addition of the scores for “exposure” and “probability” of occurrence of an impact was used to determine the impact’s likelihood of occurrence. The description for the “Consequence” and “Likelihood” of the impact is then expressed, based on the obtained score, as either “low,” “moderate,” “Substantial,” or “high.” In order to determine the overall significance of the impacts, a matrix of the scores of the “Consequence” and “Likelihood” was then used, as shown in Table 6-3, using the color codes.

Table 6-3: Significance of Impact Matrix

Impact Significance		Consequence of the Impact			
		Low	Moderate	Substantial	High
Likelihood of the impact (Exposure + Probability)	Low	L	L	M	M
	Moderate	L	M	M	S
	Substantial	M	S	S	H
	High	S	S	H	H

Table 6-4: Analysis matrix of Environmental and Social Impacts Matrix for the Proposed Dar es Salaam City Council Roads

S/N	Environmental parameters/ Impacts	Impact Rating Criteria					Impact Significance Rating			
		Special Scale	Temporal Scale	Reversibility	Cumulative Effects	Residual Impact	Mobilization Phase	Construction Phase	Demobilizati on Phase	Operation and Maintenance
	Negative Impacts									
i.	Loss of land and/or property	L	LT	IR			-2	-2	0	0
ii.	Loss of livelihood	L	ST	R			-2	-1	0	0
iii.	Temporary <i>Impact on local businesses</i> adjacent to the roads	L	ST	R			-2	-2	0	-1
iv.	Loss of accessibility to adjacent properties	L		R			-2	-2	0	-1
v.	Loss of natural habitats and trees	L	LT	IR			-2	-1	0	-1
vi.	Damage or relocation of existing infrastructure and public services	R	ST	R			-2	-2	0	-1
vii.	Increased Noise pollution	L	ST	R	Yes	Yes	-1	-2	-1	-1
viii.	Risk of damage to private property due to increased vibration levels	L	ST	R			-1	-2	-1	-1
ix.	Deterioration of air quality (due to increased air emissions)	R	ST	R	Yes	Yes	-1	-2	-1	-2
x.	Loss of definite materials and land degradation at the quarry sites	R	ST	R	Yes		-1	-3	0	-1
xi.	Population Influx	L	ST	R	Yes		-2	-2	0	-1
xii.	Increased water and soil pollution	R	ST	R			-1	-2	-1	-2
xiii.	Soil erosion and instability of slopes	L	ST	R			-1	-2	-1	-2
xiv.	Interference with local hydrology	L	LT	R	Yes	Yes	0	-2	-1	-2
xv.	Increased solid waste and wastewater generation in the area	L	ST	R		Yes	-1	-2	0	-2
xvi.	Risks of pollution by generated hazardous wastes	L	ST	R		Yes	-1	-2	-1	-1
xvii.	Risks of environmental pollution by demolition waste	L	ST	R			-2	-1	0	-1
xviii.	Increased Community Safety risks	R	LT	IR			-2	-2	-1	-1
xix.	Increased cases of occupational and health risks		ST	IR			-1	-2	-1	-1
xx.	Increased spread of social illnesses (i.e., STDs, HIV/AIDS)	L	ST	IR	Yes		-1	-2	-1	-1

S/N	Environmental parameters/ Impacts	Impact Rating Criteria					Impact Significance Rating			
		Special Scale	Temporal Scale	Reversibility	Cumulative Effects	Residual Impact	Mobilization Phase	Construction Phase	Demobilization Phase	Operation and Maintenance
xxi.	Landscape modification and increase of impervious surfaces	R	LT	R			-1	-2	-1	-2
xxii.	Increased road accidents	L	LT	IR	Yes	Yes	-1	-2	-1	-1
xxiii.	Loss of employment									
Positive Impacts										
i.	Job Creation and Increased Income to Local Communities	L	ST				+2	+3	+1	+2
ii.	Improved Transportation Services	L	LT				0	0	0	+3
iii.	Improved stormwater drainage system	R	LT				0	0	0	+3
iv.	Reduction of traffic congestion in the City	R	LT				0	0	0	+3
v.	Reduce Vehicle operation costs.	L	LT				0	0	0	+3
vi.	Improved community life, services, and status	L	LT				0	0	0	+3
vii.	Increased property and land values along the project area	L	LT				0	0	0	+3
viii.	Job creation in O&M activities	L	LT							+2

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

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

Reversibility: Reversible (R), Irreversible (IR)

Significance: Highly adverse (-3); moderately adverse (-2); Low adverse (-1); No impact (0); Low Beneficial (+1); moderately Beneficial (+2); highly Beneficial (+3)

6.4 Analysis of Potential Impacts associated with the Pre-construction Phase

6.4.1 Impacts on the Socio-Economic Environment

Positive Impacts

6.4.1.1 Increased Employment Opportunities, Job Creation, and Increased Income to Local Communities

During this phase, people shall be employed by the contractor to do mobilization works such as the construction of campsites, quarrying material extraction and transportation activities, etc. The project area, like any other urban area, is characterized by a high level of unemployment. The availability of new employment opportunities will, therefore, increase the positive benefits for the local people who are in dire need of income for sustenance. Furthermore, indirect opportunities and direct employment will arise from the provision of services to the construction teams, such as the sale of food and beverages. It is estimated that 100 to 375 people benefit from the new employment opportunities. These will include those with skills (i.e., drivers, fundis, surveyors, etc.) and non-skilled laborers.

Impact assessment

The frequency of this impact will be Short Term during the pre-construction period, with a high possibility of extending to the construction phase. The likelihood of the impact is definite due to the certainty of labor requirements for the project. The spread of the impact would be to individuals located within the project Wards and from different parts of the country, so it is classed as National. Based on these assessments and embedded mitigation, the magnitude is assessed as Beneficial. Impact significance is therefore assessed as Positive.

Negative Impacts

6.4.1.2 Minor loss of land and/or properties

The project may be associated with minor (small scale) acquisition of land for localised improvements along the road or improvement, and for walkways and bus-bays. Site clearance will involve the demolition of some properties to pave the way for construction activities. This can include land parcels, residential houses, part of residential houses (See Figure 6-1), commercial/business structures, and crops. This loss has an impact on individuals, families, and the community as a whole. RAP will be implemented as per the requirement of ESS5. RAP has identified and categorized PAPs and affected property, including 94 residential houses, 201 commercial buildings (business frames and shops), and 4 institutions' buildings. Apart from buildings, some of the planted fruit trees (i.e., pawpaw and coconut trees) will be affected. Families consume these, but they are also a source of income for the owners (see details in Table 6.5). A total of 394 PAPs have been identified. The land acquisition may also be needed on borrow pits, quarry sites, and campsite areas.

Table 6-5: Summary of affected property for each road

ROAD NAME	RESIDENTIAL BUILDINGS	COMMERCIAL BUILDINGS	KIOSKS	MIXED-USE (COMMERCIAL/ RESIDENTIAL)	WALL FENCES	HEDGE FENCE WITH POLES/CHAIN LINK FENCE	VERANDAH/CA NOPY/SLABS	WATER TANKS/ CONCRETE	SEPTIC TANKS	BUILDINGS UNDER CONSTRUCTIO	TOTAL
Barakuda- Majichumvi Road	14	29	4	3	9	3	18	1	0	0	81
Mawenzi -Tabata Kisiwani Road	36	70	3	6	14	3	54	1	1	0	188
Segerea -Majumba Sita Road	5	13	0		3	10	7	1	0	1	40
Migombani Road	30	80	5	23	38	4	25	2	0	1	208
Banana Msongola	0	1	0	0	0	0	0	0	0	0	1

ROAD NAME	RESIDENTIAL BUILDINGS	COMMERCIAL BUILDINGS	KIOSKS	MIXED-USE (COMMERCIAL/ RESIDENTIAL)	WALL FENCES	HEDGE FENCE WITH POLES/CHAIN LINK FENCE	VERANDAH/CA NOPY/SLABS	WATER TANKS/ CONCRETE	SEPTIC TANKS	BUILDINGS UNDER CONSTRUCTIO	TOTAL
Kivule Junction Road	0	0	0	0	0	0	0	0	0	0	0
KIWALANI ROADS											
Kigilagila Market Road 1	1	2	0	0	2	0	3	0	0	0	8
Sokoni Road	0	3	0	0	2	0	12	0	0	0	17
Kigilagila Market Road 3	0	0	0	0	0	0	2	0	0	0	2
Community Park 1 Road 1	0	0	0	0	0	0	6	0	0	0	6
Community Park 1 Road 2	0	0	0	0	0	0	0	0	0	0	0
Community Park 2 Road 1	0	0	0	0	1	0	0	0	0	0	1
Community Park 2 Road 2	0	0	0	0	1	0	17	0	0	0	18
Community Park 2 Road 4	0	0	0	0	0	0	0	0	0	0	0
Bombom Market Road	8	3	0	0	3	0	3	0	0	0	17
TOTAL	94	201	12	32	73	20	147	5	1	2	587

The impacts of land expropriation are not only social and economic but also psychological and can be depressing. However, adhering to the requirements of the ESS5 and national guidelines, the DCC will make all efforts to design the roads so that involuntary resettlement is largely avoided. Where it can be avoided, appropriate measures to mitigate adverse impacts associated with the loss will be carefully planned and implemented.

Impact assessment

The Intensity of this impact will be low; only a few permanent structures were found within the RoW). The probability of the impact is highly probable, and the spread of the impact is local. The duration of the impact is long-term since the relocation will not be reversed. Based on these assessments, the nature of the impact is Negative. Combined with the receptor vulnerability, the premeditation significance is *Moderate* and so additional mitigation is required. With the application of a RAP developed for the project, the impacts could be reduced to low (minor) impact.



Figure 6-1: House extension and verandas along the Migombani road that the project could impact

6.4.1.3 Loss of livelihood

Site clearance will affect small businesses located along the proposed roads. Owners of small businesses located along the proposed roads will need to relocate their businesses to other areas or suspend for some time. However, the business environment will be much more vibrant after the implementation of the project. The loss of business premises will affect both the owner and the employees. The owners will lose income, while the employees will lose employment and, consequently, income. Field surveys along the proposed project roads revealed the presence of a number of business premises that will be affected by the project. Figure 6-2 presents exemplary evidence of premises to be affected by the proposed project along the Kitunda -Kivule Msongola, Kariakoo CDB roads, Ilala CDB Roads, and Kigilagila Market Road 3. A number of business quarters are very close to the project road.



Kigilagila market – Road 3



Narung'ombe Road – Kariakoo CDB



Banana Kivule Msongola road

Figure 6-2: Some of the businesses along the project likely to be affected by the project

6.4.2 Impacts on the Biological Environment

6.4.2.1 Loss of natural habitats and trees

Tree and other minor vegetation along the proposed DMDP II roads are home to a number of higher macro-organisms. Therefore, minimal vegetation clearance is expected mainly to obtain the 6-8 m carriageway and 45 m road reserves. This might involve uprooting trees and vegetation which fall within the Right of Way (RoW) as well as displacing huge masses of top-soil. Diversions to provide access to traffic during the construction phase are expected to cause a minimal loss of habitat or alteration of habitats since the sub-project areas are, to a large extent, already disturbed. So potential impacts to plants will include crown/ stem/ root damage and total removal of plant individuals. It was revealed that there are few trees, shrubs, climbers, and herbaceous vegetation (graminoids and forbs) that are potential

to be affected through pruning, crown/ root /stem damages, or total removal due to the close vicinity with the roads and construction sites (Figure 6-3). During the survey, it was clear that ornamental and shed trees along the roads will be the most affected as opposed to other plant forms, as they form the majority of plants found in the project operation area (Figures 6-3 and 6-4). So, overall, the major impacts (small scale) will be the damage and loss of vegetation, which are mostly introduced and or naturalized plant species. Associated impacts will be the small-scale reduction in cooling, shed, and microclimate effects together with reduced control of soil erosion and reduction in bee forage.



Figure 6-3: Plant biodiversity with a high likelihood of damage or total removal.



Figure 6-4: Plant species with potential to be affected (left side are *S. siamea* and *P. dulce*, and to the right are *P. purpureum* and *P. maximum*).

6.4.2.2 Loss /reduction of Ecosystem Services

Site clearing activities will contribute to the removal of vegetation alongside the roads, which provide habitat service to fauna species, provide shade to road users (see Figure 6-5), and, in some cases, provide food (i.e., coconut and fruit trees). The project recognizes that site clearance will trigger ESS6 on Biodiversity Conservation and Sustainable Management of Living Natural Resources. However, since the project area is an urban area, and the roads exist, thus very minimal vegetation clearance is expected.

Impacts on ecosystem services include small-scale reductions in cooling, shed, and microclimate effects, reduced control of soil erosion, and reduced bee forage.

Impact Assessment

Impact evaluation considers the intensity of the loss of vegetation, loss or alteration of habitats, and loss/reduction of ecosystem services as low due to the fact that only minimal vegetation will be affected. Further, the location of the project is in an urban and disturbed environment. The impact is considered local and long-term. The probability of occurrence of the impact is definite and has a negative impact on the biological environment. The impact significant is rated as moderate without mitigation measures; however, with the implementation of proper mitigation measures, the impact can be reduced to low.



Shade trees



Fruit trees



Coconut trees

Figure 6-5: Trees that are likely to be affected alongside the Barakuda Majichumvi Road and Ilala CDB roads

6.4.3 Impacts to Physical Infrastructure

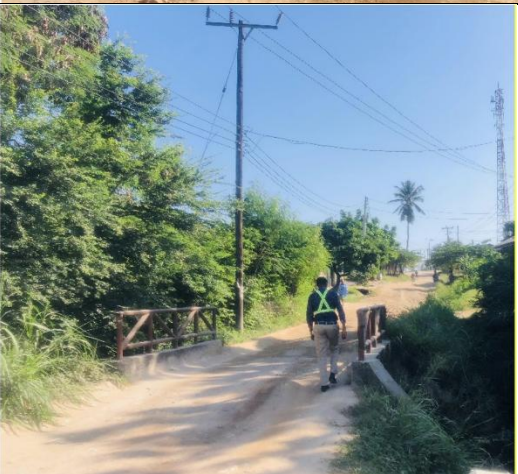
6.4.3.1 Damage or relocation of existing utility infrastructure and public services

Public utilities are critical to the local economy, providing the vital infrastructure that ensures the community has energy, clean water, and proper sanitation services. The ESIA studies existing utility infrastructure for the supply of electricity, communication, natural gas, and water, running along the road and some within the RoW. Also noted is the transport infrastructure, such as the railway track crossing the Banana - Msongola road (Table 6-6). These infrastructures may be partly or destroyed during construction. Relocation -destruction of the infrastructure will result in loss temporary loss of services and may lead to social, economic, and even health problems for served communities. Interruption of water and power might affect businesses that depend on these services for their operation. All potential stakeholders have been identified and consulted. Still, also, they will also be engaged during the project implementation in a manner that conforms to ESS10, and appropriate mitigation measures will be put in place to alleviate the impact.

Impact Assessment

It is expected that the DCC will lease with respective utility companies and either compensate or relocate the infrastructure in a manner that will reduce impacts to customers of the interrupted services. Therefore, the intensity of this impact will be *moderate*. The probability of the impact is certain since the utilities must be relocated before construction. The spread of the impact is considered *regional to national* (a large part of Dar and the region's services by TAZARA could be affected). The duration of the impact is long-term. Based on these assessments, the nature of the impact is Negative. Combined with the receptor vulnerability, the premeditation *significance is substantial* and so additional mitigation is required. With the application of a RAP developed for ESS 3 and adequate compensation, the impact could be reduced to a minor impact.

Table 6-6: Structures and properties that may require relocation during site clearance

Location	Description	Extemporary picture
Mbarakuda - Chang'ombe - Maji chumvi	DAWASA water supply pipeline (cast iron 8-inch pipe) trans-versing along the carriageway of the proposed Barakuda-Chang'ombe- Maji Chumvi road that will need to be relocated	
Mbarakuda - Chang'ombe - Maji chumvi	The existing bridge and electrical infrastructure will need to be replaced to accommodate the proposed road's design width.	
Banana-Kitunda-Kivule-Msongola road	The construction of the proposed project road will need to accommodate an existing section of the Railway crossing.	

(Source: UWP, 2023)

6.4.4 Impacts to Air Quality

6.4.4.1 Deterioration of air quality (due to dust and increased air emissions)

The mobilization of construction materials will increase traffic flow, which will, in turn, increase wheel-generated dust and windblown dust from the unpaved roads to the surrounding residences, especially when traveling on unpaved roads (most of the access roads to quarry and borrow pits are unpaved). Further, there will be an increase in exhaust emissions from trucks and vehicles operating to mobilize people and materials.

Dust emissions have visual impacts, deteriorate the hygienic conditions of the affected areas, and have health impacts on the respiratory systems.

Gaseous emissions, such as CO₂, impact climate change. Tanzania, a signatory to the Paris Agreement on Climate Change, must take all the necessary measures to control greenhouse gas emissions.

Impact Assessment

Actual emissions could not be established since the vehicles/truck's specifications are unknown at the moment. The intensity of this impact is considered to be *low*. The probability of the impact is certain since the hauling of construction materials is inevitable. The spread of the impact is considered *regional* since construction materials may come from the nearby Cost region. The duration of the impact is *short-term*. Based on these assessments, the nature of the impact is Negative. Combined with the receptor vulnerability, the premeditation *significance is moderate*, so additional mitigation is required. With the application of mitigation measures as per the requirements of ESS 3 (which requires the borrower to avoid or minimize project-related emissions of short and long-lived climate pollutants), the impact could be reduced to low impact.

6.4.5 Impacts on the Community Health and Safety

6.4.5.1 Increase Traffic and road accidents.

Mobilization and transportation of construction materials and equipment will increase traffic along the Banana - Kitunda (3.95km), Kivule Msongola Road (9.95km), Barakuda Changombe Majichumvi Road (3.27km), MajumbaSita – Segerea Road (3.31km), Migombani Road (1.93km) and Tabata Mawenzi – Kisiwani Road (2.12 km), Upanga CDB roads (4.63km), Kariakoo CDB roads (7.79km), Ilala CDB roads (8.55km), and Vingunguti roads(4.4KM). Such an increase has the potential to cause disturbance to other road users increase traffic jams along the road (s), and may also increase safety risks to the communities and other road users.

6.4.5.2 Increased noise pollution

The major sources of noise pollution in this project phase are expected from the operation of vehicles/equipment and machinery during the implementation of preliminary works. The size of the construction suggests that about 80 heavy-duty vehicles (at least two for each road) will be involved in preliminary works and transportation of construction materials. According to ICF (2009), the level of noise pollution from these sources is indicated in Table 6-7. Elevated noise levels may affect residents and may disrupt learning activities in schools located adjacent to the roads.

Table 6-7: Noise pollution levels from trucks

Technology (equipment, machinery)	Noise level
Trucks (transporting construction materials, equipment, and crew)	Trucks (56-80 dB)

Impacts Assessment

This impact is considered to be *negative*, cumulative, short-term, and low-intensity. The probability of the impact is definite. The spread of the impact is considered to be local. The duration of the impact is short-term (only during the demobilization phase). Combined with the receptor vulnerability, the premeditation *significance is low*.

6.4.6 Impacts on Land Resources

6.4.6.1 Risk of environmental pollution by demolition waste

During the mobilization phase, the entire project corridor will be cleared and leveled. This includes demolishing structures protruding into the demarked area for the area of the proposed road, which mostly includes parts of buildings and fencing walls. This activity will generate solid waste that will need to be managed prior to construction activities.

Impact Assessment

Only a few structures have been identified for demolition; thus, minimal demolition waste will be generated. Therefore, the intensity of this impact is considered to be *low*. The probability of the impact is *definite*. The spread of the impact is considered *local* (only at the construction sites). The duration of the impact is *short-term*. Based on these assessments, the nature of the impact is *Negative*. Combined with the receptor vulnerability, the premeditation *significance is low*. With the application of mitigation measures such as re-use and recycling (according to ESS3, the impact could be reduced to *low impact*.

6.5 Analysis of Potential Impacts associated with the Construction Phase

Positive Impacts

6.5.1 Impacts on the Socio-Economic Environment

6.5.1.1 *Job creation and increased income to local communities*

Direct and indirect job opportunities will emerge during the implementation of the proposed project. It has been estimated that *about 300 people* will be employed during the construction phase. It is expected that skilled and unskilled labor will be sourced from local people or from within Dar es Salaam. Those who will secure employment even in the short term will get a modest payment, which will help support their families for that time. Employment opportunities in the country are very scarce, especially for unskilled people. The presence of a construction force at the site will bring a good business opportunity to local food and refreshment vendors at or near the project sites. The vendors are expected to benefit from the sale of food and other merchandise to the construction workforce and, hence, raise their personal and household income.

Apart from the payment, it is also expected that utilization of local labor will enable the transfer of knowledge from the skilled workers and hence open the door to the possibility of acquiring employment in similar construction works elsewhere. This will also contribute to poverty reduction and improve general living standards. Still, this is in line with the ESS 2 & ESS4 in a manner that the labour force should have a contract and improve their working environment while also safeguarding their health and safety in accordance with the WB ESS2.

6.5.1.2 *Increased income to the primary supply of road construction materials*

During the construction phase, a range of construction materials, both natural (borrow pit, sand, aggregates, etc.) and synthetic ware (bitumen, cement, iron bars, etc.), will be widely needed for the realization of the project. The increased need for construction materials will increase income to primary suppliers of these materials. Not only the suppliers will benefit, but also the operators of the quarry and borrow pits, the haulers, and vendors of other services around the materials sites. Similarly, primary producers and suppliers of synthetic materials will have direct and indirect income benefits from selling their goods. This impact supports the DMDP II project to realize ESS2 on the importance of employment creation and income generation in the pursuit of poverty reduction and inclusive economic growth.

Impact assessment

The frequency of the Impacts of employment and business opportunities will be *moderate term* during the construction period. The likelihood of the impact is definite due to the definitely of labour requirements for the project. The spread of the impact would be to individuals located within the project Wards and from different parts of the country, so it is classed as National. Based on these assessments and embedded mitigation, the magnitude is assessed as Beneficial. Impact significance is therefore assessed as substantial.

Negative impacts

6.5.2 Impacts to the Community

6.5.2.1 *Temporary Impact on local businesses*

Road upgrading activities can disrupt local businesses along the road sections (but outside the road RoW), leading to temporary closures. The businesses directly adjacent and close proximity to the roads may need to close due to negative impacts from the construction activities, such as noise, dust emission, access blockage, etc.

6.5.2.2 *Loss of accessibility to adjacent properties*

During the construction phase, access to adjacent properties might be interrupted by the implementation of construction activities of the proposed project. This project impact will be mostly experienced along barakuda - Chang'ombe - Majichumvi and T/Mawenzi – Kisiwani, Upanga CDB, Kariakoo CDB, Ilala CDB, and Vingunguti roads. Roads will involve lots of cut and fill of embankments. Loss of access to private property might lead to temporary loss of income to adjacent business owners or just disturb the neighbors. In some cases, the neighbors might be unable to access their homes and business premises by cars and be forced to park away from homes and working premises.

6.5.2.3 Temporary Impact on local businesses adjacent to the roads

Road upgrading activities can disrupt local businesses along the road sections (but outside the road RoW), leading to temporary closures. The businesses directly adjacent and close proximity to the roads may need to close due to negative impacts from the construction activities, such as noise, dust emission, access blockage, etc.

Impact Assessment

The frequency of this impact will be *moderate* during the construction period. The likelihood of the impact is *substantial* since some of the roads have adequate space to provide alternative access. The spread of the impact would be local. Based on these assessments and embedded mitigation, the magnitude is assessed as negative. Impact significance is, therefore, assessed as *low*.

6.5.3 Impacts to Air Quality

6.5.3.1 Increased noise pollution

Noise impacts will occur from the use of construction equipment and machines, raised voices, and physical work such as hammering, drilling, and digging. Noise will emanate from the operation of excavators, wheel loaders, compactors, generators, motor graders, crawler loaders, crawler dozers, scrapers, dump trucks, backhoes, skid steers, haulage trucks, and drilling equipment, which are commonly used during project implementation.

Impact Assessment

Noise impacts will be cumulative. The frequency of these impacts will be *moderate* during the construction period. The likelihood of the impact is *definite* since the operations will certainly produce noise. The spread of noise impact would be to *local*. Based on these assessments and embedded mitigation, the magnitude is assessed as *negative*. Impact significance is therefore assessed as *low*.

6.5.3.2 Deterioration of air quality due to increased air emissions and dust

The excavation of topsoil in construction sites will generate dust that will vary according to the soil type and nature of the excavation. Dust will also be emitted from excavations and the operation of equipment and vehicles within the project sites and on borrow pit/quarry sites. Dust is strongly considered a source of respiratory disease. Dust can also impair visibility among vehicle drivers, cyclists, and pedestrians during the proposed facility's construction period.

Again, construction materials, such as cement, sand, stone aggregates, etc., will be brought from different sources within and outside Dar es Salaam city. The truck and earth-moving equipment will emit dust and exhaust fumes, which pollute the ambient air. Vehicular exhaust emissions mainly comprised of Carbon monoxide (CO), Oxides of Sulphur (SO_x), Oxides of Nitrogen (NO_x), Hydrocarbons (HC), and possibly Lead (Pb) from the operation of vehicles and construction equipment. Min impact is impairment of the local air quality, the extent of which will depend on quantities emitted, duration, and prevailing atmospheric conditions. Table 6.8 presents the emission factors of various construction equipment and vehicles, while Table 6.9 shows the approximate emissions.

Table 6.8: Emission factors of construction equipment and vehicles (ICF International, 2009)

Type	Qty.	Emission factors			
		CO- g/hp-hr	NOx- g/hp-hr	PM ₁₀ g/hp-hr	PM _{2.5} g/hp-hr
Excavator 97 CAT,320B(128h)	1	0.75	4.31	0.101	0.093
Wheel Loader Komatsu, WA180 (124hp)	1	0.94	4.67	0.087	0.88
Trucks Mitsubishi Fuso HD 125 PS	5	11.24	15.27	0.3338	0.3071
Motor grader CAT C9.3,149kW, 200hp)	1	0.75	4.31	0.101	0.093
Compactor Dynapac CA362 D 13ton	1	0.94	4.67	0.087	0.88

Table 6.9: Emissions from construction equipment and vehicles (ICF International, 2009)

Type	Total Emissions			
	CO (tons)	NOx (tons)	PM ₁₀ (tons)	PM _{2.5} (tons)

Excavator 97 CAT,320B(128h)	0.268	1.539	0.036	0.033
Wheel Loader Komatsu, WA180 (124hp)	0.597	2.965	0.055	0.051
Trucks Mitsubishi Fuso HD 125 PS	0.007	0.0095	0.002	0.0002
Motor grader CAT C9.3,149kW, 200hp)	0.597	2.965	0.055	0.051
Compactor Dynapac CA362 D 13ton	0.597	2.965	0.055	0.051

The details presented above suggest that the emissions may affect local air quality but will have no significant impact on global air quality issues. This is because, for example, mobilization of plant equipment and machinery will be an on-off event, requiring a very limited number of trucks. However, it should be noted that already, there are a number of vehicles plying on the city road that emit the same air pollutants. This impact is considered to be negative, cumulative, and short-term but of low significance.

Construction activities will lead to emissions emanating from fuel-powered equipment, such as vehicle engines and construction equipment. Exhaust contains pollutants, notably carbon dioxide (CO₂), plus small quantities of noxious gases such as nitrogen oxides (NO_x), Sulphur dioxides (SO_x), hydrocarbons, and particulate matter (PM). These greenhouse gases (GHGs) are known to interfere with the temperature regime and cause climate change effects.

Impact Assessment

Air pollution impacts will be cumulative. The frequency of these impacts will be moderate during the construction period. The likelihood of the impact is definite since the operations will certainly produce emissions. The spread of air pollution impacts could be global (i.e., GHGs). Based on these assessments and embedded mitigation, the magnitude is assessed as negative. Impact significance is, therefore, assessed as *moderate*.

6.5.4 Impacts on the Physical Structures

6.5.4.1 Risk of damage to private properties due to increased vibration levels

During the construction phase, project implementation activities like machinery operation and large blasts may produce ground vibrations that can damage nearby structures, either directly from wave propagation or indirectly through soil densification. Excessive vibrations in this phase are expected to be caused by the operation of heavy equipment like motor graders, crawler loaders, crawler dozers, scrapers, backhoes, and skid steers, which are commonly used during the project construction phase of road infrastructure.

Impacts Assessment

The frequency of vibration impacts will be *moderate* during the construction period. The likelihood of the impact is *unknown* (i.e., the strength of the adjacent structure is unknown). The spread of impacts will be local. Based on these assessments and embedded mitigation, the magnitude is assessed as negative. Impact significance is, therefore, assessed as *Low*.

6.5.5 Impacts on Land Resources

6.5.5.1 Loss of definite materials and land degradation at the quarry sites

Land degradation and diminishing of natural construction materials will be experienced during the construction phase. Poor regulation over the years has led to indiscriminate quarrying, resulting in severe land degradation as existing vegetation and topsoil are cleared, leading to loss of habitat and loss of the local flora and fauna, and, in some cases, loss of biodiversity (Musa, 2009). Further, poor and unplanned materials (especially aggregates) exploitation methods coupled with a lack of proper quarry management could collectively lead to serious land degradation of land (Darwish et al., 2011). Consequently, quarries could potentially disfigure the land where they are located as they collapse due to a lack of proper rehabilitation measures.

Impact assessment

The frequency of this impact will be *moderate* during the construction period. The likelihood of the impact is definite due to the certainty of construction materials requirements for the project. The spread of the impact would be regional

(sources of construction materials are located in the neighboring regions). Based on the assessment, the magnitude is assessed as *negative*. Without proper mitigations, the significance of the impacts is high. However, the application of mitigation measures (i.e., As provided for in the ESS3 and ESS6) could change the impact significance from high to low.

6.5.5.2 Increased pressure on Natural Resources

The operation of machines and equipment, construction activities, and the increased number of people in the project area will increase pressure on natural resources such as water, food, and energy. For example, construction activities will increase the demand for water. If water is drawn from available reservoirs, there is a risk of creating water scarcity in the project area.

Impact assessment

The frequency of this impact will be *moderate* during the construction period. The likelihood of the impact is *possible*. The spread of the impact would be local. The magnitude of the impact is assessed as *negative*. The significance of the impacts is *low*.

6.5.5.3 Increased water and soil pollution

No matter which construction method is used, still small-scale and short-term water pollution may result, especially at river crossings and swamps and during the construction of off-road drainage structures. Impacts can also result from accidental spillage of fuels and construction materials, which may pollute both water and the soil. Culvert construction may stir river-bed deposits into suspension. Though the large particles may settle quickly, the finer ones will increase the turbidity of surface water sources. The turbidity impacts may be short-term since the stream construction takes place within a few weeks. Roads surface drainage of Kitunda Kivule Msongola Road (9.95km), Barakuda- Chang'ombe Majichumvi Road (3.27km), Majumbasita – Segerea Road (3.31km), Migombani Road (1.93km) and Tabata Mawenzi – Kisiwani Road (2.12km), Upanga CDB roads (4.63km), Kariakoo CDB roads (7.79km), Ilala CDB roads (8.55km), and Vingunguti (4.4KM) road will drain pollutants-concentrated run-offs from the roads. Moreover, soil and groundwater pollution from accidental spillage of fuel or any other materials and chemicals associated with construction works is an undesirable possibility. Obviously, it is not possible to predict the location or type of spillage. Still, it is considered that any spillage to the soil will be local in nature, and remediation should not be difficult. Spillage to a water course is potentially very damaging, causing impacts on biodiversity and thus triggering the WB ESS 6 on biodiversity conservation.

During the implementation of the project, water and soil pollution may also be exaggerated by extreme weather events (precipitation) as a result of climate change. Being exposed to excavation works, both soil and groundwater will be susceptible to pollutants brought by stormwater runoff. Apart from potential challenges in compacting the subgrades of the proposed roads, excessive rain events have the potential to bring pollutants emanating from the project site to other adjacent areas. With the assistance of the consulting environmental experts, the proponent shall strive to account for the impacts of climate change on the proposed project and vice versa while adhering to the requirement of ESS3 on pollution prevention and management and ESS6 on Biodiversity protection.

Impact assessment

The frequency of impacts of land and water pollution is considered moderate, and its extent of spread is regional and medium-term during the construction phase. The probability of occurrence is definitely negative. The overall impact significance is considered moderate without mitigation measures, and when properly mitigated, its impact can be reduced to low.

6.5.5.4 Soil erosion and instability of slopes

During the construction phase of the sub-projects, the soil is often weakened and exposed to erosion agents. Construction works would accelerate erosion problems in most cut sections. Nevertheless, all cuts in the sloping grounds should be firmly refurbished and provided with vegetation cover to reduce the effect of soil erosion.

Prolonged drought (an impact of climate change) has the potential to challenge the establishment of vegetation to check soil erosion along the road embankments. Watering erosion-checking vegetation may even put pressure on the

city's already stressed water supply sources. However, embankment stabilization will be considered in the road design to accommodate potential climate change impacts during the construction and operation phase of the project.

Impact assessment

Not many of the proposed roads are prone to soil erosion so that this impact could be of higher significance for the Migombani road only. Overall, the frequency of the impact is considered low, while its extent of spread is local but could be long-term, lasting after the construction phase. The probability of occurrence is definitely low, and it has a negative impact. The overall impact significance is considered low.

6.5.5.5 Pollution by solid waste and hazardous waste material generation

The construction industry includes massive works that produce a significant amount of waste. Studies have indicated that construction waste can be as high as 10 to 15% of the materials utilized for construction work. Construction activities will produce construction waste resulting from defective materials, packaging waste, and used oils and lubricants. This impact can potentially be significant if the waste is not managed properly or left on construction sites poorly stored where the wind can blow the waste into nearby neighborhoods. Storing piles of construction waste in areas that are visible to the public will constitute a nuisance for the residents. The common sources of construction waste generation are indicated in Table 6.10 (Lau, H. et al., 2008). As can be noted and in accordance with the requirements of the ESS3, most of the construction solid wastes are recyclable and shall thus be recycled to reduce the significance of the impact.

Table 6-10: Common sources of construction waste generation

Waste type	Description	Source
Leftovers of packaging materials	Boxes	Lubricants carrier boxes
	Plastics bags	Cement and bitumen storage bags
	Raps	Security of construction goods
	Ropes	Attachment of goods
Concrete	Roadside drains	Footings, piling
	Maintenance hole chambers	Concrete slabs
Metal	Drains and gutters	Drainage works
	Reinforcement bar	Reinforcement fixing
	Wire mesh	Reinforcement fixing
	Aluminium frames	Window, false ceiling
Bricks	Clay brick	Wall, fencing works, gutters
	Cement brick	Wall, fencing works, partition walling
	Cinder block	Wall, fencing works
Others	Packaging	Cement packaging, plastics, cardboard, timber pallets
	Gypsum cement board	False ceiling
	Plaster	Finishing works
	PVC Pipe	Plumbing works

(Source: Lau, H. et al., 2008)

Sol of the adverse impacts of the construction waste include the following:

- Some construction wastes are difficult to dispose of and have no residual value (they cannot be reused or recycled). This impacts waste management costs in terms of transportation, land required for disposal, and costs for establishing suitable disposal sites.
- When exposed to a moist environment, some construction wastes can release hazardous components such as lead and other metal ions (e.g., Cu, Fe, Zn, etc.), which can contaminate land and water resources. Such contamination can potentially enter the food chain and cause health effects to humans and other organisms.

Food Waste: Further impacts could also arise from improper disposal of food waste, packaging materials, and human waste generated onsite by the construction workers. Hazardous disposal of food waste will attract scavenged birds, insects, and rodents, which are disease vectors. Human wastes carry infectious pathogens. Improper discharge or open defecation on the environment will contaminate soils, and pathogens can be carried by runoff to receiving water bodies, where they will contaminate water resources. Contamination of water resources and foods by pathogens can result in an eruption of diseases such as cholera, typhoid, dysentery, and diarrhea.

Impacts Assessment

An assessment of the impacts of construction waste shows that the intensity of the impact is high due to the expected complex nature of construction waste. The consequence of the impact will be felt at the local level and for a moderate duration. Its probability of occurrence is definite since the nature of construction works cannot be without generating residues. The nature of the impact is negative. The impact is considered to be of moderate significance if unmitigated and of minor significance after applying mitigation measures.

6.5.5.6 Impacts of liquid waste (i.e., human waste and spent water)

Human wastes: Faeces and urine are rich in pathogens, bacteria, and nutrients. If not properly disposed of can contaminate food (via flies). When deposited in open land, it can contaminate soils and surface runoff, which will eventually contaminate surface water and groundwater. Exposure to contaminated food or water can result in many health problems, including disease outbreaks (i.e., diarrhea, typhoid, and cholera). Further, if it gets disposed of in receiving water bodies without treatment, it can cause the following:

- ✓ Since it is rich in nutrients, it could cause eutrophication of receiving water bodies.
- ✓ Oils and grease in sullage, if not separated, can cause toxicity in the aquatic environment;
- ✓ Chemicals in soap detergents can cause toxicity in soil and aquatic organisms.

The lack of public toilets in the project areas could accelerate the problem of human waste. It will be challenging for workers operating away from the campsite to access public toilets. Experience shows that if toilets are not easily accessible, the construction crew tends to use hidden places near the project. Causing nuisance and contamination of vegetables and unprotected waste supply pipers. These, in turn, could contaminate the food chain and water supplies, causing serious health problems.

Spent water: Spent water could be highly alkaline as it contains cement hydration products. Release into the environment can alter the pH of soils and water resources, which will impact flora and fauna. If released into agricultural land, it has the potential to reduce soil productivity.

Impacts Assessment

The intensity of the impacts of improper human waste disposal could be high due to its chances of directly affecting human health. The consequence of the impact will be felt at the local level and for a moderate period. Its probability of occurrence is possible. The nature of the impact is negative. The impact is considered to be of high significance if unmitigated and of minor significance after applying mitigation measures.

6.5.5.7 Risk of land and water source pollution by hazardous wastes

No matter which construction method is used, still small-scale and short-term water pollution may occur, especially at river crossings and swamps and during the construction of off-road drainage structures. Impacts can also occur from accidental spillage of fuels (hydrocarbons) and hazardous construction materials, which may pollute both water and soil. Culvert construction may stir riverbed deposits into suspension. Though the large particles may settle quickly, the finer ones will increase the turbidity of surface water sources. The turbidity impacts may be short-term since the stream construction takes place within a few weeks.

Road surface drainage and the storm drains from the proposed roads will drain pollutants and concentrated run-offs from its urbanized catchment areas into receiving water bodies. Moreover, soil and groundwater pollution from accidental spillage of hazardous wastes (fuel or any other materials and chemicals) associated with construction works is an undesirable possibility. Obviously, it is not possible to predict the location or type of spillage. Still, it is considered

that any spillage to soil will be local, and remediation should not be difficult. Spillage to watercourses is potentially very damaging, causing impacts on humans, fish, and riverine vegetation.

Impacts Assessment

The intensity of the impact is moderate. The consequence of the impact will be felt at the local level and for a moderate. Its probability of occurrence is possible. The nature of the impact is negative. The impact is considered to be of high significance if unmitigated and of low significance after applying mitigation measures.

6.5.6 Impacts on the Community Health and Safety

6.5.6.1 Job-seekers influx

In line with the provisions of ESS4, in formal construction development, project activities, equipment, and infrastructure can increase community exposure to risks and impacts. The construction of the proposed DMDP phase II roads has the potential to attract an influx of job-seekers and opportunistic businesses along the project area due to the availability of employment opportunities as well as opportunities for other income-generating activities. The influx of people may bring communicable diseases to the project area, including sexually transmitted diseases (STDs), or the incoming workers may be exposed to diseases to which they have low resistance. This can result in an additional burden on local health resources. Local health and rescue facilities in the DCC may also be overwhelmed and/or ill-equipped to address the industrial accidents that can occur in a large construction site.

The influx of job seekers is often associated with social impacts such as social conflicts, an increase in crime and feelings of insecurity, a change in social dynamics, pressure on local public services, GBV, etc.

6.5.6.2 Workers-community negative interactions

Despite the fact that the project design has not specified the need for campsites, the operation of the campsites may increase the prevalence of HIV/AIDS and the COVID-19 pandemic due to increased mobility, migration, and interaction of people, communities, and nations at large. During stakeholder consultations, stakeholders acknowledged the existence of the problem of HIV/AIDS. Construction activities are expected to attract many people to the area, which is likely to increase the risks of transmission of communicable diseases such as HIV/AIDS and other STDs, as well as COVID-19. Increased spread of transmission of HIV/AIDS and COVID-19 during mobilization is one big challenge that has to be taken into consideration.

Impact assessment

The extent of this impact would be *high* during the project construction as the potential risk of disease transmission would be present continuously during construction. The probability of the impact is *highly probable rather than certain*. The spread of the impact would be local, to individuals located close to the project. The duration of the impact is *long-term*, as it would last for the duration of construction and beyond. Based on these assessments, the magnitude is assessed as substantial. Impact significance is therefore assessed as negative.

6.5.6.3 Potential increase in road accidents and other community safety risks

During the implementation of the proposed road construction, there is a potential increase in community safety risks in terms of road accidents, falling into the excavations, and other ill-health effects emanating from construction-related pollutants. Unless occupational health and safety are keenly taken care of, excavation and construction work exposes the laborers and the general public to airborne diseases such as bronchial and other respiratory tract diseases. Issues related to but not limited to lack of protective gear or poor use of the same during construction might result in loss of lives or injuries. The incidence rate of waterborne diseases such as cholera and diarrhea will increase if there are no proper sanitation facilities in the construction area.

Similar to all other formal construction projects in towns, the construction of the proposed DMDP phase II roads has the potential to increase road accidents because all the project roads will be constructed while in use. Both the construction activities and the users of these roads will be exposed to a potential increase in road-related accidents. The contractor shall be encouraged to prepare a traffic management plan before the commencement of the proposed project.

Impacts Assessment

The intensity of the impact is moderate, of local scale, and the duration is for a medium term. Its probability of occurrence is possible. The nature of the impact is negative. The impact is considered to be moderate, if unmitigated, and of minor significance after applying mitigation measures.

6.5.6.4 Increased risks to community health (i.e., STI, COVID, and HIV/AIDS)

Similar to other development investments, project activities, equipment, and infrastructure can increase community exposure to risks and impacts (ESS 4). Since communities in the project area are already subjected to impacts of climate change (e.g., flooding and stagnation of water) may experience an acceleration or intensification of impacts due to project activities. The major health risk from the envisioned project is the possibility of acceleration of the spread of social illnesses, which is always there when there is an influx and or intermixing of people. Unhealthy social interaction might exist, as fuelled by many factors, including economic benefits (i.e., from the construction force to the local community). Unhealthy social interaction might increase the incidence of diseases such as STIs, COVID-19, and HIV/AIDS.

Impact analysis

The intensity, local scale, and duration of the impact are moderate. Its probability of occurrence is definitely high. The nature of the impact is negative. The impact is considered to be moderate if unmitigated and of low significance after applying mitigation measures.

6.5.7 Impact on Human Rights**6.5.7.1 Labour and Working Conditions**

The WB ESS2 requires the DCC to promote safety and health at work; promote the fair treatment, non-discrimination, and equal opportunity of project workers; protect project workers, with emphasis on vulnerable workers; prevent the use of all forms of forced labor and child labor; support the principles of freedom of association and collective bargaining of project workers in a manner consistent with national law; and provide project workers with accessible means to raise workplace grievances. In case any of the mentioned is bridged, the project will be associated with impacts on human rights. To safeguard Workers' rights, all the project workers will be provided with clear information and understandable documentation regarding their terms and conditions of employment.

6.5.7.2 Child Labor and Abuse

Although not very common in urban areas of Dar es Salaam, there is a risk of children and students from low-income families in the project area being tempted to participate direct or indirectly in construction works. For example, kids may be involved in activities such as petty trading and food vending. This situation will potentially increase school dropouts and endanger the children's mental and physical health. The exposure of children may result in their forced involvement in sexual relationships with construction workers. Cumulatively, this will affect education attainment, especially for girls who are mostly vulnerable, exacerbate unwanted and/or early pregnancies, etc. To prevent child labor, children under the minimum age, as established in accordance with Tanzania Employment and Labour Relations 2004 and ESS2, will not be employed.

6.5.7.3 Increased cases of occupational and health risks

Road construction workers may be exposed to various occupational hazards, creating threats to their health and safety. Unless occupational health and safety are keenly taken care of, excavation and construction works expose the laborers and the general public to effects from running machines, ergonomic hazards, and exposure to dust, high noise, vibration levels, etc. As a result, airborne diseases such as bronchial and other respiratory tract diseases might occur. Issues related but not limited to lack of protective gear or poor use of the same during construction may result in construction-related accidents, which may be fatal, leaving the injured person unable to perform their work in the future.

Occupational health and safety issues associated with the construction and operation of roads primarily include the following:

- Physical hazards: principally from operating machinery and moving vehicles but also from working at elevation on bridges (e.g., during the construction of the Msimbazi bridge at Segerea for Majumbasita-Segerea road). Other physical hazards (e.g., exposure to weather elements, noise, work in confined spaces, trenching, contact with overhead power lines, falls from machinery or structures, and risk of falling objects) may also prevail.
- Chemical hazards: Road construction activities may be principally associated with exposure to dust during construction and paving activities, exhaust emissions from heavy equipment and motor vehicles during all construction and maintenance activities, and fumes (during asphalt laying).
- Noise: Construction personnel may be potentially exposed to extremely high levels of noise from heavy equipment operation and from working in proximity to vehicular traffic.

Most of the above-predicted impacts result from Non-adherence to Health and safety standards as described in the OHS regulations (2003), the WBG Environmental Health and Safety (EHS) guidelines, and good engineering practice. Tables 6-11 provide a summary.

Table 6-11: Summary of potential impacts to workers

Sub-project aspect/activity	Potential Risk
Exposure to dust, noise	Respiratory diseases/hearing impairment/disturbances /nuisance and discomfort
Accidents while working with heavy machinery and equipment	Minor and serious injuries, disability, and even death
Exposure to sun/heat	Sickness and ill-health (including skin cancer)
Negligence due to fatigue/loss of morale	Loss of production time

Impact Analysis

The magnitude of the impact is *moderate*, with a local scale and *moderate-term* duration during the construction phase. The probability of occurrence is definite since some of the exposures cannot be avoided as they are part and parcel of the process. Therefore, the significance of this impact is high. However, the application of mitigation measures could lower the significance rate to *low*.

6.5.7.4 Risk of increased GBV

Gender-based violence (GBV) is any assault against a person based on their gender. It can include sexual, physical, mental, and economic harm inflicted in public or in private. During the construction phase, GBV can take many forms, such as forced prostitution, sexual violence, sexual harassment, child abuse (child labor), and sexual bribery, and both women and men can experience it; however, the majority of victims in records are women and girls.

Based on the experiences gained from the rise in incidences of GBV from other road construction projects, community members expressed their concerns that during road construction, more people will come to work in the project area and hence may likely fuel gender-based violence in their communities as a result of interactions of people from different cultural backgrounds. They call upon the contractor to emphasize that employees of the project respect human dignity by abiding by traditional customs and norms instead of being the cause of fueling GBV-related issues in the project area.

Impacts Assessment

The intensity of the impact on Human health during the construction phase is moderate, local scale, and moderate-term duration. The probability of occurrence is likely. The nature of the impact is negative. The impact is considered to be high if unmitigated and of low significance after applying mitigation measures.

6.5.8 Impacts on cultural sites

6.5.8.1 Chance finds

The proposed project involves extensive excavations, which may involve possibilities for uncovering cultural site resources (particularly archaeological) with community or national interest. In case of poor handling of a chance find,

excavation during the implementation of the proposed project may negatively affect surface or sub-surface artifacts, e.g., stones, bones, pottery, metalwork, iron slag, enclosures, etc., it may also impact individual burials and/or graveyards that are currently unseen from the surface. To protect such cultural properties, procedures will include cessation of work until the significance of a “find” has been determined by the appropriate authorities and local inhabitants and until the fitting treatment of the site has been determined and carried out.

Impact analysis

The intensity of the impact is low, local scale, and short-term. Its probability of occurrence is *unknown*. The nature of the impact is *negative*. The impact is considered to be *low*.

6.6 Potential Impacts Associated with the Operation and Maintenance Phase

Positive Impacts

The DMDP II investments are usually expected to yield benefits that will help eradicate poverty and improve the living standards of beneficiary communities in the DCC. The benefits could be enhanced by the Government (through DCC) setting mechanisms to sustain the derived benefits, especially through maintenance. The assessment of the associated impact is detailed hereunder.

6.6.1 Impacts on the Socio-Economic Environment

6.6.1.1 Job creating and increasing income to local communities

The new DMDP phase II roads will create employment opportunities for residents, such as grass cutting, cleaning drainage culverts, bus conductors, and shop attendants. The new roads will also create a new market for local produce. The city will also benefit from taxes collected from parking charges and businesses. In general, the construction of the roads in the area will stimulate the economic growth of Dar es Salaam City Council as a whole.

6.6.1.2 Improved Transportation Services

Roads are the predominant mode of transport in African countries and represent a critical element for economic development. Proposed road development is a major factor in reducing poverty and economic development. New roads impact access to markets, schools, health facilities, and transport charges.

The DMDP Phase II roads were selected in such a way that traffic congestion in the city is reduced after the completion of their improvement. One of the main causes of traffic congestion is the presence of potholes on the existing roads. It is expected that the improvement will reduce travel time around the city and, consequently, reduce travel costs and pollution to the environment. The benefits of the improved roads will be experienced both at the core impact zone and at the zone of influence.

6.6.1.3 Improved stormwater draining

Surface and subsurface drainage facilities are common design features for road dressing. The improvement of roadside stormwater drains will facilitate the collection of stormwater from the project areas and discharge it safely into the receiving environment. However, the concentration of roadside stormwater in drainage channels sometimes causes erosion challenges downstream, especially under conditions where the receiving water environment is not considered in road drainage design. Sustainable improvement of stormwater drainage shall be designed in line with mitigating floods that can destroy properties, especially houses, and other infrastructure such as roads, water supply, and sewerage infrastructure. Improved stormwater drainage will also improve the public health of communities living along the project corridor. Furthermore, it will help improve safety, particularly during the rainy season, by effectively draining storm water away and reducing maintenance costs by minimizing the occurrence of stormwater-related damage.

