ENVIRONMENTAL IMPACT STATEMENT (EIS) FOR THE PROPOSED UPGRADING OF MKUYUNI FISH MARKET LOCATED AT PLOT NO. 74, BLOCK BIII, ALONG MWANZA SHINYANGA ROAD, MKUYUNI SOKONI MTAA, MKUYUNI WARD, MWANZA CITY IN MWANZA REGION

FINAL REPORT

PROPONENT:
MWANZA CITY COUNCIL (MCC)
P.O. BOX 1333
MWANZA
Tel: +255 28 250 1375/ +255 768 520 195
Email: cd@mwanzacc.go.tz Web. www.mwanzacc.go.tz

SUBMITTED TO:
The National Environment Management Council (NEMC)
Regent Estate, Plot No. 29/30
P.O. Box 63154, Dar es salaam, Tanzania
Tel: +255 22 2774889 or +255 22 2774852
Fax: +255 22 2774901
E-mail: dg@nemc.or.tz

CONSULTANT:
ROSEMARY C. NYIRENDA
Mobile: +255 713 030 865/ +255 753 880 424
Email: rosemary.nyirenda35@gmail.com

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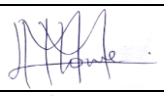
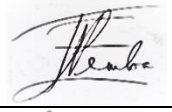
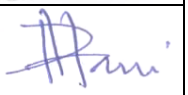
EIA STUDY TEAM

S/N	Name	Position	Registration	Signature
1.	Rosemary C. Nyirenda	Environmental Expert and ESIA Team Leader	NEMC/PC/EIA/2021/0075	
2.	Magdalena L. Mlowe	Environmental Specialist		
3.	Dr. Lilian G. Mulamula	Ecologist		
4.	Dr. Edmund Temba	Legal and Policy Framework		
5.	Dorcas Ephraim	Economist		

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Proponent: Mwanza City Council

Proponent's Contact: City Director,
Mwanza City Council,
P.O. Box 1333,
Mwanza.

Background Information

Administratively, Mwanza city was established in 2000 and became among the eight councils of Mwanza Region. Besides being a headquarters of the city council, it is also the headquarters of Mwanza region, a major Tanzanian port of Lake Victoria and a business centre of a Great Lake Region and East Africa Community. The city can easily be reached by Ugandans and Kenyans through Lake Victoria and by road to countries of Rwanda, Democratic Republic of Congo and Burundi.

Land Area and Land Use Pattern

Mwanza City has a total area of 256Sq. Km, divided into land area covering 173Sq.Km, equivalent to 67.6 percent of total area and 83.0 Sqm, equivalent to 32.4 percent of water area, mostly dominated by LakeVictoria. Comparing with other councils in Mwanza region, Mwanza city possess smallest area covered only a percent of the total area (25,233.0 Sq. Km) of the region. Looking at ward level, Mkolani is the largest ward possessing 19 percent of city area followed by Buhongwa (17.6 percent) and Igoma (16.0 percent). The least wards in terms of area are Pamba and Mirongo covered on 0.8 percent of city area each.

The TACTIC Projects in Mwanza City

Mwanza City Council as the Implementing Agency (IA) is part of the LGAs which will be executing the WB finance project through TACTIC. The objective of the proposed TACTIC project is to strengthen urban management performance and deliver improved basic infrastructure and services in participating urban local government authorities. At its core, the project aims to promote economic development of Tanzania's cities and towns and its enabling infrastructure. Investments and technical assistance under the project are intended to promote urban development that is productive, inclusive and resilient. The project will support 45 urban Local Government Associations (LGAs) spread geographically across all regions of Tanzania, ranging in population from 26,402 to 416,442 (2012), divided into three tiers based on population and growth rate. Mwanza City Council is grouped in Tier 1 as among the 12 larger, fast-growing LGAs.

The TACTIC project will provide funding to cover for the following projects in Mwanza City Council:

- Upgrading of Mkuyuni Fish Market
- Rehabilitation of Mirongo River (to mitigate flooding in the downstream)[1]

[1] See details in Annex 5.3

- Construction of Igoma-Buhongwa Road 14 km, part of the ring road that is economically critical for Mwanza

The proposed projects are in accordance with the Mwanza city strategic plan as well as the Government vision and other strategic documents to reduce and eventually end poverty in coming few decades. This ESIA report covers upgrading of Mkuyuni Fish Market.

The new proposed area is located near the existing old market and within a water log area. The area is an environmental sensitive land overlooking the lake and surrounded by light industrial zone of Igogo. The area provided for the allocation of the new market is 6.9 hectors and situated near the lake shore. The market is purposely positioned at the lakeshore purposely due to the fact that, fishes are sold directly after fishing on a daily basis. The overall objective of this project is to facilitate economic growth of Mwanza residents and the Tanzania at large, as it will boost fish business and fish industry in general. These potentials will be fully exploited when there is a reliable fish market with good infrastructures. Construction and upgrading of the proposed fish market to the said standard will require a detailed analysis in the Engineering design, Environmental aspects and other many social and economic aspects. These analyses are vital in arriving at an acceptable standard of the market design and tender documents for construction of the fish market. The number of existing and proposed number of facilities is presented in the Table below.

Facility	**Existing Number**	**Proposed Number**
Shops	60	204
Stalls	56	460
Mama lishe	2	4
Baba lishe	NIL	4
Parking car	4	20
Parking Bajaji	10	50
Parking Motorcycle	15	50
Parking Treecyle	NIL	50
Lories Parking	NIL	20
Restaurant		1

Pre liminary environmental and social assessment

This environmental and social finding covers for the upgrading of Mkuyuni Fish Market. The detailed environmental and social impact assessment study was conducted in accordance with the Environmental Impact Assessment and Audit Regulations of 2005 as amended in 2018 and the World Bank environmental and social framework (ESF). While the ESF acknowledges country's capacity in managing environmental risks and impacts, the country regulations on the other side give mandate to NEMC to oversee the ESIA process, which culminates with an award of the ESIA certificate by the Ministry responsible for Environment. The ESIA certificate is among the prerequisite approvals required before the project takes off. This project will need this approval before it is implemented. The environmental and social study is also conducted as part of the design works where by some of the mitigation measures will be rectified during finalization of the designs.

Country's Environmental and Social Policy and Legal Framework

The policy framework which are in conformity with the proposed project activities are environmental policy of 1997, land policy of 1997, gender policy of 2000 and HIV

and AIDS Policy of 2001. The legal framework for the proposed projects includes the environmental management Act of 2004, and its Regulations, the Land Act of 1999, The Occupational Health and Safety Act of 2005, HIV and Aids Act of 2008.

World Bank Environmental and Social Framework

Apart from country policies and legislation the World Bank Environmental and Social Framework (ESF) which describes ten (10) Environmental and Social Standards (ESS) will also be used. The ten ESSs as per the WB ESF are: ESS 1: Assessment and Management of Environmental and Social Risks and Impacts; ESS 2: Labor and Working Conditions; ESS 3: Resource Efficiency and Pollution Prevention and Management; ESS 4: Community Health and Safety; ESS 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement; ESS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources; ESS 7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities; ESS 8: Cultural Heritage; ESS 9: Financial Intermediaries; and ESS 10: Stakeholder Engagement and Information Disclosure. Given the nature of activities of this project, with the exception of ESS 9: Financial Intermediaries almost all the ESSs will be relevant.

Stakeholder Participation

Different groups of people in the project areas participated fully in the public consultative meetings during the Study, the categories of interested people who participated are as exemplified but not limited to the following;

- Mwanza City Council Office (City Director with all the project teams)
- Mwanza Urban Water Supply and Sanitation Authority (MWAUWASA)
- TANESCO Mwanza Regional Office
- Tanzania Forest Services Agency (TFS) – Lake Zone Office in Mwanza
- Association of traders at Mkuyuni fish market
- Mkuyuni ward leaders,
- Mkuyuni mtaa leaders
- Representative of the fisheries department (fisheries officer)
- Representatives of the Beach Management Unit (BMU),
- Community members surrounding Mkuyuni fish market

The Major issues raised during stakeholders' discussion were:

-Pollution of the lake due to its close proximity. There is a high possibility of causing river pollution during construction due to waste generation and the close proximity of the lake from the proposed site for Mkuyuni fish market.

-Soil; during construction, the contractor should be careful with causing soil pollution due to oil spillage and other waste which will be generated during construction.

-Priority for employment opportunities for labourers should be given to local communities within the project areas to reduce conflicts among the incoming labourers and the local community. Labourers from outside the construction areas should only be considered if not found within the area.

-Health and safety issues are key during construction to avoid any impacts to labourers and nearby communities. Incidents/accidents and fatalities should be avoided to workers and nearby communities at all times using all costs.

Potential Significant Environmental and Social Impacts

The development of infrastructure in unplanned settlements can cause a wide range of environmental and social impacts on a number of receptors. The impacts are of both positive and negative nature and are environmental and social. The proposed project

will directly affect the area where the new market will be constructed. The other areas that will be affected includes adjacent area around the project site; such as adjacent residential and commercial buildings might be affected by resettlements or through dust and noise impacts. Moreover, the other noticeable impact will be felt along the Kenyatta Road which connects the access road to the site. The road is going to be affected by traffic jam due to the increase in number of vehicles especially during the construction and operation phases. There will be a number of construction trucks carrying construction materials from different sources to the site. The other impact will be on the Marine environment due to the project area being too close to the shore of Lake Victoria. The activities that will be carried on site are likely going produce large amount of waste, hence if there will be no proper handling of these waste it is going to affect the area. The ecological nature of the area is also more likely to be affected to a larger part. Consultations with stakeholders revealed that the area is an important fish breeding site and also accommodates a number of marine animals such as snakes. For the adjacent residential houses and nearby factories are more likely to be affected by dust and noise pollution that will be generated from construction works. Further the impacts can be divided based on the stage from pre-construction (mobilization) phase, construction phase, operation phase and decommissioning as follows:

Impacts during pre-construction phase;

Positive Social Impacts

-Job creation and increased income
-Improvement of local economy mainly through taxes

Impacts during construction phase;

Positive Social Impacts

-Job creation and increased income to local communities
-Increase revenue to the government

Negative Environmntal Impacts

-Disruption of other infrastructure – delay to relocate utilities
-Soil erosion and instability of slopes
-Increased water and soil Pollution
-Noise, vibration and air pollution
-Loss of Vegetation

Negative Social Impacts

-Safety and health risks
-Increase possibility of road accidents
-HIV / AIDS among workers and students since the construction will be conducted while classes are ongoing
-GBV / SEA

Impacts during operational phase;

Positive Social Impacts

-Improved Transport & economy of the people
-Improved community life and services
-Reduced traffic congestion
-Increase property value
-Increase road accidents

Project alternatives

Three alternatives considered in this study including no project alternative, alternative sites and alternative designs. The no project alternative disqualified because choosing that alternative shall mean to remain with the status quo (without project) and losing all the benefits of the project. The selection of project sites (roads) and sub project done through a rigorous process that involved technical personnel and the proposed communities while observing the laid down criteria for selection of local roads. Alternative design looked at the advantages and disadvantages of using asphalt concrete over other pavement materials and covered channels over open channels. Asphalt concrete and covered channels seemed to have more advantages than the other alternatives considered.

Recommendations and plan for Mitigation

Many of the mitigation measures put forward are more of a good engineering practice that adhered to during all the project phases. The major impacts and their mitigation measures to observe include;

-*Delay caused by relocation of utilities:* The TANESCO, MWAUWASA, TRL and TTCL shall be involved from the early stages of these project so as to have an integrated planning.

-*Disturbance to communities caused by disruption of community services and infrastructures, as well as closure of roads*: Early notice shall be given to the community before any service interruption.

-*Erosion caused by soil clearance:* Unnecessary ground clearance and sensitive re-alignments shall be avoided.

-*Erosion caused by storm water on steep slopes and sharp corners:* Lined drainage channels at sensitive terrains shall be provided to control speed and volumes of storm-water. The discharge points shall be carefully chosen to avoid erosion of arable land and creation of gullies.

-*Possibility of soil or water pollution due to oil and fuel spillage:* Refueling of plant or transfer of materials should not be carried out near water bodies, and any local spillage to soil should immediately be remedied.

-*Soil and water pollution caused by construction solid waste:* Good house keeping shall be practiced within material storage compounds or vehicle maintenance yards where the possibility of spillage is great. This can easily be done by provision of Spill tanks and Secondary containment at vehicle maintenance yards.

-*Pollution caused by noise, dust or vibration:* The nuisance of noise, vibration and dust will be transient and good work practice can minimize them. In addition, these impacts are already being experienced due to the existing road segments.

-*Poor air quality caused by dust:* Watering should be practiced regularly at all active work sections along the road and at all quarries and borrow sites for the protection of workers. In addition, sections of road heavily traversed by construction vehicles should also be regularly wetted.

-*Health and safety of workers:* Appropriate working gear (such as nose, ear mask and clothing) and good camp management shall be provided.

-*Commuity health and safety:* The road design shall take account of safety concerns especially at human habitation crossings e.g. installation of bus stops at settlement centres.

-*Accidents and incidents to community members and construction workers:* Traffic management plan shall be incorporated in the designs to include for example details of signs, markings, intersection layouts, access restrictions, bus stops, crossings, footpaths etc.

-*Littering around construction sites:* Adequate number of waste bins shall be provided at the constructio sites.
-*Soil erosion and encrotchment of peoples houses:* Close supervision of earthworks shall be observed in order to confine land clearance within the proposed new coridor of impact boundaries.
-*Removal of trees and other vegetation along the road:* The road design shall try as practicable to offset the route so as to avoid felling all big trees that take many years to grow or other flora of outstanding importance.
-*Accidents and incidents along the construction roads:* Installation of proper road signs and regular inspections for their presence, also installation of speed control devices like humps, as well as installation of pedestrian lanes at human settlement crossings

Environmental and Social Impact Management Plan

The options to minimize or prevent the identified adverse social and environmental impacts as well as a monitoring plan suggest in this report and are contained in the ESMP. Many of them are based on good engineering practices. The Environmental and Social Management Plan (ESMP) presents the implementation schedule for the proposed mitigation measures to both environmental and social impacts as well as planning for long-term monitoring activities. The ESMP also includes the associated environmental costs needed to implement the recommended mitigation measures. The engineering designs have already included some of the mitigation measures recommended in this report. Additional recommendations provided in the ESMP to enable the proposed facilities become more environmentally friendly. The implementation steps will involve the Contractor, the Resident Engineer, NEMC, some utilities provide such as TTCL, TRL and TANESCO, and the local communities at large.

Decommissioning

As decommissioning is not anticipated to take place in the remote future, the specific conditions for mitigation are generally inherently uncertain. In view of this, specific mitigation measures pertaining to environmental impacts of decommissioning works cannot be proposed at the moment with a reasonable degree of certainty. A detailed decommissioning plan that takes environmental issues into consideration shall be prepared by the developer prior to the decommissioning works. Should it be done, decommissioning may entail change of use (functional changes) or demolition triggered by change of land use.

Summary and Conclusion

The proposed upgrading of Mkuyuni fish market project is planned to be implemented in Mwanza City Council, Mwanza Region. The project has enormous socio-economic benefits to Mwanza City Council and the nation at large. The project as such, entails minimal adverse environmental impacts of which adequate mitigation measures have been proposed and incorporated in the project design. It is, therefore, concluded that the proposed project will entail no significant impacts provided that the recommended mitigation measures are adequately and timely implemented. The identified impacts will be managed through the proposed mitigation measures and implementation regime laid down in this ESIA. Mwanza City Council is committed in implementing all the recommendations given in this ESIA and further carrying out the environmental auditing and monitoring schedules.

ACKNOWLEDGEMENT

The Mwanza City Council wishes to convey heartfelt thanks and appreciation to all stakeholders who in one way or other supported the completion of this work. Special thanks to all wards and mitaa leaders where the upgrading of Mkuyuni fish market will be implemented for providing relevant information and for their prompt assistance during the fieldwork. Last but not least we thank all who can not be mentioned here but managed to provide their cooperation and assistance in one way or another for the completion of this study. The proponent would like to thank Dar Alhandasah JV Don Consult's team of Consultants, Ms. Rosemary C. Nyirenda (Lead Environmental Expert), Ms. Magdalena L. Mlowe (Environmental Specialist), Dr. Lillian G. Mulamula (Ecologist), Dr. Edmund Temba (Legal Expert), Italius Kavishe (Social and Gender Expert) and Dorcas Ephraim (Economist) for their great contribution in this project.

ABBREVIATIONS AND ACRONYMS

AADT	Average Annual Daily Traffic
AAS	Atomic Absorption Spectrophotometer
AIDS	Acquired Immune Deficiency Syndrome
A.M.S.L	Above Mean Sea Level
BATNEEC	Best Available Technology Not Entailing Excess Cost
BMU	Beach Management Unit
CBD	Convention on Biological Diversity
CBO	Community Based Organization
CITES	Convention on International Trade in Endangered Species
CRB	Contractors Registration Board
CTC	Care and Treatment Clinic
CoI	Corridor of Impact
DoE	Division of Environment
EHS	Environment Health and Safety
EIA	Environmental Impacts Assessment
EIS	Environmental Impacts Statement
EMA	Environmental Management Act
EMP	Environmental Management Plan
ERB	Engineering Registration Board
ESIA	Environmental and Social Impacts Assessment
ESF	Environmental and Social Framework
ESMP	Environmental and Social Management Plan
ESS	Environmental and Social Standards
EWURA	Energy, Water Utilities Regulation Authority
GoT	Government of the United Republic of Tanzania
GRM	Grievance Redress Mechanism
GRC	Grievance Redress Committee
HBC	Home Based Care
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome
IA	Implementing Agency
LGA	Local Government Authority
MCC	Mwanza City Council
MWAUWASA	Mwanza Urban Water Supply and Sanitation Authority
NACP	National AIDS Control Programme
NEMC	National Environment Management Council
NGO	Non-Governmental Organization
NSGRP	National Strategy for Growth and Reduction of Poverty
OP	Operational Policy
PAs	Protected Areas
PAPs	Project Affected Persons
PEDP	Primary Education Development Programme
PLHAS	People Living with HIV/AIDS
PMTCT	Prevention of Mother to Child Transmission
PO-RALG	President's Office, Regional Administration and Local Government
PwD	People with Disability
RoW	Right of Way
SACCOS	Credit Co-operative Societies
SIA	Social Impacts Assessment

SEP	Stakeholder Engagement Plan
STDs	Sexually Transmitted Diseases
STIs	Sexual Transmitted Infections
TAC	Technical Advisory Committee
TACAIDS	Tanzania Commission for Aids
TACTIC	Tanzania Cities Transforming Infrastructure and Competitiveness Project
TANESCO	Tanzania Electric Supply Company Ltd
TFS	Tanzania Forest Services Agency
ToR	Terms of Reference
TRL	Tanzania Railway Corporation
TTCL	Tanzania Telecommunucation Company Ltd
ToR	Terms of Reference
WB	World Bank
VCT	Voluntary Counselling Treatment
WHO-GPA	World Health Organization Global Programme on AIDS

CHAPTER ONE

INTRODUCTION

1.1 Background Information

Administratively, Mwanza city was established in 2000 and became among the eight councils of Mwanza Region. Besides being a headquarters of the city council, it is also the headquarters of Mwanza region, a major Tanzanian port of Lake Victoria and a business centre of a Great Lake Region and East Africa Community. The city can easily be reached by Ugandans and Kenyans through Lake Victoria and by road to countries of Rwanda, Democratic Republic of Congo and Burundi.

1.1.1 Land Area and Land Use Pattern

Mwanza City has a total area of 256Sq. Km, divided into land area covering 173Sq.Km, equivalent to 67.6 percent of total area and 83.0 Sq.Km, equivalent to 32.4 percent of water area, mostly dominated by lake Victoria. Comparing with other councils in Mwanza region, Mwanza city possess smallest area covered only a percent of the total area (25,233.0 Sq. Km) of the region. Looking at ward level, Mkolani is the largest ward possessing 19 percent of city area followed by Buhongwa (17.6 percent) and Igoma (16.0 percent). The least wards in terms of area are Pamba and Mirongo covered on 0.8 percent of city area each.

1.1.2 Administrative Units

Administratively, Mwanza city council comprises one division, namely Nyamagana, 18 wards and 175 streets. However, it is important to note that, although the law identify Mwanza as a city, still has both rural and urban settings resulted to have both urban and rural wards. The urban wards comprise with Mbugani, Butimba, Mkuyuni, Mabatini, Nyegezi, Nyamagana, Igoma, Pamba, Mkolani, Mirongo, Isamilo and Igogo. The rural wards formed by Lwanhima, Kishiri, Buhongwa, Mhandu, Mahina and Luchelele (**Table 1.1**).

Table 1.1**:** Land areas by ward in square kilometer

Ward	**Land Area**		**Water Area**		**Total Area**	
	Sq.km	**Percent**	**Sq.km**	**Percent**	**Sq.km**	**Percent**
Buhongwa	31	68.9	14	31.1	45	17.6
Lwanhima*	n.a	0.0	0	0.0	0	0.0
Mkolani	35	0.0	13.54	27.9	48.54	19.0
Luchelele*	n.a	n.a	0	0.0	0	0.0
Butimba	12.91	61.7	8.01	38.3	20.92	8.2
Nyegezi*	0	0	0	0.0	0	0.0
Igogo	10	43.5	13	56.5	23	9.0
Mkuyuni	4	20.6	15.45	79.4	19.45	7.6

Ward	Land Area		Water Area		Total Area	
	Sq.km	Percent	Sq.km	Percent	Sq.km	Percent
Pamba	2	100	0	0.0	2	0.8
Nyamagana	2	16	10.5	84.0	12.5	4.9
Mirongo	2.09	100	0	0.0	2.09	0.8
Isamilo	5	37.0	8.5	63.0	13.5	5.3
Mabatini*	0	0	0	0.0	0	0.0
Mbugani	4	100	0	0.0	4	1.6
Mahina	24	100	0	0.0	24	9.4
Mhandu*	0	0	0	0.0	0	0.0
Igoma	41	100	0	0.0	41	16.0
Kishiri*	0	0	0	0.0	0	0.0
Total	**173**	**67.6**	**83**	**32.4**	**256**	**100**

***** These are new wards their areas are included in their former wards

Source: *City Director's Office, Land and Natural Resources Department, Mwanza City, 2016*

1.2 The TACTIC Projects in Mwanza City

Mwanza City Council as the Implementing Agency (IA) is part of the LGAs which will be executing the WB finance project through TACTIC. The objective of the proposed TACTIC project is to strengthen urban management performance and deliver improved basic infrastructure and services in participating urban local government authorities. At its core, the project aims to promote economic development of Tanzania's cities and towns and its enabling infrastructure. Investments and technical assistance under the project are intended to promote urban development that is productive, inclusive and resilient. The project will support 45 urban Local Government Authorities (LGAs) spread geographically across all regions of Tanzania, ranging in population from 26,402 to 416,442 (2012), divided into three tiers based on population and growth rate. Mwanza City Council is grouped in Tier 1 as among the 12 larger, fast-growing LGAs.