6.6.1.4 Reduction of traffic congestion in the city

The DMDP phase II roads are expected to reduce traffic congestion on the major roads currently experiencing frequent traffic jams during peak hours. The roads will provide breather routes of similar standard. Severe congestion is no longer confined to peak hours (7:00-9:00 am and 16:30-19:30) and is now a day-long experience on most arterial roads. A lack of roads and connections between existing roads coupled with an ever-increasing number of vehicles adds to the deteriorating traffic congestion problems. This project shall ease this Problem.

6.6.1.5 Reduced vehicle operation costs

The cost of operating the vehicles shall go down due to savings on fuel, tires, oil, spare parts consumption, vehicle depreciation and utilization, etc. At present vehicle owners incur high operating costs such as high fuel consumption and frequent need to replace parts such as the suspension system due to the condition of the road. Moreover, during the wet season, the road is not freely passable; therefore, sometimes fuel consumption becomes high. There will be an increase in the number of vehicles passing the project roads, thus lowering transport costs.

6.6.1.6 Improved community life, services, and status

Several social-related advantages will accrue from the project. Improved transportation will enable easy delivery of drugs/medicines to health care facilities. The proposed roads will facilitate patients' faster medical attention (especially in emergency cases) in the streets along the subprojects. Health workers and teachers will enjoy easier access to work than before. The roads will facilitate easy access to health centers, and thus, the lives of some patients will be saved. Bitumen roads will reduce the current level of dust experienced in the subprojects. In so doing, the quality of settlement will increase, and the health of people living in the project areas will be protected.

6.6.1.7 Increased property and land values along the project area

Improved infrastructure will have a back-to-back impact along and around the project zone. Road improvement shall increase the value and status of the area. Experience shows that house rents often increase with improved infrastructure in the area. These effects will be felt for a long period to come and will be beneficial to property owners. On the other hand, the tenants will see such improvements as a negative impact, mainly because of the increased rents. Looking at the large society, the increased property value is seen to be more beneficial to the general community.

6.6.1.8 Induced development and Urban sprawl (local economic growth)

Apart from the fact that the proposed projects are located in already urbanized areas, upon completion, the roads will play an important role in stimulating more development and growth of the local economy. As can be seen in other completed road projects in the city, road infrastructure attracts more development. It creates activity centers (shops and other businesses) in the vicinity of the roads. The relationship between road infrastructure development and land use changes around the road infrastructure is a crucial project impact to be explored. Currently, many businesses and centers along the proposed Kitunda-Kivule- Msongola, Barakuda -Chang'ombe -Majichumvi, Majumbasita-Segerea and Tabata Mawenzi-Kisiwani, Upanga CDB, Kariakoo CDB, Ilala CDB, and Vingunguti roads, are said not operating to their full potential due to deficiency of roadside drainage infrastructure (which cause ponding of runoff), absence of reliable access roads and risky bridges especially for heavy trucks. Upon implementation of the proposed projects, more development and growth of the local economy are expected to increase.

6.6.1.9 Increased income generation through the operation and maintenance of roads

Operation and maintenance (O & M) are key for the trafficability and prolonged lifespan of roads. Road operation is a routine work performed to upkeep pavement, shoulders and other designed facilities provided for the road to meet its objectives and security of users. Maintenance refers to all efforts meant to keep the roads nearly as possible in their constructed conditions under normal conditions of traffic and forces of nature. Operation and maintenance are essential to getting optimum service from the road pavement during its life period. Both operation and maintenance activities require a labor force throughout the road design period (both skilled and unskilled). It is expected that local communities living in the project area will benefit from the proposed project in terms of increased income associated with the O & M of the envisioned roads.

Negative Impacts

6.6.2 Impacts on the Physical Environment

6.6.2.1 Landscape modification and increase of impervious surfaces

In a better way, the DMDP Phase II Road projects will make changes to the landscape. Apart from the fact that some of the project roads are currently in use, the surfaces of such roads can allow a certain amount of infiltration during the rainy season. Paving the roads will increase the fraction of impervious surfaces in the city. Traversing a total length of about 66.41km, the proposed construction of roads in DMDP phase II is going to increase *540,000 m² of impervious surfaces*, equivalent to 75 football pitches.

An increased fraction of impervious surfaces will have implications in surface runoff build-up, will also contribute to reducing runoff infiltration, and minimize evaporation; in addition, this fraction of impervious surfaces will eventually influence and modify the city microclimate in terms of increase in temperature. The landscape modification will be associated with land take where necessary for road widening and cut and fill sections to improve both horizontal and vertical alignments. These are permanent features, as it is highly improbable that any land taken or earthworks constructed for the sub-projects will ever be returned or reinstated.

Impact Analysis

The magnitude of the impact is *moderate*, with a local scale and *long* duration throughout the project's life. Its occurrence is probably possible, and therefore, its significance is moderate. However, the application of mitigation measures could lower the significance rate to *low*.

6.6.2.2 Increased air quality deterioration (noise levels and emissions) and land pollution

The operation of vehicles and trucks on the constructed roads will increase noise and exhaust emissions and thus deteriorate air quality. Oil spills along the roads could also cause land pollution. The availability of good roads will minimize vehicle operations costs. This condition may eventually attract an influx of more vehicles using the routes, thus resulting in increased emissions of greenhouse gases and other pollutants. In such circumstances, the proposed investment will contribute negatively to the primary causes of climate change.

Additionally, noise is one of the most obvious negative impacts of daily road use. The discomfort caused by noise includes auditory fatigue and temporary lessening of hearing ability. However, perceived noise is related to background noise level, so a new facility in quiet areas or noisy trucks at night is often perceived as worse than higher levels of noise in a busy area during the work day. Nevertheless, the magnitude of the pollution is generally considered to be very low, except for the effect of exhaust fumes on air quality, which is considered to be significant if no maintenance program is installed. Under a good maintenance schedule, traffic exhaust emissions will be intermittent, and atmospheric dispersal of exhaust emissions will maintain the air quality. However, a concerted effort to check engine performance is needed so as to deter vehicles not road-worthy from using the road.

Impact Analysis

The magnitude of the impact is *moderate*, with a local scale and *long* duration throughout the project's life. Its occurrence is probably possible, and therefore, its significance is moderate. However, the application of mitigation measures could lower the significance rate to *low*.

6.6.2.3 Interference with local hydrology

The construction of roads, together with the improvement of drainage channels, will result in a change in the drainage patterns of the site. As highlighted earlier, the proposed development will increase the impervious surfaces, limiting water infiltration into the ground, altering the primary hydrology in terms of increased volume and speed of stormwater runoff, and emergency new drainage routes. Interference with local hydrology may have negative environmental and social impacts, such as floods and excessive soil erosion along the road surface and other adjoining areas. Still, it may also affect water resources and the ecosystem. The effects on water resources might lead to water shortage in the area, especially during dry seasons. Other negative hydrological and drainage impacts cannot be foreseen but may emerge during the implementation or operation phase of the project. Another main impact associated with the provision of road drainage channels is the blocking of shortcut access paths to residences for houses located along the road.

Impact Analysis

The magnitude of the impact is *low*, with a local scale and *long* duration throughout the project's life. The probability of its occurrence is definitely low, and therefore, its significance is *low*.

6.6.2.4 Impacts associated with poor management of roads

Upon poor operation and maintenance of road infrastructure, waste accumulation into drainage channels may block to cause floods around the project influence areas. Flood waters, in addition to improper maintenance of green structures (grass and trees), may even foster mosquito breeding sites and rodent hiding areas, respectively. The absence and inadequate management of security lights, coupled with the mismanagement mentioned above of road infrastructure, has the potential to threaten public safety.

Impact Analysis

The magnitude of the impact is *moderate*, with a local scale and *long* duration throughout the project's life. Its occurrence is probably possible, and therefore, its significance is moderate. However, the application of mitigation measures could lower the significance rate to *low*.

6.6.3 Impacts on Community, Health and Safety

6.6.3.1 Increased road accidents

Road accident-related deaths, injuries, and damage to property are the most tangible negative impacts on the community environment and may be reduced or increased as a result of road projects. The project roads transverse wards, and the effects the road causes on safety in these settlements are dependent on location. Increased traffic and speed driving will result in unnecessary road accidents to livestock and people, especially school children and older adults. The main causes of accidents are poor road conditions due to lack of maintenance, reckless driving, defective vehicles, drunkenness, poor road facilities for pedestrians and cyclists, and unqualified drivers.

Vehicles traveling at increased speeds will make it difficult for road users to cross the road, particularly children and older adults, who will be at risk of accidents.

Impact Analysis

The magnitude of the Impact is considered moderate. It is of local scale and long duration throughout the project life. The likelihood of impacts is possible with high exposure. This significance of the impact is therefore considered Moderate.

6.6.3.2 Increased level of noise annoyance/disturbance

The operation of the roads will increase the number of vehicles on the roads and thus increase noise levels along the projects. Baseline conditions indicate that there is a significantly high number of schools (nursery, primary, and secondary schools, Segerea Seminary, and others), health centers, and religious places located just adjacent to the project roads, i.e. along Banana -Msongola, Majumbasita – Segerea, Barakuda - Changombe Majichumvi, Tabata Mawenzi Kisiwani, Migombani and Upanga CDB, Kariakoo CDB, Ilala CDB, and Vingunguti roads. Traffic noise will be a significant nuisance to these sensitive receptors and has the risk of affecting school children's learning ability.

Impact Analysis

The magnitude of the Impact is considered moderate. It is of a local scale and long duration throughout the project life. The likelihood of impacts is definite, with a high exposure. This significance of the impact is, therefore, considered Moderate.

6.7 Potential impacts associated with the Decommissioning Phase

6.7.1 Impacts on the quality of air

6.7.1.1 Dust and Noise Pollution

The demolition activities for the remained part (foundation structure) shall be accompanied by the emission of much dust since the demolition works are expected to be carried out using conventional methods, such as mechanical breakers and jackhammers. However, alternative methods of demolition, including explosive techniques, can be used.

Impact Analysis

The magnitude of the Impact is considered low, as it is local scale and short duration. The likelihood of impacts is possible with low exposure, so this significance of the impact is therefore considered low.

6.8 Climate Change Risk Vulnerability Assessment for DMDP 2 Roads

Climate hazards refer to weather events that are exogenous to the transport systems and their consequences on the project area. They are characterized by intensity, a spatial probability of occurrence, and a probability of occurrence in time. Risk analysis refers to the cross-referencing of climate hazards, the physical or functional vulnerability of the infrastructure and the issues, and the comparative analysis of the physical and functional criticality.

6.8.1 Risk Assessment Methodology

This subsection presents the general methodological approach to risk analysis. Two aspects of this approach were used:

- "Functional" criticality, i.e., the transport services affected by climate hazards. The failure or breakdown of an individual system, in particular, due to an extreme climate hazard, impacts the level of service offered by the transport system and, therefore, the maintenance of the network's functions, even in a degraded situation. This analysis, which links these issues to the functional vulnerability of transport networks, is referred to as the analysis of functional criticality.
- "Physical" criticality, i.e., the physical units that make up the transport network affected by the factors. When climate hazards impact individual transport systems, which are more or less physically vulnerable, depending on the characteristics of their components, their strength, their behavior, etc., this analysis, which cross-references climate hazards and the physical vulnerability of individual transport systems, is hereafter referred to as an analysis of physical criticality. (Claire Galiana, 2015).

6.8.2 Methodological Approach to Risk Analysis

From a methodological perspective,

- Physical criticality was analyzed first. In other words, determination of the impact of each climate hazard on the proposed road and its components, according to its characteristics and, in particular, its physical vulnerability, in order to determine how it is liable to suffer serious damage. Then, examine its failure and proceed with an analysis of the functional criticality of the road. In other words, it implies consideration of how the functionalities of the roads are affected by the failure of one or more roads;
- Start with an analysis of the functional criticality. In other words, determining to what extent the proposed road failure would be costly in terms of functionality by comparing its importance with the characteristics of the transport network within Dar es Salaam City Council. Then, conduct a physical criticality analysis by comparing the climate hazards and the physical vulnerability of the proposed road in order to see whether its failure would be costly and effectively liable to break down when exposed to different climate hazards.

The comparison of the physical and functional criticality analyses finally leads to the risk analysis.

6.8.3 Identification of Climate Hazards

To assess the physical and functional criticality of the proposed road upgrading project for Banana Msongola Road, Tabata Roads, Kiwalani Community Roads, Upanga CDB Roads, Kariakoo CDB Roads, Ilala CDB Roads, and Vingunguti Roads, it was first necessary to understand the climate hazards impacting the project area, their expected evolution in terms of climate change, and their potential impacts on the road network. Then, these climate hazards must be characterized, and their probability of impacting the road network must be assessed and rated.

Table 6-12: Climatic Extremes and the Corresponding Climate Hazards

Climate variable	Selected Climate Changes	
	Tendencies	Climate Hazards
Temperature	Temperatures have risen by about 1.0°C since 1960, an average of 0.23°C per decade. (USAID)	Increase in periods of drought
	An average increase of 1.0-2.7°C in annual temperatures by the 2060s and of 1.5-4.5°C by the 2090s.	Rise in temperatures

Climate variable	Selected Climate Changes	
	Historical data shows remarkable changes in Dar es Salaam's climate from 1980 to 2008. The average temperature has increased by more than 0.5°C in both the first and second seasons, with remarkable annual variations, particularly during the second season. The number of days with a maximum temperature above 35°C has significantly increased in the first season and slightly decreased in the second season. Both seasons show an increase in heat stress days, and drought.	Increase in the number of days of a heat wave.
Precipitation	Annual rainfall has decreased at an average rate of 3.3 % per decade.	Increase in the extreme values and the number of days of precipitation.
	Precipitation patterns have become more unpredictable, with an increase in the amount of precipitation falling in isolated events.	
	Projected changes in annual precipitation by the 2060s range from a decrease of 1 percent to an increase of 18% from the 1970-99 average.	Floods
	A larger percentage of precipitation is anticipated to fall in heavy rainfall events.	
	Precipitation in Dar es Salaam has remained relatively unchanged in the first season and slightly increased in the second. However, annual averages vary remarkably.	
Wind	Changes in wind systems	Changes in violent wind systems
Extreme events	As the climate continues to warm, the difference between the temperature near the surface of the Earth and the temperature higher up in the atmosphere is likely to decrease as the atmosphere continues to warm. As this vertical gradient weakens, fewer tropical cyclones will likely form.	Changes in the cyclonic system

6.8.4 Characterization of Climate Hazards

Since climate hazards in the project area that could have a significant impact on the road network have been identified, it is necessary to characterize them in the present and the future and, therefore, to define climatic scenarios. In this way, their probability of occurrence, which is essential for the analysis of physical criticality, can be assessed. Climate hazard is characterized by:

- **An Intensity:** The intensity expresses the quantification of an event. It can be measured or estimated. In practice, thresholds of the classes of weather phenomena are used – rain, wind, heat, etc.;
- **Factors of tendency or susceptibility condition a Spatial occurrence. For example, the spatial extension of a climate hazard can be highly variable, from very local (a few km²) to national, and very difficult to estimate.**
- **The Temporal Occurrence of the Climate Hazard:** instant and duration. The temporal occurrence can be estimated qualitatively (negligible, low, high) or quantitatively by recurrence intervals (e.g., decennial to centennial). The duration of the phenomenon must also be taken into consideration. The duration can vary between a matter of hours, days, weeks or months. The rating of Climate Hazards is presented in Table 6-13.

Table 6-13: Climate Hazards Rating Scale

Class	Category Frequency	Description	Probability of occurrence by hours of service
4	Likely	The event is liable to occur several times in the lifespan of the project.	$> 10^{-5}$
3	Rare	The event is liable to occur once in the lifespan of the project.	$> 10^{-5} \rightarrow 10^{-7}$
2	Unlikely	The event is highly unlikely, but the risk of its occurrence in the lifespan of the project is not zero.	$> 10^{-7} - > 10^{-9}$
1	Extremely unlikely	The event is so unlikely that the risk of its occurrence during the project's lifespan is considered to be zero.	$< 10^{-9}$

Table 6-14: Characterization and the Ratings of the Selected Climate Hazards

Selected Climate Hazards				
	Rating	1	2	3
Climate Hazard		Floods	Heatwave	Cyclones & Storms
Characteristics				
	Intensity	Fluvial	Extreme	Tropical Depression
	Spatial Occurrence	Local	Local	Local
	Temporal Occurrence	moderate	low	Low
Rating				
	Likely	yes		yes
	Rare			
	Unlikely		yes	
	Extremely unlikely			

Physical Vulnerability Assessment: This is considered as the sensitivity of the proposed road to a particular climate hazard or the amplitude of the damage caused by the occurrence of this climate hazard. It should be understood that the proposed road can be vulnerable to one climate hazard but robust and resilient to others (Table 6-15)

Table 6-15: Potential Physical Vulnerability to the Road Project

Road Component /Section	Considered Climate Hazards		
	Floods	Heatwave	Cyclones & Storms
Road Asphalt Surface/Pavement	Rainfall changes can alter moisture balances and influence pavement deterioration.	Temperature can affect the aging of bitumen, increasing cracking of the surface chip seal and a consequent loss of waterproofing.	
Road Embankment	Flooding of road infrastructures leads to Embankment collapse and associated risks.		
	Increased frequency of extreme precipitation events increases the risk for flooding, which can reduce the service life of bridges by:	Higher temperatures and extreme heat can stress bridges through thermal expansion and movement and lead to premature deterioration of the structure.	Damage to infrastructure on roads, bridges, and signs, Reduced

Road Component /Section	Considered Climate Hazards		
	- Increasing the scouring rate of piers and bridge foundations and the buildup of sediments - Increasing moisture levels in soil may lead to loss of structural foundation integrity - Small-scale bridges are more vulnerable since they are often not designed to withstand powerful floods or strong wind		safety for vehicles driving

Climate change will directly affect the proposed road infrastructure in several ways. High temperatures will cause roads to develop cracks within a short period after their construction easily. Furthermore, higher temperatures combined with increased solar radiation (UV) may reduce the life of the proposed asphalt road surface. Additionally, high precipitation will allow new roads to develop potholes easily. The direct impact of climate change on the road and its indirect impact on other economic systems are equally enormous. Poor roads resulting from huge potholes can lead to road accidents and delay the transport of foodstuffs, forest produce, and agricultural produce to their intended destinations within or outside Dar es Salaam City Council. In contrast, traffic jams can lead to more fuel consumption in addition to huge time loss.

6.9 Assessment of Residual Impacts of the proposed DMDP II Roads

The residual impacts are defined as impacts that adversely affect one or more environmental and social receptors and remain or are predicted to remain, post mitigations measures (i.e., after efforts to “minimize” and/or “restore on-site”). The identified residual impacts were identified for all the project phases as follows:

Pre-construction and construction phases

- Economic Benefits associate employment opportunities
- Loss of definite materials and landscape degradation
- Loss of livelihoods (for small-scale vendors along the roads)
- Occupational Health and Safety risks

Operation and Maintenance Phase

- Community health and safety (risks of road accidents and exposure to exhaust emissions)
- Climate change Impacts associated with Greenhouse gas emissions

6.10 Assessment of Project Alternatives

6.10.1 Overview

It is the requirement of the WB ESMF and the local ESIA guidelines for project design to consider alternatives for accomplishing the same objectives. Alternatives considered for this project include alternative routes, alternative construction materials and technology, implementation timing, alternative design, as well as the do-nothing option. These are discussed hereunder:

6.10.2 The No Project Alternative

The no-project alternative entails retaining the current status quo without constructing and upgrading the proposed local roads. Based on the objective and benefits of the project (as described in Chapter 1 of this report) are of high significance for the DCC socio-economic development. Although the project is associated with some negative environmental and social impacts, they do not match the high positive impacts expected from the implementation of the DMDP project. Adopting this option would mean avoiding most of the negative impacts associated with the project and missing all the positive benefits, such would increased social and economic growth in Dar es Salaam City Council. The No project alternative was therefore abandoned.

6.10.3 Alternatives routes

The initial stage of this project included identifying priority roads. The client and the local leaders from the Mtaa, Ward, and Council levels developed an initial list of roads. Each of the identified roads was investigated using a matrix of criteria. The following criteria were used in the selection of road alternatives.

- v. Roads that link existing trunk roads (have the potential to increase mobility and reduce traffic congestion on the existing trunk roads;
- vi. Roads that enhance other existing or proposed transport development projects, i.e., the SGR and BRT infrastructure;
- vii. Roads with adequate Right of Way (ROW) that will require no or minimum compensation and
- viii. Roads that will address flood resilience.

A list of priority roads was developed and included in the DMDP II through a number of meetings and site verification, which the PO-RALG, DCC, Wards, and Mtaa leaders jointly conducted.

6.10.4 Alternative implementation timing

After a list of priority roads was established, the developer further assessed implementation timing. It was decided to package the selected subprojects in order, to begin with the ones with fewer planning issues so that they can be implemented immediately in the first phase. Criteria used in this case included available space (RoW), the extent of compensation required, and ease of procurement. The roads were therefore categorised in *Package 1, 2, 3, 4, 5, 6 and 7*. Package 1, 2, and 3 will be implemented immediately, while roads in other packages (i.e., Package 4, 5, 6 and 7) will be implemented at a later stage. The timing will allow more careful planning and design. The main objective was to ensure that the selected design alternative would reduce the project impacts.

6.10.5 Alternative Sources of Construction Materials

Alternative sources of road construction materials (i.e., soils and aggregates) were investigated. The design team looked at existing and new borrow sites. Currently, authorized quarry and borrow sites are located in the Pwani Region, in Msoga, Kibaha, and Bagamoyo sites. The investigation found that these sites have enough deposits of qualified materials. Opening new sites is associated with compensation costs and will cause environmental degradation, loss of habitat, and a number of socio-economic impacts. Therefore, with environmental, social, and economic considerations, all construction materials shall be sourced from authorized vendors.

Further, alternative sources of water for use in construction were assessed. Two water sources, groundwater from boreholes, surface water from Rivers in the site, and treated water supplied by DAWASA, were disqualified as they contained impurities that could endanger the quality of work. Further, the use of the two sources will require water use from the WAMI/RUVU basin office and will need treatment. The project will, therefore, use water supplied by DAWASA.

Cement will be sourced locally in Dar es Salaam city. Cement factories in Dar es Salaam include Twiga Cement, Nyati Cement Factory, etc. The use of cement from these local sources is not envisaged to lead to the scarcity of the product due to the steady production of cement from various available cement factories in Dar es Salaam and other municipalities, including Dangote in Mtwara Region and Tanga cement factory in Tanga city.

6.10.6 Alternative types of construction materials

Construction materials

The whole design process investigated alternative construction materials and designs using these materials. The investigations were done for roads, drainage and walkways.

Road carriageway: Construction materials: Two types of pavement materials (asphalt and concrete) were considered for the road carriageway, while bricks and concrete pavements were considered for walkways. The investigation was based on the materials' applicability to the existing and projected environmental conditions of the selected roads, such as 'flood-prone areas' and 'high groundwater table.'

From this assessment, the roads were classified into five different types (as presented in Chapter 2). The assessment proposes the use of asphalt in most areas and concrete in flood-prone areas. In some areas (as indicated in the design

section), the subsurface materials will be enhanced with SUDS. The use of asphalt as the major pavement material is based on the following properties of the material:

- **Durability:** Asphalt Concrete is a flexible pavement with the same bridging action, which allows it to withstand occasional overloads without serious damage. Its lack of repetitive joints removes the possibility of blow-ups associated with concrete while exposed to temperature variations. Inch for inch, asphalt cement concrete performs better than Portland cement concrete.
- **Economical:** Research has shown that a dollar spent on asphalt pavements is 26.9 percent higher than a dollar spent on concrete pavements. That is because asphalt is cost-effective. It has a lower first cost than concrete, and it lasts longer. Staged construction helps spread out the cost of placement. Because asphalt pavement has no joints to repair, it is much less expensive to maintain.
- **Safety:** Asphalt pavements offer high skid resistance values. Their dark color reduces glare and provides a high contrast for lane markings.
- **Ease of Construction:** Asphalt Concrete is machine-placed, removing the need for time-consuming formwork and steel reinforcement. Traffic can use the pavement almost immediately; no delay is required to allow the pavement to cure. The lack of pavement joints reduces maintenance requirements. Repairing an asphalt surface is quick and easy because there is little downtime waiting for a patch to cure.
- **Staged Construction:** A major advantage of Asphalt Concrete is the potential for staged construction. The asphalt base course can be placed and used under traffic during initial construction. This pavement can then be overlaid with final surface courses. Staged construction improves on-site conditions, removes the aspect of muddy soils, and provides a place to store construction materials and equipment. This method also provides an opportunity to discover and correct unanticipated problem areas, such as a weak subgrade, poor drainage, or poorly compacted trenches, which can be repaired at minimal cost.
- **Recyclable:** Another major advantage of Asphalt Concrete is its ability to be completely recycled. Not only can the aggregates be reused, but the asphalt cement binder also retains its cementing properties and can be reused in a new mix. Pavements can be recycled both on-site using a cold mix and via a hot mix plant. Recycled pavements have been tested and proven in both the laboratory and the field to perform at least as well as virgin aggregate mixes. Asphalt pavements are 100 percent recyclable.

6.10.7 Alternative design of stormwater drains

Two types of drainage systems were considered, i.e., open channels versus closed channels. An assessment was done based on costs, available space, adjacent land use, distance to houses and activities, and the behavior of the population served. The following was established:

Based on costs, open channels would be the best alternative. However, closed channels were found to have the following advantages over closed systems, including:

- Prevent solid waste from entering the channel and reduce the carrying capacity (thus reducing the risk of flooding). Experience shows that drainage systems in many areas where vendors operate beside the roads become clogged with waste;
- Reduces safety risks (open channels are associated with fall-in risks, especially for children and elders). Residential houses, nursery schools, and schools are adjacent to the roads. Covered systems would prevent waste from entering the drains.
- Closed channels can be used as walkways and, therefore, serve space that could not have been used in the case of an open channel. This, in turn, reduces compensation costs.

6.10.8 Alternative materials for Walkways

Apart from concrete paving and sand cement interlocking blocks, an attempt is being made to produce paving blocks from recycled plastics. When this is successful, it will be environmentally friendly by reducing the number of plastic objects littered haphazardly.

The use of layers of fine aggregates in standing and walking is also gaining momentum. This layer is porous, and where it is used, the systems support SUDs. Neatly ground stones can also be used to pave walkways without the need for mortar joints.

CHAPTER SEVEN

7 IMPACTS MITIGATION AND ENHANCEMENT MEASURES

This Chapter outlines the mitigation requirements and measures to adopt in response to the potential environmental and social risks & impacts identified in the preceding chapter. The potential mitigation and enhancement measures have been proposed based on stakeholder consultations, expert analysis and opinion, experience with similar and/or related projects, and best engineering practices.

7.1 Pre-Construction Phase Impacts

7.1.1 Impacts on the Socio-Economic Environment

Enhancement of Positive Impacts

7.1.1.1 Increased Employment Opportunities, Job Creation, and Increased Income to Local Communities

- i. Ensure employment procedures are in agreement with ESS 2: Labor and Working Conditions;
- ii. the employer shall promote safety and health at work as per the requirements of the OHS Regulation, 2003;
- iii. promote fair treatment, non-discrimination, and equal opportunity of project works (including the consideration for vulnerable workers;
- iv. prevent the use of all forms of forced labor and child labor;
- v. support the principles of freedom of association and collective bargaining of project workers in a manner consistent with national law; and provide project workers with accessible means to raise workplace grievances (as per the DMDP II Grievance procedures;
- vi. Ensure a fair and transparent recruitment process, which will be outlined as part of the DMDP II Recruitment Management Plan for all openings, including working with DCC and the DLA to advertise openings as early as possible to allow for potential candidates to apply and prepare their skill for local opportunities;
- vii. Local Content Policy and Plan shall be developed to ensure the local communities benefit from the opportunities;
- viii. Setting specific targets for local procurement and SME support within the DCC;
- ix. Sensitize communities to engage in activities associated with the project implementation (e.g., food/drinks vending and other needed services, etc.) and
- x. Provide awareness to locals on potential investment and employment opportunities.

7.1.1.2 Increased income to primary suppliers of road construction materials

- i. Adhering to WB E&S guidance (ESS2), the contractor shall ensure fair and transparent negotiations in case road construction materials have to be purchased from the local community or the local market in pursuit of poverty reduction and inclusive economic growth;
- ii. Setting specific targets for local procurement of construction materials (where feasible) to support affected communities within the DCC and
- iii. Sensitize communities to engage in businesses associated with the project implementation (e.g., supply of aggregates, sand, etc.).

Mitigation of Negative Impacts

7.1.1.3 Minor loss of land and/or loss of properties

- i. The design team has minimized involuntary resettlement by exploring project design alternatives or selection of alternative routes, that minimized the number of PAPs along the roads. This was done without compromising the project objectives;

- ii. The project has avoided forced eviction of PAPs;
- iii. Where it cannot be avoided, loss of land or property, transparent procedures for undertaking property valuation and compensation activities have been developed and shall be followed during implementation;
- iv. The developed RAP shall be implemented according to the requirements of ESS5 and Tanzanian compensation laws. For compensation costs, see the RAP report.
- v. For affected properties, the DCC shall conceive and execute resettlement activities (expected along the Migombani Road and Msongola roads) as a sustainable development program, providing sufficient compensation to enable displaced persons to benefit directly from the project.

7.1.1.4 Minor Loss of livelihood

- vi. Enough time shall be given to small business owners doing commercial activities within the acquired road reserve to vacate before the commencement of the project;
- vii. In case a project affects legally located businesses, proper valuation and compensation shall be implemented before the commencement of the project;
- viii. Implementation of the prepared RAP, conforming to the requirements of the ESS5;
- ix. Prepare a proper and permanent area for vendors to operate there legally;
- x. Enforcing the DCC by-laws and other relevant regulations that restrict the use of RoW by vendors/hawkers;
- xi. Specific mitigations for Ilala Market: Temporary mitigation: vendors shall voluntarily relocate to nearby non-project roads. Permanent mitigation measures: DCC has in its plans to build the Ilala Market to accommodate all vendors currently occupying the RoW.

7.1.2 Impacts on the Biological Environment

7.1.2.1 Loss of natural habitat and trees

Management of biological impacts, particularly vegetation, will involve a set of activities to minimize the impacts and ensure environmental sustainability. These will include the following:

- i. The contractor shall be emphasized to confine construction activities to the core area (i.e., within the RoW);
- ii. Participatory preparation of clearance, re-vegetation, and restoration management plan following national institutional and legal frameworks, e.g., Standard specifications for road works (2000) section 5700 on landscaping and grassing, Forest Regulation (2004), and Urban Greening Guidelines (2022). The Plan will need to be approved by the relevant organs before the actual implementation.
- iii. Plant species to be integrated into the re-vegetation and restoration plan will be equivalent to the ones removed, native/ indigenous, and with a history of good stewardship to the environment and people. Recommended species for shed and cooling include *Trichilia emetica*, *Tamarindus indica*, *Ziziphus mucronata*, and *Albizia versicolor*, while for river banks stabilizing are *O. abyssinica*, *Panicum maximum*, *Antidesma venosum*, *Rauvolfia mombasiana* and *Bridelia micrantha*. For small trees and shrubs for pavement planting, consider *Adenium obesum*, *Carissa spinarum*, and *Chassalia umbraticola*, whereas for road isles, sidewalks, and town parks and reserves, *Cynodon nlemfuensis*, *Combretum constrictum*, *Markhamia obtusifolia*, *Commiphora africana*, *Lannea schweinfurthii* and *Grewia bicolor*. Native trees/shrubs with food importance that can be incorporated include *Annona senegalensis*, *Flueggea virosa*, *Margaritaria discoidea*, and *Tamarindus indica*.
- iv. Cleared areas shall be minimized to only touch vegetation within close vicinity of the working sites. Using chemicals to clear the vegetation is strictly prohibited to ensure environmental safety and health;
- v. Raising a temporary fence to protect trees, shrubs, and other important vegetation before the commencement of any works on site; if necessary, impacted top soils will be removed and be re-used during re-vegetation and restoration.

7.1.2.2 Loss/Reduction of ecosystem services

- i. Prepare and implement a vegetation replenishment plan along the project corridor. Re-vegetation shall be done according to the plan specified by the Standard Specifications for Road Works of 2000 Section 5700 (Landscaping and Grassing) and the Dar Greening Handbook.
- ii. Confine construction work within the acquired project areas
- iii. Enforce laws governing the protection of rare endemic and endangered species
- iv. Prepare and implement an invasive species eradication plan in all areas impacted within the Project area
- v. Screen sources of construction materials by identifying all organisms on identified sources
- vi. Implement monitoring and evaluation programs to ensure minimum footprint beyond construction sites
- vii. Any contaminated soils shall be segregated and transported by the contractor to the waste collection area (WCA) located at the campsite, where it shall be collected separately from other wastes till disposed of by a third party.

7.1.3 Impacts on physical infrastructure

7.1.3.1 Damage or relocation of existing utility infrastructure and public services

- i. Utility providers within the project area (i.e., TANESCO, DAWASA, SONGAS, TAZARA, TAZAMA, TRC, and TTCL) have been involved in the planning and design of the road infrastructure, and their recommendations have been incorporated in the design,
- ii. The DCC and the Consultant shall have technical discussions with TRC on the best design options for the railway crossing along the Msongola road. The design shall be revisited by the DCC, Consultant, and Contractor during the Construction phase.
- iii. Utility relocation planning shall be done in consultation with the affected suppliers, and the relocation costs shall be in the BoQ;
- iv. Early notice shall be given to the community before any service interruption;
- v. DCC shall provide detailed Information about the location and layout of affected infrastructure to the contractor;
- vi. DCC shall provide fair, prompt, and effective compensation at full replacement cost of affected utility infrastructure, as specified in the developed RAP;
- vii. The developed DMDP II GRM shall provide a process for receiving grievances from communities, individuals, NGOs, and local government and managing them efficiently and transparently.

7.1.4 Impacts on air quality

7.1.4.1 Deterioration of air quality (due to dust and increased air emissions)

- i. Where possible, the project shall avoid, minimize, and control adverse impacts to human health, safety, and the environment from emissions to air. However, control of exhaust emissions could be tricky. The generation and release of exhaust emissions of any type shall be managed as per the requirements of the general EHS Guidelines on Air Emissions and Ambient Air Quality through a combination of:
 - ✓ Energy use efficiency in construction equipment and machines;
 - ✓ Use of cleaner fuels (i.e., Compressed natural gas (CNG), which is available in Dar es Salaam
 - ✓ Application of emissions control techniques, especially for dust.
- ii. Dust at workplaces within or close to human habitations shall be critically minimized by periodic water sprinkling on working sections. The contractor shall advise or notify local households on the shedding of dust, noise, vibration, and other dangers.

7.1.5 Impacts on community health and safety

7.1.5.1 Increased traffic and road accident

- xi. By providing alternative diversions whenever necessary, the contractor will ensure that the traffic flow is not interfered with during the entire construction period;
- xii. No total closure of the road or drain, for instance, will be allowed;
- xiii. The contractor shall provide diversions and deploy a person responsible for traffic safety;
- xiv. Ensure that prior to all activities, the Project shall assess the risks of the works to local people, including people walking by, people using nearby roads;
- xv. Ensure that all hazardous materials and equipment must be contained and access to them by local people must be prevented;
- xvi. Put barriers and warning signs around open excavations to prevent people from falling into them
- xvii. Put barriers and appropriate signage to prevent access to other hazardous areas, including areas in which equipment and vehicles are operating;
- xviii. Where appropriate, flag persons shall be used to minimize risk to community members in areas of activity and where vehicles enter/exit the Project site;
- xix. Undertake visual inspections to confirm that nobody has entered the site and is in a hazardous location, e.g., people sleeping under equipment;
- xx. Ensure road width, speed restrictions, and traffic load in the areas in accordance with acceptable standards.

7.1.5.2 Increased noise pollution

- i. Nuisances of noise will be transient, and good work practice can minimize them. Nonetheless, nearly all these impacts are already being experienced due to the existing old road,
- ii. The city authority is responsible for compliance with the relevant national legislation with respect to noise and vibration,
- iii. The impacts of noise emissions will further be minimized by proper choice of plants and machinery (i.e., fitted with noise and dust silencers or reducers) and locating quarry areas away from human habitations (at least 500 m away) and,
- iv. Silence and a good choice of equipment should critically minimize noise at workplaces within or close to human habitations. The contractor shall advise or notify local households on the shedding of noise and other dangers associated with the project.

7.1.6 Impacts on land resources

7.1.6.1 Risk of environmental pollution by demolition waste

- v. DCC/The contractor shall adhere to local and the IFC EHS Guidelines and the ESS guideline on waste management.
- vi. PAPs will be given a chance to demolish parts of affected structures and recover whatever materials they wish to recover. For example, cement blocks, iron sheets, wood, plumbing works, etc could be re-used in house construction;
- vii. Recyclable materials such as scrap metal, plastics, wood, and glass shall be sorted, separated, and stored at the waste recycling plant, located at the nearest Contractors campsite (awaiting removal by licensed Subcontractor);
- viii. The remaining on-recyclables (spoils, broken tiles, waste mortar shall be transported to the Pugu Kinyamwezi site.

7.2 Construction Phase Impacts

Enhancement of Positive Impacts

7.2.1 Impacts on the Socio-Economic Environment

7.2.1.1 *Job creation and increased income to local communities*

- i. Implement Local Content Policies
- ii. Sensitize communities to engage in activities associated with the project (e.g., food production, service sector, etc.),
- iii. Give employment priority to the local community with relevant skills based on gender.
- iv. Provide job training to workers.
- v. Provide awareness to locals on potential investment and employment opportunities.

Mitigation of Negative impacts

7.2.2 Impacts to the Community

7.2.2.1 *Loss of accessibility to adjacent properties*

- i. Consider changing the project design and assessing all viable alternatives to avoid the need for access restrictions. This might involve giving preference to alternative project approaches and/or adjusting the project's boundaries.
- ii. Ensure that full information is disclosed about project activities and potential impacts on people's rights and livelihood;
- iii. The road design shall include proper access infrastructure (culverts wherever practical) to properties located along the proposed roads.
- iv. The community must be informed of any road/road section closing, and alternative parking shall be provided.

7.2.3 Impacts on air quality

7.2.3.1 *Increased noise pollution*

- i. Planning activities in consultation with local communities so that activities with the greatest potential to generate noise are planned during periods of the day that will result in the least disturbance
- ii. Using noise control devices, such as temporary noise barriers and deflectors for impact and blasting activities, and exhaust muffling devices for combustion engines.
- iii. Avoiding or minimizing project transportation through community areas
- iv. Install acoustic enclosures for equipment casing radiating noise
- v. Noise equipment shall be installed with acoustic barriers without gaps and with a continuous minimum surface density of 10 kg/m² to minimize the transmission of sound through the barrier
- vi. During the selection of equipment, the contractor shall select equipment with lower sound power levels
- vii. The contractor shall limit the hours of operation for specific pieces of equipment or operations, especially mobile sources operating through community areas

7.2.3.2 *Deterioration of air quality due to increased air emissions and dust*

- i. Dust emissions will be mitigated by sprinkling water at the construction sites and access roads to suppress dust; all machinery, equipment, and vehicles will be switched off when not in use;
- ii. Concrete mixing plants will be located away from residential; and all project workers will be provided with protective masks to prevent them from inhaling fumes and dust.

- iii. Water sprinkling to reduce the dust at construction sites and near settlements. Sprinkle water as necessary (at least twice a day) when visual inspection indicates excessive dust and during heavy traffic.
- iv. Use of dust masks for operators and those working in dusty areas.
- v. Construction machines/ equipment shall be well maintained to manufacturers' requirements to ensure total fuel combustion.
- vi. All the vehicles shall be frequently checked and serviced during the whole construction period so that the level of exhaust emissions is reduced.
- vii. Movement of vehicles should be kept to the minimum necessary for completing the job;
- viii. The incidence of road accidents involving project vehicles during construction should be minimized through a combination of education and awareness-raising, and the adoption of procedures described in the General EHS guidelines on Transportation of Construction material;
- ix. Avoiding or minimizing project transportation through community areas
- x. Cover all trucks hauling materials, particularly sand, aggregates and borrow pit materials
- xi. Limit the speed of the vehicles to 20kmph or by placing speed limits/signs/humps within the construction site

7.2.4 Impacts on Physical Properties

7.2.4.1 Risk of damage to private properties due to increased vibration levels

- v. Shattering of excavations and physical protection of structures shall be emphasised to minimize potential damage to buildings due to vibration of heavy machines;
- vi. Employ Engineering controls (temporary or permanent retaining wall) to support adjacent private structures;
- vii. The contractor shall confine construction work within the acquired project areas
- viii. The contractor shall make proper identification of structures prone to vibration damage and prepare proper protection plans

7.2.5 Impacts on Land, Water and Natural Resources

7.2.5.1 Loss of definite materials and land degradation at the quarry sites

- i. The project shall adhere to ESS 3 on Resource Efficiency and Pollution Prevention and Management, which requires efficacy use of raw materials:
- ii. Construction materials should be obtained from the existing sites. If they are to be fetched from private lands, the material shall be purchased, and this will be officially negotiated with owners to avoid conflicts. The contractor may be compelled to pay a small fee to the respective LGA as per the local regulations/by-laws.
- iii. Potential long-term environmental impacts of borrow pits and quarry sites relate to how they are left once the resource has been extracted. In this case, all borrow pits and quarries shall be rehabilitated and properly landscaped after construction is completed. Pits shall not be left with steep or vertical sides.
- iv. The topsoil (except for the dumpsite area) shall be stockpiled for later use in reinstating the pit. Shallow slopes will encourage rapid re-vegetation, thus preventing erosion and providing safety to animals. Excavated soils (top fertile fraction) from the proposed roads shall be used for replenishing vegetation after the construction phase.
- v. Obtaining sand from valleys and riversides must be Authorised by the Authority (e.g., the DCC, WAMI RUVU BASIN/NEMC) and well-investigated to avoid accelerated land degradation and pollution of water resources.

7.2.5.2 Increased pressure on natural resources

- i. DCC to collaborate with local authorities from where the local materials will be extracted to carry out afforestation programs for replenishment of nature ecosystems;
- ii. Explore and use alternative sources of water away from sensitive areas and community sources;

- iii. Undertake water harvesting on worker's camps if feasible;
- iv. Adequate protection to the general public, including safety barriers and marking of hazardous areas; safe access across the construction site;
- v. Where necessary, the contractor Supports the cost of local social services through corporate Social Responsibility

7.2.5.3 Increased water and soil pollution

- i. No works should be undertaken within 10m of a watercourse unless it's part of the permanent design;
- ii. Any wastewater contaminated with oils, fuels, bitumen, or any other chemical substances shall be intercepted by an oil and grease interceptor trap before discharge into the wastewater treatment facility and formal disposal.
- iii. Ensure timely repair of all construction equipment to avoid fuel and oil leakage;
- iv. Ensure adequate spill kits containing, at minimum, absorbent matt, adsorbent materials, booms, and other equipment necessary to contain and clear up any spills to ground or water courses are provided at suitable and regular locations on site.
- v. Prepare and obtain approval from the client on emergency response procedures.
- vi. Avoid washing construction equipment at the intake or near perennial streams;
- vii. Washing of construction equipment and machinery shall only be permitted in agreed areas, with an impermeable base and suitable system for the collection of wash water for treatment prior to its disposal;
- viii. The contractor shall obtain a water use permit from water WRWBA before drilling of boreholes.

7.2.5.4 Soil erosion and instability of slopes

- i. The impact will be mitigated by minimizing unnecessary vegetation clearance and proper cut-off drains, which will have to be constructed before the commencement of construction works.
- ii. Construction of drainage system to collect stormwater and direct it safely downstream receiving environment,
- iii. Landscaping and reinstatement of the areas that were grabbed during construction
- iv. Retention and restoration of much of the original vegetation, which includes trees through replanting of ecologically valuable plant species; Regular monitoring of areas affected by construction-related activities and/or erosion.

7.2.5.5 Pollution by solid waste and hazardous waste materials

- i. Provide adequate secondary containment for fuel storage tanks and the temporary storage of other fluids, such as lubricating oils and hydraulic fluids,
- ii. Using impervious surfaces for refuelling areas and other fluid transfer areas,
- iii. Training workers on the correct transfer and handling of fuels and chemicals and the response to spills,
- iv. Providing portable spill containment and clean-up equipment on site and training in the equipment deployment,
- v. Assessing the contents of hazardous materials and petroleum-based products in building systems (e.g., PCB-containing electrical equipment, asbestos-containing building materials) and process equipment and removing them prior to initiation of decommissioning activities, and managing their treatment and disposal according to Sections 1.5 and 1.6 on Hazardous Materials and Hazardous Waste Management, respectively,
- vi. Assessing the presence of hazardous substances in or on building materials (e.g., polychlorinated biphenyls, asbestos-containing flooring, or insulation) and decontaminating or properly managing contaminated building materials.

7.2.5.6 Impacts of liquid wastes (i.e., human waste and spent water)

- i. establish the quality, quantity, frequency, and sources of liquid effluents at the campsite and prepare collection, treatment, and safe disposal measures;
- ii. Plan and implement segregation of wastewater from other hazardous liquid waste and stormwater, in order to limit the volume of water requiring specialized treatment.
- iii. Identify opportunities to prevent or reduce wastewater pollution through measures such as recycling/reuse within their facility, input substitution, or process modification (e.g., change of technology or operating conditions/modes).
- iv. Assess compliance of their wastewater discharges with the applicable: (i) discharge standard (if the wastewater is discharged to surface water or sewer), and (ii) water quality standard for specific reuse (e.g., if the wastewater is reused for irrigation).
- v. Ensure any discharges conform to local wastewater discharge standards of 2019.

7.2.5.7 Risk of land and water source pollution by hazardous wastes

- i. No works should be undertaken within 10m of a watercourse unless it's part of the permanent design
- ii. The contractor shall avoid washing construction equipment at the intake or near
- iii. perennial streams
- iv. Any wastewater contaminated with oils, fuels, bitumen, or any other chemical substances shall be intercepted by an oil and grease interceptor trap before discharge into the wastewater treatment facility and formal disposal.
- v. The contractor shall make timely repairs to all construction equipment to avoid fuel and oil leakage;
- vi. Shall ensure adequate spill kits containing as a minimum absorbent matt, adsorbent materials, booms, and other equipment necessary to contain and clear up any spills to ground or water courses are provided at suitable and regular locations on site.
- vii. The contractor shall prepare and obtain approval from the client on the emergency response procedure.
- viii. Construction equipment and machinery shall only be washed in agreed-upon areas with an impermeable base and suitable system for collecting wash water for treatment prior to its disposal.

7.2.6 Impacts on the Community Health and Safety**7.2.6.1 Job-seekers influx**

- i. Encourage maintenance of cultural practices and traditional knowledge systems.
- ii. Raise awareness to local communities to consider the project as an opportunity.
- iii. Encourage the conservation of Indigenous technologies and cultural practices.
- iv. Encourage local communities to produce local materials that can be sold outside their local markets.
- v. Provide awareness of HIV/AIDS, COVID-19, and other communicable diseases.
- vi. Provide Voluntary Counselling and Testing (VCT) centers for HIV/AIDs at the workplace.
- vii. Enforce HIV/AIDS laws and regulations that prohibit stigma and discrimination in taking care of the affected communities.

7.2.6.2 Workers - community negative interactions

- i. The implementing project contractor shall restrict the trivial entrance of surrounding community members into the working campsites and other working areas.
- ii. Encourage maintenance of cultural practices and traditional knowledge systems.
- iii. Raise awareness to local communities to consider the project as an opportunity.

7.2.6.3 Potential increase in road accidents and other community safety risks

- i. A Traffic Management Plan (TMP) will be in place during construction, and appropriate traffic control signs will be installed along the main road along detours in collaboration with the Police force to monitor vehicles and drivers' behavior. The road design has taken into consideration safety issues related to traffic accidents, especially near settlements and urban centers and in all accident-prone sections.
- ii. Installation of proper road signs and regular inspections for their presence
- iii. Installation of speed control devices like humps
- iv. Where feasible, the design has included the installation of pedestrian lanes at human settlement crossings;
- v. Appropriate traffic control signs shall be installed along the main road and along detours, in collaboration with the Police force, to monitor vehicles and drivers' behavior.
- vi. The road design has considered safety issues related to traffic accidents, especially near settlements and urban centers and in all accident-prone sections.
- vii. The PIU shall conduct Road safety assessments during the Construction phase, monitor incidents and accidents, and prepare regular reports on such monitoring.

7.2.6.4 Potential Increased risks to community health (i.e., STI, COVID, and HIV/AIDS)

- ix. Provide awareness on HIV/AIDS, COVID-19, and other communicable diseases.
- x. Provide Voluntary Counselling and Testing (VCT) centers for HIV/AIDs at the workplace,
- xi. Enforce HIV/AIDS laws and regulations that prohibit stigma and discrimination, and be responsible for taking care of the affected communities.
- xii. Changing work schedules account for the time involved and accommodate social distancing measures.
- xiii. Providing ample safety measures, accounting for Coronavirus (Provision of masks, sanitizer and water to workers.
- xiv. Employ a qualified health professional to lead the management of COVID-19 and communicable disease risks during construction.
- xv. Undertake screening programs for communicable diseases such as HIV/AIDS and TB based on the prevailing risk profile.
- xvi. Worker induction, Project training, and awareness campaigns must include Sexually Transmitted Diseases and HIV/AIDS. Condoms must be made available to Project workers.

7.2.7 Impacts on Human Rights**7.2.7.1 Labor and working conditions**

- xiv. Application of developed Labor Management Procedure; Code of Conduct, GRM for DMDP II,
- xv. Working terms and conditions of employment shall address national legal requirements as a minimum and ESS 2: Labor and Working Conditions;
- xvi. The contractor should ensure a fair and transparent recruitment process is outlined in the Recruitment Management Plan for all openings. This includes working with DCC and local authorities to advertise openings as early as possible, allowing potential candidates to apply and prepare their skillsets for local opportunities.
- xvii. Develop and make available to all project workers the key commitments made regarding labor management for the project.
- xviii. Promote fair treatment, non-discrimination, and equal opportunity for both skilled and unskilled workers and support principles of freedom of association and collective bargaining of workers in a manner consistent with national law.
- xix. Provide mechanisms for project workers to raise workplace grievances freely.
- xx. Provide a clear contract of employment to all workers prior to starting their work on the project.
- xxi. Local Content Policy and Plan shall be developed to supplement the Influx Management Plan.

- xxii. Give employment priority to the local community with relevant skills based on gender.
- xxiii. Provide awareness to locals on potential investment and employment opportunities.
- xxiv. Provided worker's code of conduct to all project workers before they sign their contract of employment
- xxv. Develop a Worker's Code of Conduct which will direct project workers on appropriate behaviours.
- xxvi. Prohibit physical violence, discrimination, harassment, bullying, violence, and promote equal opportunity.

7.2.8 Increased cases of occupational and health risks

The contractor Team (i.e., Environmental, Social, and Safety Officers) is responsible for ensuring the safety and health of workers and their treatment as regulated by national legislation and the World Bank's ESS2, including implementing OHS measures in subproject ESMPs and Contractors' ESMPs.

In line with the WBG EHSG – General, the project will, through subprojects ESIAs, include OHS measures in their respective ESMPs. These preventive and protective measures should be introduced according to the following order of priority:

- i. Eliminating the hazard by removing the activity from the work process.
- ii. Controlling the hazard at its source through the use of engineering controls.
- iii. Minimizing the hazard through the design of safe work systems and administrative or institutional control measures. Examples include job rotation, training safe work procedures, lock-out and tag-out, workplace monitoring, limiting exposure or work duration, etc.
- iv. Providing appropriate personal protective equipment (PPE) in conjunction with training, use, and maintenance of the PPE

7.2.9 Risk of increased GBV

- i. Develop and implement anti-GBV and anti-sexual harassment policies as per the requirements of ESS 2 and ESS 4;
- ii. The contractor should appoint senior focal points with responsibility for ensuring that commitments and policies to prevent GBVH and sexual harassment policies are implemented;
- iii. The contractor should put in place monitoring systems at the highest levels for regular reporting on GBVH.
- iv. Include requirements around GBVH in codes of conduct, policies, and protocols for contractors, including training on policies and procedures once developed;
- v. Ensure codes of conduct are publicly disclosed in local languages and are widely accessible to all workers and all groups of people in project areas;
- vi. The contractor should deliver periodic mandatory training on GBVH to all workers, including contractors, subcontractors, and core suppliers, as well as relevant consultants and clients;
- vii. The contractor should engage expertise (e.g., from local women's rights organizations or NGOs working on GBVH) to conduct awareness campaigns to provide information to local communities, such as what is unacceptable behavior and how to report an incident of GBVH;
- viii. The contractor should develop Child rights protocols.

7.2.10 Risk of increased child labor and abuse

- i. Abiding by labor and working conditions provided by World Bank Guidelines (ESS2), the contractor is to Prepare and make available Necessary manuals and policies related to the anti-child labor action plan.
- ii. Provide special assistance to vulnerable children depending on the type of vulnerability.
- iii. Liaise with local community development officers and available NGOs that can provide support to vulnerable children in the project area.

7.2.11 Impacts on cultural sites

7.2.11.1 Chance finds

- i. Conduct shovel test pits to assess the archaeology where project structures and bridges will be constructed;
- ii. Ensure that removal of spoil soil material that goes beyond one meter should be subjected to chance find procedures as per the ESS 8;
- iii. When working near the graveyards along the Msongola road, care must be taken not to destroy any features;
- iv. Local laws should be applied in case graveyards are accidentally impacted by the project;
- v. Conserve and manage any discovered archaeological materials and sites.

7.3 Potential impacts associated with the operation and maintenance phase

Enhancement of Positive impacts

7.3.1 Impacts on the socio-economic environment

7.3.1.1 Job creation and increased income to local communities

- i. DCC shall prepare a fair and transparent recruitment process to allow potential candidates to apply and prepare their skillsets for local opportunities.
- ii. DCC should give employment priority to the local community with relevant skills based on gender.
- iii. DCC should provide job training to workers
- iv. DCC should provide awareness to locals on potential investment and employment opportunities

7.3.1.2 Improved transport services

- i. DCC should set appropriate O&M measures to attain the design life of the roads and the safety of users
- ii. DCC should improve feeder roads in rural areas connecting to the project roads
- iii. Ensure the availability of public transport along the proposed roads to improve mobility benefits.
- iv. Local government authorities should facilitate the establishment of income-generating alternatives for adversely affected people.

7.3.1.3 Improved stormwater drainage

For the mitigation measures, optimum hydraulic structures should be provided for proper drainage of flood events and the best practice in the design of hydraulic structures should be considered. Some of the key guidelines for the design of hydraulic structures include:

- i. DCC shall make frequent clean-up of drainage infrastructure, including appropriate O&M schedule
- ii. Provision of community sensitization to secure and protect drainage infrastructure
- iii. Community awareness to avoid using drainage infrastructure for solid waste and other domestic waste dumping
- iv. Sensitize communities to engage in activities that will improve vegetation cover on roadside drainage channels and catchment areas.

7.3.1.4 Decrease traffic congestion in the city.

- i. LATRA should announce and register public transport routes to commute, including the proposed roads
- ii. DCC should improve feeder roads from the sub-urban areas connecting to the project roads

- iii. Installation of speed control devices like humps, Training of drivers and pedestrians, and placing of pedestrian lanes at human settlement crossings shall be emphasized to make traffic even better.
- iv. Ensure traffic signs are adequately provided and periodically check for their presence.

7.3.1.5 Reduced vehicle operation costs

- i. Reduced traffic will increase the average travel time in the city, which will have ripple effects on reducing vehicle wear and tear.
- ii. The design of the road shall recommend proper road surface dressing such that the proposed roads are safer, with a non-skid surface, and proper waterproofing materials shall be proposed.
- iii. The contractor shall install proper and adequate traffic signs to avoid frequent accidents.

7.3.1.6 Improved community life services and status

- i. DCC should ensure the cleanliness of the proposed roads to minimize dust emissions
- ii. DCC should improve feeder roads from the sub-urban areas connecting to the project roads

7.3.1.7 Increased property and land values along the project area

- i. The value of properties along the project area will be enhanced through the proper design of roadside drainage facilities. The concentrated flow of stormwater runoff collected from the road surfaces shall be well attenuated downstream to avoid flooding and soil erosion
- ii. The road design shall include proper access infrastructure (culverts and drifts whenever practical) to properties located along the proposed roads
- iii. The contractor shall install proper and adequate security features (e.g., "Roller" safety barriers, wire-rope median barrier, pedestrian fencing, etc.) to protect houses and structures located along the proposed project roads using the "forgiving roads concept." A forgiving road design aims at limiting crashes to damage only or minor recoverable injuries

7.3.1.8 Induced development and urban sprawl (local economy growth)

The Planning Department of the DCC should install good governance systems in order to discourage and/or remove such newly upcoming developments along the roads that are against the planning guidelines.

7.3.1.9 Increased income generation through the operation and maintenance of roads

- i. DCC should prepare a fair and transparent recruitment process to allow for potential candidates from the local community to engage in O&M jobs
- ii. DCC should give employment priority to the local community with relevant skills based on skills needed in O&M of roads
- iii. DCC should provide frequent training on O&M requirements for capacity building of the local community to be involved in O&M jobs
- iv. DCC should provide awareness to locals on potential investment and employment opportunities related to O&M of roads

Mitigation of Negative impacts**7.3.2 Impacts on the physical environment****7.3.2.1 *Landscape modification and increased impervious surfaces***

- i. Replanting of and monitoring of the roadside vegetation;
- ii. Regular maintenance of SUDS and nature-based solutions constructed/installed alongside the roads to manage stormwater;
- iii. Enforce laws governing the protection of important drainage structures and receiving water bodies in project-influenced areas.

7.3.2.2 *Increased air quality deterioration (noise levels and emissions) and land pollution*

- vi. Drivers and co-operators shall be sensitized about noise exposure and its effects on the surrounding environment;
- vii. Traffic police to conduct regular inspections of running vehicles to minimize vehicular emissions;
- viii. Speed limit and exhaust emissions standards shall be enforced;
- ix. Vehicle inspecting institutions should insist on regular maintenance of vehicles to minimize emissions of pollutants;
- x. Steep grades at critical locations shall be avoided so as to reduce noise from acceleration, braking, and gear changes and
- xi. Cut sections shall be used (where appropriate) to decrease noise in nearby residences.

7.3.2.3 *Interference with local hydrology*

- vi. Conduct a special wet season study on the hydrological pattern of the affected areas, checking how hydraulic features like detention ponds, retention ponds, rivers, and wetlands (if any) are affected.
- vii. Enforce laws governing the protection of important drainage routes and receiving bodies in project-influenced areas.
- viii. The contractor shall confine construction activities to the core Area
- ix. Prepare drainage restoration and rehabilitation plan
- x. Ensure restoration and rehabilitation of all sites that the proposed sub-projects will impact

7.3.3 Impacts Associated with Poor Management of Roads Infrastructures

- i. DCC shall ensure proper O&M of the proposed road infrastructure. No waste accumulation should be left into drainage channels as they may clog to cause floods around the project influence areas;
- ii. DCC shall ensure improper maintenance of green structures (grass and trees) along the proposed roads such that they are not left to foster mosquito breeding and rodent hiding areas and
- iii. DCC shall make adequate management of security lights to ensure public safety and sustainability.
- iv. The costs for road maintenance

7.3.4 Impacts on Community Health and Safety**7.3.4.1 *Increased road accidents***

- i. To ensure appropriate security of the roads, DCC shall carry out repair and maintenance of roads and its facilities properly and timely;
- ii. Installation of proper road signs and regular inspections for their presence and validity;

- iii. Proper use constructed of pedestrian lanes alongside the roads. DCC to ensure that the pedestrian lanes are strictly used for pedestrians;
- iv. No temporary or permanent business activities shall be allowed within the roads RoW;
- v. Appropriate traffic control signs shall be installed along the main road, along detours;
- vi. The Police force to monitor the driver's behavior, including adherence to speed control measures such as humps and ramps installed with the roads;
- vii. The road design has taken into consideration safety issues related to traffic accidents, especially near settlements and urban centers and in all accident-prone sections. *An investigation is ongoing on the feasibility of the inclusion of an overpass at a highly populated section of the Banana Msongola road (at Kivule Njia Panda, where there are three schools and several business activities);*
- viii. The PIU shall conduct Road safety assessments through the operation phase of the road subprojects, monitor incidents and accidents, and prepare regular reports on such monitoring.

7.4 Impacts during the Decommissioning Phase

7.4.1 Impacts on the quality of air

7.4.1.1 Dust and Noise Pollution

- i. Water sprinkling shall be applied to open earth or soil piles to reduce dust emission;
- ii. Trucks removing leftover construction materials shall be covered if the load is dry and prone to dust emissions;
- iii. In case of demolitions, the demolition area shall be fenced by iron sheets to prevent the spread of windblown dust;
- iv. Community notification shall be undertaken where appropriate where work is likely to cause dust impact on the public and nearby residents;
- v. Minimal sound construction equipment, with noise sinks, shall be used;
- vi. Machine operators in various sections with significant noise levels shall be provided with noise protective gear and
- vii. Construction equipment shall be selected, operated, and maintained to minimize noise.

CHAPTER EIGHT

8 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

8.1 Introduction

The Environmental and Social Management Plan (ESMP) presents the implementation schedule of the proposed mitigation measures for the identified and predicted environmental and socioeconomic impacts and plans for their long-term monitoring activities.

8.2 Institutional structure for ESMP

DCC will implement the DMDP 2 project with support from the President's Office, Regional Administration, and Local Government (PO-RALG).

- PO—RALG will provide overall coordination and technical support to the LGA Project Team, including necessary links with national authorities (e.g., NEMC, DAWASA, TANESCO, etc.).
- The DCC will be responsible for implementing the work, including sub-project E&S requirements and project reporting to WBCU. The DCC will establish a full-time PIT staffed with a dedicated team of officers to carry out safeguard responsibilities. The PIT will be responsible for project implementation, including environmental and social management requirements.

The DCC will use the approved ESMP to guide implementation and monitoring by the Council Teams, EMOs, Construction supervision Consultants, and Contractors.

8.3 Review and Clearance of Environmental and Social Instruments/ Documents, Including Information Disclosure

The proposed project is classified as a '**Substantial Risk project**'; thus, the ESIA report will be reviewed and approved by the WB and NEMC and made available to project-affected groups, local NGOs, and the public at large. Review and approval of ESIA and provision of environmental certificate/permit will be the mandate of the NEMC at the national level. At the WB level, review and approval for public disclosure of ESMF, ESIA, and other safeguard documents such as the SEP and LMP will be the mandate of the PO-RALG and will be conducted on both the WB website and the PO-RALG website. Disclosure will be conducted to reach as wide a range of stakeholders as possible. DCC will disclose the ESIA report by

- Publication in a government newspaper;
- On its website;
- Making copies available at the project's LGAs offices,
- Making copies available to the local government agencies and other stakeholders.
- PO-RALG will also authorize the WB to disclose this ESMF and other safeguard documents on the WB website.

8.4 Capacity Building and Training

The PIT at PO-RALG and the DCC have extensive experience working with the World Bank, particularly in urban projects, accumulated over the past fifteen years. The PO-RALG and the DCC have been actively building their capacity for Environmental and Social Safeguard requirements in construction projects, participating in WB-funded projects. However, as the staffing is not static, the departure of a few members of the PIT has created a need for capacity building for new staff and refresher courses for the ongoing PIT members. The new staff members, including three out of the nine members of the DCC, are crucial to the success of the DMDP 2 project, and therefore, their capacity building is of the utmost importance. Further, training on handling new World Bank ESF/ESS requirements is also very important.

The following teams will benefit from capacity building:

- The DCC PIT and other staff as necessary;
- The Design Consultants, interaction and mentoring with and by ESIA/ESMP Consultants, and Third-Party Monitoring and Supervision Consultants

- Contractors and Supervision Engineers/Consultants
- Roads Maintenance Teams

The Design engineers, contractors, supervising engineers, and entities responsible for design and construction will also train all workers about environmental, social, health, and safety and the site-specific environmental and social measures to be followed. All workers should be trained before starting work on-site, and training should be conducted periodically as needed.

The following issues shall be covered:

- The new World Bank's ESF;
- How to use DMDP 2 Project E&S instruments (ESMF, RPF, SEP and LMP);
- Resettlement issues;
- Stakeholder Engagement;
- Waste management;
- Grievance handling;
- Occupational health and safety (OHS)
- Labor issues and Code of Conduct for Workers;
- Specific aspects of environmental and social assessment and monitoring of the ESIA's, ESMP, and ESMF
- Preparation and implementation of site-specific ESMPs;
- Environmental and social management of construction works;
- Environmental and social supervision of construction works; and
- Reporting requirements, etc.
- Gender-based violence/Sexual Exploitation and Abuse and sexual harassment (SEA/SH).

8.5 Contractor S-ESMP Arrangements at Project Level

The safeguard team of the Contractor (comprising a social, environmental, and safety officer) will ensure that the E&S mitigations are clearly defined, including arrangements for coordination between the various actors responsible for mitigation. The project set-up will include various staff. The head of the organization will consist of a project Manager, Site manager (Works Manager), EHS Manager, Chief Engineer, Mechanical Manager, Assistant Manager, and material Engineer (QA manager). The safeguard team will coordinate activities so that each head of the organization will implement the relevant risk management measures in his section.

The Consultant's safeguard team will represent the client and oversee the performance and compliance of the Contractors' safeguard team.

8.5.1 Public Awareness and Education

The safeguard team of the Contractor shall encourage environmental awareness among foremen before and during the implementation of the road project. The education will include:

- Provision of copies of the ESMP and discuss its contents with all construction supervisors;
- Discuss techniques and answer questions about E&S management at regular site safety meetings;
- Demonstrate proper housekeeping methods
- Inform the supervisors of actions to take in the event of spills of hazardous materials (i.e., oil, fuel, and concrete)
- Installation signage at key locations reminding the team of several aspects of E& S management
- Remind supervisors of fines and penalties that may be levied against the project by the local permitting agencies to control environmental destruction is not adhered to.

The main Contractor needs to be aware that they are responsible for education and informing.

All Subcontractors (if any).

8.5.2 E&S Monitoring by the Contractor

The parameters to be monitored shall be selected based on prevailing environmental conditions during the construction phase. Still, it will be guided by the ones identified in Chapter 9 of this report. The contractor's safeguard team could use the specified methods or any other, provided they are more relevant and meet approved standards.

8.6 Environmental and Social Management Plan

8.6.1 Environmental and Social Costs

The principal environmental and social costs include the costs of implementing proposed mitigation measures and the cost of monitoring specific environmental and social parameters. The estimated costs are to be included in the Contractor's BoQ. Additional costs for implementing environmental and social management measures have been estimated for each project package, as described in Table 8-1, Table 8-2, Table 8-3, Table 8-4, Table 8-5, and Table 8-6.

Table 8-1: Environmental & Social Management Plan (ESMP) for the Proposed Upgrading of DMDP Phase II Roads, Package 1

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
MOBILIZATION PHASE				
1.	Increased Employment Opportunities, Job Creation, and Increased Income to Local Communities	- Ensure employment procedures agree with ESS 2: Labor and Working Conditions; - The employer shall promote safety and health at work as per the requirements of the OHS Regulation, 2003; - Promote fair treatment, non-discrimination, and equal opportunity of project works (including the consideration for vulnerable workers; - Prevent the use of all forms of forced labor and child labor; - support the principles of freedom of association and collective bargaining of project workers in a manner consistent with national law; and provide project workers with accessible means to raise workplace grievances (as per the DMDP II Grievance procedures; - Ensure a fair and transparent recruitment process, which will be outlined as part of the DMDP II Recruitment Management Plan for all openings, including working with DCC and the DLA to advertise openings as early as possible to allow for potential candidates to apply and prepare their skillsets for local opportunities; - Local Content Policy and Plan shall be developed to ensure the local communities benefit from the opportunities; - Setting specific targets for local procurement and SME support within the DCC; - Sensitize communities to engage in activities associated with the project implementation (e.g., food/drinks vending and other needed services, etc.) and - Provide awareness to locals on potential investment and employment opportunities.	Contractor, LGA	1,000,000
2.	Increased income to primary suppliers of road construction materials	- Adhering to WB E&S guidance (ESS2), the contractor shall ensure fair and transparent negotiations in case road construction materials have to be purchased from the local community or the local market in pursuit of poverty reduction and inclusive economic growth; - Setting specific targets for local procurement of construction materials (where feasible) to support affected communities within the DCC; - Sensitize communities to engage in businesses associated with the project implementation (e.g., supply of aggregates, sand, etc.).	Contractor	NA
3.	Minor loss of land and/or loss of properties	- The project must avoid forced eviction of PAPs. - Grievance handling and resolving land-related disputes. - Where it cannot be avoided, loss of land or property, transparent procedures for undertaking property valuation and compensation activities have been developed and shall be followed during implementation;	DCC	See RAP Report

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
		- The developed RAP shall be implemented as per the requirements of ESS5 and Tanzania compensation laws. - RAP has been prepared, so RAP should be implemented before construction starts - All PAPs shall be paid compensation according to Tanzanian Laws before the commencement of the Construction activities.		(i.e., Tentative estimations)
4.	Minor Loss of livelihood	- Enough time shall be given to small business owners doing commercial activities within the acquired road reserve to vacate before the commencement of the project; - In case a project affects legally located businesses, proper valuation and compensation shall be implemented before the commencement of the project; - Implementation of the prepared RAP, conforming to the requirements of the ESS5; - Prepare a proper and permanent area for vendors to operate there legally; - Enforcing the DCC by-laws and other relevant regulations that restrict the use of RoW by vendors/hawkers; - Specific mitigations for Kivule Market: Temporary mitigation: Vendors shall voluntarily relocate to nearby nonproject roads. Permanent mitigation measures: DCC has in its plans to build the Kivule Market to accommodate all vendors currently occupying the RoW.	Contractor, DCC	
5.	Loss of natural habitat and trees	- Confine construction activities to the core area (i.e., within the RoW); - Participatory preparation of clearance, re-vegetation, and restoration management plan following national institutional and legal frameworks, e.g., Standard specifications for road works (2000) section 5700 on landscaping and grassing, Forest Regulation (2004), and Urban Greening Guidelines (2022). The Plan will need to be approved by the relevant organs before the actual implementation. - Plant species to be integrated into the re-vegetation and restoration plan will be equivalent to the ones removed, native/ indigenous, and with a history of good stewardship to the environment and people. Recommended species for shed and cooling include <i>Trichilia emetica</i>, <i>Tamarindus indica</i>, <i>Ziziphus mucronata</i>, and <i>Albizia versicolor</i>, while for river banks stabilizing are <i>O. abyssinica</i>, <i>Panicum maximum</i>, <i>Antidesma venosum</i>, <i>Rauvolfia mombasiana</i> and <i>Bridelia micrantha</i>. For small trees and shrubs for pavement planting, consider <i>Adenium obesum</i>, <i>Carissa spinarum</i>, and <i>Chassalia umbraticola</i>, whereas for road isles, sidewalks, and town parks and reserves, <i>Cynodon nlemfuensis</i>, <i>Combretum constrictum</i>, <i>Markhamia obtusifolia</i>, <i>Commiphora africana</i>, <i>Lannea schweinfurthii</i> and <i>Grewia bicolor</i>. Native trees/shrubs with food importance that can be incorporated include <i>Annona senegalensis</i>, <i>Flueggea virosa</i>, <i>Margaritaria discoidea</i>, and <i>Tamarindus indica</i> along Kitunda-Kivule-Msongola(9.95km) and Kivule-Majohé Jct (2.79km)	Contractor	

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
		- Cleared areas shall be minimized to only touch vegetation within close vicinity of the working sites. Using chemicals to clear the vegetation is strictly prohibited to ensure environmental safety and health; - Raising a temporary fence to protect trees, shrubs, and other important vegetation before the commencement of any works on site; if necessary, impacted top soils will be removed and be re-used during re-vegetation and restoration.		
6.	Loss/Reduction of ecosystem services	- Prepare and implement a vegetation replenishment plan along the project corridor. Re-vegetation shall be done according to the plan specified by the Standard Specifications for Road Works of 2000 Section 5700 (Landscaping and Grassing) and the Dar Greening Handbook. - Confine construction work within the acquired project areas - Enforce laws governing the protection of rare endemic and endangered species - Prepare and implement an invasive species eradication plan in all areas impacted within the Project area - Screen sources of construction materials by identifying all organisms on identified sources - Implement monitoring and evaluation programs to ensure minimum footprint beyond construction sites - Any contaminated soils shall be segregated and transported by the contractor to the waste collection area (WCA) located at the campsite, where it shall be collected separately from other wastes till disposed of by a third party.	Contractor	1,000,000
7.	Damage or relocation of existing utility infrastructure and public services	- In liaison with Utility providers within the project area (i.e., TANESCO, DAWASA, and TTCL shall make arrangements for utility relocation before the construction work begins. - Utility relocation planning shall be done in consultation with the affected suppliers (i.e., TANESCO, DAWASA, SONGAS, TAZARA, TAZAMA, TRC, and TTCL have been involved in the planning and design of the road infrastructure, and their recommendations have been incorporated in the design; - The DCC and the Consultant shall have technical discussions with TRC on the best design options for the railway crossing along the Kitunda-Kivule-Msongola road. The design shall be revisited by the DCC, Consultant, and Contractor during the Construction phase. - Utility relocation planning shall be done in consultation with the affected suppliers, and the relocation costs shall be in the BoQ; - Early notice shall be given to the community before any service interruption; - Provide detailed Information about the location and layout of affected infrastructure to the contractor; - In liaison with utility infrastructure owners to ensure all affected infrastructure is relocated, to the satisfaction of the utility owner, ahead of the execution of the Works and in a manner that minimizes disruption of service to the public. Adequate funds to be included in the BoQ for this purpose.	Contractor, DCC, Owners of affected Utilities (i.e., TANESCO, DAWASA)	This is not included in RAP as per directives from PIT. It will be at the contractors' cost.

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
		- Provide fair, prompt, and effective compensation at full replacement cost of affected utility infrastructure, as specified in the developed RAP; - The developed DMDP II GRM shall provide a process for receiving grievances from communities, individuals, NGOs, and local government and managing them efficiently and transparently. - The owners of the affected infrastructure shall provide the contractor with detailed information about its location and layout.		
8.	Deterioration of air quality (due to dust and increased air emissions)	- Pollution receptors (i.e., households and business centers) should be notified of the scheduling and duration of activities emitting dust and smoke (emissions) - Dust at all working areas within or close to human habitations/ business centers/dispensaries/schools MUST be minimized by periodic (3-4 times a day) water sprinkling on working sections - The generation and release of exhaust emissions of any type shall be managed as per the requirements of the general EHS Guidelines on Air Emissions and Ambient Air Quality through a combination of: ✓ Energy use efficiency in construction equipment and machines; ✓ Use of cleaner fuels (i.e., Compressed natural gas (CNG), which is available in Dar es Salaam - Dust at workplaces within or close to human habitations shall be critically minimized by periodic water sprinkling on working sections. The contractor shall advise or notify local households on the shedding of dust, noise, vibration, and other dangers. - Vehicles and construction machinery must be properly maintained to comply with Tanzanian exhaust emission standards. - Vehicles and construction machinery must be properly maintained to comply with Tanzanian exhaust emission standards. - Dust-generating activities must be slowed down in days of strong winds.	Contractor	1,000,000
9.	Increased traffic and road accident	- By providing alternative diversions whenever necessary, the contractor will ensure that the traffic flow is not interfered with during the entire construction period; - No total closure of the road or drain, for instance, will be allowed; - Provide diversions and deploy a person responsible for traffic safety; - Ensure that prior to all activities, the Project shall assess the risks of the works to local people, including people walking by, people using nearby roads; - Instil a code of conduct for drivers, specifying drivers' behaviors and traffic speed - Ensure that all hazardous materials and equipment are contained and that access to them by local people is prevented.	Contractor	1,000,000

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
		- Flag persons shall be located at strategic locations (e.g., school areas (Heaven daycare and nursery, Daddy's Nursery and primary school, Faraja Islamic pre-and primary school, Kerezange secondary), business centers (kinda junction, civil hospital, etc.), and road sections where traffic passes through the works (half-road) to control traffic movement in and out of construction sites. - Barriers and appropriate signage should be installed to prevent access to other hazardous areas, including areas where equipment and vehicles are operating. - Ensure road width, speed restrictions, and traffic load in the areas in accordance with acceptable standards.		
10.	Increased noise pollution	- During the selection of equipment, the contractor should select equipment with lower sound power levels. - Limit the speed of the vehicles to 20 kmph or by placing speed limits/signs/humps within construction sites, - The city authority is responsible for compliance with the relevant national legislation with respect to noise and vibration, - The impacts of noise emissions will further be minimized by proper choice of plants and machinery (i.e., fitted with noise and dust silencers or reducers) and locating quarry areas away from human habitations (at least 500 m away) - Silence and a good choice of equipment should critically minimize noise at workplaces within or close to human habitations. The contractor shall advise or notify local households on the shedding of noise and other dangers associated with the project.	Contractor	1,000,000
11.	Risk of environmental pollution by demolition waste	- Adhere to local and the WBG EHS Guidelines and the ESS guidelines on waste management. - PAPs will be given a chance to demolish parts of affected structures and recover whatever materials they wish to recover. For example, cement blocks, iron sheets, wood, plumbing works, etc could be re-used in house construction; - Recyclable materials such as scrap metal, plastics, wood, and glass shall be sorted, separated, and stored at the waste recycling plant, located at the nearest Contractors campsite (awaiting removal by licensed Subcontractor); - The remaining on-recyclables (spoils, broken tiles, and waste mortar shall be transported to the Pugu Kinyamwezi dumpsite.	Contractor	A per RAP
CONSTRUCTION PHASE				
12.	Job creation and increased	- Implement Local Content Policies - Sensitize communities to engage in activities associated with the project (e.g., food production, service sector, etc.),	Contractor, LGA	1,000,000

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
	income to local communities	- Give employment priority to the local community with relevant skills based on gender. - Provide job training to workers. - Provide awareness to locals on potential investment and employment opportunities.		
13.	Increased noise pollution	- Planning activities in consultation with local communities (Mitaa Offices) so that activities with the greatest potential to generate noise are planned during periods of the day that will result in the least disturbance - Using noise control devices, such as temporary noise barriers and deflectors for impact and blasting activities, and exhaust muffling devices for combustion engines. - Drilling should be carried out with sharp drill bits to reduce noise levels, and much attention should be paid to areas close to school(Heaven Daycare and nursery, Daddy's Nursery and primary school, Misitu Secondary School, Mbonea Secondary School, Kerezange Secondary School, Zawadi nursery and primary school, Click nursery and primary, Faraja Islamic pre & primary school, Ben ubeti secondary), worshipping areas(Al masjid huda (mosque yangeyange msongola), Moravian church, EAGT church, KKKT churches, TAG and Anglican church, Ndambwe mosque, Efatha church, Masjid Taqwa Silali mosque, Efatha, TAG, WRM and KKKT) and dispensary/hospital(Kivule hospital), Msongola orphanage trust fund, Ufunuo and chapa kazi dispensaries, Msongola market, Meru dispensaries, Chang'ombe dispensaries, Kivule police station, Kitunda police station along the proposed Kitunda-Kivule-Msongola(9.95km) and Kivule-Majohe Jct (2.79km) - Construction workers in noisy sections should be provided with ear protective devices (earmuffs and/or earplugs). - Noise equipment shall be installed with acoustic barriers without gaps and with a continuous minimum surface density of 10kg/m² in order to minimize the transmission of sound through the barrier. - Limit the hours of operation for specific pieces of equipment or operations, especially mobile sources operating through community areas. - During the selection of equipment, the contractor shall select equipment with lower sound power levels. - Limit the hours of operation for specific pieces of equipment or operations, especially mobile sources operating through community areas.	Contractor	1,000,000
14.	Deterioration of air quality due to increased air emissions and dust	- Dust emissions will be mitigated by sprinkling water at the construction sites and access roads to suppress dust; all machinery, equipment, and vehicles will be switched off when not in use; - Concrete mixing plants will be located away from residential; and all project workers will be provided with protective masks to prevent them from inhaling fumes and dust. - Water sprinkling to reduce the dust at construction sites and near settlements. Sprinkle water as necessary (at least twice a day) when visual inspection indicates excessive dust and during heavy traffic.	Contractor, LGA	1,000,000

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
		- Pollution receptors (i.e., households and business centers) should be notified of scheduling and duration of activities emitting dust and smoke (emissions) - Use of dust masks for operators and those working in dusty areas. - Construction machines/ equipment shall be well maintained to manufacturers' requirements to ensure total fuel combustion. - All the vehicles shall be frequently checked and serviced during the whole construction period so that the level of exhaust emissions is reduced. - Dust at all working areas within or close to human habitations, business centers (Kitunda et al. in Msongola), dispensaries (Kivule Hospital), and schools(Daddy's School) MUST be minimized by periodic (3-4 times a day) water sprinkling on working sections. - Movement of vehicles should be kept to the minimum necessary for completing the job; - Limit the speed of the vehicles to 20kmph or by placing speed limits/signs/humps within the construction site. - Dust-generating activities must be slowed down in days of strong winds.		
15.	Risk of damage to private properties due to increased vibration levels	- Baseline conditions of structures close to the construction sites should be recorded (by photos and videos). - The road design shall include proper access infrastructure (culverts and drifts whenever practical) to properties located along the proposed roads. - Install proper and adequate security features (e.g., "Roller" safety barriers, wire-rope median barriers, pedestrian fencing, etc.) to protect houses and structures located along the proposed project roads using the "forgiving roads concept." A forgiving road design aims to limit crashes to damage only or minor recoverable injuries. - In case construction activities damage any structure, the baseline conditions shall be compared to situations before, during, and after. The Contractor shall be responsible for repairing the damage. - Shattering of excavations and physical protection of structures shall be emphasized to minimize potential damage to buildings due to vibration of heavy machines; - Employ Engineering controls (temporary or permanent retaining wall) to support adjacent private structure; - Confine construction work within the acquired project areas. - Make proper identification of structures prone to vibration damage and prepare proper protection plans.	Contractor	1,000,000

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
16.	Loss of definite materials and land degradation at the quarry sites	- Ensure the efficient use of construction materials, including re-use and recycling of materials (as per the requirement of ESS3 on Resource Efficiency and Pollution Prevention and Management) - The project shall adhere to ESS 3 on Resource Efficiency and Pollution Prevention and Management, which requires efficacy use of raw materials: - Construction materials must be obtained from authorized sources - Potential long-term environmental impacts of borrow pits and quarry sites relate to how they are left once the resource has been extracted. In this case, all borrow pits and quarries shall be rehabilitated and properly landscaped after construction is completed. Pits shall not be left with steep or vertical sides. - The topsoil shall be stockpiled for later use in reinstating the pit. Shallow slopes will encourage rapid re-vegetation, thus preventing erosion and providing safety to animals. Excavated soils (top fertile fraction) shall be used for replenishing vegetation after the construction phase. - The topsoil (except for the dumpsite area) shall be stockpiled for later use in reinstating the pit. Shallow slopes will encourage rapid re-vegetation, thus preventing erosion and providing safety to animals. Excavated soils (top fertile fraction) from the proposed roads shall be used for replenishing vegetation after the construction phase. - Obtaining sand from valleys and riversides must be Authorised by the Authority (e.g., the DCC, WAMI RUVU BASIN WATER BOARD/NEMC) and well investigated to avoid accelerated land degradation and pollution of water resources. - Collaborate with local authorities where the materials are extracted to carry out afforestation programs to replenish natural ecosystems. - All borrow pits and quarries shall be rehabilitated and properly landscaped after the construction is completed. Pits shall not be left with steep or vertical sides.	Contractor and DCC	3,300,000
17.	Increased pressure on natural resources	- Collaborate with local authorities from where the local materials will be extracted to carry out afforestation programs for the replenishment of nature ecosystems; - Explore and use alternative sources of water away from sensitive areas and community sources; - Undertake water harvesting on worker's camps if feasible; - Adequate protection to the general public, including safety barriers and marking of hazardous areas; safe access across the construction site; - Where necessary, the contractor Supports the cost of local social services through corporate Social Responsibility.	Contractor, DCC	3,300,000

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
18.	Increased water and soil pollution	- No works should be undertaken within 10m of a watercourse unless it is part of the permanent design; - Adhere to the GIIP on waste management to prevent littering and leaching on soils and waste. Skip Buckets and waste containers should be provided at the campsite. - Any wastewater contaminated with oils, fuels, bitumen, or other chemical substances shall be intercepted by an oil and grease interceptor trap before being discharged into the wastewater treatment facility and formal disposal. - Provide sheets and screens to prevent debris and construction material from falling into the water (i.e., Mzinga River, Magereza at Kipunguni JNIA, kwa Chacha Msongola after frame kumi. etc.) - Ensure timely repair of all construction equipment to avoid fuel and oil leakage; - Ensure adequate spill kits containing, at minimum, absorbent matt, adsorbent materials, booms, and other equipment necessary to contain and clear up any spills to ground or water courses are provided at suitable and regular locations on site. - Prepare and obtain approval from the client on emergency response procedures. - Avoid washing construction equipment at the intake or near perennial streams; - Washing of construction equipment and machinery shall only be permitted in agreed areas, with an impermeable base and suitable system for the collection of wash water for treatment prior to its disposal; - Obtain a water use permit from water WRBWB before drilling boreholes or for surface water.	Contractor	5,000,000
19.	Soil erosion and instability of slopes	- Efforts must be made to minimize unnecessary vegetation clearance. Proper cut-off drains should be constructed before construction works commence. - The impact will be mitigated by minimizing unnecessary vegetation clearance and proper cut-off drains, which will have to be constructed before the commencement of construction works. - Construction of drainage system to collect stormwater and direct it safely downstream receiving environment, - Removed vegetation and trees within the Construction Corridor must be replanted with either the original or ones with more ecological value (i.e., ecosystem services desired by residents such as fruits, shade, wood, etc.). - Landscaping and reinstatement of the areas that were grabbed during construction - Retention and restoration of much of the original vegetation, which includes trees through replanting of ecologically valuable plant species; Regular monitoring of areas affected by construction-related activities and/or erosion - Special considerations must be given to sections of the road prone to erosion. The most effective erosion control devices must be implemented:	Contractor	2,300,000

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
		i) temporary seeding; ii) temporary mulching; iii) temporary or permanent erosion control blankets; iv) permanent vegetative buffer strips - Proper grading shall be done to promote sheet flow and minimize flow concentration on unconsolidated soil - The use of heavy equipment and techniques that will result in excessive soil disturbances or compaction of soils must be minimized.		
20.	Pollution by solid waste and hazardous waste materials	- Provide adequate secondary containment for fuel storage tanks and the temporary storage of other fluids, such as lubricating oils and hydraulic fluids, - Using impervious surfaces for refueling areas and other fluid transfer areas - Training workers on the correct transfer and handling of fuels and chemicals and the response to spills - Providing portable spill containment and clean-up equipment on site and training in the equipment deployment - Assessing the presence of hazardous substances in or on building materials (e.g., polychlorinated biphenyls, asbestos-containing flooring, or insulation) and decontaminating or properly managing contaminated building materials.	Contractor	1,500,000
21.	Impacts of liquid wastes (i.e., human waste and spent water)	- Establish the quality, quantity, frequency, and sources of liquid effluents at the campsite and prepare collection, treatment and safe disposal measures; - Plan and implement segregation of wastewater from other hazardous liquid waste and stormwater, in order to limit the volume of water requiring specialized treatment. - Identify opportunities to prevent or reduce wastewater pollution through measures such as recycling/reuse within their facility, input substitution, or process modification (e.g., change of technology or operating conditions/modes). - Assess compliance of their wastewater discharges with the applicable: (i) discharge standard (if the wastewater is discharged to surface water or sewer), and (ii) water quality standard for specific reuse (e.g., if the wastewater is reused for irrigation). - Ensure any discharges conform to local wastewater discharge standards of 2019.	Contractor	1,500,000
22.	Risk of land and water source pollution by	- No works should be undertaken within 10m of a watercourse unless it is a part of the permanent design (i.e., at Kivule - Msongola bridges/Mzinga River and Kivule-Majohe road near Kivule hospital) - Avoid washing construction equipment at the intake or near perennial streams	Contractor	2,000,000

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
	hazardous wastes	- Make timely repairs to all construction equipment to avoid fuel and oil leakage - Obtain a water use permit from the Wami Ruvu Basin Water Board (WRBWB) before drilling any boreholes - Any wastewater contaminated with oils, fuels, bitumen, or any other chemical substances shall be intercepted by an oil and grease interceptor trap before discharge into the wastewater treatment facility and formal disposal. - Assess the contents of hazardous materials and petroleum-based products in building systems (e.g., polychlorinated biphenyls (PCB) containing electrical equipment, asbestos-containing building materials) and process equipment and removing them prior to initiation of decommissioning activities, and manage their treatment and disposal according to Hazardous Waste Management guideline, 2013 - Ensure adequate spill kits containing as a minimum absorbent matt, adsorbent materials, booms, and other equipment necessary to contain and clear up any spills to ground or water courses are provided at suitable and regular locations on site - Make timely repairs to all construction equipment to avoid fuel and oil leakage; - Ensure adequate spill kits containing, at minimum, absorbent matt, adsorbent materials, booms, and other equipment necessary to contain and clear up any spills to ground or water courses are provided at suitable and regular locations on site. - Prepare and obtain approval from the client on the emergency response procedure (ERP) - Construction equipment and machinery shall only be washed in agreed-upon areas with an impermeable base and suitable system for collecting wash water for treatment prior to its disposal.		
23.	Loss of accessibility to adjacent properties	- Consider changing the project design and assessing all viable alternatives to avoid the need for access restrictions. This might involve giving preference to alternative project approaches and/or adjusting the project's boundaries. - Ensure that full information is disclosed about project activities and potential impacts on people's rights and livelihood; - The road design shall include proper access infrastructure (culverts and drifts whenever practical) to properties located along the proposed roads. - Ensure that affected groups are asked to consent to a project or a particular activity and have the right to give their consent, withhold it, or offer it conditionally. - Where restrictions cannot be avoided, DCC, in collaboration with the local communities, will identify a fair and adequate strategy for compensation and provision of benefits for livelihood restoration or enhancement.	Contractor, DCC, and Ward/Mtaa leaders	2,000,000

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
24.	Job-seekers influx	- The hiring of available local labor force (engage the local government authority in job advertising) - The local government should educate the locals on the requirements and procedures to be followed before accommodating outsiders; - Raise awareness to local communities to consider the project as an opportunity. - Encourage the conservation of Indigenous technologies and cultural practices. - Encourage local communities to produce local materials that can be sold outside their local markets.	Contractor, LGA	2,000,000
25.	Workers community negative interactions	- The implementing project contractor shall restrict the trivial entrance of surrounding community members into the working campsites and other working areas. - Encourage maintenance of cultural practices and traditional knowledge systems. - Raise awareness to local communities to consider the project as an opportunity.	Contractor	1,500,000
26.	Potential increase in road accidents and other community safety risks	- A Traffic Management Plan (TMP) will be in place during construction, and appropriate traffic control signs will be installed along the main road along detours in collaboration with the Police force to monitor vehicles and drivers' behavior. The road design has taken into consideration safety issues related to traffic accidents, especially near settlements and urban centers and in all accident-prone sections. - Installation of proper road signs and regular inspections for their presence - Installation of speed control devices like humps - Instill a code of conduct for drivers, specifying drivers' behaviors and traffic speed - Where feasible, the design has included the installation of pedestrian lanes at human settlement crossings; - Appropriate traffic control signs shall be installed along the main road and detours, and the Police force shall collaborate to monitor vehicles and drivers' behavior. - The road design has taken into consideration safety issues related to traffic accidents, especially near settlements and urban centers and in all accident-prone sections. - The PIT shall conduct Road safety assessments during the Construction phase, monitor incidents and accidents, and prepare regular reports on such monitoring.	Contractor	3,300,000
27.	The potential spread of social illness (i.e., STI, COVID 19 and HIV/AIDS)	- Prepare and adhere to an approved HIV/AIDS, COVID-19, and other communicable diseases education and Awareness Program. Provide Voluntary Counselling and Testing (VCT) centers for HIV/AIDs at the workplace, - Enforce HIV/AIDS laws and regulations that prohibit stigma and discrimination, and be responsible for taking care of the affected communities.	Contractor, DCC	30,000,000

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
		- Provide Voluntary Counselling and Testing (VCT) centers for HIV/AIDs at the workplace and give convenient time for workers to participate. - Changing work schedules account for the time involved and accommodate social distancing measures. - Restrict trivial entrance of surrounding community members into the working campsites and other working areas. - Providing ample safety measures, accounting for Coronavirus (Provision of masks, sanitizer and water to workers. - Employ a qualified health professional to lead the management of COVID-19 and communicable disease risks during construction. - Undertake screening programs for communicable diseases such as HIV/AIDS and TB based on the prevailing risk profile. - Worker induction, Project training, and awareness campaigns must include Sexually Transmitted Diseases and HIV/AIDS. Condoms must be made available to Project workers. - Work closely with respective DCC departments, local NGOs, faith-based organizations, and local communities involved in COVID-19, HIV, and reproductive health.		
28.	Labor and working conditions	- Application of developed Labor Management Procedure; Code of Conduct, GRM for DMDP II, - Working terms and conditions of employment shall address national legal requirements as a minimum and ESS 2: Labor and Working Conditions; - The contractor should ensure a fair and transparent recruitment process is outlined in the Recruitment Management Plan for all openings. This includes working with DCC and local authorities to advertise openings as early as possible, allowing potential candidates to apply and prepare their skillsets for local opportunities. - Develop and make available to all project workers the key commitments made regarding labor management for the project. - Promote fair treatment, non-discrimination, and equal opportunity for both skilled and unskilled workers. Support principles of freedom of association and collective bargaining of workers in a manner consistent with national law. - Provide mechanisms for project workers to raise workplace grievances freely. - Provide a clear contract of employment to all workers prior to starting their work on the project. - Local Content Policy and Plan shall be developed to supplement the Influx Management Plan. - Give employment priority to the local community with relevant skills based on gender. - Provide awareness to locals on potential investment and employment opportunities.	Contractor	1,500,000

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
		- Provided worker's code of conduct to all project workers before they sign their contract of employment - Develop a Worker's Code of Conduct which will direct project workers on appropriate behaviours. - All workers must sign a worker's code of conduct before they sign their contract of employment. - Prohibit physical violence, discrimination, harassment, bullying, violence, and promote equal opportunity. - The Project must be implemented in compliance with local labor laws and national legislation as well as the World Bank's ESS2.		
29.	Increased cases of occupational and health risks	- Obtain registration by the Occupational Health and Safety Authority (OSHA) as early as possible before works commence. - Install fire prevention facilities and obtain FIRE certification as early as possible before work commencement. - Develop a plan for Worker's OHS induction training, in-job training, and toolbox meetings. - Consider eliminating the hazard by removing the activity from the work process, controlling the hazard at its source through the use of engineering controls, and minimizing the hazard through the design of safe work systems and administrative or institutional control measures. Examples include job rotation, training safe work procedures, lock-out and tag-out, workplace monitoring, limiting exposure or work duration, etc. - Providing appropriate personal protective equipment (PPE) in conjunction with training, use, and maintenance of the PPE - All job recruitment and labor management must comply with local Labour laws and legislation as well as the World Bank's ESS2, including the implementation of OHS measures in the ESMP. - There must be site-specific Emergency Prevention Preparedness and Response arrangements for emergencies.	Contractor	2,000,000
30.	Risk of increased GBV and Sexual Exploitation and Abuse	- Develop and implement anti-GBV and anti-sexual harassment policies as per the requirements of ESS 2 and ESS 4; - Appoint senior focal points with responsibility for ensuring that commitments and policies to prevent GBVH and sexual harassment policies are implemented; - The contractor should put in place monitoring systems at the highest levels for regular reporting on GBVH. - Include requirements around GBVH in codes of conduct, policies, and protocols for contractors, including training on policies and procedures once developed; - Ensure codes of conduct are publicly disclosed in local languages and are widely accessible to all workers and all groups of people in project areas;	Contractor	2,300,000

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
		- Deliver periodic mandatory training on GBVH to all workers, including contractors, subcontractors, and core suppliers, as well as relevant consultants and clients; - The contractor should engage expertise (e.g., from local women's rights organizations or NGOs working on GBVH) to conduct awareness campaigns to provide information to local communities, such as what is unacceptable behavior and how to report an incident of GBVH; - Provide a grievance mechanism for all direct workers and contracted workers (and, where relevant, their organizations) to raise the workplace. - GBV and SEA concerns. Workers must be informed of the grievance mechanism at the time of recruitment and the measures put in place to protect them against any reprisal for using it.		
31.	Risk of increased child labor and abuse	- Abiding by labor and working conditions provided by World Bank guidelines (ESS2), the contractor is to Prepare and make available Necessary manuals and policies related to anti-child labor (under 18 years of age) action plans. - Liaise with local community development officers and available NGOs that can provide support to vulnerable children in the project area. - Awareness to the public on the minimum age for employment and labor rights should be conducted.	Contractor	2,000,000
32.	Impacts on graveyards	- Extra care must be taken to protect the graves when working near the graveyards (i.e., along the Kitunda-Kivule - Msongola road) - Local laws should be applied in case graveyards are accidentally impacted by the project. - PAPs should use GRM to raise grievances regarding the affected graveyards in case of accidental destruction.	Contractor, DCC	2,000,000
33.	Chance finds	- Conduct shovel test pits to assess the archaeology where project structures and bridges will be constructed; - Conserve and manage any discovered archaeological materials and sites.	Contractor	2,000,000
34.	Increased traffic and road accident	- Prepare and implement a traffic management plan (TMP) indicating which routes will be used and when. - By providing alternative diversions whenever necessary, the contractor will ensure that the traffic flow is not interfered with during the entire construction period; - The design of the road shall recommend proper road surface dressing such that the proposed roads are safer, with a non-skid surface, and proper waterproofing materials shall be proposed. - Install proper and adequate traffic signs to avoid frequent accidents.	Contractor and Ward/Mtaa leaders	3,000,000

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
		- No total closure of the road or drain, for instance, will be allowed; - Provide diversions and deploy a person responsible for traffic safety; - Flag persons shall be located at strategic locations (i.e., school area(Heaven Daycare and Nursery, Daddy's Nursery and Primary School, Misitu Secondary School, Mbonea Secondary School, Kerezange Secondary School, Zawadi Nursery and Primary School, Click Nursery and primary, Faraja Islamic pre & primary school, Ben ubeti secondary), worshipping areas(Al masjid huda (mosque yangeyange msongola), Moravian church, EAGT church, KKKT churches, TAG and Anglican church, Ndambwe mosque, Efatha church, Masjid Taqwa Silali mosque, Efatha, TAG, WRM, and KKKT) and dispensary/hospital(Kivule hospital), Msongola orphanage trust fund, Ufunuo and chapa kazi dispensaries, Msongola market, Meru dispensaries, Chang'ombe dispensaries, Kivle police station, Kitunda police station along the proposed Kitunda-Kivule-Msongola(9.95km) and Kivule-Majohe Jct (2.79km) and at road sections where traffic is passed through the works (half road) to control traffic movement in and out of construction sites. - Ensure that all hazardous materials and equipment must be contained and access to them by local people must be prevented; - The community must be informed of any road/road section closing, and alternative parking shall be provided. - Instil a code of conduct for drivers, specifying drivers' behaviors and traffic speed - Install proper signage and frag personnel at Kitunda the Railways Crossing to alert road users and the construction team about a coming train. - Ensure that the safety personnel assess the risks of the works to local people, including people walking by and people using nearby roads, prior to all activities. - Put barriers and warning signs around open excavations to prevent people from falling into them. - Barriers and appropriate signage should be installed to prevent access to other hazardous areas, including areas where equipment and vehicles are operating. - Undertake visual inspections to confirm that nobody has entered the site and is in a hazardous location, e.g., people sleeping under equipment. - Ensure road width, speed restrictions, and traffic load in the areas in accordance with acceptable standards. - Use engineering control and best GIIP to avoid damage in areas where the gas pipeline (SONGAS) crosses the Kitunda-Kivule-Msongola (9.95km) road.		