The TACTIC project will provide funding to cover for the following projects in Mwanza City Council:

-Upgrading of Mkuyuni Fish Market
-Rehabilitation of Mirongo River (to mitigate flooding in the downstream)[2]
-Construction of Igoma- Buhongwa Road 14 km, part of the ring road that is economically critical for Mwanza

The proposed projects are in accordance with the Mwanza city strategic plan as well as the Government vision and other strategic documents to reduce and eventually end poverty in coming few decades.

[2] See details in Annex 5.3

The PO-RALG has awarded Dar Al-Handasah (Shair and Partners) to provide consultancy services for carrying out the Feasibility Study, Urban Design, Detailed Engineering Design, Environmental and Social Due Diligence for the above-mentioned proposed project for Mwanza City. The consultancy also includes carrying out Environmental and Social Impact Assessment (ESIA) for the proposed upgrading of Mkuyuni Market, rehabilitation of Mirongo River and construction of Igoma – Buhongwa Road. Therefore, Dar Al-Handasah Commissioned Rosemary C. Nyirenda, a register and licensed Environmental expert to carry out the ESIA for these subprojects.

1.3 Environmental and Social Assessment

This environmental and social finding covers for the upgrading of Mkuyuni fish market. The environmental and social study was conducted in accordance with the Environmental Impact Assessment and Audit Regulations of 2005 as amended in 2018 and the World Bank environmental and social framework (ESF) from January to December 2022. While the ESF acknowledges country's capacity in managing environmental risks and impacts, the country regulations on the other side give mandate to NEMC to oversee the ESIA process, which culminates with an award of the ESIA certificate by the Ministry responsible for Environment. The ESIA certificate is among the prerequisite approvals required before the project takes off. This project will need this approval before it is implemented. The environmental and social study is also conducted as part of the design works where by some of the mitigation measures will be rectified during finalization of the designs.

1.4 General Objective of the environmental and social assessment

Mwanza City Council undertook Environmental and Social Impact Assessment for its proposed upgrading of Mkuyuni Fish Market to comply with the country law and the WB Environmental and Social Framework (ESF) and ensure that the project does not cause significant negative environmental and socio-economic impacts. The ESIA has been conducted in accordance with the guidelines laid down by the Environment Management Act (EMA, 2004). Part IV of the ESIA Regulations GN No. 349 7 of 2005 which provides the general objectives for carrying out ESIA, among others. The list objectives include the following: -

-To ensure that environmental considerations are explicitly addressed and incorporated into the development of decision-making process;
-To anticipate and avoid, minimize or offset the adverse significant biophysical, social and relevant effects of developmental proposal.
-To protect the productivity and capacity of natural systems and ecological processes which maintain their functions.
-To promote development that is sustainable and optimizes resources' use and management opportunities.

1.4.1 Specific objectives of the environmental and social impact assessment include:

(i) To establishment the baseline information on both natural and the built environment including socio-economic activities of the proposed project area.

(ii) To ensure that environmental legal requirements are met by Mwanza City Council prior and during implementation of the project.
(iii) To identify, predict and evaluate anticipated environmental and socioeconomic impacts, both beneficial and adverse, of the proposed investment.
(iv) Proposing effective measures to mitigate the negative impacts during the construction and operation of the entire project that aim at eliminating or minimizing the potential negative impacts and promote positive ones.
(v) Outlining an environmental and social management plan to manage the impacts.
(vi) Preparing environmental and social monitoring plan to keep track of the environmental performance of the project.

1.5 Methodology

The methodology employed in conducting the ESIA study is in line with the Environment Impact Assessment Regulations, 2005, GN No.349 of 2005 and the WB Environmental and Social Standards (ESS) as described in the Environmental and Social Framework (ESF). The study was undertaken based on developed checklist and complimented by past experience of similar ESIA studies. Observations of the proposed project site and surrounding habitats were made and literature reviewed was done through reading of reports and documents. The study adopted the following approach to get the findings:

(i) Identification of stakeholders (Stakeholder Analysis)
(ii) Communicating with stakeholders (market vendors, neighborhoods.
(iii) Involvement of stakeholders The ESIA study applied different participatory methods to involve all the concerned stakeholders. One on one interviews were held with every identified stakeholder. Every individual was given an opportunity to give his/her comments freely. Every detail of each stakeholder's comment was considered important and noted down.
(iv) Data collection both primary and secondary data has been collected through field to obtain an overview of the existing situation at the site. Appraisal of physical and environmental conditions of the project site and areas that might be impacted by the project - soils, hydrology, flora and fauna, appraisal of land use and assessment of other relevant socio-economic parameters

1.6 Rationale of the ESIA

To ensure that no segment of the population is adversely affected and the physical cultural resources given the due attention, this ESIA study was carried out to identify constraints, risks and mitigation measures on the project affected communities. The ESIA provides input to the feasibility study and design proposals of the investments. The ESIA findings and recommendations contained in this report incorporated in the overall project design specifically assist in the development of mitigation and enhancement measures of the identified risks, opportunities and impacts.

It is a legal obligation of any developer to conduct an ESIA of his/her envisaged development proposal meant implemented in Tanzania. The principal legislation guiding ESIA undertakings in Tanzania is the Environmental Management Act (EMA), Act No.20 of 2004 (Cap. 191). For matters pertaining to ESIA, the EMA operationalized through the ESIA and Audit Regulations of 2005. According to these regulations, the

National Environment Management Council (NEMC) manages the ESIA process (screening and review of statements), which culminates by an award of an Environmental Certificate to the proponent by the Minister responsible for Environment. The Council (i.e., NEMC) determines the level of the ESIA study after the project has registered by the proponent. This procedure has followed in the execution of this ESIA study. The ESIA is also conducted in accordance to the WB Environmental and Social Standards (ESS) as stipulated in the WB Environmental and Social Framework (ESF) where ESS 1 directs on the importance of conducting environmental assessment such as ESIA for a new project to predicts the potential social and environmental impacts and their mitigation measures.

1.6.1 Scope of Work

The scope of this work outlined in the ToR (**Appendix I**) and includes;

1. To identify, predict, evaluate and mitigate the significant environmental impacts (positive and negative)
2. To identify key social issues relevant to the project objectives, and specify the project's social development outcomes
3. To determine magnitude of adverse environmental and social impacts and identify the safeguards instruments as per Country laws and regulations
4. To predict and assess in quantitative terms as far as possible, the impacts from changes brought about by the project on the baseline environmental conditions.
5. To establish the mitigation measures that are necessary to avoid, minimize or offset predicted adverse impacts and, where appropriate incorporate these into Environmental and Social Management Plan (ESMP)
6. To identify stakeholders who affected and carry out stakeholder analysis to determine their role in achieving social development outcomes.
7. To inform, consult and carry out dialogues with stakeholders on matters regarding project design alternatives, implementation of environmental and social mitigation measures and to provide recommendations on project design that may require adjustments in project design
8. Provide an environmental and socio-economic profile of the population and available infrastructure facilities for services and community resources.
9. To assess the capacity of the implementing agencies and the mechanisms for implementing safeguard instruments, and recommend capacity building where appropriate
10. To develop monitoring and evaluation mechanism to assess effectiveness of mitigation measures including, resettlement outcomes during and after project completion.

1.7 Approach and Methodology

1.7.1 Desk Study

A desk study was done by collecting documents and other relevant information on the project. Documents, reports, and records were reviewed to obtain existing secondary data and relevant information relevant to Mwanza City Council where the project is implemented. The information gathered during the study included the project's WB

framework documents such as the ESMF, SEP, ESHSG and RPF reports, Mwanza City Council background reports, socio-economic and investment profiles, development plans and project's preliminary reports. The secondary data included various national policies and legislation, national strategies and plans that are applicable to the proposed project at Mwanza City Council.

1.7.2 Socio-Economic Baseline Survey

A socio-economic survey was undertaken with the overall objective of assessing the socio-economic impact of the project on people's lives and their properties. This involved an assessment of the living conditions of people, with the likelihood of being affected by project in terms of income earnings and expenditures and occupation. This study also captured the insights of different stakeholders about the potential positive and negative impacts once the project is implemented. In terms of data collection procedure, the study uses both quantitative and qualitative methods. The study therefore combines the advantages of both approaches of research to enable a detailed understanding of the socio-economic context and impacts of the project.

The sampling for the qualitative data was purposive, inclusive and participatory. A range of approved data collection tools were used during interviews. Secondary data were also used to document the legal framework underpinning the implementation of the project. Secondary sources of inform action include desk review of relevant documents, review of land laws and regulations on land and other existing policies regarding constructions in Tanzania. In addition, questionnaires were administered to the neighbors and other stakeholders in order to get their views on the potential impacts of the project to both natural and human environment.

1.7.3 Public and officials Consultations

These conducted through meetings with major stakeholders of the project. During the fieldwork, consultative meetings held with municipal, ward and Vitongoji/Villages/ hamlet authorities in the project areas within Mwanza City Council. More than 5 public consultation meetings with communities were conducted. The comments received and issues rose from these public participation exercises incorporated into the report and used in determining mitigation measures for the project.

1.7.4 Observation and Expertise Judgment

Observation method was used by the team to gather data on physical characteristics and human activities in the project host community. Field observations formed an integral part of the study as experts gathered considerable information through observations. This involved site visits and recording the situation on the ground. Observation was a key to establish the exact location of the project site, shape, size, terrain and soil type. Also, the neighborhood characteristics were assessed in terms of nature of properties dominating the area, their sizes and type, tenure, dominant owners, uses, and others. Observations were also used as a tool for validating the facts that were gathered through interviews and questionnaires.

1.8 Project Impact Assessment

Superimposing project elements/activities onto the existing social and environmental natural conditions has identified the potential environmental impacts of the proposed road development. The checklist method used to identify the impacts. Further, the environmental impact matrix method has been adopted to predict impacts of major concern. A key guiding assumption in this study is that the project will be designed, constructed, operated and maintained with due care for safety and environmental matters using current and practical engineering practice and/or Best Available Technology Not Entailing Excess Cost (BATNEEC). The implementation schedule of the mitigation measure summarizes in the Environmental Management Plan (EMP).

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

1.8.1 Collection of Baseline Data

The collection of baseline data was conducted subsequent to defining the scope of the ESIA. These data allow the study team to determine whether more detailed information on environmental conditions at the development site and its surroundings are needed, where such information can be obtained, and how. Both primary and secondary data collected. Primary data collected by direct measurement, observations and using semi-structured interviews with respective and targeted parties (as explained in the previous section). Secondary data obtained from various relevant sources of information such as Municipal profiles, wards and streets reports, education and health reports and many other official and non-official documents.

1.8.2 Review of Policies, Legal and Institutional Framework for Environmental Management

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

1.8.3 Impact Identification and Evaluation

The Upgrading of Infrastructure cause a wide range of environmental and social impacts on a number of receptors. The ESIA identify these impacts for the purposes of mitigating the adverse ones or enhancing the benefits. Impact *identification* is a process designed to ensure that all potentially significant impacts are identified and taken into account in the ESIA process. A number of ‘tools’ are available to assist in impact identification. The simplest, and most frequently used, are *checklists* of impacts, although *matrices*, *network*

diagrams and *map overlays* are also commonly used. In this ESIA *a matrix* were used. The matrix consists of a horizontal list of development activities against a vertical list of environmental factors. Thus it identifies impacts by methodically checking each development activity against each environmental consideration to ascertain whether an impact is likely to occur. Taking a step further, the ranking in all phases (mobilization, construction and demobilization/decommissioning) signified the magnitude of each and combined phases. As a result the more the score illustrated the severity the impact the road project or section has.

1.9 Structure of the Report

This report is presented in accordance to the format of the Environmental Impact Assessment and Audit Regulations, 2005 and its amendment of 2018 and the World Bank's Environmental and Social Framework (ESF) on the Content of an Environmental Assessment Report. It is presented as follows:

i. Acknowledgement
ii. Executive Summary
iii. Table of Contents
iv. List of Figures
v. List of Tables
vi. List of Acronyms
vii. Project Background
viii. Project Description
ix. Legal and Institutional Framework
x. Baseline Information
xi. Stakeholder’s Consultation and Participation
xii. Assessment of Impacts and Identification of Alternatives
xiii. Impact Mitigation and Enhancement Measures
xiv. Environmental and Social Management Plan
xv. Environmental Monitoring Plan
xvi. Cost Benefit Analysis
xvii. Decommissioning and Closure
xviii. Summary and Conclusions
xix. References
xx. Appendices

The appendices, containing some key primary information collected during the study attached at the end of this report. Generally, the report structure flows in conformity with that specified in the ESIA and Audit Regulations of 2005 for Conducting ESIA. The purpose of this ESIA study is to foresee all environmental, social and economic effects of the proposed project design before the project come into the actual implementation. The study therefore has addressed the social, economic, and environmental issues associated with the project and provided relevant mitigation plan to prevent or minimize adverse impacts and enhance the positive ones.

CHAPTER TWO

PROJECT BACKGROUND AND DESCRIPTION

2.1 Description of the Proposed Projects

The project will focus on the upgrading of Mkuyuni fish market located along Kenyatta Road at Mkuyuni Sokoni Mtaa, Mkuyuni ward in Mwanza City Council, Mwanza region.

2.1.1 Rationale for the Project

Fishing is one of the major economic activity of residents of the city. The area which acts as a landing site, market, drying area and storage lacks all required infrastructures. Most users of the market are women hence working in a hazardous environment. The upgrading of Mkuyuni fish market will bring the following benefits to the Mwanza City Council.

(i) Increased revenue collection from fees and levies charged from the businessmen, and fish sellers
(ii) To improve the living standard of Mwanza City community especially fishermen
(iii) To improve quality of marine fish that are marketing and sold
(iv) To generate income for both council and fisher community
(v) To create employment opportunities

2.2 Project Description

2.2.1 Project Location

Mwanza City, is a port city and capital of Mwanza Region on the southern shore of Lake Victoria in north-western Tanzania (**Figure 2.1**). With an estimated urban population of 1,182,000 in 2021, it is Tanzania's second largest city, after Dar es Salaam. It is also the second largest city in the Lake Victoria basin after Kampala, Uganda and ahead of Kisumu, Kenya at least in population size. Within the East African community, Mwanza city is the fifth largest city after Dar, Nairobi, Mombasa, and Kampala. It is slightly ahead of Kigali, Kisumu, and Bujumbura in the population of city proper limits. However, in terms of infrastructure, Kigali and Kisumu cities are way ahead of Mwanza. Mwanza city is also the capital city of Mwanza Region.

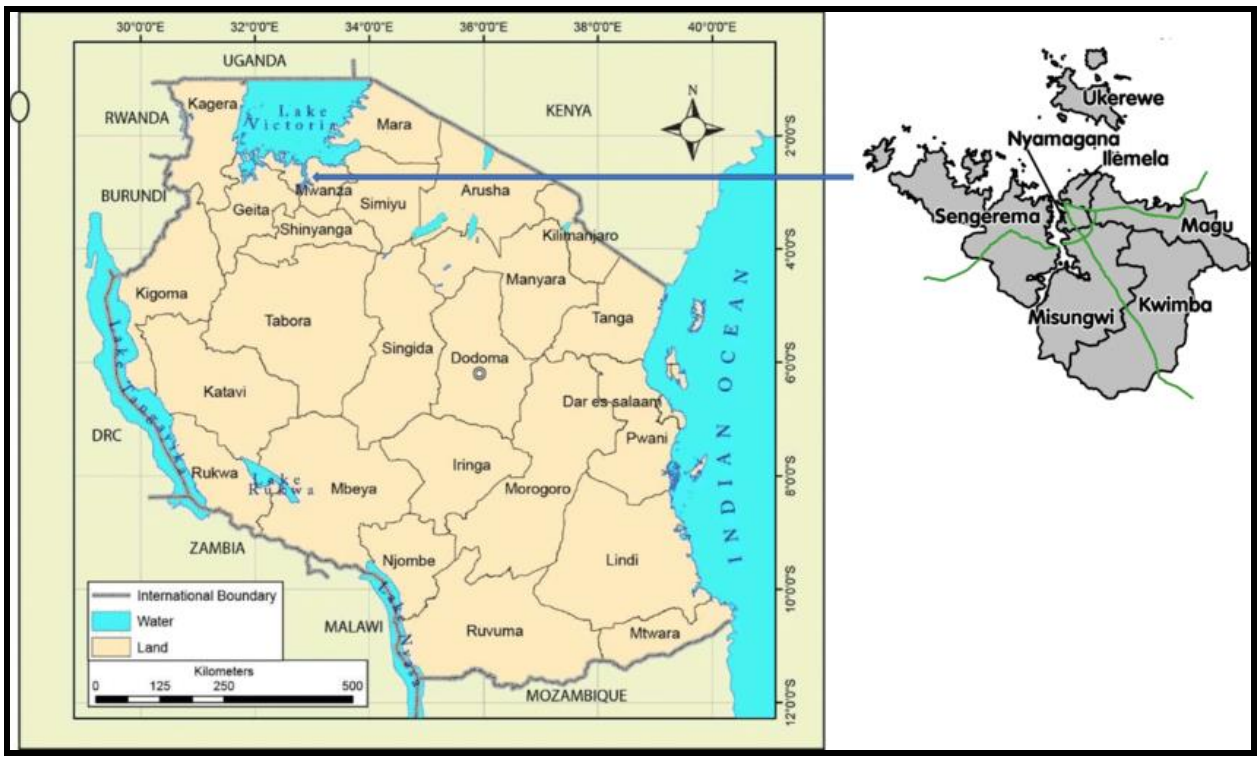


Figure 2.1 **:** Map of Tanzania showing Mwanza region and its districts.

2.2.2 Project Accessibility

The project site can be accessed through Mwanza-Shinyanga Road (Kenyatta) around 50m at Mkuyuni ward in Mwanza City Council, Mwanza region (**Figures 2.2 and 2.3**).

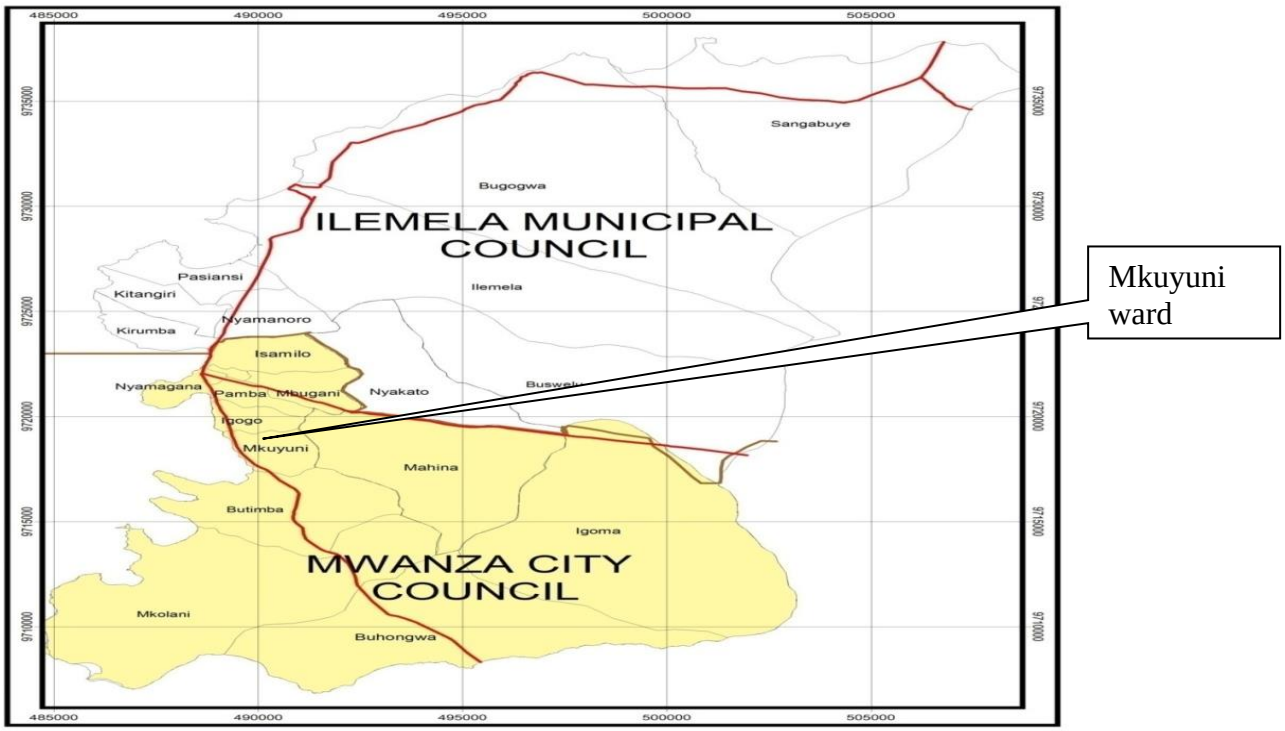


Figure 2.2 **:** Location of Mkuyuni ward in Mwanza City Council

Figure 2.3**:** Location of the proposed Mkuyuni Fish Market

2.2.3 Project Site Description and ownership

The proposed site for the construction of Mkuyuni Fish market is located at Plot No. 74, Block BIII, Mkuyuni Sokoni Mtaa, Mkuyuni Ward. The site is boarded by the Lake Victoria in the north-west side (over 200m away, hence adheres to the 60 metres restrictions), Mwalo Mswahili landing site and furniture industry to the north. To the west it is boarded by Lake Victoria (wet land). On its southern part, it is boarded by ceramic industry, modern rice paddy industry, while to the east it is boarded by residential houses and shops to the access road. The project site is owned by the Mwanza City Council with the Title Deed No. 100649 (**Appendix III**). The proposed project site is located nearby environmental sensitive areas which are Lake Victoria, a Nyankurunduma stream and some residential houses.