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
OPERATION AND MAINTENANCE PHASE				
35.	Job creation and increased income to local communities	- Prepare a fair and transparent recruitment process to allow potential candidates to apply and prepare their skillsets for local opportunities. - Give employment priority to the local community with relevant skills based on gender. - Provide OHS on-job training to workers - Provide awareness to locals on potential investment and employment opportunities	DCC	2,000,000
36.	Improved transport services	- Set appropriate O&M measures to attain the design life of the roads and the safety of users - Improve feeder roads in rural areas connecting to the project roads - Ensure the availability of public transport along the proposed roads to improve mobility benefits.	DCC	1,000,000
37.	Improved stormwater drainage	- Make frequent clean-up of drainage infrastructure, including appropriate O&M schedule - Provision of community sensitization to secure and protect drainage infrastructure - Community awareness to avoid using drainage infrastructure for solid waste and other domestic waste dumping - Sensitize communities to engage in activities that will improve vegetation cover on roadside drainage channels and catchment areas.	DCC	2,000,000
38.	Improved traffic congestion in the city	- Announce and register public transport routes to commute, including the proposed roads - Improve feeder roads from the sub-urban areas connecting to the project roads - Installation of speed control devices like humps, Training of drivers and pedestrians, and placing of pedestrian lanes at human settlement crossings shall be emphasized to make traffic even better. - Ensure traffic signs are adequately provided and periodically check for their presence. - Local government authorities should facilitate the establishment of income-generating alternatives for adversely affected people. - Provide adequate O&M of road furniture, traffic lights, and signage.	LATRA, DCC	
39.	Reduced vehicle operation costs	- Reduced traffic will increase the average travel time in the city, which will have ripple effects on reducing vehicle tear and wear. - Ensure frequent road maintenance.	DCC	2,000,000

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
40.	Improved community life services and status	- In collaboration ensure the cleanliness of the proposed roads to minimize dust emissions. - Improve feeder roads from the sub-urban areas connecting to the project roads	DCC	-
41.	Increased property and land values along the project area	- The value of properties along the project area will be enhanced through the proper design of roadside drainage facilities. - The concentrated flow of stormwater runoff collected from the road surfaces shall be well attenuated downstream to avoid flooding and soil erosion, making the land safe.	DCC	2,000,000
42.	Induced development and urban sprawl (local economy growth)	- The DCC's Planning Department should install good governance systems to discourage and/or remove new developments along the roads that violate the planning guidelines. - Restrict the establishment of any permanent or temporary business, parking lots, or any other.	DCC	2,000,000
43.	Increased income generation through the operation and maintenance of roads	- Prepare a fair and transparent recruitment process to allow for potential candidates from the local community to engage in O&M jobs - Give employment priority to the local community with relevant skills based on skills needed in O&M of roads - Provide frequent training on O&M requirements for capacity building of the local community to be involved in O&M jobs - Provide awareness to locals on potential investment and employment opportunities related to O&M of roads .	DCC	2,000,000
44.	Landscape modification and increased impervious surfaces	- Replanting of and monitoring of the roadside vegetation; - There must be Regular maintenance of SUDS and nature-based solutions constructed/installed alongside the roads to manage stormwater; - Enforce laws governing the protection of important drainage structures and receiving water bodies in project-influenced areas.	LGA, DCC	2,000,000
45.	Increased air quality deterioration (noise levels)	- Drivers and co-operators shall be sensitized about noise exposure and its effects on the surrounding environment; - Traffic police to conduct regular inspections of running vehicles to minimize vehicular emissions; - Speed limit and exhaust emissions standards shall be enforced;	DCC, LATRA.	3,300,000, which will be taken from DCC

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
	and emissions) and land pollution	- Vehicle inspecting institutions should insist on regular maintenance of vehicles to minimize emissions of pollutants; - Steep grades at critical locations shall be avoided so as to reduce noise from acceleration, braking, and gear changes and - Cut sections shall be used (where appropriate) to decrease noise in nearby residences.		Maintenance Budget
46.	Interference with local hydrology	- Conduct a special wet season study on the hydrological pattern of the affected areas, checking how hydraulic features like the Mzinga River and Magereza River at JNIA Kipunguni, kwa chacha after frame kumi (Kitunda-Kivule—Msongola road), and at Kivule hospital (Kivule-Majohe just road) are affected. - In the case of the affected area, the DCC shall ensure restoration and rehabilitation activities are confined to the core Area impacted - Ensure drainage restoration and rehabilitation plans are prepared	DCC	6,000,000 which will be taken from DCC Maintenance Budget
47.	Impacts Associated with Poor Management of Roads Infrastructures	- Ensure proper O&M of the proposed road infrastructure. No waste accumulation should be left into drainage channels as they may clog to cause floods around the project influence areas; - Ensure improper maintenance of green structures (grass and trees) along the proposed roads such that they are not left to foster mosquito breeding and rodent hiding areas and - Make adequate management of security lights to ensure public safety and sustainability.	DCC	13,000,000 which will be taken from DCC Maintenance Budget
48.	Increased Road accidents	- To ensure appropriate security of the roads, DCC shall carry out repair and maintenance of roads and its facilities properly and timely; - Installation of proper road signs and regular inspections for their presence and validity; - Proper use of constructed pedestrian lanes alongside the roads. DCC to ensure that the pedestrian lanes are strictly used for pedestrians; - No temporary or permanent business activities shall be allowed within the roads RoW; - Appropriate traffic control signs shall be installed along the main road, along detours; - The Police force to monitor the driver's behavior, including adherence to speed control measures such as humps and ramps installed with the roads; - The road design has taken into consideration safety issues related to traffic accidents, especially near settlements and urban centers and in all accident-prone sections. <i>Such as the inclusion of an overpass at a highly populated section of the Kitunda-Kivule-Msongola road (at Kivule Njia Panda, where there are Kitunda Primary, Jitihada Primary, Kitunda Ward offices, TAG Church, and several business activities);</i> - The PIT shall conduct Road safety assessments through the operation phase of the road subprojects, monitor incidents and accidents, and prepare regular reports on such monitoring.	DCC, LATRA,	
DECOMMISSION PHASE				

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
49.	Dust and Noise Pollution	- Water sprinkling shall be applied to open earth or soil piles to reduce dust emission; - Trucks removing leftover construction materials shall be covered if the load is dry and prone to dust emissions; - In case of demolitions, the demolition area shall be fenced by iron sheets to prevent spread of windblown dust; - Community notification shall be undertaken where appropriate where work is likely to cause dust impact on the public and nearby residents; - Minimal sound construction equipment, with noise sinks, shall be used; - Machine operators in various sections with significant noise levels shall be provided with noise protective gear and - Construction equipment shall be selected, operated, and maintained to minimize noise.	DCC, LGA, Contractor	To be included in the Decommissioning plan
Sub Total 1 (Mobilization and Construction phase), which includes the costs for RAP, HIV/AIDS prevention program, and road safety intervention				101,361,875
Sub Total 2 (Operation phase)				37,300,000
GRAND TOTAL				138,661,875

Table 8-2: Environmental & Social Management Plan (ESMP) for the Proposed Upgrading of DMDP Phase II Roads, Package 2

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
MOBILIZATION PHASE				
1.	Increased Employment Opportunities Job Creation and Increased Income to Local Communities	- Ensure employment procedures agree with ESS 2: Labor and Working Conditions; - The employer shall promote safety and health at work as per the requirements of the OHS Regulation, 2003; - Promote fair treatment, non-discrimination, and equal opportunity of project works (including the consideration for vulnerable workers; - Contractor must prevent the use of all forms of forced labor and child labor; - support the principles of freedom of association and collective bargaining of project workers in a manner consistent with national law; and provide project workers with accessible means to raise workplace grievances (as per the DMDP II Grievance procedures; - Ensure a fair and transparent recruitment process which will be outlined as part of the DMDP II Recruitment Management Plan for all openings including working with DCC and the DLA to advertise openings as early as possible to allow for potential candidates to apply and prepare their skillsets for local opportunities; - Local Content Policy and Plan shall be developed to ensure the local communities benefit from the opportunities; - Setting specific targets for local procurement and SME support within the DCC; - Sensitize communities to engage in activities associated with the project implementation (e.g., food/drinks vending and other needed services, etc.); and - Provide awareness to locals on potential investment and employment opportunities.	Contractor, LGA	1,000,000
2.	Increased income to primary suppliers of road construction materials	- Adhering to WB E&S guidance (ESS2), the contractor shall ensure fair and transparent negotiations in case road construction materials have to be purchased from the local community or from the local market in pursuit of poverty reduction and inclusive economic growth; - Setting specific targets for local procurement of construction materials (where feasible) to support affected communities within the DCC - Sensitize communities to engage on businesses associated with the project implementation (e.g., supply of aggregates, sand etc.).	Contractor	NA
3.	Minor loss of land and/or loss properties	- The project must avoid forced eviction of PAPs - Grievance handling and resolving land-related disputes - RAP has been prepared so RAP should be implemented before construction starts	Contractor/ LGA/ DCC/DCC	as indicated into RAP Report

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
		- Where it cannot be avoided, loss of land or property, transparent procedures for undertaking property valuation and compensation activities have been developed and shall be followed during implementation; - The developed RAP shall be implemented as per the requirements of ESS5 and Tanzania compensation laws. - All affected persons shall be paid compensation according to Tanzanian Laws before commencement of the Construction activities - For affected properties, the DCC shall conceive and execute resettlement activities (expected along the Migombani road) as sustainable development program by providing sufficient compensation to enable displaced persons to benefit directly from the project.		(i.e. Tentative estimations)
4.	Minor Loss of livelihood	- Enough time shall be given to small business owners doing commercial activities within the acquired road reserve to vacate before the commencement of the project; - In case a project affects legally located businesses proper valuation and compensation shall be implemented before the commencement of the project; - Implementation of the prepared RAP, conforming to the requirements of the ESS5; - Prepare a proper and permanent area for vendors to legally operate there; - Enforcing the DCC by laws and other relevant regulations which restrict the use of RoW by vendors/hawkers;	Contractor, DCC	
5.	Loss of natural habitat and trees	- The contractor shall be emphasized to confine construction activities to the core area (i.e. within the RoW); - Participatory preparation of clearance, re-vegetation and restoration management plan following national institutional and legal frameworks e.g. Standard specifications for road works (2000) section 5700 on landscaping and grassing, Forest Regulation (2004) and Urban Greening Guidelines (2022). The Plan will need to be approved by the relevant organs before the actual implementation. - Plant species to be integrated in re-vegetation and restoration plan will be equivalent to the ones removed, native/ indigenous and with history of good stewardship to the environment and people. Recommended species for shed and cooling include <i>Trichilia emetica</i>, <i>Tamarindus indica</i>, <i>Ziziphus mucronata</i>, and <i>Albizia versicolor</i> while for river banks stabilizing are <i>O. abyssinica</i>, <i>Panicum maximum</i>, <i>Antidesma venosum</i>, <i>Rauvolfia mombasiana</i> and <i>Bridelia micrantha</i>. For small trees and shrubs for pavement planting consider <i>Adenium obesum</i>, <i>Carissa spinarum</i> and <i>Chassalia umbraticola</i> whereas for road isles, sidewalks and town parks and reserves <i>Cynodon nlemfuensis</i>, <i>Combretum constrictum</i>, <i>Markhamia obtusifolia</i>, <i>Commiphora africana</i>, <i>Lannea schweinfurthii</i> and <i>Grewia bicolor</i>. Native trees/shrubs with food importance that can be incorporated include <i>Annona senegalensis</i>,	Contractor	

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
		Flueggea virosa, Margaritaria discoidea and Tamarindus indica along Kiwalani Community Roads (8.74 km) - Cleared areas shall be minimized to only touch vegetation within close vicinity to the working sites. Using chemicals to clear the vegetation is strictly prohibited to ensure environmental safety and health; - Raising a temporary fence to protect trees, shrubs, and other important vegetation, before the commencement of any works on site, if necessary impacted top soils will be removed and be re-used during re-vegetation and restoration.		
6.	Loss/Reduction of ecosystem services	- Prepare and implement a vegetation replenishment plan along the project corridor. Re-vegetation shall be done according to the plan specified by the Standard Specifications for Road Works of 2000 Section 5700 (Landscaping and Grassing) and the Dar Greening Handbook. - Confine construction work within the acquired project areas - Enforce laws governing the protection of rare endemic and endangered species - Prepare and implement an invasive species eradication plan in all areas impacted within the Project area - Screen sources of construction materials by identifying all organism on identified sources - Implement monitoring and evaluation programs to ensure minimum footprint beyond construction sites - Any contaminated soils shall be segregated and transported by the contractor to the waste collection area (WCA) located at the campsite, where it shall be collected separately from other wastes till disposal of by a third party.	Contractor	1,000,000
7.	Damage or relocation of existing utility infrastructure and public services	- Contractor in liaison with Utility providers within the project area (i.e. TANESCO, DAWASA and TTCL shall make arrangements for utility relocation before the construction work begins - Utility relocation planning shall be done in consultation with the affected suppliers (i.e. TANESCO, DAWASA, SONGAS, TRC and TTCL have been involved in the planning and design of the road infrastructure, and their recommendations have been incorporated in the design; - Utility relocation planning shall be done in consultation with the affected suppliers, and the relocation costs shall be in the BoQ; - Early notice shall be given to the community before any service interruption; - TARURA shall provide detailed Information about the location and layout of affected infrastructure to the contractor; - Contractor in liaison with utility infrastructure owners to ensure all affected infrastructure is relocated, to the satisfaction of the utility owner, ahead of the execution of the Works; and in a manner that minimizes disruption of service to the public. Adequate funds to be included in the BoQ for this purpose.	Owners of affected Utilities TARURA, Contractor, DCC, TANESCO, DAWASA	As per RAP

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
		- Provide fair prompt and effective compensation at full replacement cost of affected utility infrastructure, as specified in the developed RAP; - The developed DMDP II GRM shall be used to provide a process for receiving grievances from communities, individuals, NGOs, and local government and managing them efficiently and transparently. - Owners of affected shall provide detailed Information about the location and layout of affected infrastructure to the contractor		
8.	Deterioration of air quality (due to dust and increased air emissions)	- Pollution receptors (i.e. households & business centres) should be notified on scheduling and duration of activities emitting dust and smoke (emissions) - Dust at all working areas within or close to human habitations/ business centres/dispensary/schools MUST be minimized by periodic (3-4 times a day) water sprinkling on working sections - The generation and release of exhaust emissions of any type shall be managed as per the requirements of the general EHS Guidelines on Air Emissions and Ambient Air Quality through a combination of: ✓ Energy use efficiency in construction equipment and machines; ✓ Use of cleaner fuels (i.e. Compressed natural gas (CNG) which is available in Dar es Salaam - Dust at work places within or close to human habitations shall be critically minimized by periodic water sprinkling on working sections. The contractor shall advise or notify local households on shedding of dust, noise, vibration and other dangers. - Vehicles and construction machinery must be properly maintained to comply with Tanzanian exhaust emission standards - Vehicles and construction machinery must be properly maintained to comply with Tanzanian exhaust emission standards - Dust-generating activities must be slowed down in days of strong winds	Contractor	1,000,000
9.	Increased traffic and road accident	- By providing alternative diversions whenever necessary, the contractor will ensure that the traffic flow is not interfered during the entire construction period; - No total closure of the road or drain for instance, will be allowed; - Provide diversions and deploy a person responsible for traffic safety; - Ensure that prior to all activities, the Project shall assess the risks of the works to local people including people walking by, people using nearby roads; - Instil a code of conduct for drivers, specifying drivers' behaviours and traffic speed	Contractor	1,000,000

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
		- Ensure that all hazardous materials and equipment must be contained and access to them by local people must be prevented - Flag persons shall be located at strategic locations (i.e school area (Mount Zion Pre and Primary School, Anuarite Primary and Secondary School) business centre (Kigilagila Market and bombom market); and at road sections where traffic is passed through the works (half road) to control traffic movement in and out of construction sites. - Put barriers and appropriate signage to prevent access to other hazardous areas, including areas in which equipment and vehicles are operating - Ensure road width, speed restrictions and traffic load in the areas in accordance to acceptable standards.		
10.	Increased noise pollution	- During selection of equipment the contractor should select equipment with lower sound power levels. - Limit the speed of the vehicles to 20 kmph or by placing speed limits/signs/humps within construction sites, - The city authority is responsible for compliance with the relevant national legislations with respect to noise and vibration, - The impacts of noise emissions will further be minimized by proper choice of plants and machinery (i.e., fitted with noise and dust silencers or reducers) and locating quarry areas away from human habitations (at least 500 m away) - Noise at work places within or close to human habitations should be critically minimized by silences a good choice of equipment. The contractor shall advise or notify local households on shedding of noise and other dangers associated with the project	Contractor	1,000,000
11.	Risk of environmental pollution by demolition waste	- Adhere to local and the WBG EHS Guidelines and the ESS guideline on waste management. - PAPs will be given a chance to demolish parts of affected structures and recover whatever materials they wish to recover. For example, cement blocks, iron sheets, wood, plumbing works etc could be re-used in house construction; - Recyclable materials such as scrap metal, plastics, wood and glass shall be sorted and separated and stored at the waste recycling plant, located at the nearest Contractors campsite (awaiting removal by licenced Subcontractor); - The remaining on-recyclables (spoils, broken tiles, waste mortar shall be transported to the Pugu Kinyamwezi dumpsite	Contractor	As per RAP
CONSTRUCTION PHASE				
12.	Job creation and increased	- Implement Local Content Policies	Contractor, LGA	1,000,000

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
	income to local communities	- Sensitize communities to engage on activities associated with project (e.g., food production, service sector etc.), - Give employment priority to the local community with relevant skills based on gender - Provide on job training to workers - Provide awareness to locals on potential investment and employment opportunities		
13.	Increased noise pollution	- Planning activities in consultation with local communities (Mitaa Offices) so that activities with the greatest potential to generate noise are planned during periods of the day that will result in the least disturbance - Using noise control devices, such as temporary noise barriers and deflectors for impact and blasting activities, and exhaust muffling devices for combustion engines. - Drilling should be carried out with sharp drill bits to reduce noise levels and much attention should be paid in areas close to the school (Mount Zion Pre and Primary School, Anuarite Primary and Secondary School) business center (Kigilagila Market, and bombom market), and churches (Anwarite catholic church etc); along the proposed Kiwalani community Road 8.74 km - Construction workers in noisy sections should be provided with ear protective devices (earmuffs and/or earplugs). - Noise equipment shall be installed with acoustic barriers without gaps and with a continuous minimum surface density of 10kg/m² to minimize the transmission of sound through the barrier - Limit the hours of operation for specific pieces of equipment or operations, especially mobile sources operating through community areas - During the selection of equipment, the contractor shall select equipment with lower sound power levels - The contractor shall limit the hours of operation for specific pieces of equipment or operations, especially mobile sources operating through community areas	Contractor	1,000,000
14.	Deterioration of air quality due to increased air emissions and dust	- Dust emissions will be mitigated by sprinkling water at the construction sites and access roads to suppress dust; all machinery, equipment's and vehicles will be switched off when not in use; - Concrete mixing plants will be located away from residential; and all project workers will be provided with protective masks to prevent them from inhaling fumes and dust. - Water sprinkling to reduce the dust at construction site and near settlements. Sprinkle water as necessary (at least twice a day) when visual inspection indicates excessive dust and during heavy traffic	Contractor, LGA	1,000,000

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
		- Pollution receptors (i.e. households & business centres) should be notified on scheduling and duration of activities emitting dust and smoke (emissions) - Use of dust masks to operators and those working in dusty areas. - Construction machines/ equipment shall be well maintained to manufacturers' requirements to ensure total fuel combustion. - All the vehicles shall be frequently checked and serviced during the whole construction period so that the level of exhaust emissions is reduced - Dust at all working areas within or close to human habitations/ business centres (Kigilagila and Bombom market school etc) MUST be minimized by periodic (3-4 times a day) water sprinkling on working sections - Movement of vehicles should be kept to the minimum necessary for completing the job; - Limit the speed of the vehicles to 20kmph or by placing speed limits/signs/humps within the construction site - Dust-generating activities must be slowed down in days of strong winds		
15.	Risk of damage to private properties due to increased vibration levels	- Baseline conditions of structures close to the construction sites should be recorded (by photos and videos). - The road design shall include proper access infrastructure (culverts and drifts whenever practical) to properties located along the proposed roads - The contractor shall install proper and adequate security features (e.g., "Roller" safety barriers, wire-rope median barrier, pedestrian fencing, etc.) to protect houses and structures located along the proposed project roads using the "forgiving roads concept". A forgiving road design aims at limiting crashes to damage only or minor recoverable injuries - In case construction activities damage any structure, the baseline conditions shall be compared to situations before, during, and after. The Contractor shall be responsible for repairing the damage. - Shattering of excavations and physical protection of structures shall be emphasized to minimize potential damage to buildings due to the vibration of heavy machines; - Employ Engineering controls (temporary or permanent retaining wall) to support adjacent private structure; - Confine construction work within the acquired project areas - The contractor shall make proper identification of structures prone to vibration damage and prepare proper protection plans	Contractor	1,000,000
16.	Loss of definite materials and	- Ensure the efficient use of construction materials, including re-use and recycling of materials (as per the requirement of ESS3 on Resource Efficiency and Pollution Prevention and Management	Contractor and DCC	3,300,000

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
	land degradation at the quarry sites	- The project shall adhere to ESS 3 on Resource Efficiency and Pollution Prevention and Management, which requires efficacy use of raw materials: - Construction materials must be obtained from authorized sources - Potential long-term environmental impacts of borrow pits and quarry sites relate to the way they are left once the resource has been extracted. In this case, all borrow pits and quarries shall be rehabilitated, and proper landscaping done after completion of construction. Pits shall not be left with steep or vertical sides. - The topsoil shall be stockpiled for later use in reinstating the pit. Shallow slopes will encourage rapid re-vegetation thus preventing erosion as well as providing safety to animals. Excavated soils (top fertile fraction) shall be used for replenishment of vegetation after the construction phase - The topsoil (except for the dumpsite area) shall be stockpiled for later use in reinstating the pit. Shallow slopes will encourage rapid re-vegetation thus preventing erosion as well as providing safety to animals. Excavated soils (top fertile fraction) from the proposed roads shall be used for the replenishment of vegetation after the construction phase. - Obtaining sand from valleys and riversides must be Authorised by the Authority (i.e. the DCC, WAMI RUVU BASIN WATER BOARD/NEMC) and must be well investigated to avoid accelerated land degradation and pollution of water resources. - Collaborate with local authorities from where the materials are extracted to carry out afforestation programs for the replenishment of natural ecosystems - All borrow pits and quarries shall be rehabilitated and proper landscaping shall be done after completion of the construction. Pits shall not be left with steep or vertical sides.		
17.	Increased pressure on natural resources	- Collaborate with local authorities from where the local materials will be extracted to carry out afforestation programmes for replenishment of nature ecosystems; - Explore and use alternative sources of water away from sensitive areas and community sources; - Undertake water harvesting on worker's camps if feasible; - Adequate protection to the general public, including safety barriers and marking of hazardous areas; safe access across the construction site; - Where necessary the contractor Supports the cost of local social services through corporate Social Responsibility	Contractor. DCC	3,300,000
18.	Increased water and soil pollution	- No works should be undertaken within 10m of a watercourse unless it's part of the permanent design; - Adhere to GIIP on waste management to prevent littering and leaching on soils and waste Skip Bucket and waste containers should be provided at the campsite	Contractor	5,000,000

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
		- Any wastewater contaminated with oils, fuels, bitumen, or any other chemical substances shall be intercepted by an oil and grease interceptor trap before discharge into the wastewater treatment facility and formal disposal. - Provide sheets and screens to prevent debris and construction material from falling into the water course within the Kiwalani community roads and Migombani road - Ensure timely repair of all construction equipment to avoid fuel and oil leakage; - Ensure adequate spill kits containing as a minimum absorbent matt, adsorbent materials, booms, and other equipment necessary to contain and clear up any spills to ground or water courses are provided at suitable and regular locations on site - Prepare and obtain approval from the client on emergency response procedures. - Avoid washing construction equipment at the intake or near perennial streams; - Washing of construction equipment and machinery shall only be permitted in agreed areas, with an impermeable base and suitable system for the collection of wash water for treatment before its disposal; - The contractor shall obtain a water use permit from water WRBWB before drilling boreholes or for surface water.		
19.	Soil erosion and instability of slopes	- Efforts must be taken to minimize unnecessary vegetation clearance. Proper cut-off drains should be constructed before the commencement of construction works. - The impact will be mitigated by minimizing unnecessary vegetation clearance, and proper cut-off drains which will have to be constructed before the commencement of construction works. - Construction of drainage system to collect stormwater and direct it safely downstream receiving environment, - Removed vegetation and trees within the Construction Corridor must be replanted with either the original one or ones with more ecological value (i.e. with ecosystem services desired by residents such as fruits, shade, wood, etc). - Landscaping and reinstatement of the areas that were grabbed during construction - Retention and restoration of much of the original vegetation which includes trees through replanting of ecologically valuable plant species; Regular monitoring of areas affected by construction-related activities and/or erosion - Special considerations must be given to sections of the road prone to erosion: The most effective erosion control devices must be implemented: - i)temporary seedings; - ii)temporary mulching;	Contractor	2,300,000

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
		iii) temporary or permanent erosion control blankets; iv) permanent vegetative buffer strips - Proper grading shall be done to promote sheet flow and minimize flow concentration on unconsolidated soil - The use of heavy equipment and techniques that will result in excessive soil disturbances or compaction of soils must be minimized.		
20.	Pollution by solid waste and hazardous waste materials	- Provide adequate secondary containment for fuel storage tanks and the temporary storage of other fluids such as lubricating oils and hydraulic fluids, - Using impervious surfaces for refuelling areas and other fluid transfer areas - Training workers on the correct transfer and handling of fuels and chemicals and the response to spills - Providing portable spill containment and clean-up equipment on site and training in the equipment deployment - Assessing the presence of hazardous substances in or on building materials (e.g., polychlorinated biphenyls, asbestos-containing flooring or insulation) and decontaminating or properly managing contaminated building materials.	Contractor	1,500,000
21.	Impacts of liquid wastes (i.e. human waste and spent water)	- Establish the quality, quantity, frequency, and sources of liquid effluents at the campsite and prepare collection, treatment, and safe disposal measures; - Plan and implement segregation of wastewater from other hazardous liquid waste and stormwater, to limit the volume of water requiring specialized treatment. - Identify opportunities to prevent or reduce wastewater pollution through such measures as recycling/reuse within their facility, input substitution, or process modification (e.g. change of technology or operating conditions/modes). - Assess compliance of their wastewater discharges with the applicable: (i) discharge standard (if the wastewater is discharged to surface water or sewer), and (ii) water quality standard for specific reuse (e.g., if the wastewater is reused for irrigation). - Ensure any discharges conform to local wastewater discharge standards of 2019	Contractor	1,500,000
22.	Risk of land and water source pollution by hazardous wastes	- No works should be undertaken within 10m of a watercourse unless it's part of the permanent design (i.e. at Banyenza bridge) - The contractor shall avoid washing construction equipment at the intake or near perennial streams - The contractor must make timely repairs to all construction equipment to avoid fuel and oil leakage	Contractor	2,000,000

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
		- The contractor shall obtain a water use permit from the Wami Ruvu Basin Water Board (WRBWB) before drilling any boreholes - Any wastewater contaminated with oils, fuels, bitumen, or any other chemical substances shall be intercepted by an oil and grease interceptor trap before discharge into the wastewater treatment facility and formal disposal. - Assess the contents of hazardous materials and petroleum-based products in building systems (e.g., polychlorinated biphenyls (PCB) containing electrical equipment, asbestos-containing building materials) and process equipment and removing them before initiation of decommissioning activities, and manage their treatment and disposal according to Hazardous Waste Management guideline, 2013 - Shall ensure adequate spill kits containing as a minimum absorbent matt, adsorbent materials, booms, and other equipment necessary to contain and clear up any spills to ground or water courses are provided at suitable and regular locations on site - The contractor shall make timely repairs of all construction equipment to avoid fuel and oil leakage; - The contractor shall ensure adequate spill kits containing as a minimum absorbent matt, adsorbent materials, booms, and other equipment necessary to contain and clear up any spills to ground or water courses are provided at suitable and regular locations on site - The contractor shall prepare and obtain approval from the client on emergency response procedure (ERP) - Washing of construction equipment and machinery shall only be permitted in agreed areas, with an impermeable base and suitable system for the collection of wash water for treatment prior to its disposal		
23.	Loss of accessibility to adjacent properties	- Consider change project design and assess all viable alternatives to avoid the need for access restrictions. This might involve giving preference to alternative project approaches and/or adjusting the boundaries of the project. - Ensure that full information is disclosed about project activities and potential impacts on people's rights and livelihood; - The road design shall include proper access infrastructure (culverts and drifts whenever practical) to properties located along the proposed roads - Ensure that affected groups are asked to consent to a project or a particular activity and have the right to give their consent, withhold it or offer it conditionally. - Where restrictions cannot be avoided, DCC in collaboration with the local communities will identify a fair and adequate strategy for compensation and provision of benefits for livelihood restoration or enhancement.	Contractor, DCC, and Ward/Street leaders	2,000,000

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
24.	Job-seekers influx	- The hiring of available local labor force (engage the local government authority in job advertising) - The local government should educate the locals on the requirements and procedures to be followed before accommodating outsiders; - Raise awareness to local communities to consider the project as an opportunity - Encourage the conservation of indigenous technologies and cultural practices - Encourage local communities to produce local materials that can be sold outside their local markets	Contractor, LGA	2,000,000
25.	Workers community negative interactions	- The implementing project contractor shall restrict the trivial entrance of surrounding community members into the working campsites and other working areas - Encourage maintenance of cultural practices and traditional knowledge systems - Raise awareness to local communities to consider the project as an opportunity	Contractor	1,500,000
26.	Potential increase in road accidents and other community safety risks	- A Traffic Management Plan (TMP) will be in place during construction and appropriate traffic control signs shall be installed along the main road, along detours, in collaboration with the Police force in monitoring vehicles and drivers' behavior. The road design has taken into consideration safety issues related to traffic accidents, especially near settlements and urban centers and in all accidents-prone sections - Installation of proper road signs and regular inspections for their presence - Installation of speed control devices like humps - Instil a code of conduct for drivers, specifying drivers' behaviors and traffic speed - Where feasible, the design has included the installation of pedestrian lanes at human settlement crossings; - Appropriate traffic control signs shall be installed along the main road, along detours, in collaboration with the Police force in monitoring vehicles and drivers' behavior. - The road design has taken into consideration safety issues related to traffic accidents, especially near settlements and urban centers and in all accident-prone sections. - The PIT shall conduct Road safety assessments during the Construction phase monitor incidents and accidents, and prepare regular reports of such monitoring.	Contractor	3,300,000
27.	The potential spread of social illness (ie STI, COVID 19 and HIV/AIDS)	- Prepare and adhere to an approved HIV/AIDS, COVID-19 and other communicable diseases education and Awareness Program Provide Voluntary Counselling and Testing (VCT) centers for HIV/AIDs at the workplace, - Enforce HIV/AIDS laws and regulations that prohibit stigma, discrimination, and responsibility of taking care of the affected communities.	Contractor, DCC	30,000,000

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
		- Provide Voluntary Counselling and Testing (VCT) centers for HIV/AIDs at the workplace and give convenient time for workers to participate - Changing work schedules account for the time involved and accommodate social distancing measures. - Restrict trivial entrance of surrounding community members into the working campsites and other working areas - Providing ample safety measures, accounting for Coronavirus (Provision of masks, sanitizer, and water to workers. - Employ a qualified health professional to lead on the management of COVID-19 and communicable disease risks during construction - Undertake screening programs for communicable diseases such as HIV/AIDS, and TB based on the prevailing risk profile. - Worker induction Project training and awareness campaigns must include Sexually Transmitted Diseases and HIV/AIDS. Condoms must be made available to Project workers. - Work closely with respective DCC departments, local NGOs, and/or faith-based organizations, and local communities involved in Covid-19, HIV, and reproductive health		
28.	Labor and working conditions risks	- Application of developed Labor Management Procedure; Code of Conduct, GRM for DMDP II, - Working terms and conditions of employment shall address national legal requirements as a minimum and ESS 2: Labor and Working Conditions; - The contractor should ensure a fair and transparent recruitment process will be outlined as part of the Recruitment Management Plan for all openings including working with DCC and local authorities to advertise openings as early as possible to allow for potential candidates to apply and prepare their skillsets for local opportunities - Develop and make available to all project workers the key commitments that are made about labor management for the project. - Promote fair treatment, non-discrimination, and equal opportunity to both skilled and unskilled workers - support principles of freedom of association and collective bargaining of workers in a manner consistent with the national law - Provide mechanisms for project workers to raise workplace grievances freely. - Provide a clear contract of employment to all workers before starting their work on the project - Local Content Policy and Plan shall be developed to supplement the Influx Management Plan - Give employment priority to the local community with relevant skills based on gender - Provide awareness to locals on potential investment and employment opportunities	Contractor	1,500,000

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
		- Provided worker's code of conduct to all project workers before they sign their contract of employment - Develop a Worker's Code of Conduct which will direct project workers on appropriate behaviours. - All workers must sign a worker's code of conduct before they sign their contract of employment - Prohibit physical violence, discrimination, harassment, bullying, violence, and promote equal opportunity. - The Project must be implemented in compliance with local labour laws and the national legislation as well as World Bank's ESS2		
29.	Increased cases of occupational and health risks	- The contractor must obtain registration by the Occupational Health and Safety Authority OSHA, as early as possible before work commencement. - Install fire prevention facilities and obtain FIRE certification as early as possible before works commencement. - Develop a plan for Worker's OHS induction training, in-job training, and tool box meetings - The contractor should consider eliminating the hazard by removing the activity from the work process, controlling the hazard at its source through the use of engineering controls and minimizing the hazard through the design of safe work systems and administrative or institutional control measures. Examples include job rotation, training safe work procedures, lock-out and tag-out, workplace monitoring, limiting exposure or work duration, etc. - Providing appropriate personal protective equipment (PPE) in conjunction with training, use, and maintenance of the PPE - All job recruitment and labor management must comply with the local Labour laws and legislation as well as the World Bank's ESS2., including implementation of OHS measures in the ESMP - There must be site-specific Emergency Prevention Preparedness and Response arrangements for emergencies	Contractor	2,000,000
30.	Risk of increased GBV and Sexual Exploitation and Abuse	- Develop and implement anti-GBV and anti-sexual harassment policies as per the requirements of ESS 2 and ESS 4; - The contractor should appoint senior focal points with responsibility for ensuring that commitments and policies to prevent GBVH and sexual harassment policies are implemented; - The contractor should put in place monitoring systems at the highest levels for regular reporting on GBVH - Include requirements around GBVH in codes of conduct, policies and protocols for contractors, including training on policies and procedures once developed;	Contractor	2,300,000

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
		- Ensure codes of conduct is publicly disclosed in local languages and are widely accessible to all workers and all groups of people in project areas; - The contractor should deliver periodic mandatory training on GBVH to all workers, including contractors, subcontractors and core suppliers, as well as relevant consultants and clients; - The contractor should engage expertise (e.g., from local women's rights organizations or NGOs working on GBVH) to conduct awareness campaigns to provide information to local communities, such as what is unacceptable behavior and how to report an incident of GBVH; - Provide a grievance mechanism for all direct workers and contracted workers (and, where relevant, their organizations) to raise workplace - GBV and SEA concerns. Workers must be informed of the grievance mechanism at the time of recruitment and the measures put in place to protect them against any reprisal for its use		
31.	Risk of increased child labor and abuse	- Abiding to labor and working conditions provided by World Bank guidelines (ESS2), the contractor to Prepare and make available Necessary manuals and policies related to anti-child labor (under 18 years of age) action plan - Liaise with local community development officers and available NGOs that can provide support to vulnerable children along the project area - Awareness to the public on the minimum age for employment and labor rights should be conducted	Contractor	2,000,000
32.	Chance finds	- Conduct shovel test pits to assess the archaeology where project structures and bridges will be constructed; - Conserve and manage any discovered archaeological materials and sites.	Contractor	2,000,000
33.	Increased traffic and road accident	- Prepare and implement a traffic management plan (TMP), indicating which routes will be used and when. - By providing alternative diversions whenever necessary, the contractor will ensure that the traffic flow is not interfered with during the entire construction period; - The design of the road shall recommend proper road surface dressing such that the proposed roads are safer, with non-skid surface and proper waterproofing materials shall be proposed - The contractor shall install proper and adequate traffic signs to avoid frequent accidents - No total closure of the road or drain, for instance, will be allowed; - The contractor shall provide diversions and deploy a person responsible for traffic safety; - Flag persons shall be located at strategic locations (i.e school area (Mount Zion pre&primary school, Mwenyeheri Anwarite pre&secondary school, Mwenyeheri Anuarite catholic church, clinic laboratory, EAGT and Anglican churches along the proposed Kiwalani Community roads (8.74km including the	Contractor and Ward/Street leaders	3,000,000

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
		Migombani road) and at road sections where traffic is passed through the works (half road) to control traffic movement in and out of construction sites. - Ensure that all hazardous materials and equipment must be contained and access to them by local people must be prevented; - The community must be informed of any road/road section closing, and alternative parking shall be provided. - Instil a code of conduct for drivers, specifying drivers' behaviors and traffic speed - Ensure that before all activities, the safety personnel assess the risks of the works to local people including people walking by and people using nearby roads - Put barriers and warning signs around open excavations to prevent people from falling into them - Put barriers and appropriate signage to prevent access to other hazardous areas, including areas in which equipment and vehicles are operating - Undertake visual inspections to confirm that nobody has entered the site and is in a hazardous location e.g., people sleeping under equipment - Ensure road width, speed restrictions, and traffic load in the areas in accordance with acceptable standards.		
OPERATION AND MAINTENANCE PHASE				
34.	Job creation and increased income to local communities	- Prepare a fair and transparent recruitment process to allow for potential candidates to apply and prepare their skillsets for local opportunities. - Give employment priority to the local community with relevant skills based on gender. - Provide OHS on-job training to workers - Provide awareness to locals on potential investment and employment opportunities	DCC	2,000,000
35.	Improved transport services	- Set appropriate O&M measures to attain the design life of the roads and the safety of users - Improve feeder roads in rural areas connecting to the project roads - Ensure the availability of public transport along the proposed roads to improve mobility benefits - Local government authority should facilitate the establishment of income-generating alternatives to adversely affected people	DCC	1,000,000
36.	Improved stormwater drainage	- Make frequent clean-up of drainage infrastructure including appropriate O&M schedule - Provision of community sensitization to secure and protect drainage infrastructure - Community awareness to avoid using drainage infrastructure for solid waste and other domestic waste dumping	DCC	2,000,000

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
		- Sensitize communities to engage in activities that will improve vegetation cover on roadside drainage channels and catchment areas		
37.	Improved traffic congestion in the city	- Announce and register public transport routes to commute including the proposed roads - Improve feeder roads from the sub-urban areas connecting to the project roads - Installation of speed control devices like humps, Training of drivers and pedestrians and, placing of pedestrian lanes at human settlement crossings shall be emphasized to make traffic even better - Ensure traffic signs are adequately provided and periodically check for their presence - Local government authority should facilitate the establishment of income-generating alternatives for adversely affected people - Provide for adequate O&M of road furniture, traffic lights, and signage	LATRA, DCC	2,000,000
38.	Reduced vehicle operation costs	- Reduced traffic will increase the average travel time in the city which will have ripple effects on reducing the tear and wear of vehicles - Ensure frequent road maintenance	DCC	2,000,000
39.	Improved community life services and status	- In collaboration with ensure the cleanliness of the proposed roads to minimize dust emissions - Improve feeder roads from the sub-urban areas connecting to the project roads	DCC	-
40.	Increased property and land values along the project area	- The value of properties along the project area will be enhanced through the proper design of roadside drainage facilities. - The concentrated flow of storm water runoff collected from the road surfaces shall be well attenuated downstream to avoid flooding and soil erosion making the land safe	DCC	2,000,000
41.	Induced development and urban sprawl (local economy growth)	- The Planning Department of the should install good governance systems, to discourage and/or remove such newly upcoming development along the roads that is against the planning guidelines. - Restrict the establishment of any permanent or temporary business, parking lots or any other	DCC	2,000,000
42.	Increased income generation through	- Prepare a fair and transparent recruitment process to allow for potential candidates from the local community to engage in O&M jobs - Give employment priority to the local community with relevant skills based on skills needed in O&M of roads	DCC	2,000,000

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
	operation and maintenance of roads	- Provide on frequent training O&M requirements for capacity building of the local community to be involved in O&M jobs - Provide awareness to locals on potential investment and employment opportunities related to O&M of roads		
43.	Landscape modification and increased impervious surfaces	- Replanting of and monitoring of the roadside vegetation should be ensured; - There must be Regular maintenance of SUDS and nature-based solutions constructed/installed alongside the roads to manage stormwater; - Enforce laws governing the protection of important drainage structures and receiving water bodies in project-influenced areas.	LGA, DCC	2,000,000
44.	Increased air quality deterioration (noise levels and emissions) and land pollution	- Drivers and co-operators shall be sensitized about noise exposure and its effects on the surrounding environment; - Traffic police to conduct regular inspections of running vehicles to minimize vehicular emissions; - Speed limit and exhaust emissions standards shall be enforced; - Vehicle inspecting institutions should insist on regular maintenance of vehicles to minimize emissions of pollutants; - Steep grades at critical locations shall be avoided to reduce noise from acceleration, braking, and gear changes; and - Cut sections shall be used (where appropriate) to decrease noise in nearby residences.	DCC, LATRA.	3,300,000 which will be taken from DCC Maintenance Budget
45.	Interference to local hydrology	- Conduct a special wet season study on the hydrological pattern of the affected areas checking how hydraulic features like the Banyenza water course is affected - In case of the affected area ensure restoration and rehabilitation activities are confined to the core Area impacted - Ensure drainage restoration and rehabilitation plan are prepared	DCC	6,000,000 which will be taken from DCC Maintenance Budget
46.	Impacts Associated with Poor Management of Roads Infrastructures	- Ensure proper O&M of the proposed road infrastructure. No waste accumulation should be left into drainage channels as they may clog to cause floods around the project influence areas; - Ensure improper maintenance of green structure (grass and trees) along the proposed roads such that they are not left to foster mosquito breeding and rodents hiding areas; and - Make adequate management of security lights to ensure public safety and sustainability.	DCC	13,000,000 which will be taken from DCC maintenance Budget

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
47.	Increased Road accidents	- To ensure appropriate security of the roads, carry out repair and maintenance of roads and its facilities properly and timely; - Installation of proper road signs and regular inspections for their presence and validity; - Proper use of constructed pedestrian lanes alongside the roads, ensure that the pedestrian lanes are strictly used for pedestrians; - No temporary or permanent business activities shall be allowed within the roads RoW; - Appropriate traffic control signs shall be installed along the main road, along detours; - The Police force to monitor the driver's behaviour, including adherence to speed control measures such as humps and ramps installed with the roads; - The PIT shall conduct Road safety assessment through the operation phase of the roads subprojects and will monitor incidents and accidents, and prepare regular reports of such monitoring.	DCC, LATRA,	
DECOMMISSION PHASE				
48.	Dust and Noise Pollution	- Water sprinkling shall be applied to open earth or soils piles to reduce dust emission; - Trucks removing leftover construction materials shall be covered if the load is dry and prone to dust emissions; - In case of demolitions, the demolition area shall be fenced by iron sheets to prevent spread of windblown dust; - Community notification shall be undertaken where appropriate where work is likely to cause dust impact on the public and nearby residents; - Minimal sound construction equipment, with noise sinks, shall be used; - Machine operators in various sections with significant noise levels shall be provided with noise protective gear; and - Construction equipment's shall be selected, operated and maintained to minimize noise.	DCC, LGA, Contractor	To be included in the Decommissioning plan
Sub Total 1 (Mobilization and Construction phase) which includes the costs for RAP, HIV/AIDS prevention program and road safety intervention				2,069,430,520
Sub Total 2 (Operation phase)				37,300,000
GRAND TOTAL				2,106,730,520

Table 8-3: Environmental & Social Management Plan (ESMP) for the Proposed Upgrading of DMDP Phase II Roads, Package 3

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
MOBILIZATION PHASE				
1.	Increased Employment Opportunities, Job Creation, and Increased Income to Local Communities	- Ensure employment procedures agree with ESS2: Labor and Working Conditions; - The employer shall promote safety and health at work as per the requirements of the OHS Regulation, 2003 - Promote fair treatment, non-discrimination, and equal opportunity of project works (including the consideration for vulnerable workers; - Prevent the use of all forms of forced labor and child labor; - Support the principles of freedom of association and collective bargaining of project workers in a manner consistent with national law and provide project workers with accessible means to raise workplace grievances (as per the DMDP II Grievance procedures - Ensure a fair and transparent recruitment process, which will be outlined as part of the DMDP II Recruitment Management Plan for all openings, including working with DCC and the DLA to advertise openings as early as possible to allow for potential candidates to apply and prepare their skillsets for local opportunities; - Local Content Policy and Plan shall be developed to ensure the local communities benefit from the opportunities; - Setting specific targets for local procurement and SME support within the DCC - Sensitize communities to engage in activities associated with the project implementation (e.g., food/drinks vending and other needed services, etc.) and - Provide awareness to locals on potential investment and employment opportunities	Contractor, LGA	1,000,000
2.	Increased income to primary suppliers of road construction materials	- Adhering to WB E&S guidance (ESS2), the contractor shall ensure fair and transparent negotiations in case road construction materials have to be purchased from the local community or the local market in pursuit of poverty reduction and inclusive economic growth; - Setting specific targets for local procurement of construction materials (where feasible) to support affected communities within the DCC - Sensitize communities to engage in businesses associated with the project implementation (e.g., supply of aggregates, sand, etc.).	Contractor	NA
3.	Minor loss of land and/or loss of properties	- The project must avoid forced eviction of PAPs - Grievance handling and resolving land-related disputes - RAP has been prepared, so RAP should be implemented before construction starts	Contractor/ LGA/ DCC	4,198,916,899

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
		- Where it cannot be avoided, loss of land or property, transparent procedures for undertaking property valuation and compensation activities have been developed and shall be followed during implementation; - The developed RAP shall be implemented as per the requirements of ESS5 and Tanzania compensation laws. - All affected persons shall be paid compensation according to Tanzanian Laws before the commencement of the Construction activities. - For affected properties, the DCC shall conceive and execute resettlement activities (along the Baracuda—Chang'ombe—Majichumvi (3.27km), Majumbasita—Segerea (3.31km), and Tabata Mawenzi-Kisiwani (2.12km) Roads) as a sustainable development program by providing sufficient compensation to enable displaced persons to benefit directly from the project.		(i.e., <i>Tentative estimations</i>)
4.	Minor Loss of livelihood	- Enough time shall be given to small business owners doing commercial activities within the acquired road reserve to vacate before the commencement of the project; - In case a project affects legally located businesses, proper valuation and compensation shall be implemented before the commencement of the project; - Implementation of the prepared RAP, conforming to the requirements of the ESS5; - Prepare a proper and permanent area for vendors to operate there legally; - Enforcing the DCC by-laws and other relevant regulations that restrict the use of RoW by vendors/hawkers;	Contractor, DCC	
5.	Loss of natural habitat and trees	- Confine construction activities to the core area (i.e., within the RoW); - Participatory preparation of clearance, re-vegetation, and restoration management plan following national institutional and legal frameworks, e.g., Standard specifications for road works (2000) section 5700 on landscaping and grassing, Forest Regulation (2004), and Urban Greening Guidelines (2022). The Plan will need to be approved by the relevant organs before the actual implementation. - Plant species to be integrated into the re-vegetation and restoration plan will be equivalent to the ones removed, native/ indigenous, and with a history of good stewardship to the environment and people. Recommended species for shed and cooling include <i>Trichilia emetica</i>, <i>Tamarindus indica</i>, <i>Ziziphus mucronata</i>, and <i>Albizia versicolor</i>, while for river banks stabilizing are <i>O. abyssinica</i>, <i>Panicum maximum</i>, <i>Antidesma venosum</i>, <i>Rauvolfia mombasiana</i> and <i>Bridelia micrantha</i>. For small trees and shrubs for pavement planting, consider <i>Adenium obesum</i>, <i>Carissa spinarum</i>, and <i>Chassalia umbraticola</i>, whereas for road isles, sidewalks, and town parks and reserves, <i>Cynodon nlemfuensis</i>, <i>Combretum constrictum</i>, <i>Markhamia obtusifolia</i>, <i>Commiphora africana</i>, <i>Lannea schweinfurthii</i> and	Contractor	

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
		Grewia bicolor. Native trees/shrubs with food importance that can be incorporated include Annona senegalensis, Flueggea virosa, Margaritaria discoidea, and Tamarindus indica. - Cleared areas shall be minimized to only touch vegetation within close vicinity of the working sites. Using chemicals to clear the vegetation is strictly prohibited to ensure environmental safety and health; - Raising a temporary fence to protect trees, shrubs, and other important vegetation before the commencement of any works on site; if necessary, impacted top soils will be removed and be re-used during re-vegetation and restoration.		
6.	Loss/Reduction of ecosystem services	- Prepare and implement a vegetation replenishment plan along the project corridor. Re-vegetation shall be done according to the plan specified by the Standard Specifications for Road Works of 2000 Section 5700 (Landscaping and Grassing) and the Dar Greening Handbook. - Confine construction work within the acquired project areas - Enforce laws governing the protection of rare endemic and endangered species - Prepare and implement an invasive species eradication plan in all areas impacted within the Project area - Screen sources of construction materials by identifying all organisms on identified sources - Implement monitoring and evaluation programs to ensure minimum footprint beyond construction sites - Any contaminated soils shall be segregated and transported by the contractor to the waste collection area (WCA) located at the campsite, where it shall be collected separately from other wastes till disposed of by a third party.	Contractor	1,000,000
7.	Damage or relocation of existing utility infrastructure and public services	- In liaison with Utility providers within the project area (i.e., TANESCO, DAWASA, and TTCL shall make arrangements for utility relocation before the construction work begins. - Utility relocation planning shall be done in consultation with the affected suppliers (i.e., TANESCO, DAWASA, SONGAS, TAZAMA, TRC, and TTCL have been involved in the planning and design of the road infrastructure, and their recommendations have been incorporated in the design; - Utility relocation planning shall be done in consultation with the affected suppliers, and the relocation costs shall be in the BoQ; - Early notice shall be given to the community before any service interruption; - Provide detailed Information about the location and layout of affected infrastructure to the contractor; - In liaison with utility infrastructure owners to ensure all affected infrastructure is relocated, to the satisfaction of the utility owner, ahead of the execution of the Works and in a manner that minimizes disruption of service to the public. Adequate funds to be included in the BoQ for this purpose.	Owners of affected Utilities TARURA, Contractor, DCC, TANESCO, DAWASA	As per RAP

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
		- Provide fair, prompt, and effective compensation at full replacement cost of affected utility infrastructure, as specified in the developed RAP; - The developed DMDP II GRM shall provide a process for receiving grievances from communities, individuals, NGOs, and local government and managing them efficiently and transparently. - The owners of the affected infrastructure shall provide the contractor with detailed Information about the location and layout of the affected infrastructure.		
8.	Deterioration of air quality (due to dust and increased air emissions)	- Pollution receptors (i.e., households and business centers) should be notified of the scheduling and duration of activities emitting dust and smoke (emissions) - Dust at all working areas within or close to human habitations/ business centers/dispensaries/schools MUST be minimized by periodic (3-4 times a day) water sprinkling on working sections - The generation and release of exhaust emissions of any type shall be managed as per the requirements of the general EHS Guidelines on Air Emissions and Ambient Air Quality through a combination of: ✓ Energy use efficiency in construction equipment and machines; ✓ Use of cleaner fuels (i.e., Compressed natural gas (CNG), which is available in Dar es Salaam - Dust at workplaces within or close to human habitations shall be critically minimized by periodic water sprinkling on working sections. The contractor shall advise or notify local households on the shedding of dust, noise, vibration, and other dangers. - Vehicles and construction machinery must be properly maintained to comply with Tanzanian exhaust emission standards. - Vehicles and construction machinery must be properly maintained to comply with Tanzanian exhaust emission standards. - Dust-generating activities must be slowed down in days of strong winds.	Contractor	1,000,000
9.	Increased traffic and road accident	- By providing alternative diversions whenever necessary, the contractor will ensure that the traffic flow is not interfered with during the entire construction period; - No total closure of the road or drain, for instance, will be allowed; - Provide diversions and deploy a person responsible for traffic safety; - Ensure that prior to all activities, the Project shall assess the risks of the works to local people, including people walking by, people using nearby roads; - Instil a code of conduct for drivers, specifying drivers' behaviors and traffic speed - Ensure that all hazardous materials and equipment must be contained and access to them by local people must be prevented	Contractor	1,000,000

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
		- Flag persons shall be located at strategic locations (i.e., Baracuda-Majichumvi roads/Precious Daycare school, RGC Church at Chang'ombe; Tabata Mawenzi-Kisiwani road/Padre Pio Catholic Church, Ngunge mosque, Sayuni Pentecost church, Moravian Primary; Majumbasita-Segerea road/ Sitakishari Police station, Segerea Catholic seminary, Ambassador seminary, Decent dispensary, Spirit world church ministry, TAG Majumbasita Church, Queen's pre & primary, Msimbazi River and road junction, etc); and at road sections where traffic is passed through the works (half road) to control traffic movement in and out of construction sites. - Put barriers and appropriate signage to prevent access to other hazardous areas, including areas in which equipment and vehicles are operating; - Ensure road width, speed restrictions, and traffic load in the areas in accordance with acceptable standards.		
10.	Increased noise pollution	- During the selection of equipment, the contractor should select equipment with lower sound power levels. - Limit the speed of the vehicles to 20 kmph or by placing speed limits/signs/humps within construction sites, - The city authority is responsible for compliance with the relevant national legislation with respect to noise and vibration, - The impacts of noise emissions will further be minimized by proper choice of plants and machinery (i.e., fitted with noise and dust silencers or reducers) and locating quarry areas away from human habitations (at least 500 m away) - Noise at workplaces within or close to human habitations should be critically minimized by silence and a good choice of equipment. The contractor shall advise or notify local households on the shedding of noise and other dangers associated with the project	Contractor	1,000,000
11.	Risk of environmental pollution by demolition waste	- Adhere to local and the WBG EHS Guidelines and the ESS guidelines on waste management. - PAPs will be given a chance to demolish parts of affected structures and recover whatever materials they wish to recover. For example, cement blocks, iron sheets, wood, plumbing works, etc could be re-used in house construction; - Recyclable materials such as scrap metal, plastics, wood, and glass shall be sorted, separated, and stored at the waste recycling plant, located at the nearest Contractors campsite (awaiting removal by licensed Subcontractor); - The remaining on-recyclables (spoils, broken tiles, waste mortar shall be transported to the Pugu Kinyamwezi site.	Contractor	As per RAP

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
CONSTRUCTION PHASE				
12.	Job creation and increased income to local communities	- Implement Local Content Policies - Sensitize communities to engage in activities associated with the project (e.g., food production, service sector, etc.), - Give employment priority to the local community with relevant skills based on gender. - Provide job training to workers. - Provide awareness to locals on potential investment and employment opportunities.	Contractor, LGA	1,000,000
13.	Increased noise pollution	- Planning activities in consultation with local communities so that activities with the greatest potential to generate noise are planned during periods of the day that will result in the least disturbance - Using noise control devices, such as temporary noise barriers and deflectors for impact and blasting activities, and exhaust muffling devices for combustion engines. - Drilling should be carried out with sharp drill bits to reduce noise levels, and much attention should be paid to areas close to schools, dispensaries/hospitals, and worshipping areas. - Construction workers in noisy sections should be provided with ear protective devices (earmuffs and/or earplugs). - Noise equipment shall be installed with acoustic barriers without gaps and with a continuous minimum surface density of 10kg/m² in order to minimize the transmission of sound through the barrier. - Limit the hours of operation for specific pieces of equipment or operations, especially mobile sources operating through community areas - During the selection of equipment, the contractor shall select equipment with lower sound power levels. - Limit the hours of operation for specific pieces of equipment or operations, especially mobile sources operating through community areas	Contractor	1,000,000
14.	Deterioration of air quality due to increased air emissions and dust	- Dust emissions will be mitigated by sprinkling water at the construction sites and access roads to suppress dust; all machinery, equipment, and vehicles will be switched off when not in use; - Concrete mixing plants will be located away from residential; and all project workers will be provided with protective masks to prevent them from inhaling fumes and dust. - Water sprinkling to reduce the dust at construction sites and near settlements. Sprinkle water as necessary (at least twice a day) when visual inspection indicates excessive dust and during heavy traffic. - Pollution receptors (i.e., households and business centers) should be notified of the scheduling and duration of activities emitting dust and smoke (emissions) - Use of dust masks for operators and those working in dusty areas.	Contractor, LGA	1,000,000

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
		- Construction machines/ equipment shall be well maintained to manufacturers' requirements to ensure total fuel combustion. - All the vehicles shall be frequently checked and serviced during the whole construction period so that the level of exhaust emissions is reduced. - Dust at all working areas within or close to human habitations/ business centers/dispensaries/schools MUST be minimized by periodic (3-4 times a day) water sprinkling on working sections. - Movement of vehicles should be kept to the minimum necessary for completing the job; - Limit the speed of the vehicles to 20kmph or by placing speed limits/signs/humps within the construction site. - Dust-generating activities must be slowed down in days of strong winds		
15.	Risk of damage to private properties due to increased vibration levels	- Baseline conditions of structures close to the construction sites should be recorded (by photos and videos). - The road design shall include proper access infrastructure (culverts and drifts whenever practical) to properties located along the proposed roads. - The contractor shall install proper and adequate security features (e.g., "Roller" safety barriers, wire-rope median barriers, pedestrian fencing, etc.) to protect houses and structures located along the proposed project roads using the "forgiving roads concept." A forgiving road design aims to limit crashes to damage only or minor recoverable injuries. - In case construction activities damage any structure, the baseline conditions shall be compared to situations before, during, and after. The Contractor shall be responsible for repairing the damage. - Shattering of excavations and physical protection of structures shall be emphasized to minimize potential damage to buildings due to the vibration of heavy machines; - Employ Engineering controls (temporary or permanent retaining wall) to support adjacent private structure; - Confine construction work within the acquired project areas. - Make proper identification of structures prone to vibration damage and prepare proper protection plans.	Contractor	1,000,000
16.	Loss of definite materials and land degradation at the quarry sites	- Ensure the efficient use of construction materials, including re-use and recycling of materials (as per the requirement of ESS3 on Resource Efficiency and Pollution Prevention and Management - The project shall adhere to ESS3 on Resource Efficiency and Pollution Prevention and Management, which requires efficacy use of raw materials: - Construction materials must be obtained from authorized sources - Potential long-term environmental impacts of borrow pits and quarry sites relate to how they are left once the resource has been extracted. In this case, all borrow pits and quarries shall be rehabilitated	Contractor and DCC	3,300,000

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
		and properly landscaped after construction is completed. Pits shall not be left with steep or vertical sides. - The topsoil shall be stockpiled for later use in reinstating the pit. Shallow slopes will encourage rapid re-vegetation, thus preventing erosion and providing safety to animals. Excavated soils (top fertile fraction) shall be used for replenishing vegetation after the construction phase. - The topsoil (except for the dumpsite area) shall be stockpiled for later use in reinstating the pit. Shallow slopes will encourage rapid re-vegetation, thus preventing erosion and providing safety to animals. Excavated soils (top fertile fraction) from the proposed roads shall be used for replenishing vegetation after the construction phase. - Obtaining sand from valleys and riversides must be Authorised by the Authority (e.g., the DCC, WAMI RUVU BASIN WATER BOARD/NEMC) and well investigated to avoid accelerated land degradation and pollution of water resources. - Collaborate with local authorities where the materials are extracted to carry out afforestation programs to replenish natural ecosystems. - All borrow pits and quarries shall be rehabilitated and properly landscaped after the construction is completed. Pits shall not be left with steep or vertical sides.		
17.	Increased pressure on natural resources	- Collaborate with local authorities from where the local materials will be extracted to carry out afforestation programs for the replenishment of nature ecosystems; - Explore and use alternative sources of water away from sensitive areas and community sources; - Undertake water harvesting on worker's camps if feasible; - Adequate protection to the general public, including safety barriers and marking of hazardous areas; safe access across the construction site; - Where necessary, the contractor Supports the cost of local social services through corporate Social Responsibility	Contractor. DCC	3,300,000
18.	Increased water and soil pollution	- No works should be undertaken within 10m of a watercourse unless it is a part of the permanent design; - Adhere to the GIIP on waste management to prevent littering and leaching on soils and waste. Skip Buckets and waste containers should be provided at the campsite. - Any wastewater contaminated with oils, fuels, bitumen, or other chemical substances shall be intercepted by an oil and grease interceptor trap before being discharged into the wastewater treatment facility and formal disposal. - Provide sheets and screens to prevent debris and construction material from falling into the water (e.g., Msimbazi River, the River close to the Mwananchi newspaper office, Mbuyuni—Mazda (Luhanga River), Majichumvi (Tenge River), etc.). - Ensure timely repair of all construction equipment to avoid fuel and oil leakage;	Contractor	5,000,000

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
		- Ensure adequate spill kits containing, at minimum, absorbent matt, adsorbent materials, booms, and other equipment necessary to contain and clear up any spills to ground or water courses are provided at suitable and regular locations on site. - Prepare and obtain approval from the client on emergency response procedures. - Avoid washing construction equipment at the intake or near perennial streams; - Washing of construction equipment and machinery shall only be permitted in agreed areas, with an impermeable base and suitable system for the collection of wash water for treatment prior to its disposal; - The contractor shall obtain a water use permit from water WRBWB before drilling of boreholes.		
19.	Soil erosion and instability of slopes	- Efforts must be made to minimize unnecessary vegetation clearance. Proper cut-off drains should be constructed before construction works commence. - The impact will be mitigated by minimizing unnecessary vegetation clearance and proper cut-off drains, which will have to be constructed before the commencement of construction works. - Construction of drainage system to collect stormwater and direct it safely downstream receiving environment, - Removed vegetation and trees within the Construction Corridor must be replanted with either the original or ones with more ecological value (i.e., ecosystem services desired by residents such as fruits, shade, wood, etc.). - Landscaping and reinstatement of the areas that were grabbed during construction - Retention and restoration of much of the original vegetation, which includes trees through replanting of ecologically valuable plant species; Regular monitoring of areas affected by construction-related activities and/or erosion - Special considerations must be given to sections of the road prone to erosion. The most effective erosion control devices must be implemented: i) temporary seedings; ii) temporary mulching; iii) temporary or permanent erosion control blankets; iv) permanent vegetative buffer strips - Proper grading shall be done to promote sheet flow and minimize flow concentration on unconsolidated soil - The use of heavy equipment and techniques that will result in excessive soil disturbances or compact ion of soils must be minimized.	Contractor	2,300,000
20.	Pollution by solid waste and	- Provide adequate secondary containment for fuel storage tanks and the temporary storage of other fluids, such as lubricating oils and hydraulic fluids,	Contractor	1,500,000

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
	hazardous waste materials	- Using impervious surfaces for refueling areas and other fluid transfer areas - Training workers on the correct transfer and handling of fuels and chemicals and the response to spills - Providing portable spill containment and clean-up equipment on site and training in the equipment deployment - Assessing the contents of hazardous materials and petroleum-based products in building systems (e.g., PCB-containing electrical equipment, asbestos-containing building materials) and process equipment and removing them prior to initiation of decommissioning activities, and managing their treatment and disposal according to Hazardous Waste Management guidelines, 2013 - Assessing the presence of hazardous substances in or on building materials (e.g., polychlorinated biphenyls, asbestos-containing flooring, or insulation) and decontaminating or properly managing contaminated building materials.		
21.	Impacts of liquid wastes (i.e., human waste and spent water)	- Establish the quality, quantity, frequency, and sources of liquid effluents at the campsite and prepare collection, treatment, and safe disposal measures; - Plan and implement segregation of wastewater from other hazardous liquid waste and stormwater, in order to limit the volume of water requiring specialized treatment. - Identify opportunities to prevent or reduce wastewater pollution through measures such as recycling/reuse within their facility, input substitution, or process modification (e.g., change of technology or operating conditions/modes). - Assess compliance of their wastewater discharges with the applicable: (i) discharge standard (if the wastewater is discharged to surface water or sewer), and (ii) water quality standard for specific reuse (e.g., if the wastewater is reused for irrigation). - Ensure any discharges conform to local wastewater discharge standards of 2019	Contractor	1,500,000
22.	Risk of land and water source pollution by hazardous wastes	- No works should be undertaken within 10m of a watercourse unless it is a part of the permanent design (i.e., at Majumbasita-Segerea road/Msimbazi river; Barakuda-Majichumvi road/Luhanga river; T/Mawenzi-Kisiwani road/Mwananchi river) - Avoid washing construction equipment at the intake or near perennial streams - Make timely repairs to all construction equipment to avoid fuel and oil leakage. - Obtain a water use permit from the Wami Ruvu Basin Water Board (WRBWB) before drilling any boreholes/surface water.	Contractor	2,000,000

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
		- Any wastewater contaminated with oils, fuels, bitumen, or other chemical substances shall be intercepted by an oil and grease interceptor trap before being discharged into the wastewater treatment facility and formal disposal. - Assess the contents of hazardous materials and petroleum-based products in building systems (e.g., polychlorinated biphenyls (PCB) containing electrical equipment, asbestos-containing building materials) and process equipment and removing them prior to initiation of decommissioning activities, and manage their treatment and disposal according to Hazardous Waste Management guideline, 2013 - Shall ensure adequate spill kits containing as a minimum absorbent matt, adsorbent materials, booms, and other equipment necessary to contain and clear up any spills to ground or water courses are provided at suitable and regular locations on site - Make timely repairs to all construction equipment to avoid fuel and oil leakage; - Ensure adequate spill kits containing, at minimum, absorbent matt, adsorbent materials, booms, and other equipment necessary to contain and clear up any spills to ground or water courses are provided at suitable and regular locations on site. - Prepare and obtain approval from the client on the emergency response procedure (ERP) - Construction equipment and machinery shall only be washed in agreed-upon areas with an impermeable base and suitable system for collecting wash water for treatment prior to its disposal.		
23.	Loss of accessibility to adjacent properties	- Consider changing the project design and assessing all viable alternatives to avoid the need for access restrictions. This might involve giving preference to alternative project approaches and/or adjusting the project's boundaries. - Ensure that full information is disclosed about project activities and potential impacts on people's rights and livelihood; - The road design shall include proper access infrastructure (culverts and drifts whenever practical) to properties located along the proposed roads. - Ensure that affected groups are asked to consent to a project or a particular activity and have the right to give their consent, withhold it, or offer it conditionally. - Where restrictions cannot be avoided, DCC, in collaboration with the local communities, will identify a fair and adequate strategy for compensation and the provision of benefits for livelihood restoration or enhancement.	Contractor, DCC and Ward/Street leaders	2,000,000
24.	Job-seekers influx	- The hiring of available local labor force (engage the local government authority in job advertising) - The local government should educate the locals on the requirements and procedures to be followed before accommodating outsiders; - Raise awareness to local communities to consider the project as an opportunity.	Contractor, LGA	2,000,000

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
		- Encourage the conservation of Indigenous technologies and cultural practices. - Encourage local communities to produce local materials that can be sold outside their local markets.		
25.	Workers community negative interactions	- The implementing project contractor shall restrict the trivial entrance of surrounding community members into the working campsites and other working areas. - Encourage maintenance of cultural practices and traditional knowledge systems. - Raise awareness to local communities to consider the project as an opportunity.	Contractor	1,500,000
26.	Potential increase in road accidents and other community safety risks	- A Traffic Management Plan (TMP) will be in place during construction, and appropriate traffic control signs will be installed along the main road along detours in collaboration with the Police force to monitor vehicles and drivers' behavior. The road design has taken into consideration safety issues related to traffic accidents, especially near settlements and urban centers and in all accident-prone sections. - Installation of proper road signs and regular inspections for their presence - Installation of speed control devices like humps - Instil a code of conduct for drivers, specifying drivers' behaviors and traffic speed - Where feasible, the design has included the installation of pedestrian lanes at human settlement crossings; - Appropriate traffic control signs shall be installed along the main road and along detours, and the Police force shall collaborate to monitor vehicles and drivers' behavior. - The road design has considered safety issues related to traffic accidents, especially near settlements and urban centers and in all accident-prone sections. - The PIT shall conduct Road safety assessments during the Construction phase, monitor incidents and accidents, and prepare regular reports on such monitoring.	Contractor	3,300,000
27.	The potential spread of social illness (i.e., STI, COVID 19 and HIV/AIDS)	- Prepare and adhere to an approved HIV/AIDS, COVID-19, and other communicable diseases education and Awareness Program. Provide Voluntary Counselling and Testing (VCT) centers for HIV/AIDs at the workplace, - Enforce HIV/AIDS laws and regulations that prohibit stigma and discrimination, and be responsible for taking care of the affected communities. - Provide Voluntary Counselling and Testing (VCT) centers for HIV/AIDs at the workplace and give convenient time for workers to participate. - Changing work schedules account for the time involved and accommodate social distancing measures. - Restrict trivial entrance of surrounding community members into the working campsites and other working areas.	Contractor, DCC	30,000,000

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
		- Providing ample safety measures, accounting for Coronavirus (Provision of masks, sanitizer and water to workers. - Employ a qualified health professional to lead the management of COVID-19 and communicable disease risks during construction. - Undertake screening programs for communicable diseases such as HIV/AIDS and TB based on the prevailing risk profile. - Worker induction, Project training, and awareness campaigns must include Sexually Transmitted Diseases and HIV/AIDS. Condoms must be made available to Project workers. - Work closely with respective DCC departments, local NGOs, faith-based organizations, and local communities involved in COVID-19, HIV, and reproductive health.		
28.	Labour and working conditions	- Application of developed Labor Management Procedure; Code of Conduct, GRM for DMDP II, - Working terms and conditions of employment shall address national legal requirements as a minimum and ESS 2: Labor and Working Conditions; - The contractor should ensure a fair and transparent recruitment process is outlined in the Recruitment Management Plan for all openings. This includes working with DCC and local authorities to advertise openings as early as possible, allowing potential candidates to apply and prepare their skillsets for local opportunities. - Develop and make available to all project workers the key commitments made regarding labor management for the project. - Promote fair treatment, non-discrimination, and equal opportunity for both skilled and unskilled workers and support principles of freedom of association and collective bargaining of workers in a manner consistent with national law. - Provide mechanisms for project workers to raise workplace grievances freely. - Provide a clear contract of employment to all workers prior to starting their work on the project. - Local Content Policy and Plan shall be developed to supplement the Influx Management Plan. - Give employment priority to the local community with relevant skills based on gender. - Provide awareness to locals on potential investment and employment opportunities. - Provided worker's code of conduct to all project workers before they sign their contract of employment - Develop a Worker's Code of Conduct which will direct project workers on appropriate behaviours. - All workers must sign a worker's code of conduct before they sign their contract of employment. - Prohibit physical violence, discrimination, harassment, bullying, violence, and promote equal opportunity.	Contractor	1,500,000

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
		- The Project must be implemented in compliance with local labor laws and national legislation as well as the World Bank's ESS2.		
29.	Increased cases of occupational and health risks	- Must obtain registration by the Occupational Health and Safety Authority (OSHA) as early as possible before works commence. - Install fire prevention facilities and obtain FIRE certification as early as possible before work commencement. - Develop a plan for Worker's OHS induction training, in-job training, and toolbox meetings. - Consider eliminating the hazard by removing the activity from the work process, controlling the hazard at its source through the use of engineering controls, and minimizing the hazard through the design of safe work systems and administrative or institutional control measures. Examples include job rotation, training safe work procedures, lock-out and tag-out, workplace monitoring, limiting exposure or work duration, etc. - Providing appropriate personal protective equipment (PPE) in conjunction with training, use, and maintenance of the PPE - All job recruitment and labor management must comply with local Labour laws and legislation as well as the World Bank's ESS2, including the implementation of OHS measures in the ESMP. - There must be site-specific Emergency Prevention, Preparedness, and Response arrangements for emergencies.	Contractor	2,000,000
30.	Risk of increased GBV and Sexual Exploitation and Abuse	- Develop and implement anti-GBV and anti-sexual harassment policies as per the requirements of ESS 2 and ESS 4; - Appoint senior focal points with responsibility for ensuring that commitments and policies to prevent GBVH and sexual harassment policies are implemented; - The contractor should put in place monitoring systems at the highest levels for regular reporting on GBVH. - Include requirements around GBVH in codes of conduct, policies, and protocols for contractors, including training on policies and procedures once developed; - Ensure codes of conduct are publicly disclosed in local languages and are widely accessible to all workers and all groups of people in project areas; - Deliver periodic mandatory training on GBVH to all workers, including contractors, subcontractors, and core suppliers, as well as relevant consultants and clients;	Contractor	2,300,000

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
		- The contractor should engage expertise (e.g., from local women's rights organizations or NGOs working on GBVH) to conduct awareness campaigns to provide information to local communities, such as what is unacceptable behavior and how to report an incident of GBVH; - Provide a grievance mechanism for all direct workers and contracted workers (and, where relevant, their organizations) to raise the workplace. - GBV and SEA concerns. Workers must be informed of the grievance mechanism at the time of recruitment and the measures put in place to protect them against any reprisal for using it.		
31.	Risk of increased child labor and abuse	- Abiding by labor and working conditions provided by World Bank guidelines (ESS2), the contractor is to Prepare and make available Necessary manuals and policies related to anti-child labor (under 18 years of age) action plans. - Liaise with local community development officers and available NGOs that can provide support to vulnerable children in the project area. - Awareness to the public on the minimum age for employment and labor rights should be conducted.	Contractor	2,000,000
32.	Chance finds	- Conduct shovel test pits to assess the archaeology where project structures and bridges will be constructed; - Conserve and manage any discovered archaeological materials at sites.	Contractor	2,000,000
33.	Increased traffic and road accident	- Prepare and implement a traffic management plan (TMP) indicating which routes will be used and when. - By providing alternative diversions whenever necessary, the contractor will ensure that the traffic flow is not interfered with during the entire construction period; - The design of the road shall recommend proper road surface dressing such that the proposed roads are safer, with a non-skid surface, and proper waterproofing materials shall be proposed. - Install proper and adequate traffic signs to avoid frequent accidents. - No total closure of the road or drain, for instance, will be allowed; - The contractor shall provide diversions and deploy a person responsible for traffic safety; - Flag persons shall be located at strategic locations (i.e., school area, business center, road junction, etc.) and at road sections where traffic is passed through the works (half road) to control traffic movement in and out of construction sites. - Ensure that all hazardous materials and equipment must be contained and access to them by local people must be prevented; - The community must be informed of any road/road section closing, and alternative parking shall be provided. - Instil a code of conduct for drivers, specifying drivers' behaviors and traffic speed	Contractor and Ward/Street leaders	3,000,000

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
		- Ensure that the safety personnel assess the risks of the works to local people, including people walking by and people using nearby roads, prior to all activities. - Put barriers and warning signs around open excavations to prevent people from falling into them. - Put barriers and appropriate signage to prevent access to other hazardous areas, including areas in which equipment and vehicles are operating; - Undertake visual inspections to confirm that nobody has entered the site and is in a hazardous location, e.g., people sleeping under equipment; - Ensure road width, speed restrictions, and traffic load in the areas in accordance with acceptable standards. - Use engineering control and best GIIP to avoid damage in areas where the gas pipeline (SONGAS) crosses the Barakuda-Chang'ombe-majichumvi road, Majumbasita-Segerea road, and T/Mawenzi-Kisiwani road)		
OPERATION AND MAINTENANCE PHASE				
34.	Job creation and increased income to local communities	- Prepare a fair and transparent recruitment process to allow potential candidates to apply and prepare their skillsets for local opportunities. - Give employment priority to the local community with relevant skills based on gender. - Provide OHS on-job training to workers. - Provide awareness to locals on potential investment and employment opportunities.	DCC	2,000,000
35.	Improved transport services	- Set appropriate O&M measures to attain the design life of the roads and the safety of users. - Improve feeder roads in rural areas connecting to the project roads - Ensure the availability of public transport along the proposed roads to improve mobility benefits. - Local government authority should facilitate the establishment of income-generating alternatives for adversely affected people	DCC	1,000,000
36.	Improved stormwater drainage	- Make frequent clean-up of drainage infrastructure, including appropriate O&M schedule. - Provision of community sensitization to secure and protect drainage infrastructure - Community awareness to avoid using drainage infrastructure for solid waste and other domestic waste dumping - Sensitize communities to engage in activities that will improve vegetation cover on roadside drainage channels and catchment areas.	DCC	2,000,000

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
37.	Improved traffic congestion in the city	- Announce and register public transport routes to commute, including the proposed roads. - Improve feeder roads from the sub-urban areas connecting to the project roads. - Installation of speed control devices like humps, Training of drivers and pedestrians, and placing of pedestrian lanes at human settlement crossings shall be emphasized to make traffic even better. - Ensure traffic signs are adequately provided and periodically check for their presence. - Local government authorities should facilitate the establishment of income-generating alternatives for adversely affected people. - Provide adequate O&M of road furniture, traffic lights, and signage.	LATRA, DCC	2,000,000
38.	Reduced vehicle operation costs	- Reduced traffic will increase the average travel time in the city, which will have ripple effects on reducing vehicle wear and tear. - Ensure frequent road maintenance.	DCC	2,000,000
39.	Improved community life services and status	- In collaboration with DCC, ensure the cleanliness of the proposed roads to minimize dust emissions. - Improve feeder roads from the sub-urban areas connecting to the project roads.	DCC	-
40.	Increased property and land values along the project area	- The value of properties along the project area will be enhanced through the proper design of roadside drainage facilities. - The concentrated flow of stormwater runoff collected from the road surfaces shall be well attenuated downstream to avoid flooding and soil erosion.	DCC	2,000,000
41.	Induced development and urban sprawl (local economy growth)	- The Planning Department of the DCC should install good governance systems in order to discourage and/or remove such newly upcoming developments along the roads that are against the planning guidelines. - Restrict the establishment of any permanent or temporary business, parking lots, or any other	DCC	2,000,000
42.	Increased income generation through the operation and maintenance of roads	- Prepare a fair and transparent recruitment process to allow potential candidates from the local community to apply for O&M jobs. - Give employment priority to the local community with relevant skills based on skills needed in O&M of roads. - Provide frequent training on O&M requirements for capacity building of the local community to be involved in O&M jobs.	DCC	2,000,000

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
		- Provide awareness to locals on potential investment and employment opportunities related to O&M of roads.		
43.	Landscape modification and increased impervious surfaces	- Replanting of and monitoring of the roadside vegetation; - There must be Regular maintenance of SUDS and nature-based solutions constructed/installed alongside the roads to manage stormwater; - Enforce laws governing the protection of important drainage structures and receiving water bodies in project-influenced areas.	LGA, DCC	2,000,000
44.	Increased air quality deterioration (noise levels and emissions) and land pollution	- Drivers and co-operators shall be sensitized about noise exposure and its effects on the surrounding environment; - Traffic police to conduct regular inspections of running vehicles to minimize vehicular emissions; - Speed limit and exhaust emissions standards shall be enforced; - Vehicle inspecting institutions should insist on regular maintenance of vehicles to minimize emissions of pollutants; - Steep grades at critical locations shall be avoided so as to reduce noise from acceleration, braking, and gear changes and - Cut sections shall be used (where appropriate) to decrease noise in nearby residences.	DCC, LATRA.	3,300,000, which will be taken from DCC Maintenance Budget
45.	Interference with local hydrology	- Conduct a special wet season study on the hydrological pattern of the affected areas, checking how hydraulic features like detention ponds (Chang'ombe sundown near VETA), the Luhanga River, and the Msimbazi River (near Mwananchi newspaper) are affected. - In the case of the affected area, the contractor shall confine construction activities to the core Area. - Ensure drainage restoration and rehabilitation plans are prepared - Ensure restoration and rehabilitation of all sites that the proposed Majumbasita-segerea will impact; T/Mawenzi-Kisiwani and Barakuda-Chang'ombe-Majichumvi sub-project roads.	DCC	6,000,000, which will be taken from DCC Maintenance Budget
46.	Impacts Associated with Poor Management of Roads Infrastructures	- Ensure proper O&M of the proposed road infrastructure. No waste accumulation should be left into drainage channels as they may clog to cause floods around the project influence areas; - Ensure improper maintenance of green structures (grass and trees) along the proposed roads such that they are not left to foster mosquito breeding and rodent hiding areas; and - Make adequate management of security lights to ensure public safety and sustainability.	DCC	13,000,000, which will be taken from DCC Maintenance Budget

SN	Impact	Proposed Mitigation Measures/Enhancement Measures	Responsibility/ Institution	Amount
47.	Increased Road accidents	- To ensure appropriate security of the roads, carry out repair and maintenance of roads and its facilities properly and timely; - Installation of proper road signs and regular inspections for their presence and validity; - Proper use of constructed pedestrian lanes alongside the roads, ensure that the pedestrian lanes are strictly used for pedestrians; - No temporary or permanent business activities shall be allowed within the roads RoW; - Appropriate traffic control signs shall be installed along the main road, along detours; - The Police force to monitor the driver's behavior, including adherence to speed control measures such as humps and ramps installed with the roads; - The road design has taken into consideration safety issues related to traffic accidents, especially near settlements and urban centers and in all accidents-prone sections. - The PIT shall conduct Road safety assessments through the operation phase of the road subprojects, monitor incidents and accidents, and prepare regular reports on such monitoring.	DCC, LATRA,	
DECOMMISSION PHASE				
48.	Dust and Noise Pollution	- Water sprinkling shall be applied to open earth or soil piles to reduce dust emission; - Trucks removing leftover construction materials shall be covered if the load is dry and prone to dust emissions; - In case of demolitions, the demolition area shall be fenced by iron sheets to prevent spread of windblown dust; - Community notification shall be undertaken where appropriate where work is likely to cause dust impact on the public and nearby residents; - Minimal sound construction equipment, with noise sinks, shall be used; - Machine operators in various sections with significant noise levels shall be provided with noise protective gear and - Construction equipment shall be selected, operated, and maintained to minimize noise.	DCC, LGA, Contractor	To be included in the Decommissioning plan
Sub Total 1 (Mobilization and Construction phase), which includes the costs for RAP, HIV/AIDS prevention program, and road safety intervention				4,278,416,899
Sub Total 2 (Operation phase)				37,300,000
GRAND TOTAL				4,315,716,899

Table 8-4: ESMP for proposed Upgrading of Upanga CBD Roads (4.63KM) and Kariakoo CBD Roads (7.79KM) under package 4 and 7 respectively

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Estimated annual costs
MOBILISATION PHASE				
1.	Loss of natural habitat and trees	- Ensure to confine construction activities to the core area (i.e. within the RoW); - Participatory preparation of clearance, re-vegetation, and restoration management plans following national institutional and legal frameworks, e.g., Standard specifications for road works (2000), section 5700 on landscaping and grassing, Forest Regulation (2004), and Urban Greening Guidelines (2022). The relevant organs must approve the Plan before its actual implementation. - Plant species to be integrated into the re-vegetation and restoration plan will be similar or better species than the ones removed, native/ indigenous, and with a history of good stewardship to the environment and people. Recommended species for shed and cooling include <i>Trichilia emetica</i>, <i>Tamarindus indica</i>, <i>Ziziphus mucronata</i>, and <i>Albizia versicolor</i>. For small trees and shrubs for pavement planting, consider <i>Adenium obesum</i>, <i>Carissa spinarum</i>, and <i>Chassalia umbraticola</i>, whereas for road isles, sidewalks, and town parks and reserves, <i>Cynodon nlemfuensis</i>, <i>Combretum constricted</i>, <i>Markhamia obtusifolia</i>, <i>Commiphora africana</i>, <i>Lannea schweinfurthii</i>, and <i>Grewia bicolor</i>. - Cleared areas shall be minimized to only touch vegetation within close vicinity of the working sites. Using chemicals to clear the vegetation is strictly prohibited to ensure environmental safety and health. - Raising a temporary fence to protect trees, shrubs, and other important vegetation before the commencement of any works on site, if necessary. All impacted top soils will be removed and re-used during re-vegetation and restoration.	Contractor	1,000,000
2.	Loss/Reduction of ecosystem services	- Prepare and implement a vegetation replenishment plan along the project corridor. Re-vegetation shall be done according to the plan specified by the Standard Specifications for Road Works of 2000 Section 5700 (Landscaping and Grassing) and the Dar Greening Handbook. - Confine construction work within the acquired project areas. - Enforce laws governing the protection of rare endemic and endangered species. - Prepare and implement an invasive species eradication plan in all areas impacted within the Project area. - Screen sources of construction materials by identifying all organisms on identified sources - Implement monitoring and evaluation programs to ensure minimum footprint beyond construction sites. - Any contaminated soils shall be segregated and transported by the contractor to the waste collection area (WCA) located at the campsite, where they shall be collected separately from other wastes until disposal by a third party.	Contractor	1,000,000

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Estimated annual costs
3.	Damage or relocation of existing utility infrastructure and public services	- In liaison with Utility providers within the project area (e.g., TANESCO, DAWASA, TTCL, and mobile communication companies), shall make arrangements for utility relocation before the construction work begins. - Utility relocation planning shall be done in consultation with the affected suppliers (e.g., TANESCO, DAWASA, and TTCL have been involved in the planning and design of the road infrastructure, and their recommendations have been incorporated into the design. - Utility relocation planning shall be done in consultation with the affected suppliers, and the relocation costs shall be in the BoQ. - Early notice shall be given to the community before any service interruption. - Provide detailed Information about the location and layout of the affected infrastructure to the contractor. - In liaison with utility infrastructure owners to ensure all affected infrastructure is relocated, to the satisfaction of the utility owner, ahead of the execution of the Works and in a manner that minimizes disruption of service to the public. Adequate funds to be included in the BoQ for this purpose. - DCC shall provide fair, prompt, and effective compensation at full replacement cost of affected utility infrastructure, as specified in the developed RAP - The developed DMDP II GRM shall be used to provide a process for receiving grievances from communities, individuals, NGOs, and local government and managing them efficiently and transparently. - Owners of affected utilities shall provide detailed Information about the location and layout of affected infrastructure to the contractor.	Contractor, DCC, Owners of affected Utilities (i.e., TANESCO, TTCL, AIRTEL, VODACOM, DAWASA, etc)	See in BOQ
4.	Deterioration of air quality (due to dust and increased air emissions)	- Pollution receptors (i.e., households and business centers) should be notified of the scheduling and duration of activities emitting dust. - Dust must be minimized at all working areas within or close to human habitations, business centers, dispensaries, and schools by periodic (3-4 times a day) water sprinkling on working sections. - The generation and release of exhaust emissions of any type shall be managed as per the requirements of the general EHS Guidelines on Air Emissions and Ambient Air Quality through a combination of: ✓ Energy use efficiency in construction equipment and machines; ✓ Use of cleaner fuels (i.e., Compressed natural gas (CNG), which is available in Dar es Salaam - Dust at workplaces within human habitations shall be critically minimized by periodic water sprinkling on working sections. The contractor shall advise or notify local households on upcoming activities prone to shedding dust, noise, vibration, and other dangers. - Vehicles and construction machinery must be properly maintained to comply with Tanzanian exhaust emission standards.	Contractor	1,000,000

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Estimated annual costs
		- Vehicles and construction machinery must be properly maintained to comply with Tanzanian exhaust emission standards. - Dust-generating activities must be slowed down in days of strong winds.		
5.	Increased traffic and road accident	- By providing alternative diversions whenever necessary and possible, the contractor will ensure minimal interference to traffic flow during the entire construction period. - No total closure of the road or drain, for instance, will be allowed. - Provide diversions and deploy a person responsible for traffic safety. - Ensure that prior to all activities, the Project shall assess the risks of the works to local people, including people walking by and people using nearby roads; - Instil a code of conduct for drivers, specifying drivers' behaviors and the maximum allowed traffic speed - Ensure that all hazardous materials and equipment are contained and that access to them by local people is prevented. - Flag persons shall be located at strategic locations along the road, such as Hospital areas (Muhimbili Hospital at JKCI, Maternity and OPD department, PCMC Healthcare), school areas (Tambaza High School and Internation School of Tanganyika along Kalenga road), and road sections where traffic passes through the works (half road) to control traffic movement in and out of construction sites. - Install barriers and appropriate signage to prevent access to dangerous areas, including areas where equipment and vehicles operate. - Ensure road width, speed restrictions, and traffic load in the areas in accordance with acceptable design standards.	Contractor	1,000,000
6.	Increased noise pollution	- During the selection of equipment, the contractor should select equipment and machinery with lower sound power levels. - Limit the speed of the vehicles to 20 kmph or by placing speed limits/signs/humps within the road haulage. - Be responsible for compliance with the relevant national legislation with respect to noise and vibration levels. - The impacts of noise emissions could be further minimized by locating materials processing areas, batch plants, and quarry areas away from human habitations (at least 500 m away). - Advise or notify local households on the shedding of noise and other dangers associated with the project.	Contractor	1,000,000
CONSTRUCTION PHASE				

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Estimated annual costs
7.	Increased noise pollution	- Planning activities in consultation with local communities (Mitaa Offices) so that activities with the greatest potential to generate noise are planned during periods of the day that will result in the least disturbance, especially close to school (International School of Tanganyika, Tambaza High School) and Muhimbili Hospital (JKCI & maternity and OPD department) along Kalenga road - Using noise control devices, such as temporary noise barriers, deflectors for impact and blasting activities, and exhaust muffling devices for combustion engines. - Drilling should be carried out with sharp drill bits to reduce noise levels, and much attention should be paid to areas close to Muhimbili National Hospital along Kalenga Road. - Construction workers in noisy sections should be provided with ear protective devices (earmuffs and/or earplugs). - Noise equipment should be installed with acoustic barriers without gaps and with a continuous minimum surface density of 10kg/m² to minimize sound transmission through the barrier. - The contractor shall limit the hours of operation for specific equipment or operations, especially mobile sources operating through sensitive areas. - During the selection of equipment, the contractor shall select equipment with lower sound power levels. - The contractor shall limit the hours of operation for specific equipment or operations, especially mobile sources operating through community areas. - For reduction of noise during the operation phase, the Contractor shall: ✓ Avoid Steep grades at critical locations so as to reduce noise from acceleration, braking, and gear changes and ✓ Cut sections shall be used (where appropriate) to decrease noise in nearby residences.	Contractor	2,000,000
8.	Deterioration of air quality due to increased air emissions and dust	- Dust emissions should be mitigated by sprinkling water on open areas at construction sites, material storage sites, and access roads to suppress dust; all machinery, equipment, and vehicles should be switched off when not in use. - Concrete mixing plants should be located away from residential areas, and all project workers should be provided with protective masks to prevent them from inhaling fumes and dust. - Water sprinkling to reduce the dust at construction sites and near settlements. Sprinkle water as necessary (at least twice a day) when visual inspection indicates excessive dust and during heavy traffic. - Pollution receptors (i.e., households and business centers) should be notified of the scheduling and duration of activities emitting dust and smoke (emissions) - Use of dust masks for operators and those working in dusty areas.	Contractor, LGA	1,000,000

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Estimated annual costs
		- Construction machines/ equipment shall be well maintained to manufacturers' requirements to ensure total fuel combustion. - All vehicles shall be frequently checked and serviced during the whole construction period so that the level of exhaust emissions is reduced. - Dust must be minimized at all working areas within or close to human habitations, business centers (e.g., the Kariakoo area), Pharmacies (Lifeline et al., KEA, Mediking), and schools (Tambaza High School, International School of Tanganyika, Al Muntanzir Union Nursery School) by periodic (2-3 times a day) water sprinkling on working sections. - Movement of vehicles should be kept to the minimum necessary for completing the job; - The Contractor must limit the speed of the vehicles to 20kmph or by placing speed limits/signs/humps within the construction site. - Dust-generating activities must be slowed down in days of strong winds.		
9.	Risk of damage to private properties due to increased vibration levels	- Baseline conditions of structures close to the construction sites should be recorded (by photos and videos). - The road design should include proper access infrastructure (culverts and drifts whenever practical) to properties along the proposed roads. - The contractor should install proper and adequate security features (e.g., "Roller" safety barriers, wire-rope median barriers, pedestrian fencing, etc.) to protect houses and structures located along the proposed project roads using the "forgiving roads concept." A forgiving road design aims to limit crashes to damage only or minor recoverable injuries. - In case construction activities damage any structure, the baseline conditions shall be compared to situations before, during, and after. The Contractor shall be responsible for repairing the damage. - Shattering of excavations and physical protection of structures shall be emphasized to minimize potential damage to buildings due to the vibration of heavy machines. - Employ Engineering controls (temporary or permanent retaining walls) to support adjacent private structures. - The contractor shall confine construction work within the acquired project areas. - The contractor shall make proper identification of structures prone to vibration damage and prepare proper protection plans.	Contractor	1,000,000
10.	Loss of definite materials and land degradation at the quarry sites	- Ensure efficient use of construction materials, including re-use and recycling of materials (as per the requirement of ESS3 on Resource Efficiency and Pollution Prevention and Management. - The project shall adhere to ESS3 on Resource Efficiency and Pollution Prevention and Management, which requires the efficacy use of raw materials.	Contractor and DCC	3,500,000

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Estimated annual costs
		- Construction materials must be obtained from authorized sources - Potential long-term environmental impacts of borrow pits and quarry sites relate to how they are left once the resource has been extracted. In this case, all borrow pits and quarries shall be rehabilitated and proper landscaping shall be done after completion of construction. Pits shall not be left with steep or vertical sides. - The topsoil shall be stockpiled for later use in reinstating the pit. Excavated soils (top fertile fraction) shall be used to replenish vegetation in areas with enough space after the construction phase. - Obtaining sand from valleys and riversides must be authorized by the authority (e.g., the DCC, Wami Ruvu Basin Water Board/NEMC). It must also be well investigated to avoid accelerated land degradation and pollution of water resources or otherwise purchasing from authorized dealers. - Collaborate with local authorities where the materials are extracted to carry out afforestation programs to replenish natural ecosystems. - All borrow pits and quarries shall be rehabilitated, and proper landscaping will be done after the construction is completed. Pits shall not be left with steep or vertical sides.		
11.	Increased pressure on natural resources	- Collaborate with local authorities from where the local materials will be extracted to carry out afforestation programs for the replenishment of nature ecosystems; - Explore and use alternative water sources away from ecologically sensitive areas and community sources. - Undertake water harvesting on worker's camps if feasible. - Adequate protection to the general public, including safety barriers and marking of hazardous areas; safe access across the construction site. - Where necessary, the contractor supports the cost of local social services through corporate Social Responsibility (CSR).	Contractor	3,300,000
12.	Pollution by solid waste and hazardous waste materials	- Provide adequate secondary containment for fuel storage tanks and the temporary storage of other fluids, such as lubricating oils and hydraulic fluids, in the area where vehicle maintenance will be done. - Training workers on the correct transfer and handling of fuels and chemicals and the response to spills. - Using impervious surfaces for refueling areas and other fluid transfer areas. - Providing portable spill containment and clean-up equipment on site and training in the equipment deployment.	Contractor	1,500,000
13.	Impacts of liquid wastes (i.e., human waste and spent water)	- Establish the quality, quantity, frequency, and sources of liquid effluents at the campsite and prepare the collection, treatment, and safe disposal measures;	Contractor	1,500,000

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Estimated annual costs
		- Plan and implement segregation of wastewater from other hazardous liquid waste and stormwater in order to limit the volume of water requiring specialized treatment. - Identify opportunities to prevent or reduce wastewater pollution through measures such as recycling/reuse within their facility, input substitution, or process modification (e.g., change of technology or operating conditions). - Assess compliance of their wastewater discharges with the applicable: (i) discharge standard (if the wastewater is discharged to surface water or sewer), and (ii) water quality standard for specific reuse (e.g., if the wastewater is reused for irrigation). - Ensure any discharges conform to local wastewater discharge standards of 2019		
14.	Interference to local hydrology due to climate change	- Provide and ensure adequate drainage infrastructure in flat terrain areas and direct stormwater to a safe place (not in residential areas) to avoid flooding - Must adhere to design standards and specifications	Contractor	15,000,000
15.	Risk of land pollution by hazardous wastes	- Make timely repairs to all construction equipment to avoid fuel and oil leakage. - Obtain a water use permit from the Wami Ruvu Basin Water Board (WRBWB) before drilling any boreholes. - Any wastewater contaminated with oils, fuels, bitumen, or other chemical substances shall be intercepted by an oil and grease interceptor trap before being discharged into the wastewater treatment facility and formal disposal. - Ensure adequate spill kits containing, at minimum, absorbent matt, adsorbent materials, booms, and other equipment necessary to contain and clear up any spills to ground or water courses are provided at suitable and regular locations on site. - Make timely repairs to all construction equipment to avoid fuel and oil leakage; - Prepare and obtain approval from the client on the emergency response procedure (ERP) - Construction equipment and machinery shall only be washed in agreed-upon areas with an impermeable base and suitable system for collecting wash water for treatment prior to its disposal.	Contractor	2,000,000
16.	Loss of accessibility to adjacent properties	- Consider changing/adjusting the project design and assessing all viable alternatives to avoid the need for access restrictions. This might involve a preference for alternative project approaches and/or adjusting the project's boundaries. - Ensure that full information is disclosed to institutions/individuals about project activities and potential impacts on people's rights and livelihood. These institutions include Muhimbili National Hospital, International School of Tanganyika, Al Muntazil Union school nursery School, MediKing Pharmaceutical, HASAFA Health Sciences and the cage gym along Kalenga (1.29km); Kariakoo	Contractor, DCC, and Ward/Mtaa leaders	2,000,000

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Estimated annual costs
		Market along Narung'ombe road (1.04km); Benjamin W. Mkapa High school, Uhuru Primary school, Lindi Mosque, Mabrouk & Samiro pharmaceuticals, Bethel pharmacy, Dossa pharmaceuticals all along Lindi road (1.12km). - The road design shall include proper access infrastructure (culverts wherever practical) to properties along the proposed roads. - The community must be informed of any road/road section closing, and alternative parking should be provided.		
17.	Job-seekers influx	- The hiring of the available local labor force (engage the local government authority in job advertising) - The local government should educate the locals on the requirements and procedures to be followed before accommodating outsiders; - Raise awareness among local communities to consider the project as an opportunity. - Encourage conservation of indigenous technologies and cultural practices. - Encourage local communities to produce local materials that can be sold outside their local markets.	Contractor, LGA	2,000,000
18.	Workers community negative interactions	- The implementing project contractor shall restrict the trivial entrance of surrounding community members into the working campsites and other working areas. - Encourage maintenance of cultural practices and traditional knowledge systems. - Raise awareness among local communities to consider the project as an opportunity.	Contractor	1,500,000
19.	Potential increase in road accidents and other community safety risks	- A Traffic Management Plan (TMP) will be in place during construction, and appropriate traffic control signs will be installed along the main road and detour in collaboration with the Police force to monitor vehicles and drivers' behavior. The road design has taken into consideration safety issues related to traffic accidents, especially near settlements and urban centers and in all accident-prone sections. - Install proper road signs and conduct regular inspections for their presence. - Install traffic calming measures such as road humps. - Instil a code of conduct for drivers, specifying drivers' behaviors and traffic speed. - Where feasible, the design has included the installation of pedestrian lanes at human settlement crossings. - Appropriate traffic control signs shall be installed along the main road and along detours, in collaboration with the Police force, to monitor vehicles and drivers' behavior. - The road design considers safety issues related to traffic accidents, especially near settlements and urban centers and all accident-prone sections.	Contractor	3,300,000