2.2.4 Existing Structures and Activities

Currently there is no erected structure at the site except for the grasses and several planted trees, small vegetable garden and few residential houses along access road towards the site as observed during the site visit. Four (4) of the residential houses along the access road will be compensated for relocation and removed for expansion of the road to make it able to accommodate the market needs (**Appendix V)** On the opposite side of the current Mkuyuni fish market there is a drying site used by fishermen to dry their fish (**Figure 2.4**). There is a challenge of poor waste management at Mkuyuni fish market (**Figure 2.5**)

Figure 2.4 **:** The drying area for Mkuyuni fish market traders

Figure 2.5 : Poor waste management at Mkuyuni fish market

2.3 Project Components and Design

2.3.1 Project Components

The proposed Mkuyuni Fish Market project involves the construction of modern Market building will all necessary facilities such as administration block, a parking bay for the fishing boats, quality checking area, auction area, vending area, fish processing area, cold rooms for fish storage, retailing area, frying area, fruits, vegetable and spices area, Mama lishe area, canteen, toilets and garbage collection points with a plot area of 69,127sqm. The market will consist of flat buildings with the total built area of 22,045sqm, 0.087 plot ratio, 8.7%, coverage, 60m setback with more 200m buffer. The proposed components, structures and their total areas as well as the amount of area that will be built up in the phase one (1) and that for the future extension which will depend on the availability of funds and the construction speed of the contractor are as shown in **Table 2.1.**

Table 2.1: Proposed design components and their size for the proposed Mkuyuni fish Market

Program	INITIAL PROPOSED AREAS				
MARKET FACILITIES	**Comments**		**Total areas/ m2**	**Phase 1 areas/ m 2**	**future Extension**
Single or multiple open floor market spaces	can be extended		8,400	2,800	5,600
Single store's (both fish,vegetables, meat, cereal)			3,400	1,000	2,400
Entrance			450	150	300
Passage ways - opened			6,000	2,000	4,000
Storage zone			900	300	600
Wastewater facilities					
Refrigerator rooms			1800	600	1,200
Mechanical & electrical facilities					
Waste management facilities					
Public toilets			300	100	200
.Administrative and management offices			300	100	200
Security posts			50	50	
Shared/ Parking zone	transportation to assess / confirm / provide		10870	4570	6,300
RESTAURANTS AND RETAIL					
Restaurant			1620	500	1120
Waiting spaces and passageways			375	125	250
CAFÉ			400	200	200
Retail stores			420	280	140
office			150	50	100
Shared/ Parking zone	transportation to access / confirm / provide	22505	7400	7400	0
LANDING AND BOAT FACILITIES					
Boat garage facility			600	200	400
Boats landing terminal	14.5m *5m				
Mechanical zone			280	100	180
Security zone					
Loading & handling zone	conisdered in the dry-wet area & can be increased		600	400	200
Floating jetty area	4 trading boats simultaneously 20 - 80m LONG				
Shared/ Access truck loading zone	transportation to access / confirm / provide		3000	1000	2000
PRODUCTION ZONE					
Processing table zone			1600	600	1000
Dry-salted fish storage			800	300	500
Dry-salted fish open space			1300	1300	0
changing rooms & toilets + public toilets			200	150	50
Shared/ Access truck loading zone	transportation to access / confirm / provide	TOTAL	3000	3000	0
TOTAL BUA AREA IN M2		**21,500**	**22,045**	**7,480**	**14,440**
OPEN SPACE ZONE		**47,327**	**0**	**0**	**0**
TOTAL PROJECT AREA		**68,827**	**22,045**	**7,480**	**14,565**

	AREAS (m2)
TOTAL PLOT AREA in m2	**69,127**
TOTAL BUA M2	**21,800**
PHASE 1 = TOTAL BUA m2	**7,500**
Extension = TOTAL BUA m2	**14,300**
Open zones (include semi - shaded markets, parking, open spacesland boating, circulation trucks and lorries, passageways)	**47,327**
Total expected served / 0.8	**27,250**

Note

Calculation reference are based on urban planning (planning and space standards) regulations, 2018 for Tanzania.
Benchmarking study and similar local = MIN. PLOT BUA 30%
Market is conssidered as a community service use serving (10,000 - 20,000 per market)
Mikuyuni (Mkuyuni) population 2012= 18,780 pop.
Neufert &

Administration			950		
Commercial			16,415		
Entertainment					
services			8580		

2.3.2 Design Considerations

Design of the Mkuyuni fish market in Mwanza City Council has been done focusing on providing an environmentally friendly working atmosphere to the staff and the public **(Figures 2.6, 2.7 and 2.8)**. This is regarded as modern market due to the qualities that are required for a market to be called a modern market includes Sanitation services, clearness and having all facilities like electricity and water utilities, enough toilets and appearing look. The designs have strive to achieve the following;

- ***Environmental consideration-*** The architecture that will blend well with environment. Buildings will follow natural topography of the land.
- ***Design vs weather-*** The design that will take into consideration all weather conditions in and around the site.
- ***Architectural language-*** The design will take into consideration elements of traditional architecture in combination with modern architecture.
- ***Welcoming buildings-*** Most of these buildings are to be used by public. The buildings will have welcoming looks and main entrance will be emphasized.
- ***Consideration for security and safety-*** Security will be considered in all areas including private and public areas. Guidelines for safety will be established.
- ***Future expansion-*** Architects design will allow for future expansions/extensions. Architects will make sure that construction of the building (extension) do not create nuisance to the occupants.
- ***Economics design-*** Architects will come up with designs that will stand taste of time and at the same time economical.
- ***Landscaping-*** Landscaping will include a combination of greenery, hard surfaces and sculptures and stockpiled soil shall be used. Proposed plant will be those that will localy available.

The proposed construction of Mkyuyuni Fish Market shall be designed to be accomodated in the proposed project area. This subproject shall follow the building rules and regulations in accordance with Tanzania Government specifications and the planning regulations.

Figure 2.6: Site Plan for the proposed Mkuyuni Fish Market

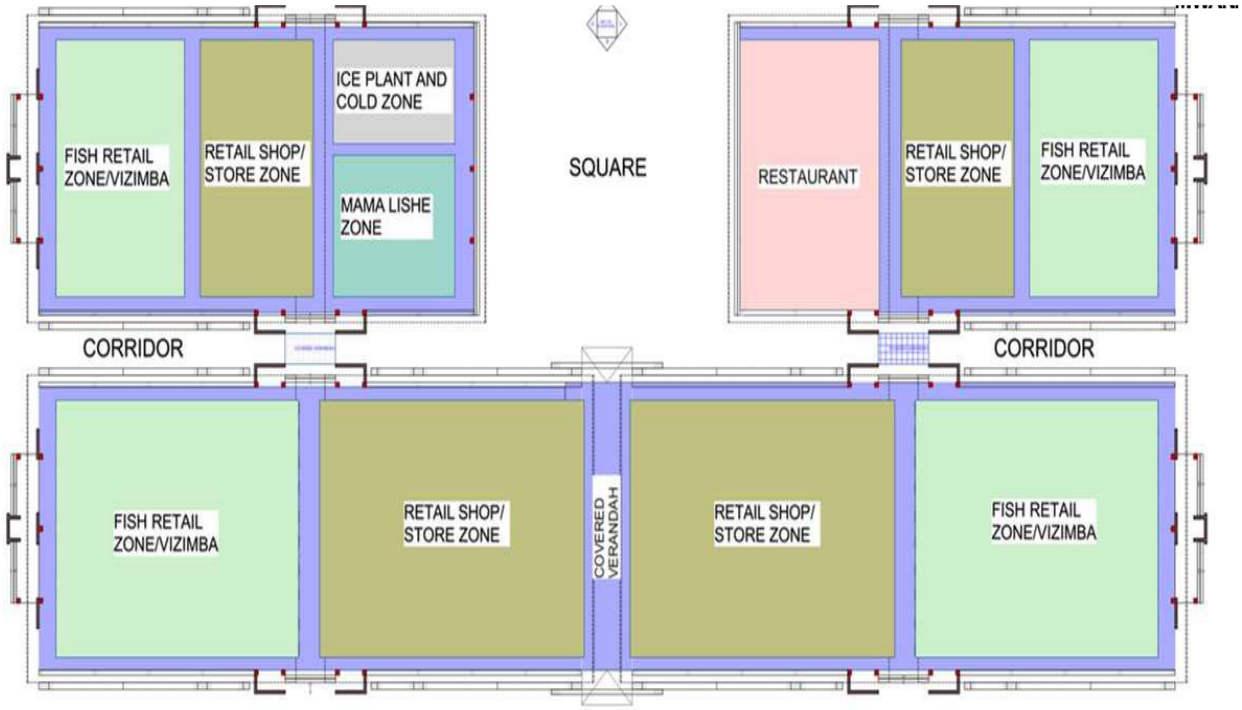


Figure 2.7 : Proposed zoning for Mkuyuni Fish Market

Figure 2.8: Proposed architectural designs for Mkuyuni Fish Market – Bird's eye

2.4 Project Activities

The proposed undertaking involves various phases from the planning phase all the way to the construction and operation phase. Each specific phase has its own activities which are well elaborated in following sections;

2.4.1 Pre -Construction Phase

Activities

The following are the main activities to be executed on the site during Pre- construction phase;

- **Topographical Survey**- Done by Surveyors to establish the boundaries and the ground levels.
- **Hydrology and Hudraulic study**- Done by hydrologists to determine determining design peak flood discharges across project roads. These peak floods will be the basis for the designs of the hydraulic structures with the required capacities (**Appendix VIII**).
- **Geotechnical investigations**- done by the geotechnical engineers to determine the physical properties of rock and soil around the site (**Appendix IX**) .
- **Architectural and Services Designs**- Preparation of Architectural drawings was done by Dar Al Handasah in joint venture with Don Consult Ltd architects to provide drawings which fits the Clients' requirements. Architectural Drawings provide in **Appendix X**.
- **Environmental Impact Assessment** (EIA)- This ESIA report part of the EIA for the project. It has been prepared according to EIA and Audit regulations of 2005 as amended in 2018.
- **Acquisition of various permits/ certificates** - Including building permit from relevant authorities.

The proposed project will have a total of 200 workers who will be skilled and non-skilled labor.

Duration

The duration of this phase will be three (3) months.

2.4.2 Construction Phase

Activities

The following are the main activities to be executed on the site during construction phase:

- **Earthworks-**This involves clearing of the site to enable construction activities to take place, site clearance shall involve grass removal and cutting of trees where neccessary. The contractor shall ensure that clearance is confined within the areas requring parmanent construction.
- **Foundations' excavation**- This involves cutting of the land to a required depth for laying down the buildings' foundation, the excavation activities shall be limited to the required areas and the excavated soil shall be used for landscaping activities to match the surrounding environment.
- **Construction of site office and storage structures-** There shall be construction of the site office and storage room for materials like steel bars, and cement bags.
- **Material transportation**- Materials (fine and coarse aggregates) from quarries will be transported by trucks to the construction site. Water shall be supplied by MWAUWASA at site other materials like cement, timber and reinforcement bars will be transported by trucks to the construction site.
- **Material Storage-** Materials like aggregates and sand will be stockpiled at the backyard of the camp site ready for use. Cement and reinforcement bars will be stored

in special storage rooms. Timber will directly be used at the required areas and consequently there will be no stockpiling of timber at the sites.

- **Actual construction works-** This involves masonry, concrete works and related activities. Generally masonry and related activities will include stone shaping, concrete mixing, plastering, slab construction, construction of foundations, and erection of building walls and curing of fresh concrete surfaces. These activities are known to be labour intensive and will be supplemented by machinery such as concrete mixers.
- **Steel Structure works-** The buildings will be reinforced with structural steel for stability. Structural steel works will involve steel cutting, welding and erection.
- **Roofing and metal works**- Roofing activities will include sheet metal cutting, raising the roofing materials such as clay roofing tiles and structural timber to the roof and fastening the roofing materials to the roof.
- **Installation of power, communications lines, water, foul water systems-** This involves electrical work and plumbing activities. Electrical work during construction of the premises will include installation of electrical gadgets and appliances including electrical cables, lighting apparatus, sockets etc. In addition, there will be other activities involving the use of electricity such as welding and metal cutting.
- **Installation of pipe-** work for water supply and distribution will be carried out within all units and associated facilities. In addition, pipe-work will be done to connect sewage from the premises to the cesspit tank.
- **Landscaping-** Landscaping shall be done to match with the surrounding environment to improve the aesthetic value or visual quality of the site once construction ceases, the proponent will carry out landscaping. This will include establishment of flower gardens and lush grass lawns where applicable and will involve replenishment of the topsoil. It is noteworthy that the proponent will use plant species that are available locally preferably indigenous ones for landscaping.
- **Construction of surface water drainage system**- This shall involve excavation of trenches depending on the design requirements.

Duration

The duration of this phase will be three (3) years.

Project Requirements

Types, amounts and sources of project requirements during the construction phase are as shown in Table 2.2.

Table 2.2: Types and sources of project requirements during the construction phase

Requirements	Type	Source	Quantity (Approx)
Raw Materials	Gravel	Designated quarry	5,500 - 7,000 tons
	Sand	Designated borrow pits	15,000 - 0,000 tons
	Cement	Mwanza	30,000 - 35,000 tons
	Water	Lake Victoria/ MWAUWASA	500,000 litres
	Reinforcement bars	Mwanza	100 - 120 tons
	Timber	Mwanza	1 - 3 tons

Requirements	Type	Source	Quantity (Approx)
Energy	Electricity	TANESCO (National Grid)/Generators	220 kV
	Fuel	Local vending stations	
Manpower	Skilled	Contractor	50
	Unskilled	Local People	100
Equipment	Excavator	Contractor	2
	Dozer	Contractor	1
	Motor grader	Contractor	1
	Plate compactor	Contractor	5
	Water Boozer (Emergency)	Contractor	1
	Tippers/ Dampers	Contractor	2
	Concrete mixers	Contractor	1
	Generator	Contractor	3

(**Source:** consultant's analysis, 2022)

Transportation of Construction Materials

Materials (fine and coarse aggregates) from quarries will be transported by trucks to the construction site. Water will be brought to the site by tanker trucks should there be water supply interruptions from the MWAUWASA network. Other materials like cement, timber and reinforcement bars will be transported by trucks to the construction site.

Storage of Construction Materials

Materials like aggregates and sand will be stored at the backyard of the camp site for use. Cement and reinforcement bars will be stored in special storage rooms. Timber will directly be used at the required areas and consequently there will be no stockpiling of timber at the construction site.

Waste Generation and Management

Types, amounts and treatment/disposal of wastes during the construction phase are shown in Table 2.3.

Table 2.3: Types, amounts and treatment/disposal of wastes during the construction phase

Waste	Types	Amount	Treatment/ Disposal
Solid Waste (Degradable)	Remnants of timber.	6-10kg/day	Shall be sold to recyclers
	Food remains, cardboards and papers	62.5kg/day (based on generation rate of 0.25kg/day/person and 250 people)	To be collected in a large skip bucket at site ready to be disposed at the authorized disposal site at Buhongwa
Solid Waste (Non-Degradable)	Spoil Soil (From Foundation)	2,000-3,000 m^3	The soils shall be stockpiled for site reinstatement at the end of the project

Waste	Types	Amount	Treatment/ Disposal
	Scrap metals, drums and plastics	6-8 kg/ day	To be Sold to Certified Recyclers
	Tins, glasses	5-7kg/day	To be collected in a large skip bucket at site ready to be disposed at the authorized disposal site at Buhongwa
	Packaging materials e.g., for cement	4 -5 kg per day	Taken to the authorized dumpsite
Liquid waste	Sewage	$8m^3$/day (Based on 150 people, water consumption rate of 40L/capita/day and wastewater discharge factor of 80%)	To be directed to the temporary septic tank -soak away system at the project area
	Oils and greases	None	Service and maintenance of vehicles will be done at designated garages

2.4.3 Demobilization Phase

Activities

Demobilization of temporary structures will be done for proper restoration of the site. Other activities including;

- Rehabilitation of the site, workshop and stockpile yard, at least to the original condition;
- Clearance of all sorts of wastes including solid wastes (plastics, wood, metal, papers, etc.);
- Deposit all wastes to the authorized to the authorized dumping site at Buhongwa area; and
- Termination of temporary employment.

Duration

Demobilization stage will last for a period of three (3) month.

Project Labor Requirements

Types and sources of project requirements during the demobilization phase are shown in Table 2.4.

Table 2.4: Types, amounts and sources of project requirements during the demobilization phase

Requirements	Type	Source	Quantity
Manpower	Skilled	Contractor	12
	Unskilled	Local People	60
Equipment	Motor grader	Contractor	1

Requirements	Type	Source	Quantity
	Tippers	Contractor	1
	Plate compactor	Contractor	2

*(**Source:** consultant's analysis 2022)*

Transportation of Materials/Rubbles

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

Waste Generation and Management

Types, amounts and treatment/disposal of wastes during the demobilization phase are shown in Table 2.5.

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

Waste	Types	Amount	Treatment/ Disposal
Solid Waste (Degradable)	Remnants of timber.	0.2-0.4tons/month	Shall be sold to recyclers
	Food remains, cardboards and papers	0.540tons/month (based on generation rate of 0.25kg/day/person and 72 people)	To be collected in a large skip bucket at site ready to be disposed at the authorized dumping site at Buhongwa area
Solid Waste (Non-Degradable)	Scrap metals, drums and plastics	0.5-0.8tons/month	To be Sold to Certified Recyclers
	Tins, glasses	0.1-0.2 tons/month	To be collected in a large skip bucket at site ready to be disposed at the authorized dumping site at Buhongwa area
Liquid waste	Sewage	69.12 m^3/Month (Based on 72 people, water consumption rate of 40L/capita/day and wastewater discharge factor of 80%)	To be directed to the Waste stabilization ponds (WSPs) at the project area
	Oils and greases		service and maintenance of vehicles will be done at designated garages

*(**Source:** consultant's analysis 2022)*

2.4.4 Operational Phase

This will include use of Mkuyuni Fish Market area. The duration of use of the proposed project infrastructure is expected to be 30 years.

Activities

The activities that are expected to be executed during operational phase include:

- **Market-** The market facilities shall be open for use by vendors and the public in general.
- **Premises and facilities Maintenance -**The premises and associated facilities will be repaired and maintained regularly during the operational phase of the project. Such activities will include repair of building walls and floors, repairs and maintenance of electrical gadgets and equipment, repairs of refrigeration equipment, repairs of leaking water pipes, painting, maintenance of flower gardens and grass lawns, and replacement of worn out materials among others. This shall be the responsibility of the Council as per Operation and Maintenance Plan.
- **Good housekeeping of the area -** The buildings and other and premises shall be cleaned by a private cleaning firm commissioned by Mwanza City Council. Cleaning operations will involve the use of substantial amounts of water, disinfectants and detergents. A garbage collection station shall be within the premises of the market and that cleaning firm and council shall be responsible for colection and disposal to the collection point before being transported to the authorised dumpsite.
- **Occupational health and safety management**-The vendors and market staff shall be instructed on the operation of the equipment installed for safety purposes including appropriate use of fire extinguishers. This shall be the responsibility of the proponent.

Duration

The duration of this phase will be more than thirty years (30) years

Project requirements

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

Table 2.6: Types and sources of project requirements during the operational phase

Requirements	Source	Quantity
Water	MWAUWASA articulation system	1,200m^3/day (Based on 100 people (vendors and other users), water demand rate of 80L/capita/day)
Electricity	TANESCO (National Grid)	2,500-2,700MwHr/ month

(**Source:** consultant's analysis, 2022)

Waste Generation and Management

Types, amounts and treatment/disposal of wastes during the operation phase are shown in Table 2.7.

Table 2.7: Types, amounts and treatment/disposal of wastes during the operation phase

Waste	Types	Amount	Treatment/ Disposal
Solid (Degradable) Waste	Vegetations (Trees, Grasses) and remnants of timber	300m^3 of biomass	Source of energy for cooking for residents near the project roads
	Food cardboards papers remains and topsoil.	10kg/day (based on generation rate of 0.1kg/day/ person for 100 people)	Collected in a large skip bucket at the campsite then to be composted and used as manure for the gardens at the camp site/office
Solid Waste (Non-Degradable)	Scrap metals, drums and plastics	6m^3 (Based on removal of 10cm topsoil from the (5x12) m^2 area on both sides of the roads	Backfilling material in the borrow pits, fill the diversions.
		8 kg per day	Sold to Recyclers
	Tins and glasses	8 kg per day	Taken to the authorized dumpsite at Buhongwa
Liquid waste	Sewage	3.2m^3/day Based on 100 people, 40l/capita/day water consumption and 80% becomes wastewater)	Septic tank –Soak away system at the camp site/office and mobile toilets along the route.
	Oils and greases	Non	Car maintenance will be done at proper garages

(**Source:** consultant's analysis, 2022)

CHAPTER THREE

POLICY, ADMINISTRATIVE AND LEGAL FRAMEWORK

3.1 National Policies

Environmental awareness in the country has significantly increased in recent years. The government has been developing and reviewing national policies to address environmental management in various sectors. Among others, the objective of these policies is to regulate the development undertaken within respective sectors so that they not undertaken at the expense of the environment. The national policies that address environmental management as far as this project is concerned and which form the corner stone of the present study include the following:

3.1.1 National Environmental Policy (NEP), 2021

Tanzania currently aims to achieve sustainable development through the rational and sustainable use of natural resources and to incorporate measures that safeguard the environment in any development activities. The environmental policy document seeks to provide the framework for making the fundamental changes that are needed to bring consideration of the environment into the mainstream of the decision-making processes in the country.