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Estimated annual costs
		- Conduct road safety assessments during the construction phase, monitor incidents and accidents, and prepare regular reports of such monitoring. - Use the WB incidents/ accident reporting procedures, which require reporting within 24 hours.		
20.	The potential spread of social illness (i.e., STI, COVID 19 and HIV/AIDS)	- Prepare and adhere to an approved HIV/AIDS, COVID-19, and other communicable diseases education and Awareness Program. Provide Voluntary Counselling and Testing (VCT) centers for HIV/AIDS at the workplace. - Enforce HIV/AIDS laws and regulations that prohibit stigma, discrimination, and responsibility for taking care of the affected communities. - Provide Voluntary Counselling and Testing (VCT) centers for HIV/AIDS at the workplace and give convenient time for workers to participate. - Changing work schedules account for the time involved and accommodate social distancing measures. - Restrict trivial entrance of surrounding community members into the working campsites and other working areas. - Provide ample safety measures, accounting for Coronavirus (Provision of masks, sanitizer, and water to workers). - Employ a qualified health professional to lead the management of COVID-19 and communicable disease risks during construction. - Undertake screening programs for communicable diseases such as HIV/AIDS and TB based on the prevailing risk profile. - Worker induction, Project training, and awareness campaigns must include Sexually Transmitted Diseases and HIV/AIDS. Condoms must be made available to Project workers. - Work closely with respective DCC departments, local NGOs, faith-based organizations, and local communities involved in COVID-19, HIV, and reproductive health.	Contractor	30,000,000
21.	Labour and working conditions	- Application of developed Labor Management Procedure; Code of Conduct, GRM for DMDP II, - Working terms and conditions of employment shall address national legal requirements as a minimum and ESS 2: Labor and Working Conditions. - Ensure a fair and transparent recruitment process is outlined in the Recruitment Management Plan for all openings. This includes working through local authorities to advertise openings as early as possible, allowing potential candidates to apply and prepare their skills for local opportunities. - Develop and make available to all project workers the key commitments made regarding labor management for the project. - Promote fair treatment, non-discrimination, and equal opportunity to skilled and unskilled workers.	Contractor	1,500,000

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Estimated annual costs
		- Support principles of freedom of association and collective bargaining of workers in a manner consistent with the national law. - Provide mechanisms for project workers to raise workplace grievances freely (i.e., through the GRM) prepared for DMDP II. - Provide a clear contract of employment to all workers before starting their work on the project. - Local Content Policy and Plan shall be developed to supplement the Influx Management Plan. - Give employment priority to the local community with relevant skills based on gender. - Provide awareness to locals on potential investment and employment opportunities. - Provided worker's code of conduct to all project workers before they signed their employment contract. - Develop a Worker's Code of Conduct to direct project workers on appropriate behaviors. - All workers must sign a worker's code of conduct before they sign their contract of employment. - Prohibit physical violence, discrimination, harassment, bullying, violence, and promote equal opportunity. - Adhere to local labor laws, national legislation, and World Bank ESS2.		
22.	Increased cases of occupational and health risks	- Must obtain Occupational Health and Safety Authority (OSHA) registration as early as possible before work commences. - Install fire prevention facilities and obtain FIRE certification as early as possible before work commencement. - Develop a plan for Worker's OHS induction pieces of training, in-job training, and toolbox meetings. - Consider eliminating the hazard by removing the activity from the work process, controlling the hazard at its source through engineering controls, and minimizing the hazard by designing safe work systems and administrative or institutional control measures. Examples include job rotation, training safe work procedures, lock-out and tag-out, workplace monitoring, limiting exposure or work duration, etc. - Providing appropriate personal protective equipment (PPE) in conjunction with training, use, and maintenance of the PPE - All job recruitment and labor management must comply with local Labour laws and legislation as well as World Bank ESS2, including the implementation of OHS measures in the ESMP. - There must be site-specific Emergency Prevention, Preparedness, and Response arrangements for emergencies.	Contractor	2,000,000
23.	Risk of increased GBV and Sexual	- Develop and implement the Contractors anti-GBV and anti-sexual harassment policies as per the requirements of ESS 2 and ESS 4;	Contractor	2,300,000

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Estimated annual costs
	Exploitation and Abuse (SEA)	- Appoint senior focal points with responsibility for ensuring that commitments and policies to prevent GBVH and sexual harassment policies are implemented; - Put in place monitoring systems at the highest levels for regular reporting on GBVH. - Requirements around GBVH should be included in codes of conduct, policies, and protocols for contractors, and once developed, training on policies and procedures should be provided. - Ensure codes of conduct are publicly disclosed in local languages and are widely accessible to all workers and all groups of people in project areas. - Deliver periodic mandatory training on GBVH to all workers, including contractors, subcontractors, core suppliers, relevant consultants, and clients. - Engage expertise (e.g., from local women's rights organizations or NGOs working on GBVH) to conduct awareness campaigns to provide information to local communities, such as what is unacceptable behavior and how to report an incident or provide a grievance mechanism for all direct workers and contracted workers (and, where relevant, their organizations) to raise workplace. - GBV and SEA concerns. Workers must be informed of the grievance mechanism at the time of recruitment and the measures put in place to protect them against any reprisal for using it.		
24.	Risk of increased child labor and abuse	- Abiding by labor and working conditions provided by World Bank guidelines (ESS2), the contractor is to Prepare and make available Necessary manuals and policies related to anti-child labor (under 18 years of age) action plans. - Whenever possible, liaise with local community development officers and any available NGO that can provide support to vulnerable children in the project area. - Awareness to the public on the minimum age for employment and labor rights should be conducted.	Contractor	2,000,000
25.	Increased traffic and road accident	- Prepare and implement a traffic management plan (TMP) that indicates which routes construction equipment will use and when. - Ensure that traffic flow is not interfered with during the entire construction period by providing alternative diversions whenever necessary. - Adhere to good construction principles, such as using proper road surfaces with non-skid surfaces and proper waterproofing materials. - Install proper and adequate traffic signs to avoid/prevent accidents. - No total closure of the road or drain, for instance, will be allowed; - Provide diversions and deploy a person responsible for traffic safety; - Flag persons shall be located at strategic locations, i.e., adjacent school areas (including the International School of Tanganyika along Kalenga road) adjacent to worship areas (including the Gereza/Lindi mosque along Lindi road, Msimbazi along Narung'ombe road, Kamata along City Garden	Contractor	3,000,000

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Estimated annual costs
		road, China Plaza along Muheza road and at road sections where traffic passes through the works (half road) to control traffic movement in and out of construction sites such as Lumumba road for Narung'ombe, Mkunguni, Udowe and Ungoni roads, UN Roads, Malik road for ends at this road. - Ensure that all hazardous materials and equipment are contained and that local people are prevented from accessing them. - Instil a code of conduct for drivers, specifying drivers' behaviors and traffic speed. - Ensure that the safety personnel assess the risks of the works to local people, including people walking by and people using nearby roads, prior to all activities. - Install barriers and warning signs around open excavations to prevent people from falling into them. - Install barriers and appropriate signage to prevent access to other hazardous areas, including areas in which equipment and vehicles are operating. - Undertake visual inspections to confirm that nobody has entered the site and is in a hazardous location, e.g., people sleeping under equipment. - Ensure road width, speed restrictions, and traffic load in the areas in accordance with acceptable standards.		
OPERATION AND MAINTENANCE PHASE				
26.	Job creation and increased income to local communities	- Ensure to prepare a fair and transparent recruitment process to allow for potential candidates to apply and prepare their skillsets for local opportunities. - Give employment priority to the local community with relevant skills based on gender. - Provide OHS on-job training to workers. - Provide awareness to locals on potential investment and employment opportunities.	DCC	2,000,000
27.	Improved transport services	- Set appropriate O&M measures to attain the design life of the roads and the safety of users - Improve feeder roads in rural areas connecting to the project roads - Ensure the availability of public transport along the proposed roads to improve mobility benefits. - Local government authority should facilitate the establishment of income-generating alternatives for adversely affected people	DCC	1,000,000
28.	Improved stormwater drainage	- Make frequent clean-up of drainage infrastructure, including appropriate O&M schedule - Provision of community sensitization to secure and protect drainage infrastructure - Community awareness to avoid using drainage infrastructure for solid waste and other domestic waste dumping	DCC	2,000,000

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Estimated annual costs
		- Sensitize communities to engage in activities that will improve vegetation cover on roadside drainage channels and catchment areas.		
29.	Reduced traffic congestion in the city	- Ensure improving feeder roads from the sub-urban areas connecting to the regional roads. - Installation of speed control devices like humps, Training of drivers and pedestrians, and placing of pedestrian lanes at human settlement crossings shall be emphasized to make traffic even better. - Ensure traffic signs are adequately provided and periodically check for their presence and functionality. - Ensure the road RoW is always open for traffic and pedestrians. Street hawkers shall not be allowed to use the road reserve for permanent or temporary business activities. - Provide adequate O&M of the roads, road furniture, traffic lights, and signage.	DCC, LATRA,	10,000,000
30.	Increased Road accidents	- To ensure appropriate security of the roads, DCC shall carry out repair and maintenance of roads and its facilities properly and timely; - Installation of proper road signs and regular inspections for their presence and validity; - Proper use of constructed pedestrian lanes alongside the roads. DCC to ensure that the pedestrian lanes are strictly used for pedestrians; - No temporary or permanent business activities shall be allowed within the roads RoW; - Appropriate traffic control signs shall be installed along the main road, along detours; - The Police force to monitor the driver's behavior, including adherence to speed control measures such as humps and ramps installed with the roads; - Conduct Road safety assessments through the operation phase of the road subprojects and will monitor incidents and accidents and prepare regular reports of such monitoring.		
31.	Reduced vehicle operation costs	- Reduced traffic will increase the average travel time in the city, which will have ripple effects on reducing vehicle wear and tear. - Ensure frequent road maintenance.	DCC	2,000,000
32.	Improved community life services and status	- Ensure the cleanliness of the proposed roads to minimize dust emissions - Improve feeder roads from the sub-urban areas connecting to the project roads	DCC	-
33.	Increased property and land values along the project area	- The value of properties along the project area will be enhanced through the proper design of roadside drainage facilities. - The concentrated flow of stormwater runoff collected from the road surfaces shall be well attenuated downstream to avoid flooding and soil erosion, making the land safe.	DCC	2,000,000

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Estimated annual costs
34.	Induced development and urban sprawl (local economy growth)	- The Planning Department of the DCC should install good governance systems in order to discourage and/or remove such newly upcoming developments along the roads that are against the planning guidelines. - Restrict the establishment of any permanent or temporary business, parking lots, or any other	DCC	2,000,000
35.	Increased income generation through the operation and maintenance of roads	- Prepare a fair and transparent recruitment process to allow for potential candidates from the local community to engage in O&M jobs. - Give employment priority to the local community with relevant skills based on skills needed in O&M of roads. - Provide frequent training on O&M requirements for capacity building of the local community to be involved in O&M jobs. - Provide awareness to locals on potential investment and employment opportunities related to O&M of roads.	DCC	2,000,000
36.	Landscape modification and increased impervious surfaces	- Ensure replanting of and monitoring of the roadside vegetation; - There must be Regular maintenance of SUDS and nature-based solutions constructed/installed alongside the roads to manage stormwater; - Enforce laws governing the protection of important drainage structures and receiving water bodies in project-influenced areas.	LGA, DCC	2,000,000
37.	Increased air quality deterioration (noise levels and emissions) and land pollution	- Drivers and co-operators shall be sensitized about noise exposure and and its effects on the surrounding environment; - Traffic police to conduct regular inspections of running vehicles to minimize vehicular emissions; - Speed limit and exhaust emissions standards shall be enforced; - Vehicle inspecting institutions should insist on regular maintenance of vehicles to minimize emissions of pollutants;	DCC, LATRA	3,000,000
38.	Impacts Associated with Poor Management of Roads Infrastructures	- Ensure proper O&M of the proposed road infrastructure. No waste accumulation should be left into drainage channels as they may clog to cause floods around the project influence areas; - ensure improper maintenance of green structures (grass and trees) along the proposed roads such that they are not left to foster mosquito breeding and rodent hiding areas and - Make adequate management of security lights to ensure public safety and sustainability.	DCC	13,000,000

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Estimated annual costs
39.	Increased Road accidents	- To ensure appropriate security of the roads, DCC shall carry out repair and maintenance of roads and its facilities properly and timely; - Installation of proper road signs and regular inspections for their presence and validity; - Proper use of constructed pedestrian lanes alongside the roads. DCC to ensure that the pedestrian lanes are strictly used for pedestrians; - No temporary or permanent business activities shall be allowed within the roads RoW; - Appropriate traffic control signs shall be installed along the main road, along detours; - The Police force to monitor the driver's behavior, including adherence to speed control measures such as humps and ramps installed with the roads; - Conduct Road safety assessments through the operation phase of the road subprojects will monitor incidents and accidents and prepare regular reports of such monitoring.	DCC, LATRA,	10,000,000
DECOMMISSION PHASE				
40.	Dust and Noise Pollution	- Water sprinkling shall be applied to open earth or soil piles to reduce dust emission; - Trucks removing leftover construction materials shall be covered if the load is dry and prone to dust emissions; - In case of demolitions, the demolition area shall be fenced by iron sheets to prevent spread of windblown dust; - Community notification shall be undertaken where appropriate where work is likely to cause dust impact on the public and nearby residents; - Minimal sound construction equipment, with noise sinks, shall be used;	Contractor	NA
TOTAL				136,400,000

Table 8-5: ESMP for Upgrading of Ilala CBD Roads (8.55 KM) package 5

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Amount
		MOBILIZATION PHASE		
1.	Loss of natural habitat and trees	- Confine construction activities to the core area (i.e. within the RoW); - Participatory preparation of clearance, re-vegetation, and restoration management plans following national institutional and legal frameworks, e.g., Standard specifications for road works (2000), section 5700 on landscaping and grassing, Forest Regulation (2004), and Urban Greening Guidelines (2022). The Plan must be approved by the relevant organs before its actual implementation. - Plant species to be integrated into the re-vegetation and restoration plan will be equivalent to the ones removed, native/ indigenous, and have a history of good stewardship to the environment and people. Recommended species for shed and cooling include <i>Trichilia emetica</i>, <i>Tamarindus indica</i>, <i>Ziziphus mucronata</i>, and <i>Albizia versicolor</i>. For small trees and shrubs for pavement, planting, consider <i>Adenium obesum</i>, <i>Carissa spinarum</i> and <i>Chassalia umbraticola</i>, whereas for road isles, sidewalks and town parks and reserves, <i>Cynodon nlemfuensis</i>, <i>Combretum constrictum</i>, <i>Markhamia obtusifolia</i>, <i>Commiphora africana</i>, <i>Lannea schweinfurthii</i> and <i>Grewia bicolor</i>. - Cleared areas shall be minimized to only touch vegetation near the working sites. Using chemicals to clear the vegetation is strictly prohibited to ensure environmental safety and health; - Raising a temporary fence to protect trees, shrubs and other important vegetation before commencement of any works on site, if necessary. All impacted top soils will be removed and re-used during re-vegetation and restoration.	Contractor	1,000,000
2.	Loss/Reduction of ecosystem services	- Prepare and implement a vegetation replenishment plan along the project corridor. Re-vegetation shall be done according to the plan specified by the Standard Specifications for Road Works of 2000 Section 5700 (Landscaping and Grassing) and the Dar Greening Handbook. - Confine construction work within the acquired project areas - Enforce laws governing the protection of rare endemic and endangered species - Prepare and implement an invasive species eradication plan in all areas impacted within the Project area - Screen sources of construction materials by identifying all organisms on identified sources - Implement monitoring and evaluation programs to ensure minimum footprint beyond construction sites - Any contaminated soils shall be segregated and transported by the contractor to the waste collection area (WCA) located at the campsite, where they shall be collected separately from other wastes until disposal by a third party.	Contractor	1,000,000

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Amount
3.	Damage or relocation of existing utility infrastructure and public services	- Utility providers within the project area (i.e. TANESCO, DAWASA, TTCL and mobile communication companies must be informed, and arrangements for utility relocation must be done before the construction work begins - Utility relocation planning shall be done in consultation with the affected suppliers (i.e. TANESCO, DAWASA, and TTCL have been involved in the planning and design of the road infrastructure, and their recommendations have been incorporated in the design; - Utility relocation planning shall be done in consultation with the affected suppliers, and the relocation costs shall be in the BoQ - Early notice shall be given to the community before any service interruption; - Provide detailed Information about the location and layout of affected infrastructure to the contractor; - Communicate with utility infrastructure owners to ensure all affected infrastructure is relocated, to the satisfaction of the utility owner, ahead of the execution of the Works; and in a manner that minimizes disruption of service to the public. Adequate funds to be included in the BoQ for this purpose. - Provide fair prompt and effective compensation at full replacement cost of affected utility infrastructure, as specified in the developed RAP - The developed DMDP II GRM shall be used to provide a process for receiving grievances from communities, individuals, NGOs, and local government and managing them in an efficient and transparent manner. - Owners of affected utilities shall provide detailed Information about the location and layout of affected infrastructure to the contractor	Contractor, DCC, Owners of affected Utilities (i.e. TANESCO, TTCL, DAWASA, TRC)	Included in BOQ
4.	Deterioration of air quality (due to dust and increased air emissions)	- Pollution receptors (i.e. households & business centres) should be notified on the scheduling and duration of activities emitting dust - Dust at all working areas within or close to human habitations/ business centres/dispensaries/schools MUST be minimized by periodic (3-4 times a day) water sprinkling on working sections - The generation and release of exhaust emissions of any type shall be managed as per the requirements of the general EHS Guidelines on Air Emissions and Ambient Air Quality through a combination of: ✓ Energy use efficiency in construction equipment and machines; ✓ Use of cleaner fuels (i.e. Compressed natural gas (CNG), which is available in Dar es Salaam - Dust at workplaces within human habitations shall be critically minimized by periodic water sprinkling on working sections. The contractor shall advise or notify local households on shedding of dust, noise, vibration and other dangers. - Vehicles and construction machinery must be properly maintained to comply with Tanzanian exhaust emission standards	Contractor	1,000,000

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Amount
		- Vehicles and construction machinery must be properly maintained to comply with Tanzanian exhaust emission standards - Dust-generating activities must be slowed down in days of strong winds		
5.	Increased traffic and road accident	- By providing alternative diversions whenever necessary, the contractor will ensure that the traffic flow is not interfered with during the entire construction period; - No total closure of the road or drain, for instance, will be allowed; - The contractor shall provide diversions and deploy a person responsible for traffic safety; - Ensure that before all activities, the Project shall assess the risks of the works to local people, including people walking by, and people using nearby roads; - Instil a code of conduct for drivers, specifying drivers' behaviours and traffic speed - Ensure that all hazardous materials and equipment must be contained and access to them by local people must be prevented - Flag persons shall be located at strategic locations (i.e. Mahad misbah mosque along Nzasa Road (0.62Km), Masjid Mosque along Dodoma Road (0.29 km), Masjid Istiqamah Mosque along Saadani Road (0.48km); TAG - Imani Community Church along Simple Motel road (0.32Km); Ilala market along Bukoba road (0.58 km), and Moshi road (0.2 km); and Karume local government office along Kilwa 1 road (1.32km)) and where road sections where traffic is passed through the works (half road) to control traffic movement in and out of construction sites. - Put barriers and appropriate signage to prevent access to dangerous areas, including areas in which equipment and vehicles are operating - Ensure that road width, speed restrictions, and traffic load in the areas are in accordance with acceptable standards.	Contractor	1,000,000
6.	Increased noise pollution	- During the selection of equipment, the contractor should select equipment with lower sound power levels. - Limit the speed of the vehicles to 20 kmph or by placing speed limits/signs/humps within the road haulage, - The impacts of noise emissions will further be minimized by proper choice of plants and machinery (i.e., fitted with noise and dust silencers or reducers) and locating quarry areas away from human habitations (at least 500 m away) - Noise at workplaces within or close to human habitations should be critically minimized by silence and a good choice of equipment. The contractor shall advise or notify local households on the shedding of noise and other dangers associated with the project	Contractor	1,000,000
CONSTRUCTION PHASE				

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Amount
7.	Increased noise pollution	- Planning activities will be done in consultation with local communities (Mitaa Offices) so that activities with the greatest potential to generate noise are planned during periods of the day that will result in least disturbance, especially close to Mahad misbah mosque along Nzasa road (0.62Km), Masjid Mosque along Dodoma road (0.29 km), Masjid Istiqamah Mosque along Saadani road (0.48km); TAG - Imani Community Church along Simple Motel road (0.32Km); Ilala market along Bukoba road (0.58 km), and Moshi road (0.2 km); and Karume local government office along Kilwa 1 road (1.32km). - Using noise control devices, such as temporary noise barriers and deflectors for impact and blasting activities and exhaust muffling devices for combustion engines. - Drilling should be carried out with sharp drill bits to reduce noise levels. Much attention should be paid in areas close to Mahad misbah mosque along Nzasa Road (0.62Km), Masjid Mosque along Dodoma Road (0.29 km), Masjid Istiqamah Mosque along Saadani Road (0.48km); TAG - Imani Community Church along Simple Motel road (0.32Km); Ilala market along Bukoba road (0.58 km), and Moshi road (0.2 km); and Karume local government office along Kilwa 1 road (1.32km). - Construction workers in noisy sections should be provided with ear protective devices (earmuffs and/or earplugs). - Noise equipment shall be installed with acoustic barriers without gaps and with a continuous minimum surface density of 10kg/m² in order to minimize the transmission of sound through the barrier - Limit the hours of operation for specific pieces of equipment or operations, especially mobile sources operating through sensitive areas - During the selection of equipment, the contractor shall select equipment with lower sound power levels - Limit the hours of operation for specific pieces of equipment or operations, especially mobile sources operating through community areas	Contractor	1,000,000
8.	Deterioration of air quality due to increased air emissions and dust	- Dust emissions will be mitigated by sprinkling water at the construction sites and access roads to suppress dust; all machinery, equipment and vehicles will be switched off when not in use; - Concrete mixing plants will be located away from residential areas, and all project workers will be provided with protective masks to prevent them from inhaling fumes and dust. - Water sprinkling to reduce the dust at construction sites and near settlements. Sprinkle water as necessary (at least twice a day) when visual inspection indicates excessive dust and during heavy traffic - Pollution receptors (i.e. households & business centres) should be notified of the scheduling and duration of activities emitting dust and smoke (emissions) - Use of dust masks for operators and those working in dusty areas. - Construction machines/ equipment shall be well maintained to manufacturers' requirements to ensure total fuel combustion.	Contractor	1,000,000

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Amount
		- All the vehicles shall be frequently checked and serviced during the whole construction period so that the level of exhaust emissions is reduced - Dust at all working areas within or close to human habitations/ business centres (Ilala Market and Kilwa market), Church (TAG – Imani Community Church), and Mosque (Mahad misbah mosque along Nzasa road (0.62Km), Masjid Mosque along Dodoma road (0.29 km), Masjid Istiqamah Mosque along Saadani road (0.48km); and Karume local government office along Kilwa 1 road (1.32km)) MUST be minimized by periodic (3-4 times a day) water sprinkling on working sections - Movement of vehicles should be kept to minimum necessary for completing the job; - Limit the speed of the vehicles to 20kmph or by placing speed limits/signs/humps within construction site - Dust-generating activities must be slowed down in days of strong winds		
9.	Risk of damage of private properties due to increased vibration levels	- Baseline condition of structures close to the construction sites should be recorded (by photos and videos). - The road design shall include proper access infrastructure (culverts and drifts whenever practical) to properties located along the proposed roads - Install proper and adequate security features (e.g., "Roller" safety barriers, wire-rope median barrier, pedestrians fencing etc) to protect houses and structures located along the proposed project roads using the "forgiving roads concept". A forgiving road design aims at limiting crashes to damage only or minor recoverable injuries - In case construction activities damage any structure, the baseline conditions shall be compared to situations before, during and after. The Contractor shall be responsible for repairing the damage. - Shattering of excavations and physical protection of structures shall be emphasised to minimize potential damage to buildings due to vibration of heavy machines; - Employ Engineering controls (temporary or permanent retaining wall) to support adjacent private structure; - Confine construction work within the acquired project areas - Make proper identification of structures prone to vibration damage and prepare proper protection plans	Contractor	1,000,000
10.	Loss of definite materials and land degradation at the quarry sites	- Ensure the efficiency use of construction materials, including re-use and recycling of materials (as per the requirement of ESS3 on Resource Efficiency and Pollution Prevention and Management - The project shall adhere to ESS3 on Resource Efficiency and Pollution Prevention and Management, which requires efficacy use of raw materials: - Construction materials must be obtained from authorized sources	Contractor and DCC	3,300,000

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Amount
		- Potential long-term environmental impacts of borrow pits and quarry sites relate to how they are left once the resource has been extracted. In this case, all borrow pits and quarries shall be rehabilitated, and proper landscaping will be done after completion of construction. Pits shall not be left with steep or vertical sides. - The topsoil shall be stockpiled for later use in reinstating the pit. Excavated soils (top fertile fraction) shall be used for replenishment of vegetation in areas with enough space after the construction phase - Obtaining sand from valleys and riversides must be Authorized by the Authority (i.e. the DCC, WAMI Ruvu Basin Water Board/NEMC) and must be well investigated to avoid accelerated land degradation and pollution of water resources or otherwise purchasing from authorized dealers - Collaborate with local authorities from where the materials are extracted to carry out afforestation programmes for the replenishment of natural ecosystems - All borrow pits and quarries shall be rehabilitated, and proper landscaping is done after completion of the construction. Pits shall not be left with steep or vertical sides.		
11.	Increased pressure on natural resources	- Collaborate with local authorities from where the local materials will be extracted to carry out afforestation programmes for the replenishment of natural ecosystems; - Explore and use alternative sources of water away from ecologically sensitive areas and community sources; - Undertake water harvesting on worker's camps if feasible; - Adequate protection to the general public, including safety barriers and marking of hazardous areas; safe access across the construction site; - Where necessary, the contractor Supports the cost of local social services through corporate Social Responsibility (CSR)	Contractor, DCC	3,300,000
12.	Pollution by solid waste and hazardous waste materials	- Provide adequate secondary containment for fuel storage tanks and the temporary storage of other fluids, such as lubricating oils and hydraulic fluids in the area where vehicle maintenance will be done - Training workers on the correct transfer and handling of fuels and chemicals and the response to spills - Using impervious surfaces for refuelling areas and other fluid transfer areas - Providing portable spill containment and clean-up equipment on site and training in the equipment deployment	Contractor	1,500,000
13.	Impacts of liquid wastes (i.e. human waste and spent water)	- Establish the quality, quantity, frequency and sources of liquid effluents at the campsite and prepare collection, treatment and safe disposal measures; - Plan and implement segregation of wastewater from other hazardous liquid waste and stormwater to limit the volume of water requiring specialized treatment.	Contractor	1,500,000

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Amount
		- Identify opportunities to prevent or reduce wastewater pollution through measures such as recycling/reuse within their facility, input substitution, or process modification (e.g., change of technology or operating conditions). - Assess compliance of their wastewater discharges with the applicable: (i) discharge standard (if the wastewater is discharged to surface water or sewer), and (ii) water quality standard for specific reuse (e.g., if the wastewater is reused for irrigation). - Ensure any discharges conform to local wastewater discharge standards of 2019		
14.	Interference to local hydrology due to climate change	- Provide and ensure adequate drainage infrastructure in flat terrain areas and direct stormwater to a safe place (not in residential areas) to avoid flooding - Adhere to design standards and specifications	Contractor	10,000,000
15.	Risk of land pollution by hazardous wastes	- Make timely repairs to all construction equipment to avoid fuel and oil leakage - Obtain a water use permit from Wami Ruvu Basin Water Board (WRBWB) before drilling any boreholes - Any wastewater contaminated with oils, fuels, bitumen, or other chemical substances shall be intercepted by an oil and grease interceptor trap before discharge into the wastewater treatment facility and formal disposal. - Ensure adequate spill kits containing as a minimum absorbent matt, adsorbent materials, booms, and other equipment necessary to contain and clear up any spills to ground or water courses are provided at suitable and regular locations on site - Make timely repair of all construction equipment to avoid fuel and oil leakage; - Prepare and obtain approval from the client on the emergency response procedure (ERP) - Washing of construction equipment and machinery shall only be permitted in agreed areas, with an impermeable base and suitable system for the collection of wash water for treatment before its disposal	Contractor	2,000,000
16.	Loss of accessibility to adjacent properties	- Consider changing the project design and assessing all viable alternatives to avoid the need for access restrictions. This might involve giving preference to alternative project approaches and/or adjusting the project's boundaries. - Ensure that full information is disclosed to institutions/individuals about project activities and potential impacts on people's rights and livelihood. These institutions include Mahad misbah mosque along Nzasa road (0.62Km), Masjid Mosque along Dodoma road (0.29 km), Masjid Istiqamah Mosque along Saadani road (0.48km); TAG - Imani Community Church along Simple Motel road (0.32Km); Ilala market along Bukoba road (0.58 km), and Moshi road (0.2 km); and Karume local government office along Kilwa 1 road (1.32km) - The road design shall include proper access infrastructure (culverts wherever practical) to properties located along the proposed roads	Contractor	2,000,000

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Amount
		- Ensure that affected groups are asked to consent to a project or a particular activity and have the right to give their consent, withhold it or offer it conditionally. - Where restrictions cannot be avoided, the Contractor, in collaboration with the local communities, will identify a fair and adequate strategy for compensation and provision of benefits for livelihood restoration or enhancement.		
17.	Job-seekers influx	- Hiring of available local labour force (engage the local government authority in job advertising) - The local government should educate the locals on the requirements and procedures to be followed before accommodating outsiders; - Raise awareness among local communities to consider the project as an opportunity - Encourage local communities to produce local materials that can be sold outside their local markets	Contractor, LGA	2,000,000
18.	Workers community negative interactions	- The implementing project contractor shall restrict trivial entrance of surrounding community members into the working camp sites and other working areas - Encourage maintenance of cultural practices and traditional knowledge systems - Raise awareness to local communities to consider the project as an opportunity	Contractor	1,500,000
19.	Potential increase of road accident and other community safety risks	- A Traffic Management Plan (TMP) will be in place during construction and appropriate traffic control signs shall be installed along the main road, along detours, collaboration with Police force in monitoring vehicles and drivers' behaviour. The road design has taken into consideration safety issues related to traffic accidents especially near settlements and urban centres and in all accidents-prone sections - Installation of proper road signs and regular inspections for their presence - Installation of speed control devices like humps - Instil a code of conduct for drivers, specifying drivers' behaviours and traffic speed - Where feasible, the design has included installation of pedestrian lanes at human settlement crossings; - Appropriate traffic control signs shall be installed along the main road and along detours, in collaboration with the Police force, to monitor vehicles and drivers' behaviour. - The road design has considered safety issues related to traffic accidents, especially near settlements, urban centres, and all accident-prone sections. - The PIT shall conduct Road safety assessments during the Construction phase, monitor incidents and accidents, and prepare regular reports of such monitoring.	Contractor	3,300,000
20.	The potential spread of social illness (i.e. STI, COVID 19 and HIV/AIDS)	- Prepare and adhere to an approved HIV/AIDS, COVID-19 and other communicable diseases education and Awareness Program Provide Voluntary Counselling and Testing (VCT) centres for HIV/AIDs at the workplace, - Enforce HIV/AIDS laws and regulations that prohibit stigma, discrimination and responsibility for taking care of the affected communities.	Contractor, DCC	30,000,000

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Amount
		- Provide Voluntary Counselling and Testing (VCT) centres for HIV/AIDs at the workplace and give convenient time for workers to participate - Changing work schedules account for the time involved and accommodate social distancing measures. - Restrict trivial entrance of surrounding community members into the working campsites and other working areas - Provide ample safety measures, accounting for Coronavirus (Provide masks, sanitiser and water to workers. - Employ a qualified health professional to lead on the management of COVID-19 and communicable disease risks during construction - Undertake screening programmes for communicable diseases such as HIV/AIDS and TB based on the prevailing risk profile. - Worker induction and Project training and awareness campaigns must include Sexually Transmitted Diseases and HIV/AIDS. Condoms must be made available to Project workers. - Work closely with respective DCC departments, local NGOs, and/or faith-based organisations, and local communities involved in COVID-19, HIV and reproductive health		
21.	Labour and working conditions	- Application of developed Labor Management Procedure; Code of Conduct, GRM for DMDP II, - Working terms and conditions of employment shall address national legal requirements as a minimum and ESS 2: Labor and Working Conditions; - Ensure a fair and transparent recruitment process will be outlined as part of the Recruitment Management Plan for all openings, including working through local authorities to advertise openings as early as possible to allow for potential candidates to apply and prepare their skillsets for local opportunities - Develop and make available to all project workers the key commitments made regarding labour management for the project. - Promote the fair treatment, non-discrimination, and equal opportunity to both skilled and unskilled workers - Support principles of freedom of association and collective bargaining of workers in a manner consistent with the national law - Provide mechanisms for project workers to raise workplace grievances freely. - Provide a clear contract of employment to all workers prior to starting their work on the project - Local Content Policy and Plan shall be developed to supplement the Influx Management Plan - Give employment priority to the local community with relevant skills based on gender - Provide awareness to locals on potential investment and employment opportunities	Contractor	1,500,000

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Amount
		- Provided worker's code of conduct to all project workers before they sign their contract of employment - Develop a Worker's Code of Conduct to direct project workers on appropriate behaviours. - All workers must sign a worker's code of conduct before they sign their contract of employment - Prohibit physical violence, discrimination, harassment, bullying, violence, and promote equal opportunity. - The Project must be implemented in compliance with local labour laws and national legislation as well as World Bank ESS2		
22.	Increased cases of occupational and health risks	Registration by the Occupational Health and Safety Authority (OSHA) must be obtained as early as possible before work commences. - Install fire prevention facilities and obtain FIRE certification as early as possible before work commencement. - Develop a plan for Worker's OHS induction training, in job training and toolbox meetings - Consider eliminating the hazard by removing the activity from the work process, controlling the hazard at its source through the use of engineering controls, and minimizing the hazard through the design of safe work systems and administrative or institutional control measures. Examples include job rotation, training safe work procedures, lock-out and tag-out, workplace monitoring, limiting exposure or work duration, etc. - Providing appropriate personal protective equipment (PPE) in conjunction with training, use, and maintenance of the PPE - All job recruitment and labour management must comply with the local Labour laws and legislation as well as World Bank ESS2., including implementation of OHS measures in the ESMP - There must be site-specific Emergency Prevention and Preparedness and Response arrangements for emergency situations	Contractor OSHA	2,000,000
23.	Risk of increased GBV and Sexual Exploitation and Abuse (SEA)	- Develop and implement anti-GBV and anti-sexual harassment policies as per the requirements of ESS 2 and ESS 4; - Appoint senior focal points with responsibility for ensuring that commitments and policies to prevent GBVH and sexual harassment policies are implemented; - Put in place monitoring systems at the highest levels for regular reporting on GBVH - Include requirements around GBVH in codes of conduct, policies and protocols for contractors, including training on policies and procedures once developed; - Ensure codes of conduct is publicly disclosed in local languages and are widely accessible to all workers and all groups of people in project areas;	Contractor	2,300,000

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Amount
		- Deliver periodic mandatory training on GBVH to all workers, including contractors, subcontractors and core suppliers, as well as relevant consultants and clients; - Engage expertise (e.g., from local women's rights organizations or NGOs working on GBVH) to conduct awareness campaigns to provide information to local communities, such as what is unacceptable behaviour and how to report an incident of GBVH; - Provide a grievance mechanism for all direct workers and contracted workers (and, where relevant, their organizations) to raise workplace - GBV and SEA concerns. Workers must be informed of the grievance mechanism at the time of recruitment and the measures put in place to protect them against any reprisal for its use		
24.	Risk of increased child labour and abuse	- Abiding to labour and working conditions provided by World Bank guidelines (ESS2), the contractor is to Prepare and make available Necessary manuals and policies related to anti-child labour (under 18 years of age) action plan - Liaise with local community development officers and available NGO which can provide support to vulnerable children along the project area - Awareness to the public on the minimum age for employment and labour rights should be conducted	Contractor	2,000,000
25.	Increased traffic and road accident	- Prepare and implement a traffic management plan (TMP) that indicates which routes will be used and when. - By providing alternative diversions whenever necessary, the contractor will ensure that the traffic flow is not interfered with during the entire construction period; - The design of the road shall recommend proper road surface dressing such that the proposed roads are safer, with non-skid surface and proper waterproofing materials shall be proposed - Install proper and adequate traffic signs to avoid frequent accidents - No total closure of the road or drain, for instance, will be allowed; - Provide diversions and deploy a person responsible for traffic safety; - Flag persons shall be located at strategic locations (i.e. Mahad misbah mosque along Nzasa road (0.62Km), Masjid Mosque along Dodoma road (0.29 km), Masjid Istiqamah Mosque along Saadani road (0.48km); TAG - Imani Community Church along Simple Motel road (0.32Km); Ilala market along Bukoba road (0.58 km), and Moshi road (0.2 km); Karume local government office along Kilwa 1 road (1.32km) and at road sections where traffic is passed through the works (half road) to control traffic movement in and out of construction sites. - Ensure that all hazardous materials and equipment must be contained and access to them by local people must be prevented;	Contractor and Ward/Mtaa leaders	3,000,000

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Amount
		- The community must be informed of any road/road section closing, and alternative parking shall be provided. - Instil a code of conduct for drivers, specifying drivers' behaviours and traffic speed - Ensure that prior to all activities, the safety personnel shall assess the risks of the works to local people, including people walking by and people using nearby roads - Put barriers and warning signs around open excavations to prevent people from falling into them - Put barriers and appropriate signage to prevent access to other hazardous areas, including areas in which equipment and vehicles are operating - Undertake visual inspections to confirm that nobody has entered the site and is in a hazardous location, e.g., people sleeping under equipment - Ensure that road width, speed restrictions, and traffic load in the areas are in accordance with acceptable standards.		
OPERATION AND MAINTENANCE PHASE				
26.	Job creation and increased income to local communities	- Prepare a fair and transparent recruitment process to allow potential candidates to apply and prepare their skillsets for local opportunities. - Give employment priority to the local community with relevant skills based on gender. - Provide OHS on-job training to workers - Provide awareness to locals on potential investment and employment opportunities	DCC	2,000,000
27.	Improved transport services	- Set appropriate O&M measures to attain the design life of the roads and the safety of users - Improve feeder roads in rural areas connecting to the project roads - Ensure the availability of public transport along the proposed roads to improve mobility benefits - Local government authority should facilitate the establishment of income-generating alternatives to adversely affected people	DCC	1,000,000
28.	Improved stormwater drainage	- Make frequent clean-up of drainage infrastructure, including appropriate O&M schedule - Provision of community sensitisation to secure and protect drainage infrastructure - Community awareness to avoid using drainage infrastructure for solid waste and other domestic waste dumping - Sensitize communities to engage in activities that will improve vegetation cover on roadside drainage channels and catchment areas	DCC	2,000,000
29.	Improved traffic congestion in the city	- Improve feeder roads from the sub-urban areas connecting to the regional roads - Installation of speed control devices like humps, Training of drivers and pedestrians and placing of pedestrian lanes at human settlement crossings shall be emphasised to make traffic even better - Ensure traffic signs are adequately provided and periodically check for their presence	DCC	

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Amount
		- Local government authority should facilitate the establishment of income-generating alternatives for adversely affected people - Provide adequate O&M of road furniture, traffic lights, and signage		
30.	Reduced vehicle operation costs	- Reduced traffic will increase the average travel time in the city, which will have ripple effects on reducing the tear and wear of vehicles - Ensure frequent road maintenance	DCC	2,000,000
31.	Improved community life services and status	- In collaboration with other institutions to ensure the cleanliness of the proposed roads to minimize dust emissions - Improve feeder roads from the sub-urban areas connecting to the project roads	DCC	NA
32.	Increased property and land values along the project area	- The value of properties along the project area should be enhanced through proper design of roadside drainage facilities. - The concentrated flow of stormwater runoff collected from the road surfaces shall be well attenuated downstream to avoid flooding and soil erosion, making the land safe	DCC	2,000,000
33.	Induced development and urban sprawl (local economy growth)	- The Planning department should install good governance systems in order to discourage and/or remove such newly upcoming developments along the roads that are against the planning guidelines. - Restrict the establishment of any permanent or temporary business, parking lots or any other	DCC	2,000,000
34.	Increased income generation through the operation and maintenance of roads	- Prepare a fair and transparent recruitment process to allow for potential candidates from the local community to engage in O&M jobs - Give employment priority to the local community with relevant skills based on skills needed in O&M of roads - Provide frequent training on O&M requirements for capacity building of the local community to be involved in O&M jobs - Provide awareness to locals on potential investment and employment opportunities related to O&M of roads	DCC	2,000,000
35.	Landscape modification and increased impervious surfaces	- Ensure replanting of and monitoring of the roadside vegetation; - There must be Regular maintenance of SUDS and nature-based solutions constructed/installed alongside the roads to manage stormwater; - Enforce laws governing the protection of important drainage structures and receiving water bodies in project-influenced areas.	DCC	2,000,000

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Amount
36.	Increased air quality deterioration (noise levels and emissions) and land pollution	- Drivers and co-operators shall be sensitised about noise exposure its effects to the surrounding environment; - Traffic police to conduct regular inspection of running vehicles to minimize vehicular emissions; - Speed limit and exhaust emissions standards shall be enforced; - Vehicle inspecting institutions should insist on regular maintenance of vehicles to minimize emissions of pollutants; - Steep grades at critical locations shall be avoided so as to reduce noise from acceleration, braking and gear changes; and - Cut sections shall be used (where appropriate) to decrease noise in nearby residences.	DCC, LATRA.	DCC Maintenance Budget
37.	Impacts Associated with Poor Management of Roads Infrastructures	- Ensure proper O&M of the proposed road infrastructure. No waste accumulation should be left into drainage channels as they may clog to cause floods around the project influence areas; - Ensure improper maintenance of green structures (grass and trees) along the proposed roads such that they are not left to foster mosquito breeding and rodent hiding areas; and - Manage security lights adequately to ensure public safety and sustainability.	DCC	13,000,000 which will be taken from DCC maintenance Budget
38.	Increased Road accidents	- To ensure appropriate security of the roads, carry out repair and maintenance of roads and its facilities properly and timely; - Installation of proper road signs and regular inspections for their presence and validity; - Proper use of constructed pedestrian lanes alongside the roads to ensure that the pedestrian lanes are strictly used for pedestrians; - No temporary or permanent business activities shall be allowed within the roads RoW; - Appropriate traffic control signs shall be installed along the main road, along detours; - The Police force to monitor the driver's behaviour, including adherence to speed control measures such as humps and ramps installed with the roads; - Conduct Road safety assessment through the operation phase of the road subprojects and will monitor incidents and accidents and prepare regular reports of such monitoring.	DCC, LATRA,	
		DECOMMISSION PHASE		
39.	Dust and Noise Pollution	- Water sprinkling shall be applied to open earth or soil piles to reduce dust emission; - Trucks removing leftover construction materials shall be covered if the load is dry and prone to dust emissions;	DCC, LGA, Contractor	To be included in the

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Amount
		- In case of demolitions, the demolition area shall be fenced by iron sheets to prevent spread of windblown dust; - Community notification shall be undertaken where appropriate where work is likely to cause dust impact on the public and nearby residents; - Minimal sound construction equipment, with noise sinks, shall be used; - Machine operators in various sections with significant noise levels shall be provided with noise protective gear and - Construction equipment shall be selected, operated and maintained to minimise noise.		Decommissioning plan
TOTAL				107,200,000

Table 8-6: ESMP for Upgrading of Vingunguti Roads (4.4 KM) Package 6

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Amount
		MOBILIZATION PHASE		
1.	Loss of natural habitat and trees	- Confine construction activities to the core area (i.e., within the RoW); - Participatory preparation of clearance, re-vegetation, and restoration management plans following national institutional and legal frameworks, e.g., Standard specifications for road works (2000), section 5700 on landscaping and grassing, Forest Regulation (2004), and Urban Greening Guidelines (2022). The relevant organs must approve the Plan before its actual implementation. - Plant species to be integrated into the re-vegetation and restoration plan will be equivalent to the ones removed, native/ indigenous, and have a history of good stewardship to the environment and people. Recommended species for shed and cooling include <i>Trichilia emetica</i>, <i>Tamarindus indica</i>, <i>Ziziphus mucronata</i>, and <i>Albizia versicolor</i>. For small trees and shrubs for pavement planting, consider <i>Adenium obesum</i>, <i>Carissa spinarum</i>, and <i>Chassalia umbraticola</i>, whereas for road isles, sidewalks, and town parks and reserves, <i>Cynodon nlemfuensis</i>, <i>Combretum constrictum</i>, <i>Markhamia obtusifolia</i>, <i>Commiphora africana</i>, <i>Lannea schweinfurthii</i>, and <i>Grewia bicolor</i>. - Cleared areas shall be minimized to only touch vegetation near the working sites. Using chemicals to clear the vegetation is strictly prohibited to ensure environmental safety and health; - Raising a temporary fence to protect trees, shrubs and other important vegetation before commencement of any works on site, if necessary. All impacted top soils will be removed and re-used during re-vegetation and restoration.	Contractor	1,000,000
2.	Loss/Reduction of ecosystem services	- Prepare and implement a vegetation replenishment plan along the project corridor. Re-vegetation shall be done according to the plan specified by the Standard Specifications for Road Works of 2000 Section 5700 (Landscaping and Grassing) and the Dar Greening Handbook. - Confine construction work within the acquired project areas - Enforce laws governing the protection of rare endemic and endangered species - Prepare and implement an invasive species eradication plan in all areas impacted within the Project area - Screen sources of construction materials by identifying all organisms on identified sources - Implement monitoring and evaluation programs to ensure minimum footprint beyond construction sites - Any contaminated soils shall be segregated and transported by the contractor to the waste collection area (WCA) located at the campsite, where they shall be collected separately from other wastes until disposal by a third party.	Contractor	1,000,000

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Amount
3.	Damage or relocation of existing utility infrastructure and public services	- Utility providers within the project area (i.e., TANESCO, DAWASA, TTCL, and mobile communication companies must be informed, and arrangements for utility relocation must be made before the construction work begins. - Utility relocation planning shall be done in consultation with the affected suppliers (i.e., TANESCO, DAWASA, and TTCL have been involved in the planning and design of the road infrastructure, and their recommendations have been incorporated in the design, - Utility relocation planning shall be done in consultation with the affected suppliers, and the relocation costs shall be in the BoQ. - Early notice shall be given to the community before any service interruption; - Provide detailed Information about the location and layout of affected infrastructure to the contractor; - Communicate with utility infrastructure owners to ensure all affected infrastructure is relocated, to the satisfaction of the utility owner, ahead of the execution of the Works and in a manner that minimizes disruption of service to the public. Adequate funds to be included in the BoQ for this purpose. - Provide fair, prompt, and effective compensation at full replacement cost of affected utility infrastructure, as specified in the developed RAP. - The developed DMDP II GRM shall provide a process for receiving grievances from communities, individuals, NGOs, and local government and managing them efficiently and transparently. - Owners of affected utilities shall provide detailed Information about the location and layout of affected infrastructure to the contractor.	Contractor, DCC, Owners of affected Utilities (i.e., TANESCO, TTCL, DAWASA, TRC)	
4.	Deterioration of air quality (due to dust and increased air emissions)	- Pollution receptors (i.e., households & business centers) should be notified of the scheduling and duration of activities emitting dust - Dust at all working areas within or close to human habitations/ business centers/dispensaries/schools MUST be minimized by periodic (3-4 times a day) water sprinkling on working sections - The generation and release of exhaust emissions of any type shall be managed as per the requirements of the general EHS Guidelines on Air Emissions and Ambient Air Quality through a combination of: ✓ Energy use efficiency in construction equipment and machines; ✓ Use of cleaner fuels (i.e., Compressed natural gas (CNG), which is available in Dar es Salaam - Dust at workplaces within human habitations shall be critically minimized by periodic water sprinkling on working sections. The contractor shall advise or notify local households on the shedding of dust, noise, vibration, and other dangers. - Vehicles and construction machinery must be properly maintained to comply with Tanzanian exhaust emission standards. - Vehicles and construction machinery must be properly maintained to comply with Tanzanian exhaust emission standards.	Contractor	1,000,000

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Amount
		- Dust-generating activities must be slowed down in days of strong winds		
5.	Increased traffic and road accident	- By providing alternative diversions whenever necessary, the contractor will ensure that the traffic flow is not interfered with during the entire construction period; - No total closure of the road or drain, for instance, will be allowed; - Provide diversions and deploy a person responsible for traffic safety; - Ensure that before all activities, the Project shall assess the risks of the works to local people, including people walking by and people using nearby roads; - Instil a code of conduct for drivers, specifying drivers' behaviors and traffic speed - Ensure that all hazardous materials and equipment are contained and that local people are prevented from accessing them. - Flag persons shall be located at strategic locations (i.e. Gracious Nursery School along Trump Road (1.01Km), Al-Madrasat Judydul Quadiriya Nursery & DayCare and Mwana Orphanage Centre along Kituo cha yatima Road (0.34Km), Vingunguti Health center, Vingunguti Primary School, Vingunguti Secondary School, Ian daycare along zahanati road (0.49 Km) St. Theresia of children of Christ Catholic Church, Masjid Ibun Abba and Masjid Sheikh Ali Bin Saif Mosque, Butiama Mtaa Local government along Vingunguti Mnyamani Road (1.91Km) and where road sections where traffic is passed through the works (half road) to control traffic movement in and out of construction sites. - Barriers and appropriate signage should be installed to prevent access to dangerous areas, including areas where equipment and vehicles are operating. - Ensure that road width, speed restrictions, and traffic load in the areas are in accordance with acceptable standards.	Contractor	1,000,000
6.	Increased noise pollution	- During the selection of equipment, the contractor should select equipment with lower sound power levels. - Limit the speed of the vehicles to 20 kmph or by placing speed limits/signs/humps within the road haulage, - The impacts of noise emissions will further be minimized by proper choice of plants and machinery (i.e., fitted with noise and dust silencers or reducers) and locating quarry areas away from human habitations (at least 500 m away) - Silence and a good choice of equipment should critically minimize noise at workplaces within or close to human habitations. The contractor shall advise or notify local households on the shedding of noise and other dangers associated with the project.	Contractor	1,000,000
		CONSTRUCTION PHASE		