The National Environmental Policy, 2021 serves as a national framework for planning and sustainable management of the environment in a coordinated, holistic and adaptive approach taking into consideration the prevailing and emerging environmental challenges as well as national and international development issues. It is worth noting that, effective implementation of this policy requires mainstreaming of environmental issues at all levels, strengthening institutional governance and public participation in environmental management regime. The long-term vision of this policy is geared towards realization of environmental integrity, assurance of food security, poverty alleviation and increased contribution of the environmental resources to the national economy.

The National Environmental Policy of 2021 replaces the NEP of 1997 whose objective was to provide for the implementation of a range of strategic interventions to address the identified priority areas of environmental concerns by involving Government sectors and other stakeholders. This approach was preferred on the understanding that all stakeholders would take priority actions to address the environmental challenges based on the fact that environment is a cross-cutting issue and as such environmental challenges affect all sectors. In order to implement the Policy, the Government enacted the Environmental Management Act (2004) to provide for legal and institutional framework for sustainable management of the environment. In addition to this, the Government in collaboration with other stakeholders implemented several strategies, programs, plans and projects through which the policy objectives were implemented.

The specific objectives of the National Environmental Policy of 2021 are:
i) To strengthen coordination of environmental management in sectors at all levels; ii) To enhance environmentally sound management of land resource for socio-economic development; iii) To promote environmental management of water sources; iv) To strengthen conservation of wildlife habitats and biodiversity; v) To enhance conservation of forest

ecosystems for sustainable provision of environmental goods and services; vi) To manage pollution for safe and healthy environment; vii) To strengthen the national capacity for addressing climate change impacts; viii) To enhance conservation of aquatic system for sustained natural ecosystem; ix) To ensure safety at all levels of application of modern biotechnology; x) To promote gender consideration in environmental management; xi) To promote good governance in environmental management at all levels; and xii) To ensure predictable, accessible, adequate and sustainable financial resources for environmental management.

3.1.2 National Gender Policy (2000)

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

3.1.3 National Policy on HIV/AIDS (2001)

The National Policy on HIV/AIDS (2001) formulated by the Government of Tanzania (GOT) under technical support from the World Health Organization Global Programme on AIDS (WHO-GPA) that led to the establishment of National HIV/AIDS Control Programme (NACP) under the Ministry of Health. However, due to its multi-sectoral nature, there was a need to involve all sectors and community participation was found to be crucial. One of the government strategic initiatives is to establish Tanzania Commission for AIDS (TACAIDS) under the Prime Minister's Office. The Commission provides leadership and coordination of national multi-sectoral response to the HIV/AIDS epidemic. The management functions, institutional and organizational arrangement of TACAIDS outlined in the National Policy.

The policy identifies HIV/AIDS as a global disaster, hence requiring concerted and unprecedented initiative at national and global levels. It recognizes HIV/AIDS as an impediment to development in all sectors, in terms of social and economic development with serious and direct implication on social services and welfare. Thus, the policy recognizes the linkage between poverty and HIV/AIDS, as the poor section of the society are the most vulnerable. The main policy objective reflected well in the establishment of TACAIDS. However, the policy has also set a number of strategic objectives to deal with specific HIV/AIDS problems: Prevention of transmission of HIV/AIDS; HIV Testing; Care for People Living with HIV/AIDS (PLHAS); Enhance Sectoral roles through participation and financial support; Promote and participate in research on HIV/AIDS-including dissemination of scientific information and development of HIV vaccine; Creating a legal framework through enactment of laws on HIV/AIDS-governing ethical issues and legal status of HIV/AIDS affected families.

Other objectives: monitoring and safeguarding rights of infected or affected people; prevent human rights abuse, discrimination and social injustice; provide effective treatment for opportunistic diseases; promote fight against drug substance abuse; prohibit misleading advertisements of drugs and other products for HIV/AIDS prevention, treatment and care.

This project can be a precursor of Incidents of HIV/AIDS due to the influx of people into the areas including construction workers. This would result in an increase in the incidence of diseases including STI, and HIV/AIDS.

3.1.4 The National Water Policy (2002)

The National Water Policy recognizes that there is a growing scarcity, misuse and wastage of water resources in many places of Tanzania, which may become a serious threat to sustainable availability of the resource. The National Water Policy advocates that industrial performance depends, among other factors, on reliable water supply. However, the growth in the industrial sector has significant impact on water supply, and also in terms of potential pollution and degradation of water resources due to industrial solid wastes and effluents if not properly disposed of, but are allowed into water bodies without adequate treatment.

The National water policy requires all water users to avoid contaminating water sources. The policy also supports the application of the "polluter pays principle" and has a specific objective to "have in place water management system which protects the environment, ecological system and biodiversity".

The proponent shall abide with the policy by using its waste management systems that ensures efficiency of the facility in management of its surrounding environment.

3.1.5 The National Investment Promotion Policy (1996)

The policy encourages investment of all possible commercial and alternative sources of energy with emphasis of utilization of domestic resources with aim of ensuring security and continuity of supplies as well as reducing dependence on biomass fuels. It also promotes adoption of system of production, procurement, transportation, distribution and end-use, which are efficient and not detrimental to the environment.

The National Investment Promotion Policy encourages protection of environment in line with the countries socio-economic policies. Under the policy, investors are required to undertake activities in a manner that best contributes to consumer and environmental protection. The investors are also encouraged to use local raw materials/components where possible.

This study is undertaken to ensure that the project operation abide by the relevant provisions of the policy to ensure compliance with the development.

3.1.6 The National Employment Policy (2008)

To reiterate the afore-stated assertion, the development of our economy has been far from satisfactory. Such development has led to the reduction of employment opportunities and a growing state of not only poverty but also misery especially in rural areas. Based on the National Development Vision 2025, the goal of the National Employment Policy is to achieve full and productive employment for all Tanzanians. The aim of this National Employment Policy is therefore to stimulate an adequate employment growth in our economy, in order to reduce Unemployment and Underemployment rates and eventually attain full, productive, and decent employment for all Tanzanians.

The major aim of this policy is to promote employment, mainly for Tanzania citizens. Relevant sections of this policy are (i) 10, which lays down strategies for promoting employment and section 10.1 is particularly focusing on industry and trade sectors (ii) 10.6

which deals with employment of special groups i.e., women, youth, persons with disabilities and (iii) 10.8 which deals with the tendencies of private industries to employ expatriates even where there are equally competent nationals.

The proponent shall abide by this policy by ensuring gender balance throughout the project implementation and give priorities to local people.

3.1.7 The National Sustainable Industries Development Policy (SIDP), 1996-2020

The overall mission of industrial development in Tanzania over the coming two decades will be: to contribute towards the achievement of the overall national long-term development goals as enshrined in the overall national vision; and to enhance sustainable development of the industrial sector.

However, the national goals towards which the industrial sector will be geared include: Human development and creation of employment opportunities; Economic transformation for achieving sustainable economic growth; External balance of payments; Environmental sustainability; and Equitable development.

In order to achieve the above goals, the industrial sector needs to undergo a continuous structural orientation and enhancement of sustainable technologies progress.

Therefore, going hand in hand with the objectives of the policy, the proposed project will help stir up the industrial development for economic growth of the country due to improved and increased infrastructure.

3.1.8 National Human Settlements Development Policy (NHSDP), 2000

Among the objectives of this policy that touch the sub-projects sector is to improve the level of the provision of infrastructure and social services for the development of sustainable human settlements and to make serviced land available for shelter to all sections of the community. Such infrastructure and services constitute the backbone of urban/rural economic activities. Another objective is environmental protection within human settlements and protection of natural ecosystems against pollution, degradation and destruction. The NHSDP recognizes planning and management of human settlement areas as one of the broad human settlement issues for environmental management. Within this regard, the NHSDP identifies environmental protection as one of the strategic issues in human settlement planning and development. NHSDP also addresses the following issues: Lack of solid and liquid waste management, leading to environmental deterioration; Emission of noxious gases from vehicles and industrial activities as a major cause of air pollution in urban areas; Encroachment into fragile and hazardous lands (river valleys, steep slopes and marshlands) leading to land degradation, pollution of water sources, etc.; increasing dependence on firewood and charcoal as a main source of energy in human settlements leading to depletion of forest, environmental deterioration and air pollution; and Un-authorized sand mining in river valleys leading to environmental degradation.

The proposed Mkuyuni fish market is a reliable and efficient project which will improve market infrastructure and its services that are essential to increase productivity and the establishment of small manufacturing industries. The project activities shall be carried out in such a way that pollution of any kind is avoided and the environment is protected and avoid unnecessary displacement of settlements.

3.1.9 The Construction Industry Policy, 2003

This policy promotes among other things, application of cost effective and innovative technologies and practices to support socio-economic development including utilities and ensure application of practices, technologies and products which are not harmful to both the environment and human health. This EIA is undertaken to ensure that the project proponent uses technologies, materials and products not harmful to both the environmental and human health by providing appropriate mitigation measures. The construction team shall abide by this policy by using modern technology during construction but with emphasis on value for money for a cost-effective project.

3.1.10 Small and Medium Enterprises Development Policy, 2003

The Small and Medium Enterprises Development Policy (SMEDP) (URT, 2003) harmonizes the role of informal sector that constitute the bulk of the SMEs in Tanzania. The main objective of the SMEDP is to foster job creation and income generation through promoting the creation of new SMEs and improving the performance and competitiveness of existing ones to increase their participation and contribution to the Tanzania economy" (URT, 2003: 16). The Policy defines SME as entities mainly based on non-farm economic activities in manufacturing, mining, commerce and services, employing between 5 - 99 people with capital investment of Tshs. 5 million to 800 million (*ibid*: 4). The proposed Mkuyuni Fish market in Mwanza City is likely to stimulate growth and spread of SMEs, that may be engaged in a variety of activities, including service provision and employment opportunities.

3.1.11 The National Trade Policy, 2003

In accordance with the National Development Vision 2025, the goal of trade policy is that of raising efficiency and linkages in domestic production and building a diversified competitive export sector as the means of stimulating higher rates of growth and development. Five specific objectives emanate from and reflect this goal. The first specific objective is to stimulate a process of trade development as the means of triggering higher performance and capacity to withstand intensifying competition within the domestic market. This includes the establishment of improved physical market-place infrastructure and stimulating dissemination of market information and increasing access to the market. The second objective involves economic transformation towards an integrated, diversified and competitive entity capable of participating effectively in the MTS. The third objective entails the stimulation and encouragement of value-adding activities on primary exports as a means of increasing national earnings and income flows even on the basis of existing output levels. Fourth is the stimulation of investment flows into export-oriented areas in which Tanzania has comparative advantages as a strategy for inducing the introduction of technology and innovation into production systems as the basis for economic competitiveness. The fifth objective is the attainment and maintenance of long-term current account balance and balance of payments through effective utilization of complementarities in regional and international trading arrangements as a means of increasing exports combined with initiatives for higher efficiency in the utilization of imports. The ultimate target is to enhance income generation and the people's earning power at the grass-roots level as the key to poverty reduction in fulfilment of the fundamental human right of equal opportunity for all citizens as enshrined in the constitution of the United Republic of Tanzania. The proposed construction of Mkuyuni Fish Market will facilitate trading activities since it is an important infrastructure that will provide a marketing place for traders to sell their goods. The proponent will ensure that every

resident with the desire and qualification to trade is given that opportunity to be party of the market and make a positive impact in the community.

3.1.12 The National Economic Empowerment Policy, 2004

The National Economic Empowerment Policy of 2004 provides general guidelines which will ensure that the majority of the citizens of Tanzania have access to opportunities to participate effectively in economic activities in all sectors of the economy. In this regard, sector policies will give preferential treatment to nationals where necessary so as to enhance their bargaining position and opportunities. Among others, the Policy focuses on: - Improving efficiency in public service delivery; Raising skills and knowledge levels; Strengthening economic infrastructure and involving Tanzanians in infrastructure development; Encouraging and strengthening the development of cooperatives; Using land as a springboard to accelerate empowerment; and establishing a sound institutional framework for managing and supervising the implementation of the National Economic Empowerment Policy. Aligning with this policy, the proponent shall ensure that the local people in the proposed project area are given priority and equal opportunity when it comes to employment along with making sure the proposed project bring a positive impact by stimulating the city's economic development.

3.1.13 The Tanzania 2025 Development Vision

The Tanzania Vision 2025 aims at achieving a high-quality livelihood for its people attain good governance through the rule of law and develop a strong and competitive economy. Specific targets include:

1. A high-quality livelihood characterized by sustainable and shared growth (equity), and freedom from abject poverty in a democratic environment. Specifically, the Vision aims at: food self-sufficiency and security, universal primary education and extension of tertiary education, gender equality, universal access to primary health care, 75% reduction in infant and maternal mortality rates, universal access to safe water, increased life expectancy, absence of abject poverty, a well-educated and learning society.
2. Good governance and the rule of law moral and cultural uprightness, adherence to the rule of law, elimination of corruption.
3. A strong and competitive economy capable of producing sustainable growth and shared benefits a diversified and semi-industrialized economy, macro-economic stability, a growth rate of 8% per annum, adequate level of physical infrastructure, an active and competitive player in regional and global markets.

This proposed project is one of the most important agents to enable Tanzania achieve its Development Vision objectives (both social and economic), such as increasing market fish and related goods and improving quality of those goods and services.

3.2 Legislation

3.2.1 The Environmental Management Act of 2004 and its amendments 2016 – 2021

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

Among the major purposes of the EMA are to provide the legal and institutional framework for sustainable management of the environment in Tanzania; to outline principles for management, impact and risk assessment, the prevention and control of pollution, waste management, environmental quality standards, public participation, compliance and enforcement; to provide the basis for implementation of international instruments on the environment; to provide for implementation of the National Environmental Policy; to provide for establishment of the National Environmental Fund and to provide for other related matters. Part VI of the EMA deals with Environmental Impact Assessments (ESIA) and other Assessments and directs that an ESIA is mandatory for all development projects. Section 81(2) states that "*An Environmental Impact Assessment study shall be carried out prior to the commencement or financing of a project or undertaking*", while Section 81 (3) states "*a permit or license for the carrying out of any project or undertaking in accordance with any written law shall not entitle the proponent or developer to undertake or to cause to be undertaken a project or activity without an environmental impact assessment certificate issued under this Act*". This EISA is conducted for this project in order to abide to this law.

3.2.2 The Road Act, 2007

For purposes of this project, the Road Act 2007 serves as a guide to the use of the road reserve. Contrary to previous informal understanding, the reserve is exclusive to road related activities that do not include other utilities. However, clause 29 (2) does give provision for the request and terms of approval for use of the road reserve by utilities such as power lines and water pipes. On land acquisition the Act clearly states in part III, Section 16 that *'where it becomes necessary for the road authority to acquire a land owned by any person, the owner of such land shall be entitled to compensation for any development on such land in accordance with the Land Act and any other written law'.* Mwanza City Council shall observe this law for the conservation of the Road Reserve and Compensation of the PAPs.

3.2.3 Occupation Safety and Health Act (2003)

The law requires employers to provide a good working environment to workers in order to safeguard their health. The employers need to perform medical examinations to determine fitness before engaging employees. Employers must also ensure that the equipment used by employees is safe and shall also provide proper working gear as appropriate. PMO-RALG and Contractor shall observe this law during construction.

3.2.4 Employment and Labour Relations Act No. 6 R.E (2019)

The Act makes provisions for core labour rights; establishes basic employment standards, provides a framework for collective bargaining; and provides for the prevention and settlement of disputes. PMO-RALG shall see to it that the Contractor adheres to employment standards as provided for by the law.

3.2.5 Engineers Registration Act and its Amendments 1997 and 2007

The Acts regulate the engineering practice in Tanzania by registering engineers and monitoring their conduct. It establishes the Engineering Registration Board (ERB). Laws require any foreigner engineer to register with ERB before practicing in the country. Foreign engineers working with this project shall abide to the law requirement.

3.2.6 Contractors Registration Act (1997)

The Contractors Registration Act requires contractors to be registered by the Contractors Board (CRB) before engaging in practise. It requires foreign contractors to be registered by the Board before gaining contracts in Tanzania. PO-RALG shall comply with the law requirement during the recruitment of contractors for project implementation.

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

The law provides for public education and programmes on HIV and AIDS. Section 8(1) of the law states that "The Ministry (Health), health practitioners, workers in the public and private sectors and NGOs shall for the purpose of providing HIV and AIDS education to the public, disseminate information regarding HIV and AIDS to the public". Furthermore, Section 9 states that "Every employer in consultation with the Ministry (Health) shall establish and coordinate a workplace programme on HIV and AIDS for employees under his control and such programmes shall include provision of gender responsive HIV and AIDS education….". This project shall abide to HIV/AIDS Act in the fight against the disease.

3.2.8 Workers Compensation Act (2008)

An Act to provide for compensation to employees for disablement or death caused by or resulting from injuries or diseases sustained or contracted in the course of employment; to establish the Fund for administration and regulation of workers' compensation and to provide for related matter. The Act applies to all employers and employees, including those in the public service, as well as those employed on a Tanzania ship or aircraft. The Act applies to mainland Tanzania.

3.2.9 Environmental Impact Assessment and Auditing Regulations (2005)

These regulations set procedures for conducting ESIA and environmental audit in the country. The regulations also require registration of ESIA experts. This ESIA has been conducted following the above stated regulations.

3.2.10 The Environmental Management (Registration and Practice of Environmental Experts) Regulations, 2021

The Regulations applies to registration, categorization, practicing and conduct of environmental experts and firms of environmental experts registered and certified under these Regulations to conduct- (a) environmental impact assessment; (b) environmental audit; or (c) any other environmental study that may be required to be undertaken under the Act or its Regulations. The objectives of these Regulations are to- (a) establish a system of registration, categorization and practicing of environmental experts; (b) provide for qualifications for persons who may conduct environmental studies; (c) provide for a system of nurturing competence, knowledge and consistence of environmental experts in the carrying out of environmental impact assessment and environmental audits; and (d) provide for a code of conduct, discipline and control of environmental experts.

3.2.11 The Urban Planning Act, 2007

The Act provides for control of urban and sub rural development while implementing a project for land development. Important aspects include the designation and allocation of

adequate land for solid waste disposal in any urban and sub rural areas. The law empowers local authorities to enforce such schemes and punishments as stipulated in the Act. The law further empowers neighbors and any individual to take to court anyone who injuriously affects others due to his/her unhygienic activities.
Urban Planning Act, 2007 stipulates that in planned areas, the construction of any building should start when the building permit has been issued by responsible land office. This permit will be issued after the site plan has been approved by City, Municipal or Town planner The Architectural plans with sanitation drawings need to be approved by an Engineer, an Architect and Health officer. Through this process, the issues of accessibility in case of emergency, emergency exits, proper ventilation and health and hygiene issues are usually taken seriously before the approval.

Therefore, the proposed project is approved by the authority that is the Mwanza City Council and therefore it is in line with the objectives of this law. The project proponent will observe good solid and liquid waste disposal practice as required by the Act.

3.2.12 Public Health Act, 2009

The Public Health Act is the most recently enactment. The Act provides for legal and institutional framework for promotion, preservation, and maintenance of public health. The Act replicates some of the provisions of the Environmental Management Act. It regulates human and housing settlements. It provides for legal and institutional framework for the management of solid and liquid wastes by prescribing conditions for keeping and maintaining dumping sites, collection and disposal of liquid wastes, designation of transfer stations etc. The Act also stipulates conditions for management and control of gaseous wastes from dwelling houses, industries and motor vehicles management of excreta, hazardous and health care wastes and their disposal.

The Act provides conditions for construction, maintenance and use of sewerage systems, latrines septic tanks etc. The Act creates offenses relating to violations of public health rules and stipulates penalties.

These provisions have direct implication to proposed project. The proponent will have the responsibility of ensuring that it complies with the requirements of the Act in all phases of the project i.e., construction, operation and decommissioning thus protecting public health.

3.2.13 The Water Supply and Sanitation Act, 2019

This Act to provide for sustainable management and adequate operation and transparent regulation of water supply and sanitation services; to provide for the establishment of water supply and sanitation authorities, Rural Water Agency, National Water Fund and Community based water supply organizations; to provide for appointment of service providers, repeal of the Water Supply Act, 2009 and Dar es Salaam Water and Sewerage Authority Act, 2001 and to provide for related matters. Water supply authorities are duty bound to enter into a trade waste agreement for the discharge of waste into a sewerage system, to prohibit the discharge of certain wastes into sewerage a system. The Act creates the offence of willfully or negligently damaging water works, any sewer, sewerage treatment plant or other assets of water supply authorities. Any person who unlawfully diverts or takes water from the water works also commits an offence.

The proponent will abide to the given provisions by making sure all sewage produced and any other waste is well contained in the designed facilities and once full are properly

disposed through contractors to the designated areas. Also, the proponent shall ensure all water used in the project is accounted for and the water sources and supply infrastructures are protected. All this is to ensure the environment becomes sustainable to all living beings at neighborhood of the proposed project.

3.2.14 Architects and Quantity Surveyors Act, 1997

An Act to establish the Board to regulate the conduct of Architects, Quantity Surveyors, Architectural and Quantity Surveying firms, to provide for their registration and for related matters. This Act was enacted by the parliament to provide for establishment of a board to regulate the conduct of Architects and Quantity surveyors and architectural and quantity surveying consulting firms in Tanzania.

The board is vested with powers to inspect premised or construction sites to verify whether the rules and regulations of carrying out construction projects are adhered by consulting firms. This is aimed at ensuring that appropriate professionals who are registered by the board are involved in undertaking works as required by the law.

This Act has direct implications to the proposed project and thus the proponent has hired registered Architects and Quantity Surveyors when preparing the drawings of the proposed project. Therefore, the proponent abides by this Act.

3.2.15 Engineers Registration Act No 15 of 1997

This Act establishes an Engineering Registration Board (ERB) which regulates the conduct of engineers, to provide for their registration and for related matters. The Act provides restriction that no person other than a registered engineer shall engage in professional engineering work or services which includes professional service consultation, planning, designing or responsible supervision of construction or operation in connection with any public or privately owned public utilities, buildings, machines, equipment, processes, works or projects where public interest and welfare, or the safeguarding of life, public health or property is concerned or involved, and that requires application of engineering principles and data. Furthermore, the Act stipulates that no person shall employ or continue to employ - any engineer who is not a registered as a professional engineer.

The developer abides to the Act by assigning the registered engineers to carry out the engineering activities and guidance to the completion of the project. The proponent shall engage qualified engineers so as to observe the provisions of the Act when executing its activities.

3.2.16 Fire and Rescue Services Act, 2007

According to the Act, among others, the functions of the force are to: ‘(a) Extinguish fire (b) grade cities, Districts, townships and Mtaa into various fire and rescues services levels (c) conduct fire inspection and investigations for purposes of obtaining information relating to the causes of fire and loss inflicted by fire (d) Conduct studies on investigation of arson and accidental fire (e) Conduct training for fire department personnel, other officers and voluntary fire fighters (f) Prepare fire statistics and fire service information (g) Conduct fire tests on protection facilities, equipment and materials. In section 3(1) (g) it covers premises of facility used as a place for storage flammable liquids, gas or chemicals.

The Act obliges the owners and managers of the structures to set aside places with free means of escape, and install fire alarm and detection systems, or such other escape and rescue modalities in the event of fire. The proposed project is prone to fire risks, to comply with the Act, measures such as installation of fire extinguishers and emergency preparedness and response plan will be instituted for fire risks abatement.

3.2.17 Environmental Management (Environmental Impact Assessment and Audit) (Amendment) Regulations, 2018

Based on Regulation No. 6(1) of the Environmental Management (Environmental Impact Assessment and Audit) (Amendment) Regulations G.N. No. 474 of 2018, the project falls under Type B2 of the third schedule of the regulations on which EIA shall be undertaken and can be done. This report has been prepared with reference to Regulation No. 6(1) of the Environmental Management (Environmental Impact Assessment and Audit) (Amendment) Regulations G.N. No. 474 of 2018, as a one step toward integrating Environmental concerns into development processes for sustainable development.

In this regard, proponent shall abide by the relevant provisions given in the Regulation. Being aware of the above, Proponent commissioned Dar Alhandasah in JV with Don Consult who subcontracted Ms. Rosemary Nyirenda to carry out the Environmental Impact Assessment and submit an Environmental Impact statement report to the Council for review as Environmental Management Act, 2004 requires.

3.2.18 The Environmental Management (hazardous Waste Control and Management) Regulations, 2019

These regulations shall apply to all categories of hazardous waste and to the generation, collection, storage, transportation, treatment, recycling, re use, recovery and disposal of hazardous waste and their movements into and out of Tanzania Mainland.

The proponent will adhere to the existing regulations by making sure proper ways are used to manage/ handle produced hazardous waste all its phases thus ensure the environment is protected from such harmful pollution.

3.2.19 Environmental Management (Air Quality Standards) Regulations, 2007

The object of these Regulations shall be to:

a) Set baseline parameters on air quality and emissions based on a number of practical considerations and acceptable limits;
b) Enforce minimum air quality standards prescribed by the National Environmental Standards Committee;
c) Help developers such as industrialists to keep abreast with environmentally friendly technologies; and
d) Ensure protection of human health and the environment from various sources of pollution.

The proponent shall abide by the relevant provisions given in these regulations to ensure the quality of air is maintained to the required standard and avoid pollution that may cause harm to the environment hence affect public health.

3.2.20 Environmental Management (Soil Quality Management) Regulations, 2007

The object of these Regulations is to:

a) Set limits for soil contaminants in agriculture and habitat;
b) Enforce minimum soil quality standards prescribed by the National Environmental Standards Committee;
c) Prescribe measured designed to maintain, restore and enhance the sustainable productivity of the soil;
d) Prescribe minimum soil quality standards to maintain, restore and enhance the inherent productivity of the soil in the long term;
e) Enforce minimum soil standards prescribed by the National Environmental Standards Committee for such purposes as agricultural practices;
f) Ensure implementation of criteria and procedures prescribed by the National Environmental Standards Committee for the measurement and determination of soil quality;
g) Prescribe measures and guidelines for soil management; and
h) Ensure compliance with any such measures and guidelines for soil management that may be prescribed by the minister.

The proposed project may result to soil pollution in one way or another due to several activities. In this regard, proponent shall be required to properly handle all the oil spills during the operations or any other activities that will result to soil pollution.

3.2.21 Environmental Management (Control of Ozone Depleting Substances) Regulations, 2007

These Regulations shall apply to:

a) All persons dealing or otherwise handling or using controlled substances or products that contain, is made with or is dependent on, or designed to contain chemical substances that have the potential to destroy ozone molecules in the stratosphere and includes the products listed in the First Schedule to these Regulations;
b) Every importer and distributor of ozone depleting substances;
c) Every importer of technology which uses ozone depleting substances;
d) Every company and individual who services refrigerators, air conditioners including mobile and other ozone depleting substances technologies;
e) Every company or an individual using or servicing fire extinguishers.

The project proponent will abide to the given regulation to make sure ozone is protected from any ozone depleting substance.

3.2.22 Environmental Management (Water Quality Standards) Regulations of 2007

Part I of this regulation Section (3) provides the objectives the following objectives;

a) Protect human health and conservation of the environment;
b) Enforce minimum water quality standards prescribed by the National Environmental Standards Committee;
c) Enable the National Environmental Standards Committee to determine water usages for purposes of establishing environmental quality standards and values for each usage; and
d) Ensure all discharges of pollutants take account the ability of the receiving waters to accommodate contaminants without detriment to the uses specified for the waters concerned.

However, Part III of this regulation gives the prohibitions and prescribed minimum water quality standards.

The proponent shall protect water sources from any kind of pollution by having well organized and designed structures to ensure all the operations are compliant to this regulation provided.

3.2.23 Environmental Management (Solid Wastes Management) Regulations, 2009

The Environmental (Solid Waste Management) Regulations of 2009, provides principles for management and control of solid wastes including administration and institutional arrangement, licenses and permits. Regulation 5 (1) states that, any person who owns or controls a facility or premises which generates waste shall minimize the waste generated by adopting cleaner production principles such as improvement of production process through conserving raw materials and energy by:

a) Eliminating the use of toxic raw materials within such times as may be prescribed by the Minister; and
b) Reducing toxic emissions and wastes to a level prescribed in the applicable national environmental quality standards. Regulation 17 (a) prohibits certain solid wastes into receptacles. The regulation states that no person shall deposit hazardous substance including asbestos or asbestos containing material, explosives, fireworks, firearms, batteries, hot ashes, flammable liquid, highly flammable materials, infectious material, pressurized containers (other than a pressurized container commonly used for containing domestic products such as fly spray, hair spray and similar materials), or radio-active material. Regulation 17 (b) prohibits any person to deposit certain solid wastes of corrosive, carcinogenic, flammable, persistent, toxic, explosive, or radioactive nature materials into receptacles. Regulation 17 (c) prohibits any person to deposit any liquid, acid, paint, printers' ink, oil, oil sludge, asphalt emulsion, viscous fluid or similar product into receptacles which if spilt in a public place may cause damage or injury or result in pollution of the environment. PART VI of the regulations is on plastic waste management. Under the duty to segregate solid waste, regulation 35-(1) requires any person to ensure that plastic materials are separated from non-plastic materials and deposited into receptacles prescribed by local government. Regulation 35-(2) states that duties to segregate waste apply to all stages of waste management including collection, transportation and final disposal.

The proponent will comply with the given provisions by proper handling of all the wastes at their premises through provision of adequate waste collection facilities before final disposal by contractor to the appropriate dumpsite.

3.2.24 Environment Management (Quality Standards for Control of Noise and Vibration Pollution) Regulations, 2015

The object of the regulations as prescribed by the National Environmental Standards Committee which are stated in section 4 shall be to- (a) ensure the maintenance of a healthy environment for all the people in Mainland Tanzania, the tranquility of their surrounding and their psychological well-being by regulating noise and vibration levels; (b) prescribe the maximum permissible noise and vibration levels from a facility or activity to which a person may be exposed; (c) provide for the control of noise and vibration and mitigating measures for the reduction of noise and vibration; (d) set baseline parameters on noise and vibration permissible levels based on a number of practical considerations and acceptable limits; (e)

enforce minimum noise and vibration limits prescribed by the National Environmental Standards Committee; (f) help developers such as industrialists to keep abreast with environmentally friendly technologies; and (g) ensure protection of human health and the environment from various sources of noise and vibration pollution.

Part III section 7 (1) are General Prohibitions 7which states that no person shall 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.

Section 8 stipulates on excessive vibrations. "Except as otherwise provided in these Regulations, no person shall- (a) make or cause to be made excessive vibrations which annoy, disturb, injure or endanger the comfort, repose, health or safety of others and the environment; or (b) cause to be made excessive vibrations which exceed 0.5 centimeters per second beyond any source property boundary or 30 meters from any moving source".

Section 9 (1) provides permissible noise levels in terms of maximum noise levels while section 10 (1) and (2) states the tolerance limits for environmental vibrations.

The proposed construction activities are expected to generate some noise and vibrations which the Developer through Contractor have to abide with these Regulations. Under the regulation the Contractor will be required to undertake daily monitoring of the noise levels within the Project area during construction period to maintain compliance. Due to nature of the activities of the building, no excessive noise and vibrations are expected during the operation phase.

3.2.25 The Land Use Planning Act, 2007

The Act provides for the procedures for the preparation, administration, and enforcement of land use plans; to repeal the National Land Use Planning Commissioning Act, and to provide for related matters. Among the objectives of the Act as given in Section 4 are to facilitate the orderly management of land use and to promote sustainable land-use practices. This proposed project aligns with the provisions of this act, any infringement on existing land use shall need a consultation with land use planning authorities.

3.2.26 The Companies Act, 2002 Cap 212 R.E 2019

The amendment of the Companies Act (Cap. 212) provides that any company that intends to promote commerce, investment, trade or any other activity as the Minister may, by notice published in the Gazette, prescribe, shall be incorporated or registered under this Act. Therefore, all companies that will be involved in this proposed project must adhere to this Act to ensure the projects smooth undertaking.

3.3 International Treaties and Agreements

Tanzania has ratified a number of Multilateral Environmental Agreements (MEAs) and consequently is bound by obligations under these agreements. The most relevant MEAs to this particular project are the African Convention on the Conservation of Nature and Natural Resources. Like the CBD, this Convention alerts nations on the conservation the African nature and natural resources in their widest sense. Infrastructure upgrading project is likely to interfere with the normal lives of nature such population and some habitats.

3.3.1 United Nations Framework Convention on Climate Change (1992)

The objective of United National Framework Convention on Climatic Change (UNFCCC) is to stabilize the concentration of greenhouse gas (GHG) in the atmosphere, at a level that allows ecosystems to adapt naturally and protects food production and economic development. Article 4 commits parties to develop, periodically update, publish and make available national inventories of anthropogenic emissions of all greenhouse gases not controlled by the Montreal Protocol (by source) and inventories of their removal by sinks, using agreed methodologies. It commits parties to mitigate GHG as far as practicable. Since Tanzania is a Party to the Convention, she will have to account for all sources of GHG in her future National Communications. In this aspect, since this proposed Project is subjected to emission some amount of the GHG from its facilities-vehicles and machineries.

3.3.2 Kyoto Protocol (1997)

The Kyoto Protocol is an international agreement linked to the UNFCCC. The Kyoto Protocol binds 37 industrialised countries and the European Community to reduce their GHG emission by 5% from 1990 levels in the commitment period 2008-2012. The Protocol differs from the Convention in that while the Convention encourages industrialized countries to stabilize GHG emissions, the Protocol commits them to do so. It recognizes that developed countries are principally responsible for the current high levels of GHG emissions in the atmosphere as a result of more than 150 years of industrial activity. As a result, the Protocol places a heavier burden on developed nations under the principle of “common but differentiated responsibilities.” It provides mechanisms to achieve this objective, namely the carbon trading, joint implementation and the clean development mechanism (CDM). Since Tanzania is not one of the 37 industrialised countries bound by the Protocol, on the CDM it is relevant to this project.

3.3.3 The convention on wetland RAMSAR

The Convention on Wetlands (Ramsar, Iran, 1971) -- called the "Ramsar Convention" -- is an intergovernmental treaty that embodies the commitments of its member countries to maintain the ecological character of their Wetlands of International Importance and to plan for the "wise use", or sustainable use, of all of the wetlands in their territories. Unlike the other global environmental conventions, Ramsar is not affiliated with the United Nations system of Multilateral Environmental Agreements, but it works very closely with the other MEAs and is a full partner among the "biodiversity-related cluster" of treaties and agreements.

3.3.4 Convention on Protection of Workers against Occupational Hazards in the Working Environment Due to Air Pollution, Noise and Vibration

This Convention, ratified by Tanzania in 1984, provides the framework for ensuring a safe working environment for workers. The implementation of infrastructural sub-projects will ensure that it prevents the exposure of its workers and the public from any occupational hazards by providing appropriate security and safety equipment.

3.4 Regional Agreements

3.4.1 Other relevant International Conventions Ratified by Tanzania

ILO Convention: C138 Minimum Age Convention, 1973 (Ratified by Tanzania (United Republic of) on 16:12:1998) which prohibits Child labour. ILO Convention: C182 Worst

Forms of Child Labour Convention, 1999 (Ratified by Tanzania (United Republic of) on 12:09:2001). Therefore, in accordance with these Convention requirements, TACTIC Projects shall adhere to the ILO Convention, particularly in child labour employment. ILO Convention: C148 Working Environment (Air Pollution, Noise and Vibration) Convention, 1977 (Ratified by Tanzania (United Republic of) on 30:05:1983) which protects Workers against Occupational Hazards in the Working Environment Due to Air Pollution, Noise and Vibration.

3.5 World Bank Environmental and Social Framework

3.5.1 World Bank Environmental and Social Standards

The World Bank's Environmental and Social Framework sets out the Bank's commitment to sustainable development, through a Bank Policy and a set of Environmental and Social standards that are designed to support Borrowers' projects, with the aim of ending extreme poverty and promoting shared prosperity. The E&S Framework comprises of: (1) Vision for Sustainable Development, which sets out the Bank's aspirations regarding environmental and social sustainability; (2) The World Bank Environmental and Social Policy for Investment Project Financing, which sets out the mandatory requirements that apply to the Bank; and (3) The Environmental and Social Standards, together with their Annexes, which set out the mandatory requirements that apply to the Borrower and projects.

The World Bank Environmental and Social Policy for Investment Project Financing sets out the requirements that the Bank must follow regarding projects it supports through Investment Project Financing. The Environmental and Social Standards set out the requirements for Borrowers relating to the identification and assessment of environmental and social risks and impacts and mitigation measures associated with projects supported by the Bank through Investment Project Financing. The E&S standards are expected to: (a) support Borrowers in achieving good international practice relating to environmental and social sustainability, (b) assist Borrowers in fulfilling their national and international environmental and social obligations; (c) enhance non-discrimination, transparency, participation, accountability and governance; and (d) enhance the sustainable development outcomes of projects through ongoing stakeholder engagement. The ten ESSs as per the WB ESF are: ESS 1: Assessment and Management of Environmental and Social Risks and Impacts; ESS 2: Labor and Working Conditions; ESS 3: Resource Efficiency and Pollution Prevention and Management; ESS 4: Community Health and Safety; ESS 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement; ESS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources; ESS 7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities; ESS 8: Cultural Heritage; ESS 9: Financial Intermediaries; and ESS 10: Stakeholder Engagement and Information Disclosure. Given the nature of activities of this project, with the exception of ESS 9: Financial Intermediaries almost all the ESSs will be relevant.

Environmental and Social Standard ESS1 applies to all projects for which Bank Investment Project financing is sought. ESS1 establishes the importance of: (a) the Borrower's existing environmental and social framework in addressing the risks and impacts of the project; (b) an integrated environmental and social assessment to identify the risks and impacts of a project; (c) effective community engagement through disclosure of project-related information, consultation and effective feedback; and (d) management of environmental and social risks and impacts by the Borrower throughout the project life cycle. The Bank requires that all environmental and social risks and impacts of the project be addressed as part of the environmental and social assessment conducted in accordance with ESS1. ESS2–10 set out

the obligations of the Borrower in identifying and addressing environmental and social risks and impacts that may require particular attention based on the proposed project activities. The World Bank Access to Information Policy, which reflects the Bank's commitment to transparency, accountability and good governance, applies to the entire Framework and includes the disclosure obligations that relate to the Bank's Investment Project Financing. Borrowers and projects are also required to apply the relevant requirements of the World Bank Group Environmental, Health and Safety Guidelines (EHSGs). These are technical reference documents, with general and industry specific examples of Good International Industry Practice (GIIP).

According to the TACTIC ESMF the proposed sub projects will apply the Environmental and Social Standards as described in **Table 3.1.**

Table 3.1**:** Application of World Bank's ESSs to the TACTIC Project

ESSs	**Yes/No**	**Application**
ESS 1: Assessment and Management of Environmental and Social Risks and Impacts	Yes	The Project will exert site-specific environmental and social impacts which will be managed through this ESMF. Site-specific ESIAs and ESMPs will be prepared to recommend E&S measures to be incorporated into designs of the specific subprojects.
ESS 2: Labor and Working Conditions	Yes	A number of project workers will be employed for the implementation of the project including construction of different investment subprojects. Project workers will be provided with information and documentation that is clear and understandable regarding their terms and conditions of employment. The information and documentation will set out their rights under national labor and employment law (which will include any applicable collective agreements), including their rights related to hours of work, wages, overtime, compensation and benefits, as well as those arising from the requirements of this ESS. This information and documentation will be provided at the beginning of the working relationship and when any material changes to the terms or conditions of employment occur. In order, to ensure fair treatment of workers, the Project will ensure that terms and conditions of employment (hours, rest periods, annual leave, non-discrimination and equal opportunity in recruitment and employment), respect for workers organizations, inclusion of redundancy plans, the prohibition of forced labor and of worst forms of child labor, occupational health and safety, including use of Personal Protective Equipment (PPE), and operation of a worker grievance mechanism for workers to address employment-related concerns, including sexual harassment, are aligned with the requirements of national law and ESS2. To protect workers, the project will ensure the application and implementation of all appropriate Occupational Health and Safety (OHS) measures, to avoid and manage the risks of ill health, including in relation to COVID-19, accidents and injuries. Labour Management Procedures (LMP) have been prepared to ensure these requirements of ESS2 and national law are observed and included in the specifications for contractors. The project will manage any labor influx and work camps for project workers in accordance with the provisions ESS2 and ESS4. As the situation permits and depending on the public health circumstances, the project will ensure compliance with national law, policies and protocol requirements as well as World Health Organization and World Bank guidance[3] regarding the COVID-19 situation in relation to stakeholder consultations, project worksites and related areas.
ESS 3: Resource Efficiency and Pollution Prevention and	Yes	Implementation of most of the investment subprojects will involve construction activities that will generate dust, erosion, sediments, solid and liquid wastes that will be properly managed via ESIAs, ESMPs and WMP. More or less similar impacts are likely to be experienced during operation phases and will be

[3] World Bank Technical Note: Public Consultations and Stakeholder Engagement in WB-supported operations when there are constraints on conducting public meetings. March 20, 2020; and "ESF/Safeguards Interim Note: COVID-19 Considerations in Construction/Civil Works Projects", April 7, 2020.

ESSs	Yes/No	Application
Management		managed by the same tools as well as operation and maintenance plans.
ESS 4: Community Health and Safety	Yes	Construction activities (excavation, vehicle operations, work at height, use of chemicals, use of crane or other heavy equipment etc.) may have irreversible effects of disability or fatality to community. Localized negative impacts (like dust emissions, accidents, etc.) to sensitive receptors such as schools, religious buildings and community centers will need to be managed. The Project will require Contractors to prepare appropriate plans for emergency preparedness and response, management and safety of hazardous materials, traffic and road safety, security personnel, etc. as per the requirement of ESS4. Implementation of the Project is likely to trigger influx of workers or job seekers and their followers into a sub-project area. If a significant labor influx does occur, the project will develop and implement a Labor Influx Management Plan in line with ESS2, ESS4 and other provisions of the ESF. The project workforce could facilitate an increase in the transmission of HIV and other communicable diseases to members of the local/host communities during implementation of the sub-projects. Specific measures to address GBV risks are presented in section 3.11 and the Project GRM in section 4 will be implemented. As the situation permits and depending on the public health circumstances, the project will ensure compliance with national law, policies and protocol requirements as well as World Health Organization and World Bank guidance[4] regarding the COVID-19 situation in relation to stakeholder consultations, project worksites, communities and related areas.
ESS 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	Yes	Land acquisition, restrictions on land use and involuntary resettlement are likely during the implementation of the Project. The RPF will provide guidance on RAP preparation. The project shall try to minimize land acquisition and any associated physical or economic resettlement wherever possible especially during detailed engineering designs for roads, drains, and other community facilities to be upgraded/constructed.
ESS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	Yes	No sub-projects will be financed inside or near protected areas and sensitive habitats. Sub-projects will be screened for potential direct and indirect impacts on natural habitats. In case the project will purchase natural resources commodities such as timber, it will be important to establish the source area and to have a mechanism in place to ensure that the Primary Suppliers are not significantly impacting sensitive ecosystem or degrading natural habitats.
ESS 7: Indigenous People/Sub-Saharan African Historically	No	Relevance of this ESS will further be assessed during project preparation as part of the ESIA process and as we get more information and clarity especially about selected and confirmed locations and sites for project implementation.