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Amount
7.	Increased noise pollution	- Planning activities will be done in consultation with local communities (Mitaa Offices) so that activities with the greatest potential to generate noise are planned during periods of the day that will result in the least disturbance, especially close to Gracious Nursery School along Trump Road (1.01Km), Al-Madrasat Judydul Quadiriya Nursery & DayCare and Mwana Orphanage Centre along Kituo cha yatima Road (0.34Km), Vingunguti Health center, Vingunguti Primary School, Vingunguti Secondary School, lan daycare along zahanati road (0.49 Km) St. Theresia of children of Christ Catholic Church, Masjid Ibun Abba and Masjid Sheikh Ali Bin Saif Mosque, Butiama Mtaa Local government along Vingunguti Mnyamani Road (1.91Km). - Using noise control devices, such as temporary noise barriers and deflectors for impact and blasting activities and exhaust muffling devices for combustion engines. - Drilling should be carried out with sharp drill bits to reduce noise levels. Much attention should be paid to areas close to Gracious Nursery School along Trump Road (1.01Km), Al-Madrasat Judydul Quadiriya Nursery & DayCare, and Mwana Orphanage Centre along Kituo cha yatima Road (0.34Km), Vingunguti Health center, Vingunguti Primary School, Vingunguti Secondary School, lan daycare along zahanati road (0.49 Km) St. Theresia of children of Christ Catholic Church, Masjid Ibun Abba and Masjid Sheikh Ali Bin Saif Mosque, Butiama Mtaa Local government along Vingunguti Mnyamani Road (1.91Km). - Construction workers in noisy sections should be provided with ear protective devices (earmuffs and/or earplugs). - Noise equipment shall be installed with acoustic barriers without gaps and with a continuous minimum surface density of 10kg/m² in order to minimize the transmission of sound through the barrier. - Limit the hours of operation for specific pieces of equipment or operations, especially mobile sources operating through sensitive areas. - During the selection of equipment, the contractor shall select equipment with lower sound power levels. - Limit the hours of operation for specific pieces of equipment or operations, especially mobile sources operating through community areas.	Contractor	1,000,000
8.	Deterioration of air quality due to increased air emissions and dust	- Dust emissions will be mitigated by sprinkling water at the construction sites and access roads to suppress dust; all machinery, equipment, and vehicles will be switched off when not in use; - Concrete mixing plants will be located away from residential areas, and all project workers will be provided with protective masks to prevent them from inhaling fumes and dust. - Water sprinkling to reduce the dust at construction sites and near settlements. Sprinkle water as necessary (at least twice a day) when visual inspection indicates excessive dust and during heavy traffic. - Pollution receptors (i.e., households & business centers) should be notified of the scheduling and duration of activities emitting dust and smoke (emissions)	Contractor	1,000,000

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Amount
		- Use of dust masks for operators and those working in dusty areas. - Construction machines/ equipment shall be well maintained to manufacturers' requirements to ensure total fuel combustion. - All the vehicles shall be frequently checked and serviced during the whole construction period so that the level of exhaust emissions is reduced. - Dust at all working areas within or close to human habitations/ Institutions/ business centres (Gracious Nursery School along Trump Road (1.01Km), Al-Madrasat Judydul Quadiriya Nursery & DayCare and Mwana Orphanage Centre along Kituo cha yatima Road (0.34Km), Vingunguti Health center, Vingunguti Primary School, Vingunguti Secondary School, Ian daycare along zahanati road (0.49 Km) St. Theresia of children of Christ Catholic Church, Masjid Ibun Abba and Masjid Sheikh Ali Bin Saif Mosque, Butiama Mtaa Local government along Vingunguti Mnyamani Road (1.91Km)) MUST be minimized by periodic (3-4 times a day) water sprinkling on working sections. - Movement of vehicles should be kept to the minimum necessary for completing the job; - Limit the speed of the vehicles to 20kmph or by placing speed limits/signs/humps within the construction site. - Dust-generating activities must be slowed down in days of strong winds		
9.	Risk of damage to private properties due to increased vibration levels	- Baseline conditions of structures close to the construction sites should be recorded (by photos and videos). - The road design shall include proper access infrastructure (culverts and drifts whenever practical) to properties located along the proposed roads. - Install proper and adequate security features (e.g., "Roller" safety barriers, wire-rope median barriers, pedestrian fencing, etc.) to protect houses and structures located along the proposed project roads using the "forgiving roads concept." A forgiving road design aims to limit crashes to damage only or minor recoverable injuries. - In case construction activities damage any structure, the baseline conditions shall be compared to situations before, during, and after. The Contractor shall be responsible for repairing the damage. - Shattering of excavations and physical protection of structures shall be emphasized to minimize potential damage to buildings due to the vibration of heavy machines; - Employ Engineering controls (temporary or permanent retaining wall) to support adjacent private structure; - Confine construction work within the acquired project areas - Make proper identification of structures prone to vibration damage and prepare proper protection plans	Contractor	1,000,000

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Amount
10.	Loss of definite materials and land degradation at the quarry sites	- Ensure the efficient use of construction materials, including re-use and recycling of materials (as per the requirement of ESS3 on Resource Efficiency and Pollution Prevention and Management) - The project shall adhere to ESS3 on Resource Efficiency and Pollution Prevention and Management, which requires the efficacy use of raw materials: - Construction materials must be obtained from authorized sources - Potential long-term environmental impacts of borrow pits and quarry sites relate to how they are left once the resource has been extracted. In this case, all borrow pits and quarries shall be rehabilitated, and proper landscaping will be done after construction is completed. Pits shall not be left with steep or vertical sides. - The topsoil shall be stockpiled for later use in reinstating the pit. Excavated soils (top fertile fraction) shall be used to replenish vegetation in areas with enough space after the construction phase. - Obtaining sand from valleys and riversides must be authorized by the Authority (e.g., the DCC, WAMI Ruvu Basin Water Board/NEMC). It must also be well investigated to avoid accelerated land degradation and pollution of water resources or otherwise purchasing from authorized dealers. - Collaborate with local authorities where the materials are extracted to carry out afforestation programs to replenish natural ecosystems. - All borrow pits and quarries shall be rehabilitated, and proper landscaping shall be done after the construction is completed. Pits shall not be left with steep or vertical sides.	Contractor and DCC	3,300,000
11.	Increased pressure on natural resources	- Collaborate with local authorities from where the local materials will be extracted to carry out afforestation programs for the replenishment of natural ecosystems; - Explore and use alternative sources of water away from ecologically sensitive areas and community sources; - Undertake water harvesting on worker's camps if feasible; - Adequate protection to the general public, including safety barriers and marking of hazardous areas; safe access across the construction site; - Where necessary, the contractor Supports the cost of local social services through corporate Social Responsibility (CSR)	Contractor, DCC	3,300,000
12.	Pollution by solid waste and hazardous waste materials	- Provide adequate secondary containment for fuel storage tanks and the temporary storage of other fluids, such as lubricating oils and hydraulic fluids, in the area where vehicle maintenance will be done - Training workers on the correct transfer and handling of fuels and chemicals and the response to spills - Using impervious surfaces for refueling areas and other fluid transfer areas - Providing portable spill containment and clean-up equipment on site and training in the equipment deployment	Contractor	1,500,000

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Amount
13.	Impacts of liquid wastes (i.e., human waste and spent water)	- Establish the quality, quantity, frequency, and sources of liquid effluents at the campsite and prepare collection, treatment, and safe disposal measures; - Plan and implement segregation of wastewater from other hazardous liquid waste and stormwater to limit the volume of water requiring specialized treatment. - Identify opportunities to prevent or reduce wastewater pollution through measures such as recycling/reuse within their facility, input substitution, or process modification (e.g., change of technology or operating conditions). - Assess compliance of their wastewater discharges with the applicable: (i) discharge standard (if the wastewater is discharged to surface water or sewer), and (ii) water quality standard for specific reuse (e.g., if the wastewater is reused for irrigation). - Ensure any discharges conform to local wastewater discharge standards of 2019	Contractor	1,500,000
14.	Interference to local hydrology due to climate change	- Provide and ensure adequate drainage infrastructure in flat terrain areas and direct stormwater to a safe place (not in residential areas) to avoid flooding - Adhere to design standards and specifications	Contractor	
15.	Risk of land pollution by hazardous wastes	- Make timely repairs to all construction equipment to avoid fuel and oil leakage. - Obtain a water use permit from the Wami Ruvu Basin Water Board (WRBWB) before drilling any boreholes. - Any wastewater contaminated with oils, fuels, bitumen, or other chemical substances shall be intercepted by an oil and grease interceptor trap before discharge into the wastewater treatment facility and formal disposal. - Ensure adequate spill kits containing, at minimum, absorbent matt, adsorbent materials, booms, and other equipment necessary to contain and clear up any spills to ground or water courses are provided at suitable and regular locations on site. - Make timely repair of all construction equipment to avoid fuel and oil leakage; - Prepare and obtain approval from the client on the emergency response procedure (ERP) - Construction equipment and machinery shall only be washed in agreed-upon areas with an impermeable base and suitable system for collecting wash water for treatment before its disposal.	Contractor	2,000,000
16.	Loss of accessibility to adjacent properties	- Consider changing the project design and assessing all viable alternatives to avoid the need for access restrictions. This might involve giving preference to alternative project approaches and/or adjusting the project's boundaries. - Ensure that full information is disclosed to institutions/individuals about project activities and potential impacts on people's rights and livelihood. These institutions include Gracious Nursery School along Trump Road (1.01Km), Al-Madrasat Judydul Quadiriya Nursery & DayCare and Mwana Orphanage	Contractor	2,000,000

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Amount
		Centre along Kituo cha yatima Road (0.34Km), Vingunguti Health center, Vingunguti Primary School, Vingunguti Secondary School, lan daycare along zahanati road (0.49 Km) St. Theresia of children of Christ Catholic Church, Masjid Ibun Abba and Masjid Sheikh Ali Bin Saif Mosque, Butiama Mtaa Local government along Vingunguti Mnyamani Road (1.91Km). - The road design shall include proper access infrastructure (culverts wherever practical) to properties located along the proposed roads. - Ensure that affected groups are asked to consent to a project or a particular activity and have the right to give their consent, withhold it, or offer it conditionally. - Where restrictions cannot be avoided, the Contractor, in collaboration with the local communities, will identify a fair and adequate strategy for compensation and provision of benefits for livelihood restoration or enhancement.		
17.	Job-seekers influx	- The hiring of the available local labor force (engage the local government authority in job advertising) - The local government should educate the locals on the requirements and procedures to be followed before accommodating outsiders; - Raise awareness among local communities to consider the project as an opportunity. - Encourage local communities to produce local materials that can be sold outside their local markets.	Contractor, LGA	2,000,000
18.	Workers community negative interactions	- The implementing project contractor shall restrict the trivial entrance of surrounding community members into the working campsites and other working areas. - Encourage maintenance of cultural practices and traditional knowledge systems. - Raise awareness to local communities to consider the project as an opportunity.	Contractor	1,500,000
19.	Potential increase in road accidents and other community safety risks	- A Traffic Management Plan (TMP) will be in place during construction, and appropriate traffic control signs will be installed along the main road along detours in collaboration with the Police force to monitor vehicles and drivers' behavior. The road design has taken into consideration safety issues related to traffic accidents, especially near settlements and urban centers and in all accident-prone sections. - Installation of proper road signs and regular inspections for their presence - Installation of speed control devices like humps - Instil a code of conduct for drivers, specifying drivers' behaviors and traffic speed - Where feasible, the design has included the installation of pedestrian lanes at human settlement crossings; - Appropriate traffic control signs shall be installed along the main road and along detours, in collaboration with the Police force, to monitor vehicles and drivers' behavior. - The road design has considered safety issues related to traffic accidents, especially near settlements, urban centers, and all accident-prone sections.	Contractor	3,300,000

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Amount
		- The PIT shall conduct Road safety assessments during the Construction phase, monitor incidents and accidents, and prepare regular reports of such monitoring.		
20.	The potential spread of social illness (i.e., STI, COVID 19 and HIV/AIDS)	- Prepare and adhere to an approved HIV/AIDS, COVID-19 19, and other communicable diseases education and Awareness Program. Provide Voluntary Counselling and Testing (VCT) centers for HIV/AIDS at the workplace, - Enforce HIV/AIDS laws and regulations that prohibit stigma, discrimination, and responsibility for taking care of the affected communities. - Provide Voluntary Counselling and Testing (VCT) centers for HIV/AIDS at the workplace and give convenient time for workers to participate. - Changing work schedules account for the time involved and accommodate social distancing measures. - Restrict trivial entrance of surrounding community members into the working campsites and other working areas. - Provide ample safety measures, accounting for Coronavirus (Provide masks, sanitizer, and water to workers. - Employ a qualified health professional to lead the management of COVID-19 and communicable disease risks during construction. - Undertake screening programs for communicable diseases such as HIV/AIDS and TB based on the prevailing risk profile. - Worker induction, Project training, and awareness campaigns must include Sexually Transmitted Diseases and HIV/AIDS. Condoms must be made available to Project workers. - Work closely with respective DCC departments, local NGOs, faith-based organizations, and local communities involved in COVID-19, HIV, and reproductive health.	Contractor, DCC	30,000,000
21.	Labor and working conditions	- Application of developed Labor Management Procedure; Code of Conduct, GRM for DMDP II, - Working terms and conditions of employment shall address national legal requirements as a minimum and ESS 2: Labor and Working Conditions; - Ensure a fair and transparent recruitment process is outlined as part of the Recruitment Management Plan for all openings. This includes working through local authorities to advertise openings as early as possible, allowing potential candidates to apply and prepare their skillsets for local opportunities. - Develop and make available to all project workers the key commitments made regarding labor management for the project. - Promote fair treatment, non-discrimination, and equal opportunity to both skilled and unskilled workers. - Support principles of freedom of association and collective bargaining of workers in a manner consistent with the national law	Contractor	1,500,000

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Amount
		- Provide mechanisms for project workers to raise workplace grievances freely. - Provide a clear contract of employment to all workers prior to starting their work on the project. - Local Content Policy and Plan shall be developed to supplement the Influx Management Plan. - Give employment priority to the local community with relevant skills based on gender. - Provide awareness to locals on potential investment and employment opportunities. - Provided worker's code of conduct to all project workers before they sign their contract of employment - Develop a Worker's Code of Conduct to direct project workers on appropriate behaviors. - All workers must sign a worker's code of conduct before they sign their contract of employment. - Prohibit physical violence, discrimination, harassment, bullying, violence, and promote equal opportunity. - The Project must be implemented in compliance with local labor laws and national legislation as well as World Bank ESS2.		
22.	Increased cases of occupational and health risks	Registration by the Occupational Health and Safety Authority (OSHA) must be obtained as early as possible before work commences. - Install fire prevention facilities and obtain FIRE certification as early as possible before work commencement. - Develop a plan for Worker's OHS induction training, in-job training, and toolbox meetings. - Consider eliminating the hazard by removing the activity from the work process, controlling the hazard at its source through the use of engineering controls, and minimizing the hazard through the design of safe work systems and administrative or institutional control measures. Examples include job rotation, training safe work procedures, lock-out and tag-out, workplace monitoring, limiting exposure or work duration, etc. - Providing appropriate personal protective equipment (PPE) in conjunction with training, use, and maintenance of the PPE - All job recruitment and labor management must comply with local Labour laws and legislation as well as World Bank ESS2, including the implementation of OHS measures in the ESMP. - There must be site-specific Emergency Prevention, Preparedness, and Response arrangements for emergencies.	Contractor OSHA	2,000,000
23.	Risk of increased GBV and Sexual Exploitation and Abuse (SEA)	- Develop and implement anti-GBV and anti-sexual harassment policies as per the requirements of ESS 2 and ESS 4; - Appoint senior focal points with responsibility for ensuring that commitments and policies to prevent GBVH and sexual harassment policies are implemented; - Put in place monitoring systems at the highest levels for regular reporting on GBVH	Contractor	2,300,000

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Amount
		- Include requirements around GBVH in codes of conduct, policies, and protocols for contractors, including training on policies and procedures once developed; - Ensure codes of conduct are publicly disclosed in local languages and are widely accessible to all workers and all groups of people in project areas; - Deliver periodic mandatory training on GBVH to all workers, including contractors, subcontractors, and core suppliers, as well as relevant consultants and clients; - Engage expertise (e.g., from local women's rights organizations or NGOs working on GBVH) to conduct awareness campaigns to provide information to local communities, such as what is unacceptable behavior and how to report an incident of GBVH; - Provide a grievance mechanism for all direct workers and contracted workers (and, where relevant, their organizations) to raise workplace - GBV and SEA concerns. Workers must be informed of the grievance mechanism at the time of recruitment and the measures put in place to protect them against any reprisal for its use		
24.	Risk of increased child labor and abuse	- Abiding by labor and working conditions provided by World Bank guidelines (ESS2), the contractor is to Prepare and make available Necessary manuals and policies related to anti-child labor (under 18 years of age) action plans. - Liaise with local community development officers and available NGOs that can provide support to vulnerable children in the project area. - Awareness to the public on the minimum age for employment and labor rights should be conducted.	Contractor	2,000,000
25.	Increased traffic and road accident	- Prepare and implement a traffic management plan (TMP) that indicates which routes will be used and when. - By providing alternative diversions whenever necessary, the contractor will ensure that the traffic flow is not interfered with during the entire construction period; - The design of the road shall recommend proper road surface dressing such that the proposed roads are safer, with a non-skid surface, and proper waterproofing materials shall be proposed. - Install proper and adequate traffic signs to avoid frequent accidents - No total closure of the road or drain, for instance, will be allowed; - Provide diversions and deploy a person responsible for traffic safety; - Flag persons shall be located at strategic locations (i.e. Gracious Nursery School along Trump Road (1.01Km), Al-Madrasat Judydul Quadiriya Nursery & DayCare and Mwana Orphanage Centre along Kituo cha yatima Road (0.34Km), Vingunguti Health center, Vingunguti Primary School, Vingunguti Secondary School, Ian daycare along zahanati road (0.49 Km) St. Theresia of children of Christ Catholic Church, Masjid Ibun Abba and Masjid Sheikh Ali Bin Saif Mosque, Butiama Mtaa Local government	Contractor and Ward/Mtaa leaders	3,000,000

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Amount
		along Vingunguti Mnyamani Road (1.91Km) and at road sections where traffic is passed through the works (half road) to control traffic movement in and out of construction sites. - Ensure that all hazardous materials and equipment must be contained and access to them by local people must be prevented; - The community must be informed of any road/road section closing, and alternative parking shall be provided. - Instil a code of conduct for drivers, specifying drivers' behaviors and traffic speed - Ensure that prior to all activities, the safety personnel shall assess the risks of the works to local people, including people walking by and people using nearby roads - Put barriers and warning signs around open excavations to prevent people from falling into them - Put barriers and appropriate signage to prevent access to other hazardous areas, including areas in which equipment and vehicles are operating - Undertake visual inspections to confirm that nobody has entered the site and is in a hazardous location, e.g., people sleeping under equipment - Ensure that road width, speed restrictions, and traffic load in the areas are in accordance with acceptable standards.		
OPERATION AND MAINTENANCE PHASE				
26.	Job creation and increased income to local communities	- Prepare a fair and transparent recruitment process to allow potential candidates to apply and prepare their skillsets for local opportunities. - Give employment priority to the local community with relevant skills based on gender. - Provide OHS on-job training to workers. - Provide awareness to locals on potential investment and employment opportunities.	DCC	2,000,000
27.	Improved transport services	- Set appropriate O&M measures to attain the design life of the roads and the safety of users. - Improve feeder roads in rural areas connecting to the project roads - Ensure the availability of public transport along the proposed roads to improve mobility benefits - Local government authority should facilitate the establishment of income-generating alternatives for adversely affected people	DCC	1,000,000
28.	Improved stormwater drainage	- Make frequent clean-up of drainage infrastructure, including appropriate O&M schedule. - Provision of community sensitization to secure and protect drainage infrastructure - Community awareness to avoid using drainage infrastructure for solid waste and other domestic waste dumping - Sensitize communities to engage in activities that will improve vegetation cover on roadside drainage channels and catchment areas.	DCC	2,000,000

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Amount
29.	Improved traffic congestion in the city	- Improve feeder roads from the sub-urban areas connecting to the regional roads. - Installation of speed control devices like humps, Training of drivers and pedestrians, and placing of pedestrian lanes at human settlement crossings shall be emphasized to make traffic even better. - Ensure traffic signs are adequately provided and periodically check for their presence. - Local government authorities should facilitate the establishment of income-generating alternatives for adversely affected people. - Provide adequate O&M of road furniture, traffic lights, and signage	DCC	5,000,000
30.	Reduced vehicle operation costs	- Reduced traffic Will increase the average travel time in the city, which will have ripple effects on reducing vehicle wear and tear. - Ensure frequent road maintenance.	DCC	2,000,000
31.	Improved community life services and status	- In collaboration with other institutions to ensure the cleanliness of the proposed roads to minimize dust emissions - Improve feeder roads from the sub-urban areas connecting to the project roads	DCC	NA
32.	Increased property and land values along the project area	- The value of properties along the project area should be enhanced through the proper design of roadside drainage facilities. - The concentrated flow of stormwater runoff collected from the road surfaces shall be well attenuated downstream to avoid flooding and soil erosion, making the land safe.	DCC	2,000,000
33.	Induced development and urban sprawl (local economy growth)	- The Planning department should install good governance systems in order to discourage and/or remove such newly upcoming developments along the roads that are against the planning guidelines. - Restrict the establishment of any permanent or temporary business, parking lots, or any other.	DCC	2,000,000
34.	Increased income generation through the operation and maintenance of roads	- Prepare a fair and transparent recruitment process to allow for potential candidates from the local community to engage in O&M jobs - Give employment priority to the local community with relevant skills based on skills needed in O&M of roads - Provide frequent training on O&M requirements for capacity building of the local community to be involved in O&M jobs - Provide awareness to locals on potential investment and employment opportunities related to O&M of roads	DCC	2,000,000
35.	Landscape modification and	- Ensure replanting of and monitoring of the roadside vegetation;	DCC	2,000,000

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Amount
	increased impervious surfaces	- There must be Regular maintenance of SUDS and nature-based solutions constructed/installed alongside the roads to manage stormwater; - Enforce laws governing the protection of important drainage structures and receiving water bodies in project-influenced areas.		
36.	Increased air quality deterioration (noise levels and emissions) and land pollution	- Drivers and co-operators shall be sensitized about noise exposure and its effects on the surrounding environment; - Traffic police to conduct regular inspections of running vehicles to minimize vehicular emissions; - Speed limit and exhaust emissions standards shall be enforced; - Vehicle inspecting institutions should insist on regular maintenance of vehicles to minimize emissions of pollutants; - Steep grades at critical locations shall be avoided so as to reduce noise from acceleration, braking, and gear changes and - Cut sections shall be used (where appropriate) to decrease noise in nearby residences.	DCC, LATRA.	3,000,000
37.	Impacts Associated with Poor Management of Roads Infrastructures	- Ensure proper O&M of the proposed road infrastructure. No waste accumulation should be left into drainage channels as they may clog to cause floods around the project influence areas; - Ensure improper maintenance of green structures (grass and trees) along the proposed roads such that they are not left to foster mosquito breeding and rodent hiding areas and - Manage security lights adequately to ensure public safety and sustainability.	DCC	13,000,000
38.	Increased Road accidents	- To ensure appropriate security of the roads, carry out repair and maintenance of roads and their facilities properly and timely; - Installation of proper road signs and regular inspections for their presence and validity; - Proper use of constructed pedestrian lanes alongside the roads to ensure that the pedestrian lanes are strictly used for pedestrians; - No temporary or permanent business activities shall be allowed within the roads RoW; - Appropriate traffic control signs shall be installed along the main road, along detours; - The Police force to monitor the driver's behavior, including adherence to speed control measures such as humps and ramps installed with the roads; - Conduct Road safety assessment through the operation phase of the road subprojects. Monitor incidents and accidents and prepare regular reports on such monitoring.	DCC, LATRA,	
		DECOMMISSION PHASE		

SN	Impact	Proposed Mitigation Measures	Responsibility/ Institution	Amount
39.	Dust and Noise Pollution	- Water sprinkling shall be applied to open earth or soil piles to reduce dust emission; - Trucks removing leftover construction materials shall be covered if the load is dry and prone to dust emissions; - In case of demolitions, the demolition area shall be fenced by iron sheets to prevent spread of windblown dust; - Community notification shall be undertaken where appropriate where work is likely to cause dust impact on the public and nearby residents; - Minimal sound construction equipment, with noise sinks, shall be used; - Machine operators in various sections with significant noise levels shall be provided with noise protective gear and - Construction equipment shall be selected, operated, and maintained to minimize noise.	DCC, LGA, Contractor	To be included in the Decommissioning plan
				105,200,000

Table 8-7: Summary of ESMP implementation cost

PACKAGE	Description	Estimated costs
1	Sub Total 1 (Mobilization and Construction phase), which includes the costs for HIV/AIDS prevention program and road safety intervention	101,361,875
	Sub Total 2 (Operation phase)	37,300,000
	GRAND TOTAL	138,661,875
2	Sub Total 1 (Mobilization and Construction phase), which includes the costs for RAP, HIV/AIDS prevention program and road safety intervention	2,069,430,520
	Sub Total 2 (Operation phase)	37,300,000
	GRAND TOTAL	2,106,730,520
3	Sub Total 1 (Mobilization and Construction phase), which includes the costs for RAP, HIV/AIDS prevention program and road safety intervention	4,278,416,899
	Sub Total 2 (Operation phase)	37,300,000
	GRAND TOTAL	4,315,716,899
4 & 7	Sub Total 1 (Mobilization and Construction phase), which includes HIV/AIDS prevention program and road safety intervention	85,400,000
	Sub Total 2 (Operation phase)	51,000,000
	GRAND TOTAL	136,400,000
5	Sub Total 1 (Mobilization and Construction phase), which includes HIV/AIDS prevention program and road safety intervention	79,200,000
	Sub Total 2 (Operation phase)	28,000,000
	GRAND TOTAL	107,200,000
6	Sub Total 1 (Mobilization and Construction phase), which includes HIV/AIDS prevention program and road safety intervention	69,200,000
	Sub Total 2 (Operation phase)	36,000,000
	GRAND TOTAL	105,200,000
GREAT GRAND TOTAL		6,909,909,294

8.7 ESMP SUB-PLANS FOR THE PROJECT

Based on ESIA findings (baseline studies, impacts identified, and proposed ESMP), during the mobilization phase, the Contractor shall be required to develop additional independent safeguard tools to guide implementation and supervision of environmental and social issues. These tools shall comply with national requirements, and World Bank Group (WBG) Environmental and Social Standards requirements. The plans presented below shall be reviewed and approved both by DCC and before rolling out in the field. These tools shall be prepared prior to the implementation of the road projects shall form part of the project contract, and must be approved by the Resident Engineer and DCC before implementation. These tools will draw the basis for the Contractor to abide by the requirements of the implementation of the environmental, social, health, and safety mitigation measures. These tools will be updated from time to time by the Contractor on emerging issues and challenges during project implementation or upon request from DCC and/or WBG.

The proposed mandatory safeguard tools shall include the following:

- xv. Climate risks impacting the design
- xvi. Health and Safety Management Plan (HSMP)
- xvii. Borrow Pits and Quarry Sites Operation and Reinstatement Plan (BPQSORP);
- xviii. Waste Management Plan (WMP);
- xix. Stakeholders Engagement Plan (SEP);
- xx. Child Abuse Protection Plan (CAPP);
- xxi. Gender-Based Violence and Protection Plan (GBVPP);
- xxii. Grievance Redress Mechanism (GRM);
- xxiii. Traffic Management Plan (TMP);
- xxiv. Emergency Preparedness Plan (EPP);
- xxv. Code of Ethical Conduct (CEC); and
- xxvi. Site Rehabilitation Plan
- xxvii. Occupational Health, Safety, and Security Plan

A brief description and essence of the above mandatory E&S Instruments are given in the following subsections.

8.7.1 Climate Risks Impacting the Project Design

8.7.1.1 Consideration of climate risks impacting Road Pavement

The main risks to the road surface associated with climate change in areas like Dar es Salaam include high temperature, higher occurrence of heavy rain and floods, which are also associated with erosion.

i. Temperature

Very high temperatures are manifested by an increased risk of asphalt rutting, flushing, and bleeding of bituminous surfaces and/or cracking. As the temperature of the asphalt mixture increases, the binder phase loses stiffness, and the irreversible deformations caused by static or dynamic traffic loading will accumulate faster. Possible solutions that are being considered in the design of the Ilala DMDP II subprojects include:

- Adjustment of bituminous mixture design (using binders with higher softening points, including polymer modification of bitumen and selection of stronger aggregate skeleton);
- Adjustment of the structural design of the pavement (flexible, semi-rigid, and rigid/composite designs) depending on specific road conditions;
- Concrete pavement is used in some areas and requires special attention. It has higher temperature resistance and other advantages (longer lifetime, possibility of increased load, lower need for maintenance), albeit slightly higher purchase costs.
- Changing the design of the concrete pavement mixture to reduce the amount of water required.
- Increase the reflectance (albedo) of the road surface, e.g., by using bright, colored elements on the road or reflective coatings on road surfaces.

ii. Increase in frequency of intense precipitation

The primary impacts of an increased frequency of intense precipitation include water damage to asphalt, reduced bearing capacity of lower pavement layers, and reduced safety and comfort for the user (less friction, less comfort). Possible adaptation responses considered by the project design include:

- Use of permeable/reservoir pavements. Water is stored in the pavement structure and infiltrated into the soil or discharged by a drainage system.
- Use of porous top layers that can facilitate water drainage to the sides of the road and prevent aquaplaning.
- For concrete surfaces, higher cement contents and lower water-cement ratios are recommended.
- Development of hydrophobic coatings suitable for use at the micro-mechanical and/or pavement surfacing level.

8.7.1.2 Consideration of climate risks impacting Bridges and similar infrastructure

The main climate change concerns relevant to the design, construction, and management of existing bridge structures are the increased occurrence of flooding, river discharge, erosion and slope instabilities, and temperature fluctuation.

8.7.1.3 Vegetation along roads

Vegetation along roads contributes to environmental protection, in particular by reducing noise and pollution, and can also have an adaptation function, for example, protecting roads from direct sunlight. On the other hand, improper use of vegetation along roads can be a risk factor for traffic disruption when extreme weather events occur and may also influence road safety. The recommendations towards building up climate-resilient roads, therefore, include the replacement of mature trees with hedges (using elastic woody plants suitable for and more adapted to the Dar es Salaam Climate) and planting the vegetation at a sufficient distance from the road.

8.7.2 Health and Safety Management Plan (HSMP)

The plan should detail the measures taken by the project Contractor to manage the hygiene conditions and medical care in each of the worker's camps. It should also address occupational health and safety in alignment with the Labour law of Tanzania, ESS 4 requirements, and Good Industry Practices. This plan should include (but not be limited to) the following topics: (i) Health and safety policy and commitment from management; (ii) Description of organization; human resources, definition of roles and responsibilities; (iii) workers accommodation, hygiene facilities and food supply, (iv) Description of material resources including Personal Protective Equipment (PPE) to be used by workers, (v) Health and safety procedures, (vi) Risk assessment, (vii) Pollution prevention and protection, (viii) Health and safety training, (ix) Monitoring of health and safety performance, and (x) Medical checks.

8.7.3 Stakeholders Engagement Plan (SEP)

A Stakeholders Engagement Plan (SEP) was prepared at the early stages of this project in line with the ESS 10 standards and submitted to the Client. The Plan indicated its objectives and processes for stakeholder identification, analysis, and engagement, including consultation and public disclosure. The Plan is expected to be reviewed from time to time based on the newly identified stakeholders and issues that may arise under the different phases of the project.

8.7.4 GBV/SEA/SH and VAC

Gender-based violence (GBV) and violence against children (VAC) are interconnected and often co-occur in various contexts. GBV and VAC are both types of violence that have significant impacts on individuals, families, and communities. However, while GBV is specifically directed at individuals based on their gender, VAC refers to any form of violence that is directed at children and young people.

Gender-based violence (GBV) is any form of violence that is directed at an individual based on their gender, including physical, sexual, emotional, or economic violence. GBV can occur in various settings, including the home, workplace, school, and community, and can have long-lasting physical, psychological, and social effects.

The United Nations defines sexual exploitation as any actual or attempted abuse of a position of vulnerability, differential power, or trust for sexual purposes, including, but not limited to, profiting monetarily, socially, or politically from the sexual exploitation of another. Sexual abuse, on the other hand, is “the actual or threatened physical intrusion of a sexual nature, whether by force or under unequal or coercive conditions.” SEA is, therefore, a form of GBV and generally refers to acts perpetrated against beneficiaries of a project by Staff, Contractors, Consultants, Workers, and Partners.

Sexual harassment (SH) occurs between personnel and staff and involves any unwelcome sexual advances or unwanted verbal or physical conduct of a sexual nature.

VAC encompasses a wide range of violent behaviors, including physical, sexual, and emotional abuse, neglect, exploitation, and harmful traditional practices such as child marriage and female genital mutilation (FGM). VAC can have long-lasting physical, psychological, and social effects on children. It can lead to a range of negative outcomes, including poor health, low educational attainment, and increased risk of perpetrating or experiencing violence in adulthood.

In this road project's context, gender issues, GBV, and VAC intersect, leading to increased risk and harm. For instance, women and girls may be particularly vulnerable to GBV during the construction phase and displacement processes. Poverty and lack of access to resources can exacerbate vulnerability to GBV and other forms of violence.

Addressing GBV and VAC for this project requires a multi-faceted approach that includes prevention, protection, and response. This may involve initiatives such as education and awareness-raising, advocacy for women's and children's rights, legal and policy reforms, and provision of services such as health care, psychosocial support, and legal aid. Additionally, addressing the underlying social, cultural, and economic factors that contribute to GBV and VAC is critical to preventing and reducing violence over the long term.

8.7.4.1 Country Context

Tanzania, like many Sub-Saharan African countries, is faced with gender inequality challenges despite efforts to address gender gaps. The following inequality issues impact women and girls.

- High fertility, adolescent fertility, and early marriage correlated with decreased economic activity, lower levels of education, and poverty.
- Lower education attainment among females
- Fewer revenues from women entrepreneurs (46% less than those of their male counterparts), attributed to lower spending on wages in their businesses, lower returns to the wealth index, and lower rates of registration
- Women have significantly less decision-making power than men, about healthcare, major household purchases, and politics.

These inequalities place women and girls at more risk of GBV than their male counterparts.

According to the Tanzania Demographic and Health Survey, 2015-2016, 40% of women in Tanzania aged 15-49 years have experienced physical violence, while 17% have experienced sexual violence. 44% of women aged 15-49 years have experienced physical or sexual violence by an intimate partner. Girls are more vulnerable to sexual violence, and about 30% have experienced sexual violence before the age of 18.

Some communities still practice FGM despite efforts and campaigns to eliminate FGM. However, it has declined from 18% in 1996 and 15% in 2013. The average prevalence of FGM among girls and women aged 15-49 in 2016 was 10 percent.

Physical and sexual violence among spouses is higher in rural compared to urban areas. Spousal violence prevalence in rural areas averages 52%, while that in urban averages 45%. Married women are at a higher risk of

physical violence, as 58% of women and 40% of men believe that a husband is justified in beating his wife under certain circumstances.

About 16% of never-married women have experienced physical violence, and 9% have experienced sexual violence. Only 54% of women in Tanzania who experienced physical or sexual violence seek help.

According to the National VAC Survey of 2009, 75% of children experienced physical violence by a relative before attaining the age of 18 years, with the majority of the abuse taking the form of being punched, whipped, or kicked. Physical violence against children is also attributed to the widespread use of corporal punishment allowed in schools and practiced in the home nationwide. 3/10 Tanzanian females reported at least one experience of sexual violence before the age of 18 from common perpetrators who were strangers (32.5%), neighbors (24.8%), and dating partners (24.6%), with the majority (70%) older than the victim. 81% of the females reported receiving money or goods for sex.

Tanzania has put in place a National Plan of Action (NPA) to End Violence against Women and Children in Tanzania from 2017/18 to 2021/22 to help address GBV, and VAC challenges through policy guidance in prevention and response to GBV and VAC in the country. The NPA's thematic areas include household economic strengthening; norms and values; safe environment; parenting, family support, and relationships; implementation and enforcement of laws; safe schools and life skills; response and support services; and coordination, monitoring, and evaluation. (World Bank, 2022).

8.7.4.2 Local Project Level Context

Women are at a higher risk and experience physical and social violence from their partners and/or other men in the community. Married women tend to face more violence than unmarried, particularly beatings, which are considered a normal part of life in marriage. The prevalence of IPV against ever-married women in the Dar es Salaam region was 39% in 2016. Although there are police gender desks and Social Welfare Officers in both DCC and the project Wards, most victims of physical and sexual violence do not report the incidences.

FGM is not a common practice in Dar es Salaam Region and the project area. Key informant interviews with DCC indicated that FGM was not practiced at all in the area.

Reported challenges in addressing GBV and VAC include:

- Limited awareness-raising packages to reach the targeted communities
- Limited funding and resources are required to execute activities that require emergency handling and response to GBV victims. There is no specific budget for such incidents.
- Inadequate reporting system that supports monitoring and evaluation purposes.
- Lack of safe houses for GBV and VAC survivors.

8.7.4.3 Anticipated GBV and VAC Impacts

Although there were minimum GBV/VAC incidents in the project Wards/Mitaa, this project can increase the risk of GBV and VAC during the construction phase and resettlement processes as indicated below:

- During construction, the project may bring in a large number of migrant workers who may be separated from their families and support systems, hence increasing the risk of sexual violence against women and young girls, particularly those who may be forced to enter unwilling relationships due to poverty or other circumstances in the project area.
- Migrant workers and job seekers arriving at Project Mitaa might disrupt social structures and traditional gender roles. This will increase GBV among families, placing women and children at a higher risk. An increased rate of divorce is anticipated and might break families and disturb the welfare of children in such families. VAC will also increase for children living in vulnerable conditions.

- Increased traffic and mobility can provide opportunities for perpetrators of violence to target vulnerable individuals.
- An increased rate of school dropouts and early pregnancy is expected for girls if they are deceived and sexually harassed by migrant workers during the construction phase.
- Physical and economic displacement of families may place women and children at risk of GBV and VAC when family members disagree on how they would handle compensation matters. A lack of decisions and planning for resettlement and compensation by both spouses may end in physical and psychological impacts for some members of the affected households.

On the other hand, the project can also positively impact GBV and VAC by improving access to services and economic opportunities, which can reduce the risk of violence. Improved road infrastructure can make it easier for women and children to access health care, education, and other essential services and can provide opportunities for economic empowerment.

Road construction will have the potential to increase women's and family incomes in a number of ways. The culture of the people in the project area does not prohibit women from participating in road construction. However, the extent of their involvement is limited because of their roles in domestic activities. Nonetheless, both women and men who have no access to formal employment can accumulate capital for future investment from employment opportunities during the construction phase and later during the maintenance phase. This in itself will increase family and individual level incomes.

During road construction, women will also establish small-scale businesses such as food vendor services, popularly known as *Mama Lishe*. This, again, will lead to increases in the incomes of women and families in general and elevate women's status in the community. The involvement of the local population, including women, will lead to capacity building in terms of new skills and will help minimize GBV and VAC in the community.

To minimize the potential adverse impacts of the project on GBV and VAC, it is important to implement measures such as worker training on GBV and VAC prevention, community awareness campaigns, and the provision of support services for survivors of violence, as indicated in the action plans below.

8.7.4.4 Grievance Mechanism

GBV/SEA/SH allegations should be reported using the project-level GRM channel, just like any other project-related grievance. The GRM focal person for the Project will link the complainant with the selected service provider, who will be given the responsibility to link the survivor with other local service providers with the complainant's consent.

The Project Coordination Team should support Contractors in developing an information-sharing protocol with GBV service providers to ensure the confidentiality of survivor's survivor-related information. A response protocol, reporting of allegations procedures, and response framework of the GRM should also be developed, following a six-step value chain as follows: 1) Uptake; 2) Sort and process; 3) Acknowledge and follow up; 4) Verify, investigate, and act; 5) Monitor and evaluate; and 6) Provide feedback to the complainant.

In situations of a pandemic like COVID-19, the GRM should incorporate hotlines, place community leaders, and facilitate the establishment of a community help center to ensure access to service provision and promote the safety and well-being of women and girls at risk and in need.

8.7.5 GBV/SEA/SH Action Plan

Table 8-7: GBV/SEA/SH Action Plan

SN	Action	Activities	Phase	Responsible	Output indicators	Budget/cost (TZS)
1.	Awareness-raising programs and training on GBV/SEA/SH in the DMDP project	Prepare and disseminate communication materials on GBV/SEA/SH	Pre-construction	Project Coordination Team, DCC	GBV/SEA/SH communication materials prepared and disseminated	30,000,000
		Conduct at least 2 awareness meetings at each project Ward with key participants from Mitaa, including representatives of special groups (women, youth, etc.)	Pre-construction and Construction	Project Coordination Team, DCC, Contractor	Awareness meetings conducted at the Ward level	
		Engage TGNP to promote GBV awareness at the community level.	Pre-construction	Project Coordination Team, DCC		
		Develop training manual and conduct training on GBV/SEA/SH risks on the project and implementation mechanisms to relevant DCC Staff (Social Welfare, Community Development, and Gender Officers) and Police Gender Desk Officers in the project area.	Pre-construction	Project Coordination Team	Number of key Staff trained on GBV/SEA/SH	
		Provide contractors with orientation on the importance of addressing GBV/SEA/SH at the workplace and within the project area.	Pre-construction	Project Coordination Team, DCC	Number of Contractors oriented on GBV/SEA/SH	
2.	Conduct capacity building on anti-GBV/SEA/SH policies to labors, contractors, suppliers, etc.	Prepare basic ethics and Code of Conduct to be used by Contractors, Consultants, Sub-contractors, and laborers on people's rights and positive discipline to prevent GBV/SEA/SH at the workplace in the project	Pre-construction	Project Coordination Team, DCC, Contractors	Code of Conduct is prepared and used by relevant stakeholders	25,000,000
		Develop procedures for dealing with GBV/SEA/SH complaints reporting mechanisms, and services for survival.	Pre-construction	Gender Consultant	Procedures in place	
3.		Inform workers and surrounding communities of GBV grievance mechanisms	Construction		Availability of an effective GRM with	25,000,000

SN	Action	Activities	Phase	Responsible	Output indicators	Budget/cost (TZS)
	Functionalize effective GBV Grievance Redress Mechanism	Map local service providers (including GBV committees at Mtaa/Ward levels, SWOs, and gender Desks) and develop a referral protocol for GBV response services.	Pre-construction	Project Coordination Team, DCC, Contractors	multiple channels to initiate a GBV-related complaint	
		Train Contractor's personnel to operate GRM (confidential proper documentation for complaint registration and management of GBV cases)	Construction			
		Communicate with local service providers to provide referral and support services to survivors as per Grievance mechanism guidance on SEA/SH.	Construction			
4.	Operationalize Codes of Conduct (CoC) for GBV	Sensitize project Staff and Contractors about CoC requirements	Pre-construction	Project Coordination Team, DCC	Number of project-related workers/laborers trained, oriented, and signed CoCs	15,000,000
		Avail CoC in both English and Swahili versions for easy understanding by those signing	Construction	Contractors		
		Ensure all workers with physical presence at project sites sign the CoC	Construction	Contractors		
		Disseminate CoCs and their visual illustrations and discuss with workers and surrounding communities.	Construction	Contractors		
5.	Establish accountability and response framework for SEA/SH allegations	Create an accountability and response framework to handle the breach of CoC on SEA/SH allegations (incl. disciplinary measures)	Construction	Contractors	Record of number of cases and disciplinary actions taken	5,000,000
		Ensure workers understand the repercussions.	Construction	Contractors		
6.	Implement appropriate project-related civil works for labor to reduce GBV risks	Have separate, safe, and easily accessible facilities for men and women working on the project sites	Construction	Contractors	Facilities for men and women designed and in place	120,000,000
		Ensure adequate security personnel.	Construction	Contractors	Security personnel recruited	
		Toilets should be located in separate areas, well-lit, with the ability to lock inside.	Construction	Contractors	Well-lit toilets in place	
		Visibility display signs in project sites that signal GBV are prohibited.	Construction	Contractors	Display signs in place	

SN	Action	Activities	Phase	Responsible	Output indicators	Budget/cost (TZS)
		Improve lighting around the project sites.	Construction	Contractors	Well-lit spaces in project sites	
7.	Undertake quarterly M&E of progress on anti-GBV activities.		Construction	Contractors, Project Coordination Team/DCC	Quarterly reports on the implementation of the GBV action plan	60,000,000
Total Costs						280,000,000

8.7.6 Child Abuse Protection Plan (CAPP)

The Contractors for construction under this project should follow the country's guidelines and laws in protecting children's rights and adhere to their own and those of the Client's policies aimed to prevent child abuse. In addition, the Contractors should prepare a Child Abuse Protection Plan for their companies that include the following:

- Hiring practices and screening that specify a zero-tolerance standard for abuse and inappropriate behavior by staff members, and procedures for criminal record checks and reference checks, including their proper documentation under the Human Resources Department.
- Training and education on the Code of Conduct and Child Abuse Prevention
- Reporting of red-flag and inappropriate behavior and/or violations of the Code of Conduct, particularly on child abuse, to the jurisdiction having authority
- Staff are prohibited from being alone with a child/children and are restricted from hugging and touching children, babysitting, and diapering when attending project programs that link them with the community.
- Establishment of a safety committee responsible for a wide range of safety topics, including child abuse Prevention.

8.7.7 Labour Management Plan

The labor management plan (LMP) should define the approach to ensure recruitment practices and working conditions comply with legal requirements and project standards.

The LMP should:

- Comply with international labor standards, national labor laws, and regulations concerning transparency, accountability, anti-corruption, and human rights
- Recognize workers' right to trade union representations and organize collective bargaining
- Provide suitable working conditions, including rest facilities and breaks
- Provide a mechanism for compliance with the International Labour Organisation Maternity Protection Convention (2000)
- Respect workers' rights to privacy, including data protection requirements.
- Recruitment policies and processes, including guidance for local recruitment
- Provision for local content, development of local enterprise, and capacity development
- Location and operation of recruitment centers
- Labor contracts, including workers' rights and conduct, camp rules, and workers' grievance procedure
- Disciplinary procedures
- A retrenchment plan to manage retrenchment at the end of the construction phase
- Workforce environmental and social training and awareness programs and local skills development
- Training to ensure the workforce has the skills to perform their responsibilities.

8.7.8 Grievance Redress Mechanism (GRM)

A RAP has been prepared for the project, providing a grievance redress mechanism (GRM) that will enable timely settlement of grievances to the PAPs. The grievance procedures will be anchored and administered at the local level to facilitate access, flexibility, and openness to all PAPs. The grievance redress procedure (GRP) ensures consultations with DCC and other key stakeholders. It provides for record-keeping to determine the validity of claims and to ensure that solutions are taken in the most transparent and cost-effective ways for all PAPs. The affected individuals will be informed about the process for expressing dissatisfaction and how to Seek redress.

8.7.8.1 Grievance Redress Committees

Two GRC committees are proposed, and they will be confirmed during detailed RAP preparations. The GRC will be involved in redressing grievances arising from PAPs in the project area. This includes the Mtaa Grievance Handling Committee (MGHC) and the District Grievance Handling Committee (DGHC). The composition of GRC members is provided in Table 8-5, and the GRM handling process is summarized in Table 8-6.

Table 8-8: Proposed GRC member

S/N	Committee	Proposed Members
1	Mtaa Grievance Redress Committee	▪ Mtaa Chairperson, ▪ Mtaa Executive Officer (MEO) ▪ Representative of Vulnerable Group ▪ Two representatives of community/PAPs, 1 female and 1 male.
		▪
2	City/Municipal Grievance Redress Committee	▪ District Commissioner – Chairperson ▪ Land Office ▪ Valuer ▪ RAP Implementing Agency ▪ Community Development Officer ▪ PAP representative/local NGO ▪ A representative from DCC

8.7.8.2 GRM Reporting Channels

DCC will communicate this procedure to its external stakeholders to raise awareness and offer transparency on how stakeholders can voice their grievances. Various channels for external stakeholders to vocalize their grievances formally include:

- i) *Using Grievance Form* - Stakeholders can complete a grievance form to be available at the Mtaa and Ward Office and submit it to the secretary MEO
- ii) *Face-to-face*—Stakeholders can voice their grievances to any member of GRC, who will then escalate using the correct process.
- iii) *Use of Suggestion Box* – The surrounding community members may use the Project opinion box to be placed at the Mtaa Office

All received complaints must be recorded in a Complaints Log Book by MEO for future monitoring and reference.