[4] World Bank Technical Note: Public Consultations and Stakeholder Engagement in WB-supported operations when there are constraints on conducting public meetings. March 20, 2020, and "ESF/Safeguards Interim Note: COVID-19 Considerations in Construction/Civil Works Projects", April 7, 2020.

ESSs	Yes/No	Application
Underserved Traditional Local Communities		
ESS 8: Cultural Heritage	Yes	The Project will be implemented in 45 LGAs, all with different cultural backgrounds. Elements of cultural heritage are found in some of the ULGAs such that their potential for cultural heritage resources to be found unexpectedly (chance finds) and screening of subproject sites to avoid impacts on cultural heritage during construction. Chance finds procedures will be included in the Specifications for the contracts.
ESS 9: Financial Intermediaries	No	This ESS is not relevant to the Project.
ESS 10: Stakeholder Engagement and Information Disclosure	Yes	A Stakeholder Engagement Plan (SEP) has been prepared to guide implementing agencies on how to provide stakeholders with timely, relevant, understandable and accessible information, and consult with them in a culturally appropriate manner, which is free of manipulation, interference, coercion, discrimination and intimidation as well as establishment / strengthening as relevant of a GRM for all stakeholders.

3.5.2 World Bank Safeguard Tools for the TACTIC Project in Mwanza City Council

The implementation of each of the ESSs will be enabled through five instruments which are all part of the Operational Manual of the TACTIC and therefore mandatory and which have been developed based on the respective ESSs:

- Environmental and Social Management Framework (ESMF) (and subsequent ESIAs/ESMPs) for the application of the ESS1, ESS2, ESS3, ESS4, ESS6 and ESS8.
- Stakeholders Engagement Plan (SEP) for the application of ESS10;
- Resettlement Policy Framework (RPF) and any subsequent RAPs for the application of ESS5;
- Labour Management Procedures for the application of ESS2
- Environmental and Social Commitment Plan (ESCP) which will describe the obligations of the borrower to apply the above instruments and other actions.

3.5.3 World Bank EHS Guidelines

The World Bank Groups Environmental, Health, and Safety (EHS) Guidelines are technical reference documents with general and industry specific examples of Good International Industry Practice (GIIP). EHS Guidelines are applied as required by their respective policies and standards. These industry sector EHS guidelines are designed to be used together with the General EHS Guidelines document, which provides guidance to users on common EHS issues potentially applicable to all industry sectors. Specific guidelines which will be used is Environmental, Health, and Safety (EHS) Guidelines: Environmental Waste Management. As stipulated earlier the guidelines will be used together with the Environmental, Health, and Safety General Guidelines. The EHS Guidelines contain the performance levels and measures that are generally considered to be achievable in new facilities by existing technology at reasonable costs. Application of the EHS Guidelines to existing facilities may involve the establishment of site-specific targets, with an appropriate timetable for achieving them. The

applicability of the EHS Guidelines will be tailored to the hazards and risks established for the project in accordance to the proposed project activities. The circumstances that skilled and experienced professionals may find when evaluating the range of pollution prevention and control techniques available to a project may include, but are not limited to, varying levels of environmental degradation and environmental assimilative capacity as well as varying levels of technical feasibility. The applicability of specific technical recommendations will be based on the professional opinion of qualified and experienced persons.

The project proponent shall comply with the relevant requirement of environment, health and safety (EHS) of the World Bank Group (WBG). The World Bank Environmental Health and Safety General Guidelines containing quantitative limits and good international management practices to manage potential impacts (**Table 3.2**).

Table 0.2**:** World Bank EHS Guidelines applicable

EHS Guideline	Content and Relevance for the upgrading of Mkuyuni fish market
General EHS Guidelines (2007)	These guide performance levels and measures that are generally considered in the achievement of new facilities by existing technology at reasonable costs. Application of the EHS guidelines to existing facilities may involve establishing site-specific targets, with an appropriate timetable for achieving them.
EHS Guidelines for - Air Emissions and Ambient Air Quality, 2007	Requirements of the guidelines have been incorporated in the analysis and management measures for emissions management during construction and operation phases of the proposed facilities at Mwanza City Council. This provides guiding approach to managing significant sources of emissions, including specific guidance for assessment and monitoring of impacts.
General EHS Guidelines 3 Community Health and Safety (2007)	These address project activities implemented outside of the traditional project boundaries but that are nonetheless related to the project operations, including water quality and availability, traffic safety, transport of hazardous materials, disease prevention, and emergency preparedness and response.
EHS Guidelines: Waste Management Facilities (2007)	If significant waste management activity such as incineration is included in the project scope/design basis, leading to creating a separate waste management facility, the World Bank guidelines for dedicated waste management facilities could apply.
General EHS Guidelines 1 Environmental (2007)	It covers a range of environmental aspects that apply to most industrial development projects. The subsections are air emissions and ambient air quality, energy conservation, wastewater and ambient water quality, water conservation, hazardous materials management, waste management, noise and contaminated land.
WHO Ambient Air Standards	The ambient air quality guidelines specified in the Standard have been incorporated in the analysis and development of management measures to avoid or minimize human health risks.

3.5.4 Other World Bank Instruments Applicable for TACTIC Project

- ***Environmental and Social Framework - Guidance Notes for Borrowers[5];***

The World Bank has developed several Guidance Notes to ensure the governments (borrowers) comply with the World Bank Environmental and Social Standards. This guidance are public documents that be accessed in the World Bank website[6].

Among the applicable guidance notes for this project are:

- Community Health and Safety: http://documents.worldbank.org/curated/en/290471530216994899/ESF-Guidance-Note-4-Community-Health-and-Safety-English.pdf
- Gender based violence: http://documents.worldbank.org/curated/en/399881538336159607/Environment-and-Social-Framework-ESF-Good-Practice-Note-on-Gender-based-Violence-English.pdf

3.6 Institutional Framework

3.6.1 Overall Management Responsibility

The institutional arrangement for environmental management in Tanzania is well spelt 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 environment shall be in overall in-charge of all matters relating to the environment and shall in that respect be responsible for articulation of policy guidelines necessary for the promotion, protection and sustainable management of environment in Tanzania.

The legal institutions for environmental management in the country include;

- National Environmental Advisory Committee;
- Minister responsible for Environment;
- Director of Environment;
- National Environment Management Council (NEMC);

3.6.2 National Environmental Advisory Committee

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

[5] http://www.worldbank.org/en/projects-operations/environmental-and-social-framework/brief/environmental-and-social-framework-resources#guidancenotes

[6] https://www.worldbank.org/en/projects-operations/environmental-and-social-framework/brief/environmental-and-social-framework-resources#guidancenotes

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

Relevance: TAC review and advice the minister regarding this ESIA if it complies with the law.

3.6.3 Minister Responsible for Environment

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

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

Relevance: Shall issue certificate for this ESIA.

3.6.4 Director of Environment

The Director of Environment heads the Office of the Director of Environment and is appointed by the President of the United Republic of Tanzania. The functions of the Director of Environment include:

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

- Coordination of issues relating to articulation and implementation of environmental management aspects of other sector policies and the National Environment Policy.

Relevance: TAC review and advice the minister regarding this ESIA if it complies with the law.

3.6.5 National Environment Management Council (NEMC)

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

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

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

Relevance: Register and oversee the whole process of this ESIA; Controls the implementation of the Environmental Management Plan (EMP) during and after construction of the road; Monitors the effects of activities on the environment during and after construction.

3.6.6 Sector Ministries

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

The Sector Ministries' Environmental Sections;

- Ensure environmental compliance by the Sector Ministry;
- Ensure all environmental matters falling under the sector ministry are implemented and report of their implementation is submitted to the DoE;
- Liaise with the DoE and the NEMC on matters involving the environment and all matters with respect to which cooperation or shared responsibility is desirable or required;

- Ensure that environmental concerns are integrated into the ministry or departmental development planning and project implementation in a way which protects the environment;
- Evaluate existing and proposed policies and legislation and recommend measures to ensure that those policies and legislation take adequate account of effect on the environment;
- Prepare and coordinate the implementation of environmental action plans at national and local levels;
- Promote public awareness of environmental issues through educational programmes and dissemination of information;
- Refer to the NEMC any matter related to the environment;
- Undertake analysis of the environmental impact of sectoral legislation, regulation, policies, plans, strategies and programmes through strategic environmental assessment (SEA);
- Ensure that sectoral standards are environmentally sound;
- Oversee the preparation of and implementation of all ESIA's required for investments in the sector;
- Ensure compliance with the various regulations, guidelines and procedures issued by the Minister responsible for the environment and;
- Work closely with the ministry responsible for local government to provide environmental advice and technical support to city level staff working in the sector.

3.6.7 Regional Secretariat

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

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

In Mwanza City Council, all Environmental issues handled by the City Environmental Officers.

3.6.8 Local Government Authorities

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

The Environmental Management Committee of each jurisdiction:

- Initiates inquiries and investigations regarding any allegation related to the environment and implementation of or violation of the provisions of the Environmental Management Act;
- Requests any person to provide information or explanation about any matter related to the environment;
- Resolves conflicts among individual persons, companies, agencies non-governmental organizations, government departments or institutions about their respective functions, duties, mandates, obligations or activities;

- Inspects and examines any premises, street, vehicle, aircraft or any other place or article which it believes, or has reasonable cause to believe, that pollutant or other articles or substances believed to be pollutant are kept or transported;
- Requires any person to remove such pollutants at their own cost without causing harm to health and;
- Initiates proceedings of civil or criminal nature against any person, company, agency, department or institution that fails or refuses to comply with any directive issued by any such Committee.

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

- Ensure enforcement of the Environmental Management Act in their respective areas;
- Advice the Environmental Management Committee on all environmental matters;
- Promote awareness in their areas on the protection of the environment and conservation of natural resources;
- Collect and manage information on the environment and the utilization of natural resources;
- Prepare periodic reports on the state of the local environment;
- Monitor the preparation, review and approval of ESIA's for local investors;
- Review by-laws on environmental management and on sector specific activities related to the environment;
- Report to the DoE and the Director General of the NEMC on the implementation of the Environmental Management Act and;
- Perform other functions as may be assigned by the local government authority from time to time.

Mwanza City Council have Environmental Management officers who head the section of Environment under the department. Therefore, all issues concerning environmental management during and after construction of sub-projects handled by this section.

CHAPTER FOUR

ENVIRONMENTAL AND SOCIAL BASELINE DATA

4.1 Geographical Location

Mwanza City is located on the southern shores of Lake Victoria in Northwest Tanzania. It covers an area of 256.45 Kilometer square of which 184.90 (72 percentages) is dry land and 71.55 Kilometer (28 percentages) is covered by water. Of the 184.90-kilometer dry land area, approximately 173 kilometers is urbanized while the remaining areas consist of forested land, valleys, cultivated plains, grassy and undulating rocky hill areas.

4.2 Area and Administrative Units

Administratively**,** Mwanza city was established in 2000 and became among the eight councils of Mwanza Region. It iscomprises of one division, namely Nyamagana, 18 wards and 175 streets. However, it is important to note that, although the law identify Mwanza as a city, still has both rural and urban locations resulted to have both urban and rural wards. The urban wards comprise with Mbugani, Butimba, Mkuyuni, Mabatini, Nyegezi, Nyamagana, Igoma, Pamba, Mkolani, Mirongo, Isamilo and Igogo. The rural wards formed by Lwanhima, Kishiri, Buhongwa, Mhandu, Mahina and Luchelele (**Table 4.1**). The proposed Mkuyuni Fish Market will be constructed in Mkuyuni ward but will serve Mwanza Region and the country.

Table 4.1**:** Number of Administrative Units by Wards, Mwanza City Council; 2015

Ward	Land Area (Sq. km)	No. of Hamlets	Percent of Land Area
Buhongwa	45	18	17.6
Lwanhima*	0	18	n.a
Mkolani	48.54	10	19.0
Luchelele*	0	10	n.a
Butimba	20.92	8	8.2
Nyegezi*	0	8	n.a
Igogo	23	9	9.0
Mkuyuni	19.45	8	7.6
Pamba	2	10	**0.8**
Nyamagana	12.5	4	4.9
Mirongo	2.09	3	0.8
Isamilo	13.5	11	5.3
Mabatini*	0	6	n.a
Mbugani	4	6	1.6
Mahina	24	9	9.4
Mhandu*	0	11	n.a
Igoma	41	14	16.02
Kishiri*	0	12	n.a
Total	**256**	**175**	**100**

***** These are new wards their areas are included in their former wards

Source: *City Director's Office, Land and Natural Resources Department, Mwanza City, 2016*

4.3 Agro-Ecological Zones

4.3.1 Climate

Mwanza City lies at an altitude of 1,140 meters above the sea level with mean temperature ranges between 25.7^{o}C and 30.2^{o}C in hot season and 15.4^{o}C and 18.6^{o}C in the cooler months. The city also experiences the average annual rainfalls between 700 and 1000mm falling in two fairly distinct seasons, short and long rainfalls. The short rain season occurs between the months of October and December and long rain season last between February and May. The proposed Mkuyuni Market designs shall take into consideration changes of weather particularly in terms of temperature and rainfall by ensuring there is proper ventilation, minimal solar exposure, outdoor shading by trees and alternative water sources. Tree planting within the market is encouraged so as to minimize extreme hot condition and prevent dust during hot and windy seasons respectively.

4.3.2 Topography

The topography of Mwanza City is characterized by gently undulating granites and granodiorite physiography with isolated hill masses and rock inselbergs. It is also characterized by well-drained sandy loamy soil generated from coarse grained cretaceous. The vegetation cover is typical savannah with scattered tall trees and tall grass.

4.3.3 Agro-Economic Zone

The status of the city causes Agriculture-Economic Zone to be not extensive to date. There is only 21 square hectares suitable for irrigation. Currently, an urbanization process transformed the extensive irrigation system to simple irrigation along the lake shores and some inland areas. Irrigation is mostly used in vegetable, fruits and maize production. The main areas where agriculture is practiced include; Kishiri, Lwanhima, Buhongwa and Mkolani wards respectively. However, production of vegetables and fruits is increasing due to higher market demand within the city, whereas, a number of tons of vegetables and fruits are transported from other areas such as Kagera, Geita and Sengerema. The proposed Mkuyuni fish market will be an extension to the city's economic zone that contribute to and raise its economy like the agro-economic zone.

4.4 Population

Population is very important due to that it's a source of labour for the production of goods and services also provide market for goods and services, also the following are considered as the parameters of economic development; size, structure, distribution and quality of a population.

4.4.1 Population Size and Growth

According to the 2002 and 2012 Population Censuses reports, the population of Mwanza City increased from241,923 (119,617 male and122,305 female) in 2002 and reached 363,452 (177,812male and 185,578female) in 2012 with the annual natural growth rate of 3.0 percent. At ward level, Table 1.4 shows the highest population increase was recorded in Buhongwa ward with an inter-censual increase of 121.7 percent between 2002 and 2012. It was followed by Mahina (85.5 percent), Mkolani (67.8 percent), Igoma (56.5 percent), Mkuyuni (41.6 percent) and lowest increase was recorded in Isamilo ward (35.6 percent). **Table 4.2** also shows that wards such as Mirongo, Igogo and Nyamagana had negative population increase of 44.9 percent, 0.2 percent respectively in 2012. The main reason, among others, is the changing usage of dwellings from residential to commercial buildings in these wards causes

the tenants to migrate to other wards in the city. One general observation from these data is absence or lack of data to new wards with marked (*) which were established after census period. The data for these wards are included in their former wards.

Table 4.2: Population Distribution by Sex and by Ward, Mwanza City Council; 2002 and 2012

Ward	2002			2012			Population Change	
	Male	Female	Total	Male	Female	Total	Number	Percent
Buhongwa	5,866	6,169	12,035	12,789	13,892	26,681	14,646	121.7
Lwanhima*							0	
Mkolani	9,472	9,714	19,187	15,716	16,483	32,199	13,012	67.8
Luchelele*							0	
Butimba	21,067	18,415	39,482	24,287	22,657	46,944	7,462	18.9
Nyegezi*							0	
Mkuyuni	6,598	6,663	13,261	9,163	9,617	18,780	5,519	41.6
Igogo	15,524	15,723	31,247	13,374	13,929	27,303	-3,944	-12.6
Pamba	11,667	11,793	23,460	11,411	12,108	23,519	59	0.3
Nyamagana	3,072	2,745	5,817	2,961	2,846	5,807	-10	-0.2
Isamilo	8,791	9,065	17,856	11,752	12,406	24,220	6,364	35.6
Mirongo	2,687	2,625	5,312	1,478	1,447	2,925	-2,387	-44.9
Mbugani	18,878	18,426	37,304	19,010	20,031	39,041	1,737	4.7
Mabatini*							0	
Mahina	13,702	18,345	32,047	28,550	30,887	59,437	27,390	85.5
Mhandu*							0	
Igoma	17,817	18,345	36,162	27,321	29,275	56,596	20,434	56.5
Kishiri*							0	
Total	119,617	122,305	241,923	177,812	185,578	363,452	121,529	50.2
Percent	49.4	50.6	100	48.9	51.1	100		

* New wards did not exist in the 2012 census; their data are included to their former wards.
Source: NBS, Compiled Data from 2002 and 2012 Population Census Reports, Mwanza Region, 2016

4.5 Socioeconomic Activities

4.5.1 Gross Domestic Product (GDP)

Mwanza city, like other districts of Mwanza region, has never computed its GDP and Per capita GDP since it was established. Nevertheless, Mwanza city makes significant contribution to the Regional GDP. The 2011 Economic Survey Report shows that Mwanza region's share of the national GDP for the year 2016 was only 9.3 percent equivalent to TSHS. 8,452,013 million while per capita income of regional residents was estimated to be TSHS. 2,004,353, (equivalent to US$ 911.1 at a rate of TZS 2,200 per USD). The regional GDP was TShs. 4,016,270 million in 2010 and TShs. 6,654,600 million in 2013. The proposed Mkuyuni fish market will promote the fish products availability and the income that comes with it and can raise the city's GDP.

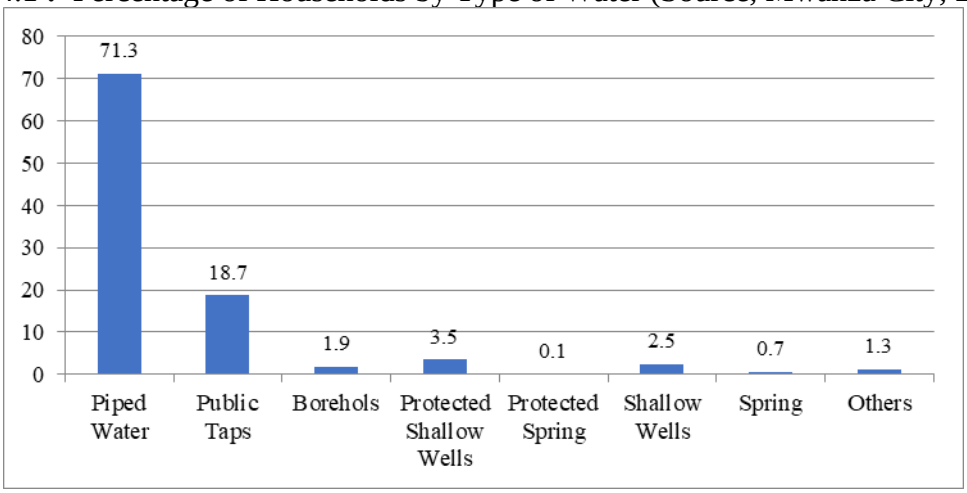
4.5.2 Food Security and Food Poverty

In Mwanza City Council, although Mwanza region experienced food insecurity, it has never observed that experience. Availability of grains such as maize, sorghum, millets and paddy together with protein including livestock and fish, small fish and related species make the council as among a few councils with plenty of foods varieties in the region. Food consumption as an indicator for poverty observed on the number of meals consumed in a day and the frequencies of protein intake per week, particularly meat and fish, are most superior in measuring poverty levels of the households. The proposed Mkuyuni fish market will increase availability of fish products hence making food secure for the people who will be served by it.

4.5.3 Access to Clean Drinking Water

The topography and existence of Lake Victoria are the main reasons for the reliable sources of water in Mwanza city. The 2002 Population and Housing Census show that the piped water was the main source of drinking water in Mwanza city (71.3 percent) followed by public tapes (18.7 percent), protect shallow wells (3.5 percent) and unprotect shallow wells (2.5 percent). However, the council has very small proportions of households who use boreholes, protected spring, springs and others such as surface water and rain water harvesting (**Figure 4.1**).

Figure 4.1 **:** Percentage of Households by Type of Water (Source, Mwanza City, 2012)



Source: *NBS, 2012 Population and Housing Census Report, Mwanza region, 2016*

4.5.4 Urban Water Supply

Urban water supply in Mwanza region is still under construction of its facilities. Though district councils develop and maintain rural water supply even at their headquarters. The 2012 Population and Housing Census shows that access of safe and clean drinking water in Mwanza region is higher (85.6 percent) in urban areas than rural areas (38.6 percent).

Looking on technology used to ensure sufficient water supply in urban areas, the existing water sources in the city were mostly use (98.5 percent) hand pump machines followed by gravity piped (1.5 percent). Unfortunately, wind mill, electricity pump and diesel pump were not recorded to be used mostly in the city council. However, the council through water department should put more effort in introducing more water scheme technologies to reach the target of serving each population with clean water. The proposed Mkuyuni fish market will be one of the beneficiaries of the urban

water supply during its operation because water will be needed for fish products cleaning and general cleanliness. There will be negative impacts on the urban water supply system (**Table 4.3).**

Table 4.3: Number of Water Schemes by Type of Technology by Ward; Mwanza City Council; 2015

Technology	Working	Percent Working	Not Working	Percent Not Working	Total	Percent Source
Wind mill	0	0	0	0	0	0
Electricity Pump	0	0	0	0	0	0
Diesel pump	0	0	0	0	0	0
Hand Pump	30	46.9	34	53.1	64	98.5
Gravity Piped	1	100	0	0	1	1.5
Total	**31**	**47.7**	**34**	**52.3**	**65**	**100**

Source: *Compiled data from City executive director's office, Water Department, 2016*

4.6 Primary Education

Education is a basic right of every Tanzanian child of school going age (7-13). To render this possible, the Government of Tanzania put in place the policy of Universal Primary Education (UPE) in 1974 making such education compulsory and setting out to make enrolment increase possible. To achieve this goal, the first task was to have enough primary schools that would ensure enrolment of all school going age children in the region.