Table 8-9: Summary of Grievance Redress Process

Step	Reporting of Grievance	Officer / Committee Members	Timeframe to Redress	Grievance Redressed	Grievance not Redressed
1	The Mtaa level will have its grievance committee, the committee will meet whenever a grievance is filed (once a week)	- Two representatives of community/PAPs, 1 female and 1 male; - Mtaa Chairperson, - Mtaa Executive Officer (MEO) - Representative of Vulnerable Group	Upon receipt of the grievance, the Grievance committee at the Mtaa project level will meet and try to resolve it amicably with the active participation of the aggrieved party within 5 working days from the date the grievance was filed.	If the grievance is resolved and the complaints are satisfied with the committee's decision, a summary of the same shall be recorded in the GRM Logbook signed by the complaints, and the case shall be closed.	If the grievance is not resolved, go to step 2.
2	If a complainant is not satisfied with the step 1 decision, the case shall be forwarded to the District GRC.	- District Commissioner – Chairperson - PIT Coordinator - Land Office - Valuer - RAP Implementing Agency - Community Development Officer - PAP representative/local NGO - A representative from DCC	If any grievance files cannot be resolved at lower levels, the Grievance Redress Committee (GRC) will meet once a month at the district level.	If the grievance is resolved and the complainants are satisfied with the GRC's decision, a summary report shall be prepared for record, and the case shall be closed.	It is assumed that all the cases shall be solved at the GRC level; however, some cases might remain unresolved at the GRC level. The complainant shall have the option to refer his/her case to the Region and/or later Relevant Ministry levels before or taking the case to the appropriate court
3	PAP takes the case to the Minister or the appropriate court				

8.7.9 Waste Management Plan

A detailed Waste Management Plan should be prepared and implemented as part of the construction ESMP. The plan should detail all site-specific measures the project Contractor will implement during the construction phase to identify, collect, transport, and treat all waste produced on the Worksites by its personnel. The plan should reflect consultations and agreements achieved with the local authorities.

8.7.10 Code of Ethical Conduct

The Contractor will prepare and implement the workers' Code of Ethical Conduct (CEC) attuned to Part III (Employment Standards), Section 14 (Contracts with employees) of the Tanzanian Employment and Labour Relations Act No. 6 of 2004 and ESS2. The CEC will set out guidelines, i.e., "dos" and "don'ts," intended to support ethical behavior and decision-making for all employees of the Contractor. The term 'employees' here includes all management, staff, volunteers, students, subcontractors, and others who provide services for the organization.

8.7.11 Traffic Management Plan

A detailed Traffic Management Plan should be prepared and implemented as part of the construction ESMP. The plan should (i) define the characteristics of the construction fleet of vehicles and site machinery, (ii) describe the expected Project's traffic (frequency of trips between Worksites, working hours, convoys), and (ii) detail all site-specific measures of the project.

The contractor will implement this during the construction period to minimize the nuisances to the neighborhood generated by its fleet and reduce the risk of accidents.

8.7.12 Site Rehabilitation Plan

A detailed Site Decommissioning and Rehabilitation Plan should be prepared and implemented as part of the construction ESMP. The plan should detail all site-specific measures the project Contractor will implement at the end of the construction period to rehabilitate all temporary areas disturbed by the works. Site rehabilitation should be considered an integral part of the road project by incorporation throughout the planning, design, construction, and maintenance phases. It is equally important that the rehabilitation process be budgeted for in each of these phases. Issues that need to be addressed during the restoration phase should include:

- Identification of safety issues—This involves applying road requirements and standards to landscape plans to ensure that proposed treatments will not impede safety.
- Selection of appropriate species—species mixes need to be formulated considering the aim of the restoration program and the intrinsic environmental values of adjacent areas.
- Development of an appropriate establishment technique – this could include seeding, seedling planting etc.

8.7.13 Emergency Preparedness Plan

A detailed Emergency Preparedness Plan will be prepared and implemented as part of the construction of ESMP. The EPP for Common Hazards and Emergency Situations during construction should be structured as such but not limited to:

- Identification of potential emergencies based on hazard assessment
- Procedures to respond to the identified emergencies;
- Procedures to shut down equipment;
- Procedures to contain and limit pollution;
- Procedures for decontamination;
- Procedures for rescue and evacuation, including a designated meeting place outside the construction camps;
- Location of alarms and schedule of maintenance;

- List and location of equipment and facilities for employees responsible for responding to the emergency (fire-fighting equipment, spill response equipment, personal protection equipment for the emergency response teams, first aid kits and stations);
- Protocols for the use of the emergency equipment and facilities;
- Schedule for periodic inspection, testing, and maintenance of emergency equipment;
- Clear identification of evacuation routes and meeting points;
- Schedule of training (drills), including with local emergency response services (e.g., firefighters);
- Procedures for emergency drills;
- Emergency contacts and communication protocols, including with affected communities when necessary, and procedures for interaction with the government authorities;
- Procedures for periodic review and update of emergency response plans.

8.7.14 Risk assessment

Exposure to heat, floods, and working in confined spaces, particularly in the context of bridge works and road construction, requires a comprehensive evaluation of potential hazards and their associated risks. The following should be done.

- Identifying Hazards & risks
- Assessing Exposure
- Evaluating Risks
- Implementing Controls
- Regular Monitoring and Review
- Training and Communication.

8.7.15 Accident reporting

In road construction, it is a crucial process aimed at documenting and analyzing incidents that occur during construction activities. The following protocol shall be followed;

- Immediate Response
- Reporting
- Information Gathering
- Documentation
- Notification
- Investigation
- Analysis and Corrective Actions
- Follow-Up

Note: The DCC/PO-RALG shall notify the World Bank not later than 48 hours after learning of the incident or accident.

CHAPTER NINE

9 ENVIRONMENTAL AND SOCIAL MONITORING PLAN

9.1 Environmental and Social Monitoring

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

The EIA and Audit regulations require the developer (DCC) to prepare and undertake a monitoring plan and regular auditing. Monitoring is needed to check if and to what extent the impacts are mitigated, benefits enhanced, and new problems addressed. Recommendations for monitoring have been included in the ESMP (Table 9-1). The ESMP also assigns responsibilities for monitoring activities. However, the divisional/ward/village environmental committees and district environmental committees will participate in the long-term daily monitoring of the project road.

9.2 Environmental Audit

It is recommended that environmental audits determine the long-term effects of adopted mitigation measures. It is recommended that environmental audits be carried out on the project as part of the ongoing maintenance program. The audits will unveil the actual performance of mitigation measures and will allow effective measures to be included in future projects based on the legislation in force. As per operative ESIA documents in Tanzania and environmental audit regulations, it is the responsibility of the developer (DCC) and the National Environment Management Council (NEMC) to ensure that the undertaking complies with the environmental management requirements.

9.3 Monitoring Parameters

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

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

Table 9-1: Environmental and Social Monitoring Plan for DMDP II Package 1, 2,3,4,5, 6 & 7 Roads

Aspect /Activity	Parameter	Monitoring frequency	Sampling area	Measurement units	Method	Target level (as listed in the standard)	Responsibility	Annual costs
PRE-CONSTRUCTION AND CONSTRUCTION PHASE								
The Physical Environment								
Air Quality deterioration	Air emissions (PM ₁₀ , PM _{2.5} , CO, CO ₂ , SO _x , NO _x)	Quarterly	At identified sensitive receptors along the roads	ppm, µg/m ³	Ambient air analyzers and Micro dust Pro	As per TZS 845 2012 and WHO Global Air Quality Guidelines, 2021	Contractor	9,000,000
Water quality test at water crossings	pH, Turbidity, Colour, Lead, Copper, Cadmium, Zinc	Semi-annually	At identified sensitive receptors along the roads (water source)	NTU, Hazen ⁰ , mg/l	Laboratory analysis	As per Tanzania standard (TZS 789:2018) ESS3 Requirements	Contractor	9,000,000
Exposure to noise	Occupational noise level and community noise level (LAeq, Lmax, Lmin)	Quarterly	At project identified sensitive receptors (workplace and community areas)	dBA	Noise Meter	As per TZS 1471: 2018 (2nd Ed); Environmental Management (Noise and Vibrations Pollution) Regulations, 2014; ISO 2631	Contractor	5,000,000
Exposure to vibrations	Peak Particle Velocity (PPV) and Root Means Speed (RMS)	Quarterly	At project identified sensitive receptors	mm/s		As per TZS 1471: 2018, the Environmental Management (Standards for Control of Noise and Vibrations Pollution) Regulations, 2014 ESS 3 requirements	Contractor	3,000,000
Loss of definite materials/land degradation	Landscape quality	Quarterly	At the quarry site/ borrow pits		Inspection	Baseline landscape ESS 3	Contractor	5,000,000

Aspect /Activity	Parameter	Monitoring frequency	Sampling area	Measurement units	Method	Target level (as listed in the standard)	Responsibility	Annual costs
						General EHS Guidelines and sector-specific guidelines for Waste Management Facilities		
Land pollution by Demolition wastes	Demolition wastes	Weekly during the mobilization activities	At the locations of demolition	Volumes (m ³)/ Kg and % composition of components	Volumetric method	Local waste and Hazardous waste guideline ESS 5 Requirements	Contractor	3,000,000
Soil erosion and instability of slopes	Erosion	Three times during the construction period	Project area	level of erosion	Site inspection	EAS12:2018 and Environmental Management (Soil Quality Standards) Regulations, 2007	Contractor	2,500,000
Interference to local hydrology due to landscape alteration	Hydrometric	Three times during the construction period	Water Bodies Water bodies near the project sites	flooding level	Volumetric measurements	ESS6 requirements	Contractor	2,000,000
The Biological Environmental								
Loss /reduction of ecosystem services	composition change over time	Once after site clearance	Along the roads (on cleared land)	Ha / Sq km	Checklist	ESS 6 requirement	Contractor	3,000,000
Loss of vegetation cover	composition change over time	Once after site clearance	Along the roads (on cleared land)	Ha / Sq km	Checklist	ESS6 requirements	Contractor	3,000,000
Socio-Economic Environment								
Increased Employment opportunities	Number of new employees	Quarterly	Whole project area	Workers		-Employment and Labour Relations Act, 2019	Contractor	1,000,000

Aspect /Activity	Parameter	Monitoring frequency	Sampling area	Measurement units	Method	Target level (as listed in the standard)	Responsibility	Annual costs
						-OHS Regulation, 2003 -ESS 2		
Relocation of people's properties	PAPs eligible for compensation have been compensated (monetary or other) prior to land being taken	once before construction begins	Along the roads	People and money or land size compensated		As per Tanzania laws and ESS5 requirements	Contractor	3,000,000
Relocation of Utility Infrastructure	Service availability and quality	Once before construction begins	Along the roads	Service -water -electricity -communication - etc		Restoring services to baseline conditions as per Tanzania Laws ESS10 requirements	DCC and Contractor	The costs for relocation of utilities to be issued by Utility companies During construction
Impacts on community health, safety, and security	-Number of reported cases of illness related to construction Number of accidents reported	Quarterly	Throughout the project area	Number of incidents and accidents/frequency	Inspections/interviews/inquiries	-ESS 2 and ESS 4 - National laws	Contractor	2,000,000
Restricted access to resources and social services	Number of filed complaints over time	Quarterly	Throughout the project area	Local communities	Inspections/interviews/inquiries	National laws	Contractor	2,000,000
Impact on Gender-Based Violence and Harassment (GBVH)	Reported GBV cases Presence/ absence of GBV policy	Quarterly	Throughout the project area	Workers and local communities	Inspections/interviews/inquiries	-ESS 2 and ESS 4 - National laws	Contractor	4,000,000

Aspect /Activity	Parameter	Monitoring frequency	Sampling area	Measurement units	Method	Target level (as listed in the standard)	Responsibility	Annual costs
	Number and types of awareness programs							
Impacts on Vulnerable Groups	Number and types of assistance provided	Quarterly	Throughout the project area	Local communities	Inspections/interviews/inquiries	-ESS 2 and ESS 4 - National laws	Contractor	2,000,000
Road accidents	Number and frequency of accidents and road signs	Biannual	Project sites	Road signs and number of accidents	Records, inquiries, and inspection	Zero accident	Contractor	6,000,000
loss of livelihood	Rate of compensation for land and properties	once before the construction work starts	project sites	-	file records for People and money or land size compensated	Tanzania Land law	Contractor	4,000,000
loss of accessibility to adjacent properties	Baseline information on the availability of services	once before the construction begins	Along the project roads	Type/extent of services	Measuring and Observation	Tanzania laws	Contractor	5,000,000
Traffic load	Number and type of vehicles		project sites	-	Traffic count	Traffic regulations	Contractor	15,000,000
Socio-Economic								
Occupation health and safety	Number and type of safety equipment Medical examination	Annually	Project site/campsites	Number of safety measures provided	Records, inquiries, and inspection	National laws	Contractor/ OSHA	3,000,000
Employment Opportunity	Percentage of local construction laborers	Quarterly	Project site	Number of local people employed in the project	Records, inquiries, and observation	Employment and Labour Relations Act, 2019	Contractor	4,000,000

Aspect /Activity	Parameter	Monitoring frequency	Sampling area	Measurement units	Method	Target level (as listed in the standard)	Responsibility	Annual costs
increased income to local communities	Current income Vs. income before the project	Twice in the first year of operation	Project site	Income level (Tshs)	Questionnaires	Improved quality of life	Contractor	5,000,000
Road accidents	Number of Accident cases	twice a week	Project sites	-Number of safety measures	Records of accident cases	Zero accidents National laws	Contractor	3,000,000
Sub Total 1								102,500,000
OPERATION PHASE								
-Increased accessibility and reduction in congestion	Traffic congestion	Biannual	Project sites	Traffic counts	Counts	Easy access to and from socio-economic services	DCC	2,000,000
Reduced flooding	Stormwater drainage	Biannual	Project sites	Flood volumes	Volumetric	Zero flooding cases	DCC	10,000,000
Road accidents	Number and frequency of accidents and road signs	Biannual	Project sites	Road signs and number of accidents	Records, inquiries, and inspection	Zero accident case	DCC	10,000,000
Local hydrology due to changes in the natural waterways	Hydrometric	at least once per year	Water Bodies near the project sites	flooding level	Volumetric measurements	ESS4 and ESS6 requirements	DCC	5,000,000
Climate change impacts	Climate hazards (floods)	Annually	Project site	flooding level	Volumetric measurements	zero reported case	DCC	7,000,000
Sub Total 2								34,000,000
GRAND TOTAL								136,500,000

Source; (UWP, 2023)

Note: The ESMoP shall be applicable to all project packages

CHAPTER TEN

10 CONCLUSION

The DMDP project has been designed as a Series of Projects (SOP) to support the long-term development of the Dar es Salaam Metropolitan (Dar Metro) region. The recently closed DMDP 1 was the first in the series to address urgent infrastructure demands for basic services, urban mobility, and flooding in the Dar Metro region, but also the need for support to develop the institutional structure and capacity to manage the future mega-city of Dar es Salaam. DMDP Phase 2 is intended to scale up priority infrastructure, continue to strengthen urban institutions, and introduce new investments in solid waste management. The DMDP will be implemented in 5 DLAs, i.e., including the Dar es Salaam City Council (DCC). This ESIA is for component 1, Sub-Component 1.1: Resilient Transport Infrastructure, which covers about 66.41 km of urban roads.

ESIA was conducted following the requirements of the World Bank Environmental and Social Framework (ESF), which requires the Borrower to conduct ESIA following the requirements of Environmental and Social Standard 1 (ESS1): Assessment and Management of Environmental and Social Risks and Impacts, and the EIA and Audit Regulations of 2005 (amended 2018).

The ESIA team identified and consulted stakeholders from Government institutions, agencies, and organizations such as Mobile network services providers, SONGAS, TAZAMA, TRC, TAA, DAWASA, TPDC, TANESCO, Jumuiya ya Wafanya biashara Kariakoo (JWK), LATRA, Ilala Market Office, Wards, and metal Offices, as indicated in the report. The costs for relocation of the utilities have been included in the Bill of Quantities (BoQ).

The implementation of the proposed subproject roads in DCC will have positive and negative impacts. The Positive impacts include Reduction of travel times within the city, Prevention/reduction of urban flooding, improvement of mobility and transportation services, Connectivity to the BRT corridors, Connectivity with DMDP Phase 1 Sub-projects, Provision of access to community and social and economic activities, Contribution to overall improvement of Dar es Salaam Transport Master Plan; Improvement of CBD environment and mobility and Potentiality on improvement of urban drainage and flood control. The identified negative impacts include noise, dust emissions, traffic congestion and accidents, pollution by construction wastes, and occupational and community health and safety risks. Other significant impacts are associated with the relocation of utility infrastructure along the road, and relocation of vendors/hawkers who occupy or conduct their business within the corridor, and compensation of structures, land, and trees within RoW.

RAP was conducted, which identified and categorized *PAPs and affected property* as 62 residential houses, 154 commercial buildings (148 business frames and 6 shops), and 4 institutions' buildings. Apart from buildings, the planted fruit trees (i.e., pawpaw and coconut trees) will be affected. Families consume these, but they are also a source of income for the owners. PAP compensation is in the final process to pave the way for construction activities.

The study identified that most of the subproject roads pass along sensitive receptors such as Ilala market, Kariakoo business center, Kigilagila and Kivule markets, worship areas, schools, msimbazi river, major highway junction, and Dispensary/Health centers. Monitoring of impacts is critical, and the monitoring parameters include the Creation of employment (workers employment contracts, wages paid to workers), Generation of dust (levels of dust generated by construction activities, implementation of measures to reduce dust, use of dust masks), Noise levels (levels of noise generated by equipment, maintenance activities, use of ear plugs for workers working in noisy areas), Gaseous emission (levels of exhaust generated by equipment), Disruption of domestic water supply in pipeline utilities (damage to pipelines, implementation

measures to prevent damages to water supply utilities), Generation of wastes (management of wastes, treatment, and disposal of wastes), Road traffic congestion and accidents (fencing of work sites, separation of work site to public traffic and measures to prevent traffic congestion and accidents) and Health problems associated with the handling of cement and concrete (use of PPE, Work practice and hygiene).

However, the subproject impacts can be mitigated following the timely application of measures stated in ESMP, adhering to the WB ESS, Tanzania environmental regulations, and Occupation health and safety regulations. The impacts could be reduced to acceptable limits. The ESMP contains mitigation measures for all identified impacts and a plan for their implementation. Further, a monitoring program has been designed to ensure the Contractor, DCC, TARURA, OSHA, and NEMC have a way of monitoring ESMP implementation either directly or indirectly.

From the study findings, it can be concluded that the impacts of the proposed subprojects are substantial and can be mitigated following the proposed mitigation measures and good engineering practices. The ESIA team, therefore, recommends that the proposed project proceed.

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APPENDIX

Appendix I: Water and Soil Sample Analysis Results

ENVIRONMENTAL ENGINEERING LABORATORY

Water Analysis Results

Client: UWP (T) CONSULTING LTD
 Date: 04 October 2023
 Source: Water

S/N	PARAMETER	Units	Msimbazi River	Mzinga River	Mazda River
1	pH		6.58	6.85	6.99
2	Turbidity	NTU	64	62	3
3	Colour	Hazen°	9	54	9
4	Lead	mg/l	<0.01	<0.01	<0.01
5	Copper	mg/l	<0.01	<0.01	<0.01
6	Cadmium	mg/l	0.011	<0.01	<0.01
7	Zinc	mg/l	<0.01	<0.01	<0.01

Sampling done by client

Reporting Officer

Ndimbo A.M



ENVIRONMENTAL ENGINEERING LABORATORY

Soil Analysis Results

Client: UWP (T) CONSULTING LTD
 Date: 04 October 2023
 Source: Soil

S/N	PARAMETER	Units	Msimbazi River	Mzinga River	Mazda River
1	pH		7.03	7.15	6.94
2	Lead	mg/kg	5.270	5.040	5.035
3	Copper	mg/kg	0.302	1.202	2.204
4	Cadmium	mg/kg	0.418	2.289	0.534
5	Zinc	mg/kg	7.243	11.329	32.506

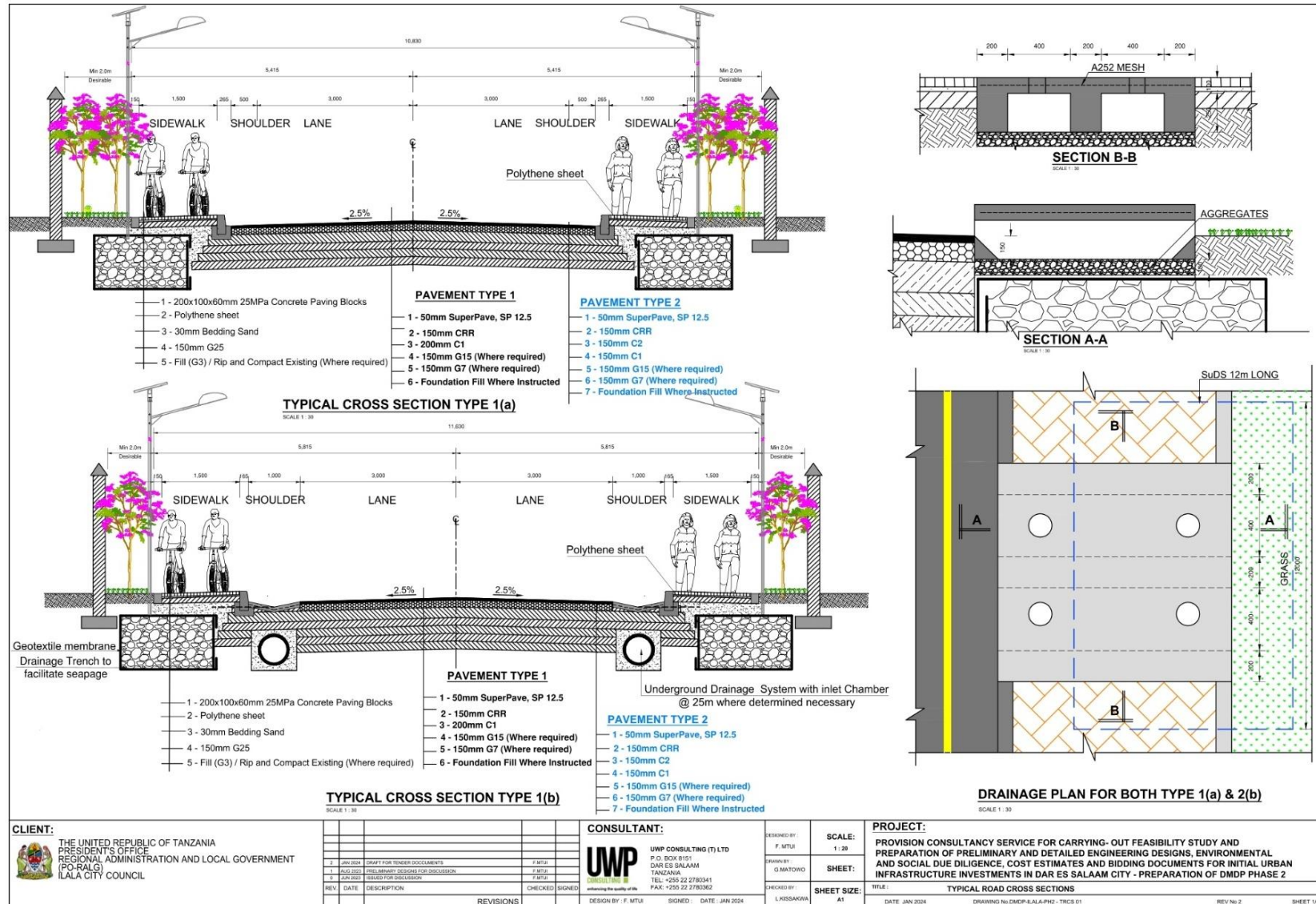
Sampling done by client

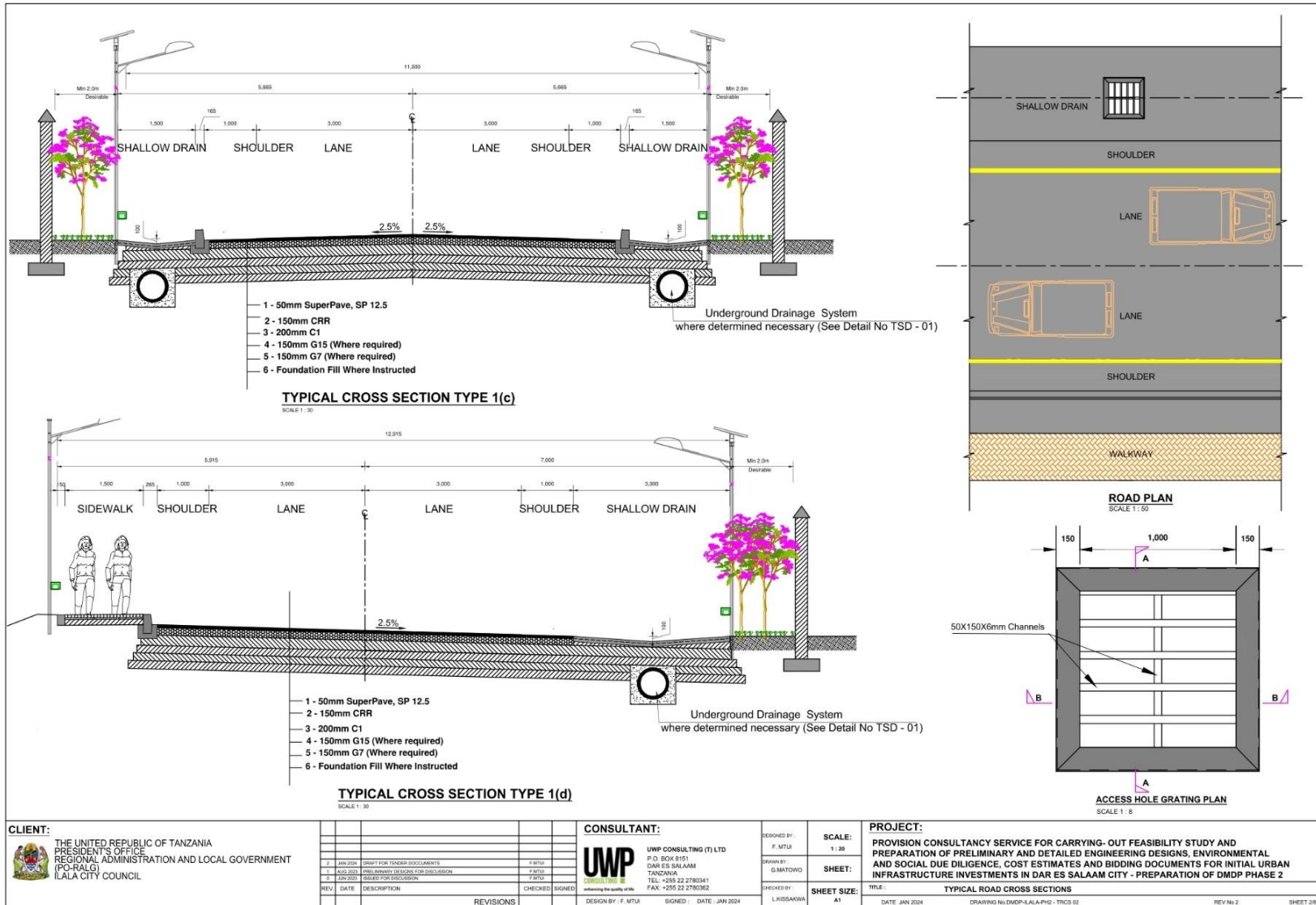
Reporting Officer

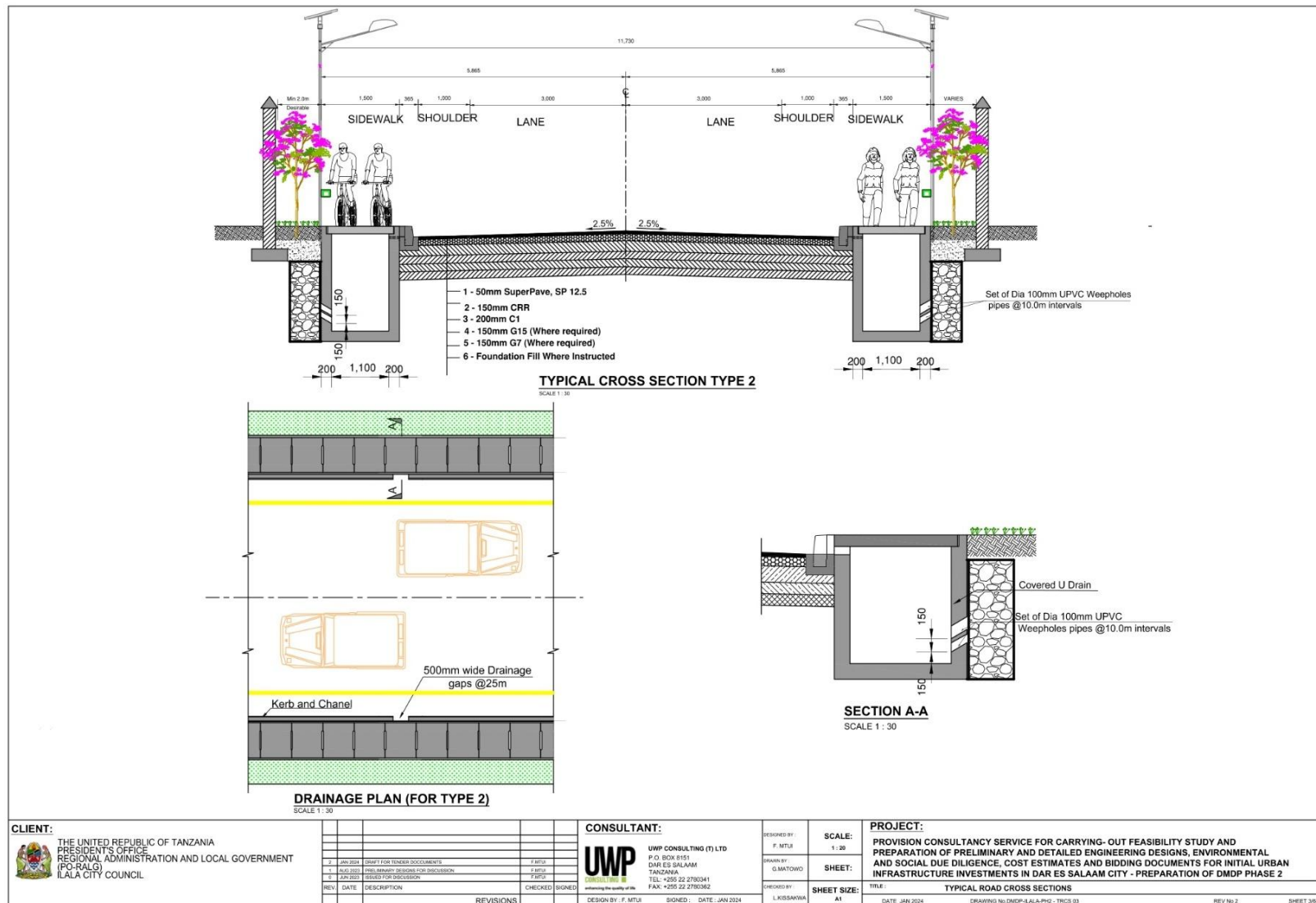
Ndimbo A.M

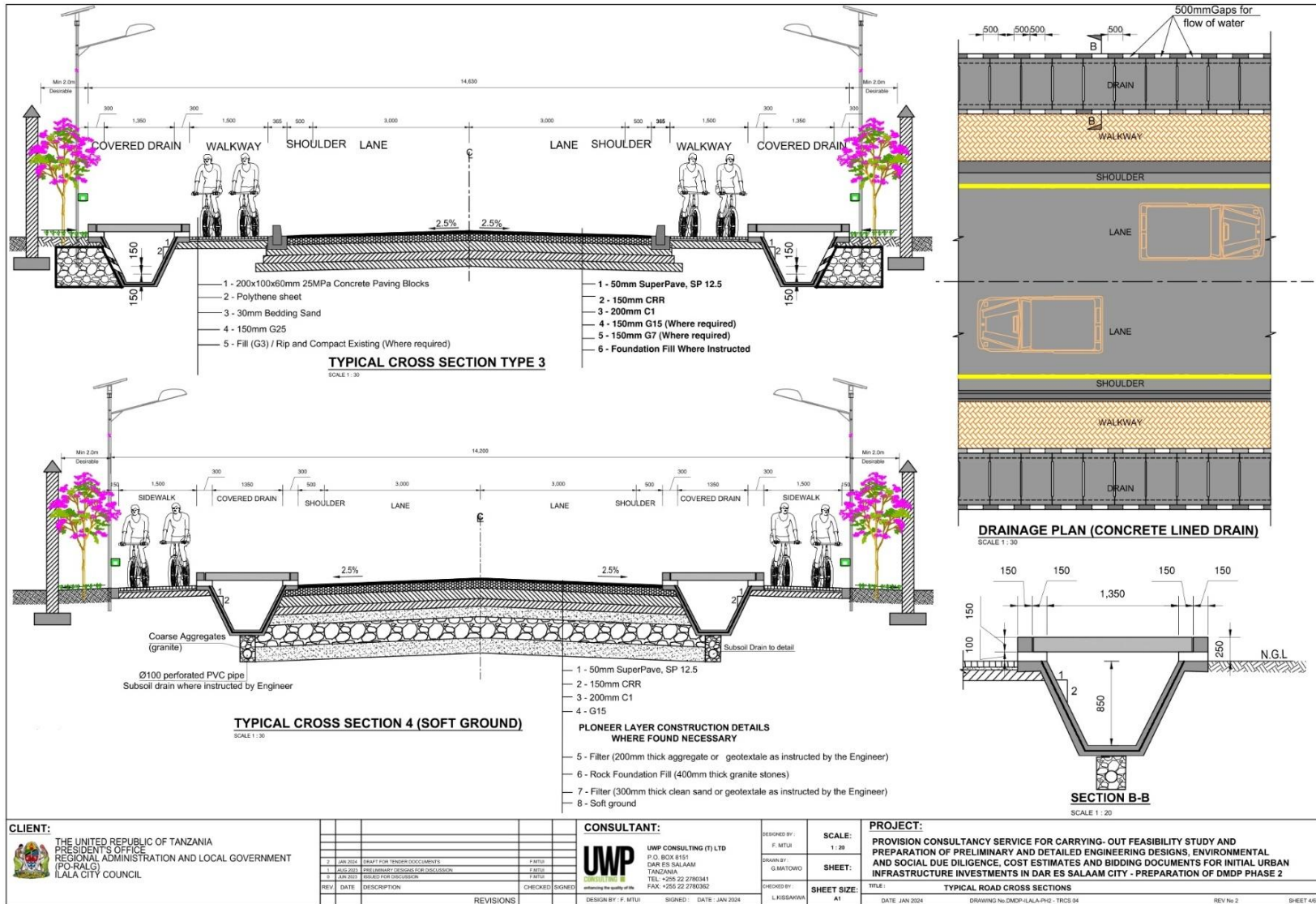


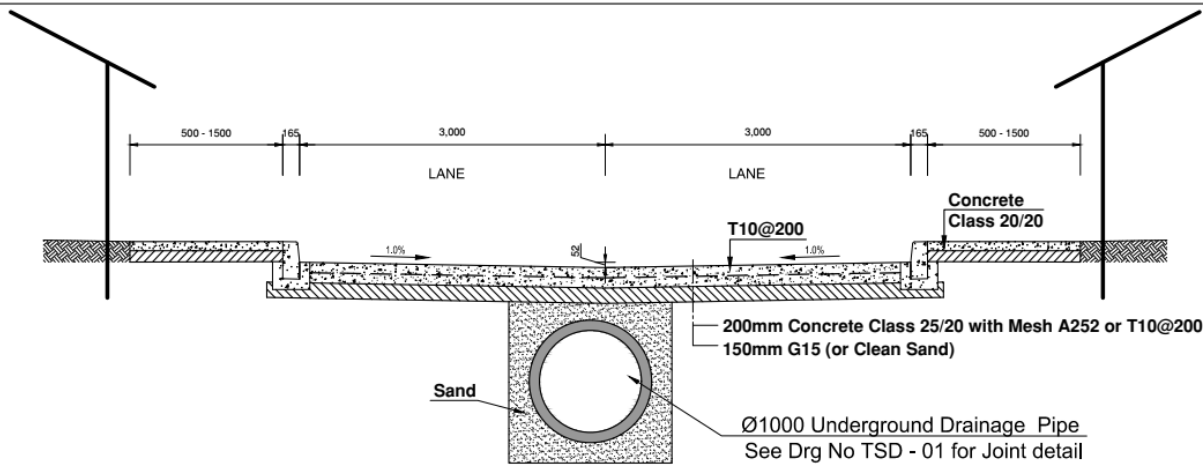
Appendix II: Typical Cross Section Drawings for the proposed road





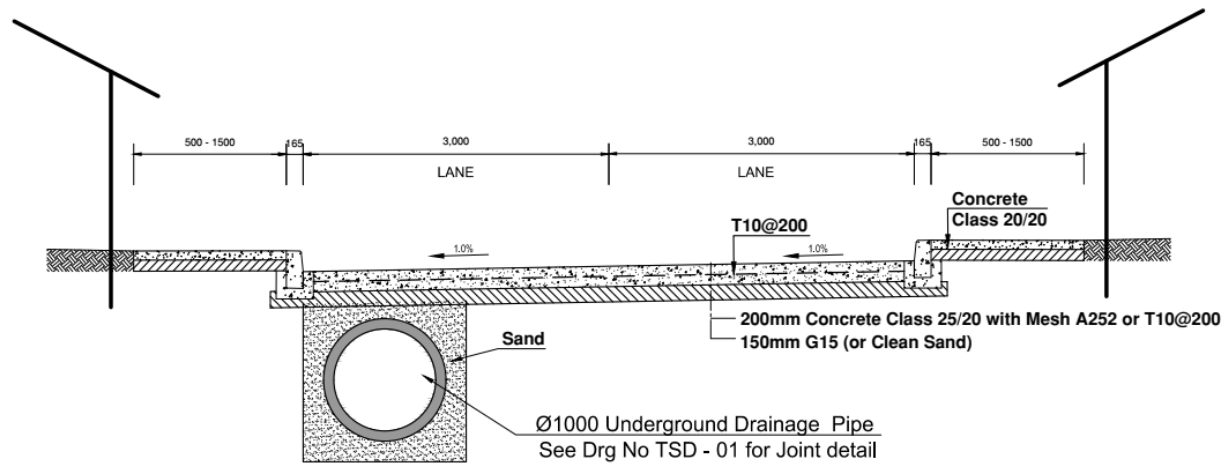






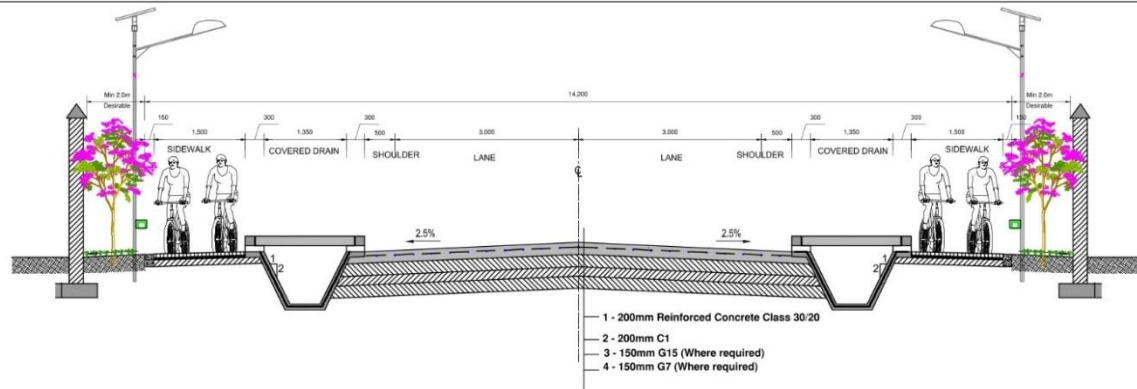
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SCALE 1 : 30



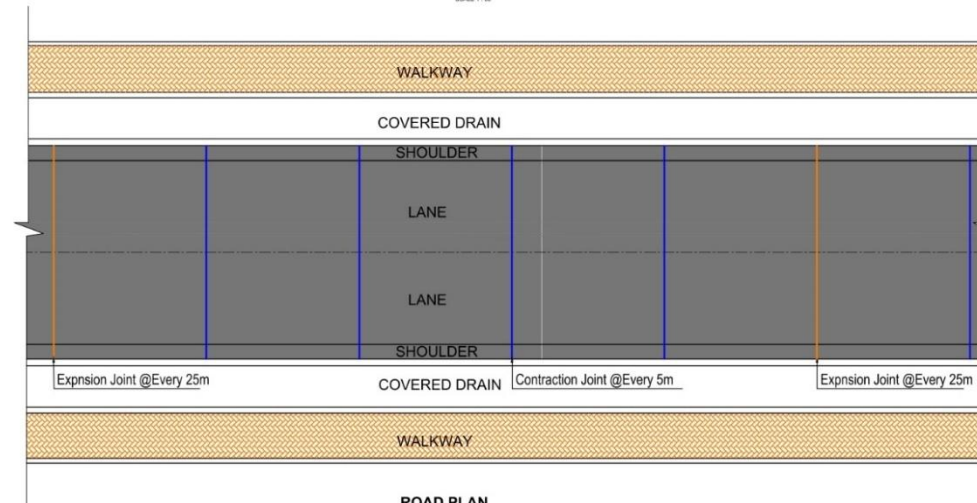
TYPICAL CROSS SECTION TYPE 5(b)

SCALE 1 : 30



TYPICAL CROSS SECTION 4(b)

SCALE: 1:30



ROAD PLAN

SCALE: 1:30

CLIENT:

THE UNITED REPUBLIC OF TANZANIA
PRESIDENT'S OFFICE
REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT
(PO-RALG)
ILALA CITY COUNCIL

REV	DATE	DESCRIPTION	CHECKED	SIGNED
1	JAN 2024	DRAFT FOR TENDER DOCUMENTS	J. MTU	
2	JAN 2024	PRELIMINARY DESIGN FOR PRELIMINARY DESIGN	J. MTU	
3	JAN 2024	ISSUED FOR DECISION	J. MTU	
REVISIONS				

CONSULTANT:

UWP CONSULTING (T) LTD
P.O. BOX 8151
DAR ES SALAAM
TANZANIA
TEL: +255 22 2780341
FAX: +255 22 2780380

DESIGNED BY:

J. MTU

G. MATOWO

L. KISSAKI

SIGNED: DATE: JAN 2024

SCALE:

1:30

SHEET:

A1

DATE: JAN 2024

PROJECT:

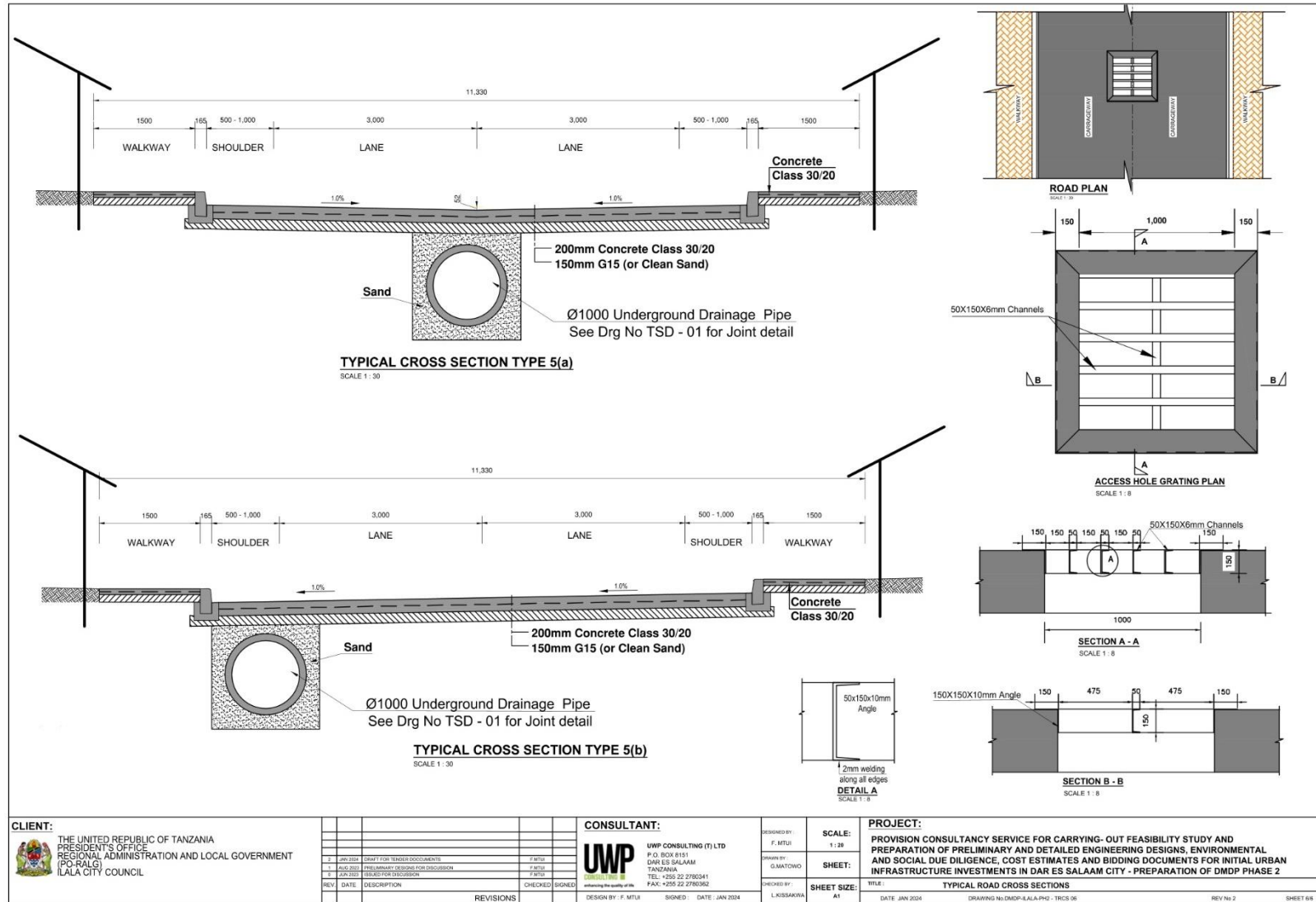
PROVISION CONSULTANCY SERVICE FOR CARRYING-OUT FEASIBILITY STUDY AND PREPARATION OF PRELIMINARY AND DETAILED ENGINEERING DESIGNS, ENVIRONMENTAL AND SOCIAL DUE DILIGENCE, COST ESTIMATES AND BIDDING DOCUMENTS FOR INITIAL URBAN INFRASTRUCTURE INVESTMENTS IN DAR ES SALAAM CITY - PREPARATION OF DMDP PHASE 2

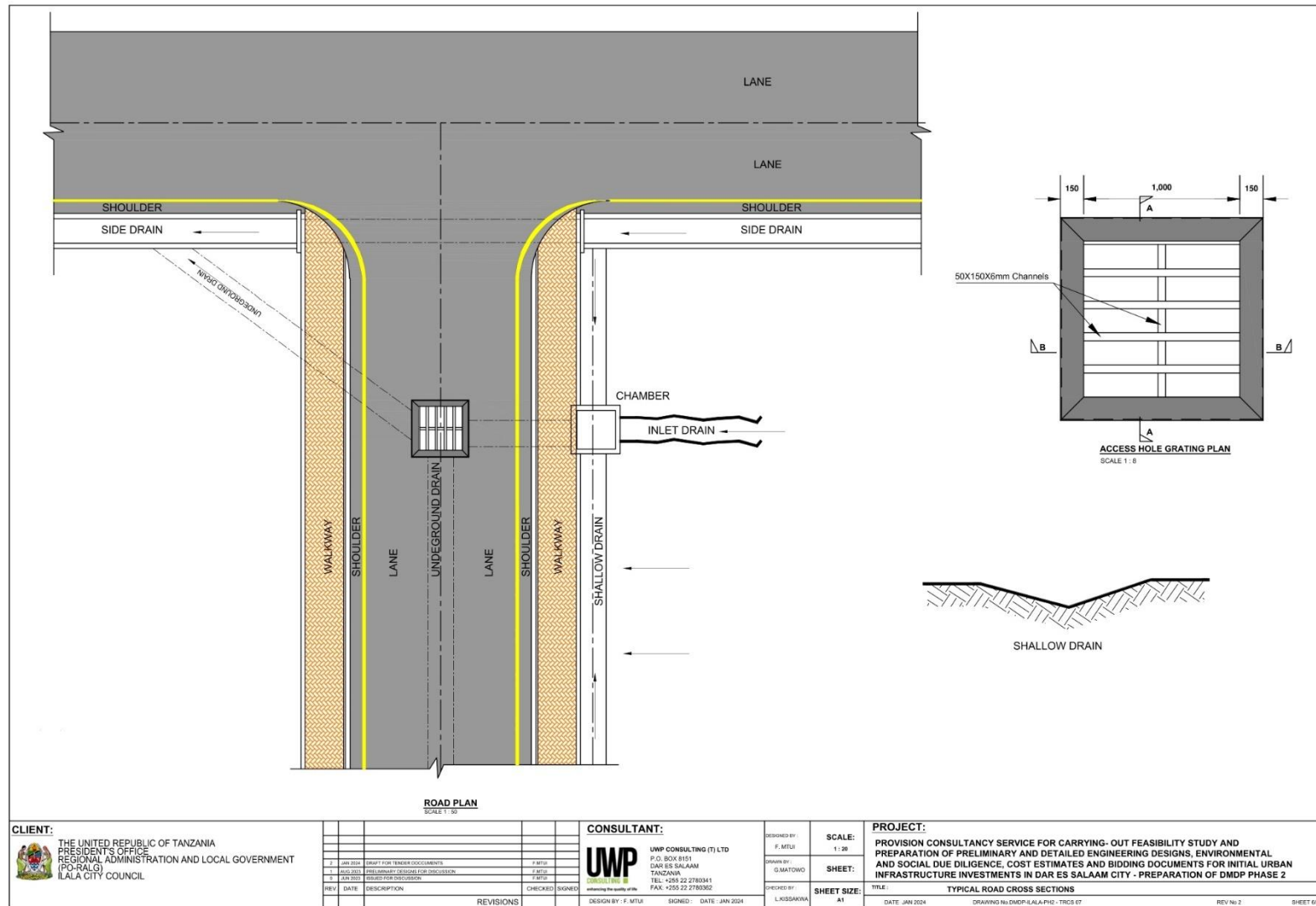
TYPICAL ROAD CROSS SECTIONS

DRAWING NO: DMDP-E-SALA-PPH2 - TRC13-05

REV No: 2

SHEET 06





Appendix III: Stakeholder Consultation Meeting Minutes and signed attendance

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TO AVOID DISCLOSURE OF PERSONAL INFORMATION