By increasing number of primary schools from 95 in 2011 to 226 in 2015 the city council showed positive attitude by giving every child of school going age has a chance of being enrolled into standard one. **Table 4.4** shows that, on average, each ward had at least 4 public primary schools and a primary school in each mtaa as city council had 19 wards,123 mitaa and 226 public primary schools in 2015. Furthermore, Table 5.19 also reveals that Nyegezi had the largest number of public primary schools (151), whilst Mahina had the least with 0 schools.

Table 4.4 **:** Distribution of Primary Schools by Council; Mwanza Region, 2015

Ward	No. of Mitaa	No. of Schools	Schools Mtaa Ratio
Buhongwa	18	3	6
Lwanhima	18	2	9
Mkolani	10	3	3
Luchelele	10	3	3
Butimba	8	6	1
Nyegezi	8	2	1
Igogo	9	6	2
Mkuyuni	8	4	2
Pamba	10	8	1
Nyamagana	4	2	2
Mirongo	3	4	1
Isamilo	11	8	1

Mabatini	6	5	1
Mbugani	6	1	6
Mahina	9	3	3
Mhandu	11	10	1
Igoma	14	6	2
Kishiri	12	7	2
Total	**175**	**80**	**47**

Source: *City Director's Office (Education Department), Mwanza City Council, 2016*

Looking at ownership, out of 95 primary schools recorded in 2011, only 8.0 percent was privately owned. In 2013, private primary schools were only 37.6 percent out of 162 schools and 64.2 percent of 226 primary schools were privately owned in 2015.

The proposed Mkuyuni fish market will not directly impact this sector.

4.7 Employment Status at the Council

The performance of the City mainly based on both human and financial resources. Mwanza city according to **Table 4.5** shows that education sector covers 80 percent (49.2 percent primary teachers and 38.4 percent secondary teachers) out of 2,509 employees of Mwanza city in 2011, it was followed by health sector (9.4 percent) and agriculture and livestock (2 percent), while other sectors accounted for only a percent. The number of employees of key sectors has reached 3,391 in 2013 and became 3,680 in 2015. Again, education sector had the highest percentage of employees in the city. The proposed Mkuyuni fish market will provide employment in all phases to the community members of the city hence be able to earn income.

Table 4.5 **:** Number of Government Employees in Key sectors of Economy, Mwanza city; 2011, 2013 and 2015

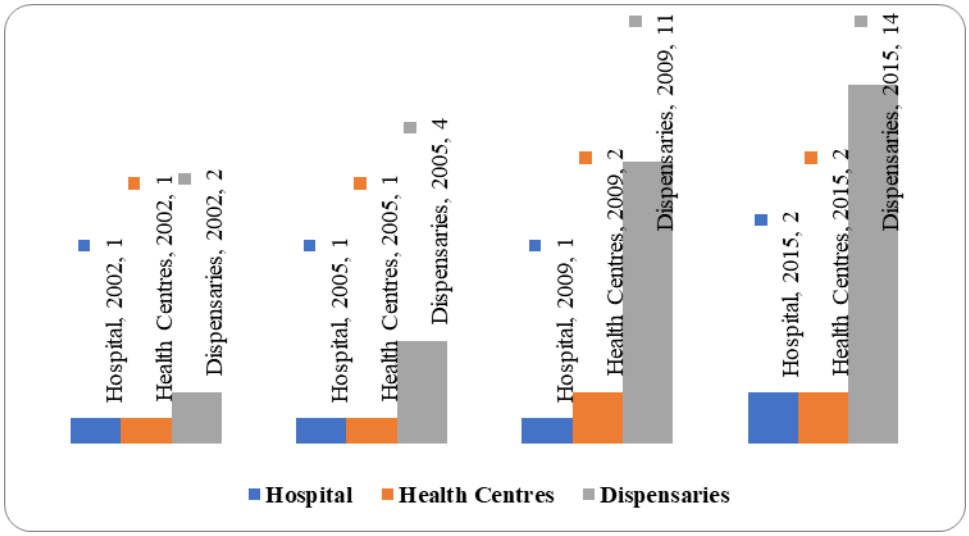
Key Sector	**2011**		**2013**		**2015**		**Change of Staff 2011 and 2015**	
	No.	**Percent**	**No.**	**Percent**	**No.**	**Percent**	**No.**	**Percent**
Education - Primary Teachers	1,234	49.2	1,758	51.8	1,803	48.9	569	46.1
Education - Secondary Teachers	963	38.4	1,166	34.4	1,586	43.0	623	64.7
Health sector	237	9.4	393	11.6	210	5.7	-27	-11.4
Agriculture and Livestock sector	50	2.0	44	1.3	45	1.2	-5	-10.0
Natural Resource sector	14	0.6	14	0.4	18	0.5	4	28.6
Planning Stat. and Evaluation	6	0.2	6	0.2	7	0.2	1	16.7
Works	5	0.2	10	0.3	19	0.5	14	280.0
Total	**2,509**	**100.0**	**3,391**	**100.0**	**3,688**	**100.0**	**1,179**	**47.0**

Source: *City Director's Office (City Administrative Officer), Mwanza City, 2016*

4.8 Health Facilities

Mwanza city, like other councils in the region, has done great achievements in the health sector by improving the availability of health facilities (Figure 5.1) and other medical equipment. **Figure 4.2** shows that public health facilities increased from 4 in 2002 to 14 facilities (a hospital, 2 health facilities and 11 dispensaries) in 2012 and reached 18 facilities (2 hospitals, 2 health centres and 14 dispensaries) in 2015. One general observation is that, the city also similar problem of having uneven distribution of health facilities like other councils in the Region.

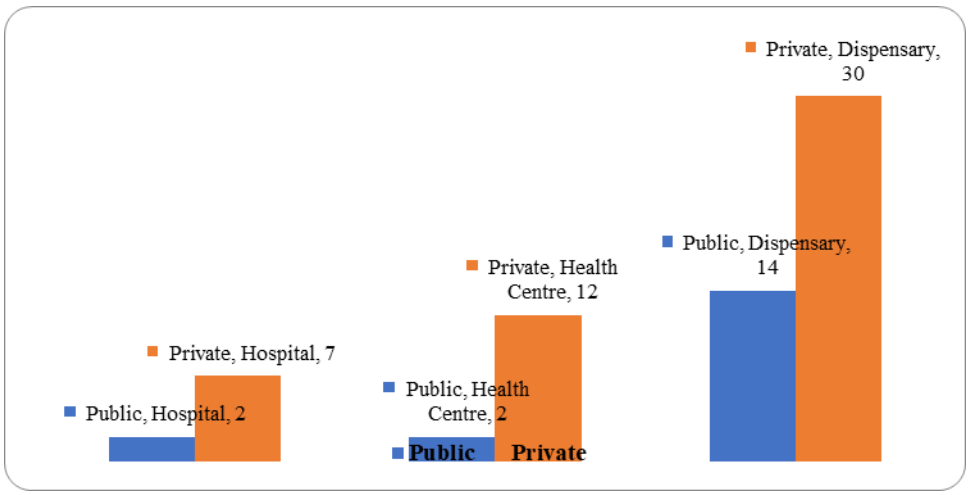
Figure 4.2 **:** Availability of Health Facilities by Type, Mwanza city council; 2002, 2009 and 2015



Source: *City Director's Office, City Medical Office, Mwanza city council, 2016*

Looking at ownership, private participation in the provision of health services as emerged by the health policy is significant in Mwanza city council. **Figure 4.3** sows that, out of 57 health facilities, 39 facilities, equivalent to 28.7 percent are privately owned; 10 are hospitals, 23 health centers and 73 dispensaries.

Figure 4.3 **:**Availability of Health Facilities by Ownership, Mwanza city council; 2015



Source: *City Director's Office, City Medical Office, Mwanza city council, 2016*

Besides achievement reached so far in health sector, the city is still lagging behind in the implementation of health policy under which each ward has to have a health center and have a dispensary in each mtaa. Table 5.1 shows that Mwanza city has the biggest shortages of both public health centers and dispensaries, as of now one health centre servicing almost 10 wards and each dispensary facilitating 14 mitaa. Only two wards, namely Mirongo and Igoma had public health centre each and 14 out of 175 mitaa had at least a public dispensary (**Table 4.6**). One general observation in this sector is that, the observed shortages have been reduced by the participation of private sector and reached to less than a ward and 4 mitaa per health centre a dispensary respectively. The proposed Mkuyuni fish market will not have any direct impact on the health facilities.

Table 4.6: Distribution of Public Health Facilities by Administrative Unit, Mwanza city council; 2015

Ward	No. of Mitaa	Public Facilities				Total (Public and Private) Facilities			
		No. of Health Centres	No. of Dispensaries	Average Wards per HC	Average Mitaa per Dispensary	No. of Health Centrs	No. of Dispensaries	Average Wards per HC	Average Mitaa per Dispensary
Pamba		0	1	0	0	1	2	0.5	0
Nyamagana		0	1	0	0	1	3	0.3	0
Isamilo		0	0	0	0	2	1	1.0	0
Mirongo		1	0	1	0	3	0	0.0	0
Mbugani		0	1	0	0	1	4	0.3	0
Mabatini		0	0	0	0	1	2	0.5	0
Mhandu		0	0	0	0	0	1	1.0	0
Mkolani		0	3	0	0	0	4	0.3	0
Nyegezi		0	0	0	0	0	1	1.0	0
Butimba		0	1	0	0	1	4	0.3	0
Mahina		0	1	0	0	1	3	0.3	0
Igogo		0	1	0	0	0	3	0.3	0
Igoma		1	1	1	0	2	6	0.2	0
Mkuyuni		0	0	0	0	0	1	1.0	0
Luchelele		0	1	0	0	0	5	0.2	0
Buhongwa		0	2	0	0	1	2	0.5	0
Kishiri		0	0	0	0	0	0	0.0	0
Lwanhinma		0	1	0	0	0	2	0.5	0
Total	**175**	**2**	**14**	**1.4**	**12.5**	**14**	**44**	**0.4**	**4.0**

Source:*City Director's Office,City Medical Office, Mwanza city council, 2016*

4.9 Production Sectors

4.9.1 Distribution of Arable Land

Many places observed in urbanazing Mwanza City Council is associated with the increase of survyed plots for human settlements, business centres, social services, infrastructures and industries.This affected much on land size planted with food crops or cash crops. Arable land is the land that is suitable for growing crops. Out of the city council's total land area of 12,155 hectares, 3,473hectares was arable land (**Table 4.7**). Moreover, out of the arable land,

only 92.8 per cent (3,223ha) of the arable land is underutilization. From the table, the wards with higher utilization of arable land were Igoma (100 per cent), Kishiri (100 per cent), Mhandu (97.4 per cent), Buhongwa (93.9 per cent), Lwanhima (92.3 per cent), Mahina (82.6 per cent), Igogo (Butimba (50.0 percent) and Mkuyuni (12.3 per cent). On the other hand, pure urban wards which did not involve in utilization of arable land were Luchelele, Nyegezi, Pamba, Nyamagana, Mirongo, Mabatini and Mbugani.

The proposed site for Mkuyuni fish market is part of the city's arable land used by some farmers in the area for vegetable cultivation, hence it will decrease and people who used to earn income from that activity will be affected.

Table 4.7**:** Distribution of Arable Land (ha) by Ward, Mwanza City Council; 2015

Ward	Total land area (Ha)	Total arable land (Ha)	Arable land under cultivation (Ha)	Percent of arable land under cultivation
Buhongwa	3729	1,323	1242	93.9
Lwanhima	2623	928.6	857.1	92.3
Mkolani	-	-	177.5	-
Luchelele	-	-	-	-
Butimba	1420	344	172	50
Nyegezi	-	-	-	-
Igogo	611.5	41.5	25	60.2
Mkuyuni	802	57.2	7	12.3
Pamba	-	-	-	-
Nyamagana	-	-	-	-
Mirongo	-	-	-	-
Isamilo	-	-	-	-
Mabatini	-	-	-	-
Mbugani	-	-	-	-
Mahina	-	192.5	159	82.6
Mhandu	117	117	114	97.4
Igoma	1430	351	351	100
Kishiri	1,422.20	118.5	118.5	100
Total	**12,155**	**3,473**	**3,223**	**92.8**

Source: City Director's Office (Agriculture Department), Mwanza City Council, 2016

4.10 Major Food Crops

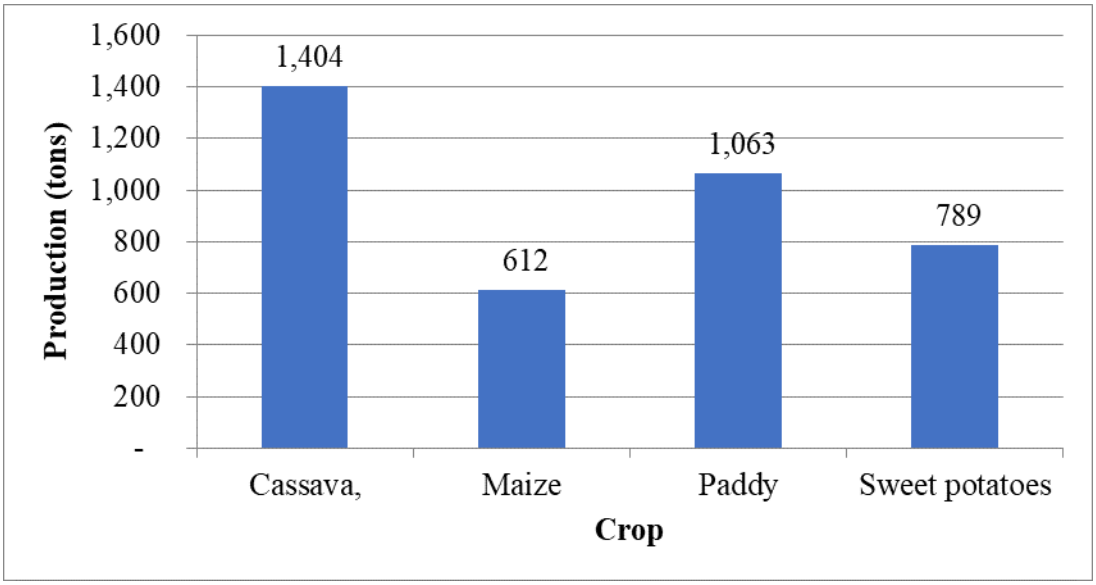
Over the reference period shown in **Table 4.8**, Mwanza City Council harvested a total of 11,603 tons of major food crops which averaged annually at 3**,**868 tons. Cassava was the leading food crops in terms of production. It accounted for 36.3 percent of the total production (11,603 tons). Paddy was the second major food crop with 27.5 percent of the total production followed by sweet potatoes (20.4 percent). Maize was the least important food crop in terms of production (1,836 tons, 15.8 percent) as shown in **Figure 4.4**.

Table 4.8**:** Estimated Production in tons of Major Food Crops; Mwanza City Council; 2010/11 to 2014/15

Crop	Production (tons)			Total	Average per Year	Percent
	2011/12	2012/13	2013/14			
Cassava,	1,404	1,404	1,404	**4,212**	**1,404**	**36.3**
Maize	612	612	612	**1,836**	**612**	**15.8**
Paddy	1,063	1,063	1,063	**3,189**	**1,063**	**27.5**
Sweet potatoes	789	789	789	**2,366**	**789**	**20.4**
Total	**3,868**	**3,868**	**3,868**	**11,603**	**3,868**	**100**
Percent	**33.3**	**33.3**	**33.3**	**100**		

Source: *City Director's Office (Agriculture Department), Mwanza City Council, 2016*

Figure 4.4**:** Annual Production in tons of Major Food Crops; Mwanza City Council; 2010/11 to 2014/15



Source: *City Director's Office (Agriculture Department), Mwanza City Council, 2016*

4.10.1 Irrigation Prospects

Irrigation farming in Mwanza City Council is feasible due to availability of some water bodies available. As table 3.5 shows, the whole Mwanza City Council has irrigation potential of 550 ha of which 82ha or 14.9 percent already exploited. The biggest potential area for irrigation found in Buhongwa ward which accounted for 86.5 percent followed by Lwanhima (8.5 percent) and Kishiri (4.9 percent) of the total potential area. However, traditional irrigation schemes are dominant with horticultural crops and paddy, tomatoes, Chinese cabbage being irrigable crops (**Table 4.9**).

Table 4.9: Irrigation Prospects by Ward, Mwanza City Council; 2014/15

Ward	Estimated Potential Area (ha) for irrigation	Area (ha) under irrigation	Unutilized potential area (ha)	Percent of potential area
Buhongwa	470	65	405	86.5
Lwanhima	55	15	40	8.5
Kishiri	25	2	23	4.9
Total	**550**	**82**	**468**	**100**

Source: *City Director's Office (Agriculture Department), Mwanza City Council, 2016*

4.10.2 Livestock Population

Table 4.10 shows estimated livestock population by ward in Mwanza City Council in 2014/15. Poultry counted at 322,054 (157,436 Indigenous chicken and 164,618 Broilers and Layers) was the most populaous livestock followed by cattle (15,913), goats (12,678), pigs (3,664), sheep (1,536) and donkeys (33). Majority of livestock populated in Igoma as this ward led in number of cattle (2,786), goats (1,778) and sheep (208). Likewise, largest population of donkeys (33) was observed in Kishiri ward, pigs (882) in Mkolani ward and poultry (42,033) in Butimba ward. The proposed project will not affect the livestock population in the city.

Table 4.10: Estimated Livestock Population by ward, Mwanza City Council; 2015

Ward	Cattle	Goats	Sheep	Donkeys	Pigs	Indigenous chicken	Chicken (Broilers& Layers)
Igoma	2786	1778	208	0	204	12884	8664
Kishiri	2776	3104	417	33	312	15335	6420
Buhongwa	2250	2163	133	0	476	17100	10200
Pamba	336	453	88	0	62	2821	2060
Mkuyuni	181	103	28	0	158	10336	1700
Mbugani	170	84	18	0	350	2810	30150
Mahina	191	144	21	0	186	2350	3432
Mirongo	6	19	0	0	0	1750	540
Nyamagana	87	92	4	0	18	1314	11060
Mabatini	147	97	22	0	250	11205	6000
Isamilo	98	93	6	0	23	1300	1800
Mkolani	2130	2402	317	0	882	16891	18000
Igogo	127	187	27	0	23	3876	250
Butimba	632	203	63	0	103	10033	32000
Nyegezi	298	143	21	0	111	11223	8600
Luchelele	1302	297	41	0	207	10732	10320
Lwanhima	2104	1115	99	0	189	12345	6122
Mhandu	292	201	23	0	110	13131	7300
Total	15,913	12,678	1,536	33	3,664	157,436	164,618

Source: *City Director's Office (Livestock Department), Mwanza City Council, 2016*

4.11 Natural Resources

Natural resource sector is comprised of forestry, hunting, beekeeping and tourism. The forestry sub sector plays an important role in maintaining ecological balance, protect soils from erosion and conserves water and wildlife. Forests are sources of domestic energy and provide industrial raw materials. Forests also provide useful non-wood products mainly honey and bee wax. Urbanization of Mwanza City Council is accompanied by rapid population growth. Social impact associated to this including changes of natural resources use and economic activity. Protection of natural resources is the most challenging problem facing management of urbanization process in Mwanza City Council. This is true as high urban population growth raised the need for the Mwanza City Council to have adequate planned, surveyed and serviced land for households and public uses which all these processes put more pressure on natural resources. In due cause, balancing urban development and management processes against natural resources protection guiding principles is important for sustainable development of the city council. This sector will be affected by the proposed project since tress will be cut to make way for construction of Mkuyuni fish market.

4.11.1 Forestry

Eighteen wards in the city council comprising of Buhongwa, Lwanhima, Mkolani, Luchelele, Butimba, Nyegezi, Igogo, Mkuyuni, Pamba, Nyamagana, Mirongo, Isamilo, Mabatini, Mbugani, Mahina, Mhandu, Igoma and Kishiri had a total of 17,300 hectares of total land area and total natural forest reserves of 1,253 hectares which is equivalent to 7.2 percent of the city council land area. Mkolani has the largest area, (850 hectares) of natural forest reserves followed by Luchelele ward with 150 hectares. Other wards do not possess area under forest reserves including Nyegezi, Igogo, Mkuyuni, Pamba, nyamagana to mention few as shown in **Table 4.11**.

Table 4.11**:** Status of Forest Cover by ward, Mwanza city Council; 2015

Ward	**Total Land Area (ha)**	**Natural forest reserve area (ha)**
Buhongwa	31,000	21
Lwanhima	0	30
Mkolani	35,000	850
Luchelele	0	150
Butimba	12,910	80
Nyegezi	0	100
Igogo	10,000	0
Mkuyuni	40,000	0
Pamba	2,000	0
Nyamagana	2,000	0
Mirongo	2,090	0
Isamilo	5,000	20
Mabatini	0	0
Mbugani	4,000	0
Mahina	24,000	2
Mhandu	0	0
Igoma	41,000	0
Kishiri	0	0

Total	**17,300**	**1,253**

Source: *City Director's Office (Natural Resources Department), Mwanza City Council, 2016*

Though the city council is endowed with inadequate forestry resources due to increasing human activities, high urban population growth raised the need for the Mwanza City Council to have adequate planned, surveyed and serviced land for households and public uses which all these processes put more pressure on natural resources. The city council has taken necessary initiatives of tree planting in order to prevent critical deforestation that might happen in the near future. Various wards were involved in both raising and planting trees in adversely affected areas. A total of 207,365 tree seedlings were planted in Mwanza city council from Mkuyuni ward in 2011. Isamilo ward planted a total of 10,000 tree seedlings in 2013. There was no data for other wards. No forest reserve will not be affected by the proposed project.

4.11.2 Fishery

Tanzania is one of the largest fishing countries in Africa. According to FAO; it is ranked in the top ten countries in terms of total capture fisheries production. Inland production is from water bodies which Lake Victoria is the largest in Africa and the major source for fishing in Mwanza city council. The main location of fishing activities in the city council is Mkuyuni, Nyamagana, Kishiri, Luchelele, Pamba, Igoma, Mhandu and Buhongwa ward. Table 3.21 shows fishery resource facilities and production in 2015. Mwanza city council has large share of Lake Victoria water body but has not yet utilised due to absence of official fish market centres which will result to the improvement of well-being of fishermen and population of Mwanza city council as a whole. The proposed Mkuyuni fish market will create opportunities for fishermen and traders to sell fish and improve their well-being. This will also contribute to the economic growth of Mwanza City and the country at large.

Table 4.12 shows that the city council had 359 fishing licences, 1,077 fishermen and 359 registered fishing vessels. Table 3.21 also shows that a total of 1,722.7 million kilograms of fishes were caught in 2015 and total of TZS 4,544.8 million were earned by Mwanza city council residents. Mkuyuni, Nyamagana and Kishiri were the three giant wards which performance of the sector was significantly observed. While Lwanhima, Mkolani, Butimba, Nyegezi wards to mention few had no fishing activity due to absence of water body.

Table 4.12**:** Fishery Resources and Production by ward from January to December, 2015; Mwanza City Council

Ward	**No. of Fishing licences**	**No. of Fishermen**	**No. of Registered Fishing Vessels**	**Fish Production**	
				Weight (kg)	**Value (Tshs. "000")**
Buhongwa	-	-	-	9,600	38,400
Lwanhima	-	-	-	-	-
Mkolani	-	-	-	-	-
Luchelele	227	681	227	28,800	144,000
Butimba	-	-	-	-	-
Nyegezi	-	-	-	-	-
Igogo	-	-	-	-	-
Mkuyuni	132	396	132	1,277,288	2,338,661

Pamba	-	-	-	26,148	130,740
Nyamagana	-	-	-	295,320	1,476,600
Mirongo	-	-	-	-	-
Isamilo	-	-	-	-	-
Mabatini	-	-	-	-	-
Mbugani	-	-	-	-	-
Mahina	-	-	-	-	-
Mhandu	-	-	-	21,000	105,000
Igoma	-	-	-	25,200	125,000
Kishiri	-	-	-	39,360	186,390
Total	**359**	**1,077**	**359**	**1,722,716**	**4,544,791**

Source: *City Director's Office (Natural Resources Department), Mwanza City Council, 2016*

The revenues collected from selling fish products in Mwanza city council for 2013, 2014 and 2015 was TSHS. 302,765,839.64, 40,416,450 and 90,690,000 respectively. There is no improvement of revenue earned by fishermen in the city council when comparing 2013 and 2015 seasons. The revenue earned by fishermen decreased by Tshs. 212,075,839.64between 2013 and 2015.

4.11.3 Mining Sector

Mining though is an economic activity, so far is not well implemented in the city council. Currently, there are lot of surveys and researches going on in search of existence of mineral deposits in terms of quantity and quality. These surveys and researches are done heavily by foreign companies while local companies are invested in small scales. However, there are small scale extractions of mineral at Buhongwa, Lwanhima, Igoma and Kishiri ward, mostly extracted mineral includes quarrying and sand minerals (**Table 4.13**). There was no data on distribution of existing mineral deposits in other wards. These minerals are mostly purchased by brokers and dealers in Mwanza City Council.

Table 4.13**:** Distribution of Existing Mineral Deposits and Scale of Mining by ward, Mwanza City Council;2015

Ward	Type of Mineral Deposit	Small Scale	Medium Scale	Large scale
Buhongwa	Aggregate sand	127	-	1
	Rock	59	-	-
Lwanhima	Aggregate sand	2	-	1
	Rock	43	-	-
Mkolani	-	-	-	-
Luchelele	-	-	-	-
Butimba	-	-	-	-
Nyegezi	-	-	-	-
Igogo	-	-	-	-
Mkuyuni	-	-	-	-
Pamba	-	-	-	-
Nyamagana	-	-	-	-

Mirongo	-	-	-	-
Isamilo	-	-	-	-
Mabatini	-	-	-	-
Mbugani	-	-	-	-
Mahina	-	-	-	-
Mhandu	-	-	-	-
Igoma	Agregate sand	46	-	-
	Rock	32	-	-
Kishiri	Agregate sand	27	-	-
	Rock	15	-	-
Total		351		2

Source: City Director's Office (Mining Sector), Mwanza City Council, 2016

4.12 Industrial Production

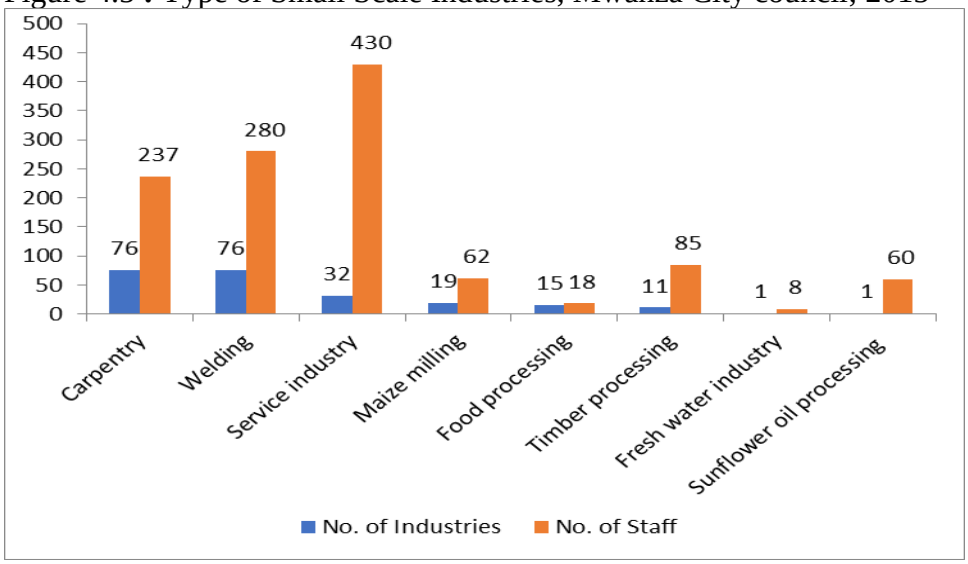
Industries all over Mwanza region are known to play a major role in socio-economic development. This is also the case in Mwanza city council, where industries, mostly small scale contribute significantly to jobs creation, income generation and stimulation of growth in urban areas of the city council. Looking at **Table 4.14**, by the end of 2015 there were 231 small scale industries employing 1,180 staff. More than thirty percent (i.e., 32.9 percent) of the 76 industries were involved with carpentry. Small scale industries involved with welding counted to have 76 industries (32.9 percent), service industries 32 (13.9 percent) (**Figure 4.5**). Majority of staff (430 or 36.4 percent of the total staff) were working in service industry - garage while very few of them (8 staff, 0.7 percent) working in fresh water industry.

Table 4.14**:** Type of Small-Scale Industries by ward, Mwanza City council; 2015

Type of Industry	Number of Industries	Percent	Total no. of staff	Percent
Carpentry	76	32.9	237	20.1
Welding	76	32.9	280	23.7
Service industry – garage	32	13.9	430	36.4
Maize milling	19	8.2	62	5.3
Food processing	15	6.5	18	1.5
Timber processing	11	4.8	85	7.2
Fresh water industry (Nole)	1	0.4	8	0.7
Sunflower oil processing mill	1	0.4	60	5.1
Total	231	100	1,180	100

Source: City Director's Office (Trade Department), Mwanza City Council, 2016

Figure 4.5 **:** Type of Small Scale Industries, Mwanza City council; 2015



Source: *City Director's Office (Trade Department), Mwanza City Council, 2016*

Table 4.15 gives a number of medium scale industries which were available in the city council in 2015. The distribution of medium scale industries by ward were as follows: Mhandu (64.9 percent), Igoma (19.3), Nyamagana (7.0 percent), Lwanhima (5.4 percent), Igogo and Mkuyuni with 1.8 percent each, of the total of 57 medium industries which were available in Mwanza City Council in 2015.

Table 4.15**:** Type of Medium Scale Industries by ward; Mwanza City Council; 2015

Ward	**Type of Industry**	**Number of industries**	**Percent**
Lwanhima	Pharmaceutical	1	1.8
	Bricks	1	1.8
	Local soap	1	1.8
Igogo	Publisher	1	1.8
Mkuyuni	Magodoro Hasham Jamali	1	1.8
Nyamagana	Maize Milling	2	3.5
	Timber processing	2	3.5
Mhandu	Service Industry	30	52.6
	Capentry	7	12.3
Igoma	Mwanza Fishing	1	1.8
	Eincher Mwanza Branch	3	5.3
	Mabati chapa Kiboko	3	5.3
	Umoja wa wafanyabiashara wa mbao	4	7.0
Total		57	100

Source: City Director's Office (Trade Department), Mwanza City Council, 201 6

Table 4.16 gives a number of large-scale industries which were available in the city council in 2015. The distribution of large-scale industries by ward were as follows: Igogo (5 industries), Mkuyuni (one industry) and Mahina (one industry) in which a total of 7 large industries were available in Mwanza City Council in 2015.

Table 4.16**:** Number of Large Scale Industries by ward, Mwanza City Council; 2015

Ward	Type of Industry	Number of industries
Igogo	Fishing prod	1
	Poly bags	1
	Vegetable oil industry	1
	Gas plant	1
	Marine seru	1
Mkuyuni	Kiwanda cha magodoro	1
Mahina	Food processing Biscut	1
Total		7

Source: City Director's Office (Trade Department), Mwanza City Council, 2016

The proposed Mkuyuni Fish Market will raise industrial production due to increased fishing activities as a result of availability of market space for different fish products to be sold. Nile perch and tilapia from Lake Victoria are potential types of fish in the market, if a proper place for marketing is provided it will lead to increased value resulting to increased productivity and income generation among the fishermen and traders hence lead to the city's economic growth.

4.13 Economic Infrastructure

Economic infrastructure such as road and railway network are promoters of economic activities in the Mwanza City. The proposed Mkuyuni Fish Market may facilitate extension of these infrastructure to ensure fish products are transported to the desired locations hence positively affect the project.

4.13.1 Road network

As indicated in **Table 4.17,** road network for Mwanza city council in 2015was about 577 kilometers. Trunk road constitutes 30 kilometers (5.2 percent) of the regional network. The district /council roads constitute 547 kilometers (94.8 percent). Buhongwa ward had the largest road network with the total length of 47 kilometers and Mirongo ward being the least with 9.5 kilometers. Unfortunately, the council had neither regional nor feeder roads.

Table 4.17**:** Length of Road Network by ward (in km) Mwanza City Council, 2015

Ward	**Type (in km)**				
	Trunk	**Regional**	**District/Urban**	**Feeder**	**Total**
Buhongwa	4	-	43.0	-	47.0
Lwanhima*	0	-	35.0	-	35.0
Mkolani	2	-	42.3	-	44.3
Luchelele*	0	-	39.5	-	39.5
Butimba	2	-	33.4	-	35.4
Nyegezi	1	-	32.6	-	33.6
Igogo	3	-	22.3	-	25.3
Mkuyuni	1.5	-	23.9	-	25.4
Pamba	1	-	25.7	-	26.7
Nyamagana	2	-	26.5	-	28.5
Mirongo	0	-	9.5	-	9.5

Isamilo	2	-	27.3	-	29.3
Mbugani	1	-	13.2	-	14.2
Mabatini*	3	-	15.3	-	18.3
Mahina	2	-	39.8	-	41.8
Mhandu*	1	-	37.2	-	38.2
Igoma	4	-	38.8	-	42.8
Kishiri*	0.5	-	41.8	-	42.3
Total	**30**	**0**	**547.0**	**0**	**577.0**
Percent	**5.2**	**0**	**94.8**	**0**	**100**

Source: Compiled data from City Executive Director's office, 2016

4.13.2 Railway Transport

Mwanza region is served by the central line railway system that connects Mwanza with Tabora, Kigoma and Dar es Salaam. The importance of the Central Railway system to the region is felt in hauling agricultural and industrial goods to and from the region. Goods transport from the region is to a great magnitude dominated by cotton. This smears for all the railway stations within the region. Railway station within Mwanza City council which serves embarking and disembarking is Mwanza Town Station where passengers are also ferried by this Central Railway System. The information provided by Tanzania Railway Limited shows that a total of 10,232 passengers used the line while as much as 446 tons of cargo was ferried.

4.14 Environmental Baseline Information

4.14.1 Water Supply

The topography and existence of Lake Victoria are the main reasons for the reliable sources of water in Mwanza city. The 2002 Population and Housing Census show that the piped water was the main source of drinking water in Mwanza city (71.3 percent) followed by public tapes (18.7 percent), protect shallow wells (3.5 percent) and unprotect shallow wells (2.5 percent). However, the council has very small proportions of households who use boreholes, protected spring, springs and others such as surface water and rain water harvesting. Water services are provided by MWAUWASA. The existing water treatment plant located at Capri Point produces between 63,000 - 96,000 m^3/day. The water supply coverage rate is 65%. The proposed project will have a water use permit to obtain water from Lake Victoria for construction activities. Excess abstraction of water for these activities can result to the decreased water level in the lake. Also, during the operation phase, the proposed Mkuyuni fish market will be connected to the water supply system by MWAUWASA for use in activities such as cleanliness of the market and preparation of fish products. This will lead to increased water revenue but may also add pressure to the water supply system and reduce its capacity. This can be avoided if there will be a borehole as an alternative water source.

4.14.2 Solid Waste Management

Mwanza city does not have good waste disposal system; therefore, there are no proper ways of disposing solid waste. There is only one known landfill for solid waste disposal located at Buhongwa. Moreover, inadequate solid waste dump trucks lead to uncollected garbage which in turn pollute the environment of the city. The proposed project will have need to have a proper solid waste management plan by having an incinerator and waste collection system and transport solid waste residues to the landfill so that it does not add a burden to the existing challenge.

4.14.3 Sanitation

Mwanza city, like other urban cities in the country, is well endowed with both improved and unimproved toilets facilities, the 2012 population and housing census shows Mwanza city with highest proportion of households with improved toilet facilities categorized as flush toilets (54.1 percent) and ventilated pit latrines (5.2 percent) while 39.6 percent of households in Mwanza city still use traditional pit latrines and 1.1 percent those with no toilets. Very few households have septic tanks and the most common way of disposing human waste is through pit latrines. Moreover, with lack of cesspool emptier and inadequate solid waste dump trucks, over flooding sewage pollute the environment of the city. There are sewerage services provided by MWAUWASA sewage management and other liquid waste. The central sewerage system covers only the central part of the City Centre and a few neighborhoods such as Kirumba and Pasiansi. The wastewater treatment plant located in Ilemela Municipality has a capacity of 7000 m^3/day. During the project implementation, the proponent will ensure there is a wastewater treatment plant and toilet facilities that will serve the proposed market to avoid polluting the environment by open urination and defecation.

4.14.4 Sound levels

Noise level measurement in the selected areas within the project site was done using Environment Test Meter, Model NO9AQ, 4 – in – 1 digital multifunction environment meter with measurement range of 35 to 130dB. The Sound level metre meets ANSI S1.4 type 2 standards and conforms to IEC 60651 type 2. Equipment accuracy is ±3.5 dB of reading. The metre was calibrated using electrical calibration with built-in oscillator (1 kHz sine wave). On taking measurements, the metre was set to the "A" weighed measurement scale, which enables the metre to respond in the same manner as the human ear. The "A" scale is applicable for workplace compliance testing, environmental measurement, and workplace design and law enforcement. The metre was held approximately 1.5 metres above the land and at least 0.5 metre away from hard reflecting surfaces such as walls. A set of three (3) readings were taken per point and the selection of individual testing points included areas where people were working and also ensured to capture the centre of noise source as shown in Table 4.18. The lowest and the highest values were recorded and then compared with local standards, Tanzania Bureau of Standards (TBS). The study took place on 28th December, 2022 between 03:30 pm to 4:20 pm for proposed Mkuyuni Fish Market project site.

Table 4.18: Sound Levels Monitoring Data at the proposed Mkuyuni Fish Market project site

Date (dd/mm/yy)	**Location**	**Coordinates** (Degrees)	**Sound level (dBA)** (Accuracy ±3.5 at 94 dBA)		
			Lowest	**Highest**	**Average**
28.12.2022	Point A	S02.560248 E32.911984	42.5	43.5	43.0
28.12.2022	Point B	S02.560128 E32.912363	42.7	43.1	43.1
28.12.2022	Point C	S02.560135 E32.912019	42.8	43.3	43.3
Tanzania Standards as per Tanzania Bureau of Standards (TBS) 70 dB(A)					
IFC Noise Level Guidelines for Industrial and commercial receptors 70 dB(A)[7]					

Source: Primary data/Consultant, 2022

[7] https://www.ifc.org/wps/wcm/connect/4a4db1c5-ee97-43ba-99dd-8b120b22ea32/1-7%252BNoise.pdf?MOD=AJPERES&CVID=ls4XYBw

4.14.5 Ambient Air Quality

Ambient air quality was measured using a portable device known as Environment Air quality tester ECO-12. According to the standard Q31/0120000311C003-2018. Adoption of the independently sampled high quality sensors, which can be used to detect CO, NO_2 and CO_2 in ppm, PM_{10} in $\mu g/m^3$, $PM_{2.5}$ in $\mu g/m^3$, TVOC in mg/m^3, temperature and humidity in the environmental air. The study took place on 28th December, 2022 between 03:30 pm to 4:20 pm for proposed Mkuyuni Fish Market project site. The equipment was held 1.0m above the ground during measurement, in which reading were recorded at each point to represent the value of that particular point.

The average measured concentration for $PM_{2.5}$ and PM_{10} found to range between 0.02 and 0.05 $\mu g/m^3$ and between 0.02 and 0.08 $\mu g/m^3$ respectively. Based on the results, the average $PM_{2.5}$ and PM_{10} concentrations measured at all stations were below the respective standards stipulated by TBS, WHO/IFS and Environmental Management (Air Quality Standards) Regulations, 2007 presented in Table 4.19. The average measured concentrations of Total Volatile Organic Compounds (TVOC), Carbon monoxide (CO) in ppm, Nitrogen dioxide (NO_2) in ppm and Carbon dioxide (CO_2). All the measured parameters were within the stipulated guidelines, i.e., WHO/IFC ambient air quality guidelines and safe for human health and the surrounding environment. Based on the results, the project is expected to have an impact due to the construction activities.

Table 4.19: Average values of dust levels measured at the proposed Mkuyuni Fish Market project site

Location	**Coordinates** (Degrees)	**Measured Dust Parameter**		**TVOC** (mg/m^3)	**NO_2** (ppm)	**CO_2** (ppm)	**CO** (ppm)
		$PM_{2.5}$	**PM_{10}**				
Point A	S02.560248 E32.911984	0.03	0.03	0.09	0.0	305	0.0
Point B	S02.560128 E32.912363	0.02	0.02	0.08	0.0	313	0.0
Point C	S02.560135 E32.912019	0.05	0.08	0.08	0.0	336	0.0
The Environmental Management (Air Quality Standards) Regulations, 2007 and TBS Standards		**40**	**60 – 90**		**0.1 ppm for 8 hours of exposure**		**90 ppm for 15 minutes of exposure**
WHO/IFS Standards		**25 for 24 – hour mean**	**50 for 24 – hour mean**	**0.3 – 0.5**	**0.3 ppm for 30 minutes of exposure**	**400 - 1000**	**90 ppm for 15 minutes of exposure**

Source: Primary data/Consultant, 2022

4.14.6 Temperature and Relative humidity

Temperature and Relative Humidity measurements in the selected areas within the project site were done using Environment Test Meter, Model NO9AQ, 4 – in – 1 digital multifunction environment meter with measurement range of -20°C to +750°C (-4°F to +1382°F) for temperature and 25% to 95% Relative Humidity (RH). Equipment accuracy is ±3/3.5% reading ±2°C (at -20°C~+200°C) and ±5% RH (at 25°C, 35%~95% RH) for temperature and relative humidity respectively. The metre was calibrated using electrical

calibration with built-in oscillator (1 kHz sine wave). On taking measurements, the metre was set to the "(Fahrenheit degree (◦F)" measurement scale for temperature and percentage for relative humidity, which enables the metre to respond in the same manner as the atmospheric conditions. These scales are applicable for workplace compliance testing, environmental measurement, and workplace design and law enforcement. The metre was held approximately 1.5 metres above the land and at least 5 metres away from hot objects. A set of two (2) to four (4) readings were taken per points and the selection of individual testing points included areas where people were working and also ensured to capture the centre of project as shown in Table 4.20. The values were recorded and then compared with meteorological data from Tanzania Meteorological Authority (TMA). The study took place on 28th December, 2022 between 03:30 pm to 4:20 pm for proposed Mkuyuni Fish Market project site.

Table 4.20: Temperature and Relative Humidity Monitoring Data at proposed Mkuyuni Fish Market project site

Sampling point	**Coordinates**	**Flue Temperature** (◦F)	**Air Temperature** (◦F)	**O_2** (%)	**CO** (ppm)	**NO** (ppm)	**NO_X** (ppm)	**SO_2** (ppm)	**Temperature Difference** (◦F)
Point A	S02.560248 E32.911984	77.80	84.60	20.90	0.00	0.00	1.05	0.00	-6.8
	S02.560128 E32.912363	79.70	87.80	20.90	0.00	0.00	1.05	0.00	-8.1
Point C	S02.560135 E32.912019	78.60	87.10	20.90	0.00	0.00	1.05	0.00	-8.5
Tanzania Bureau of Standards (TBS) Limits		-	-	-	**0.01**	**0.00012**	**0.00012**	**0.0005**	

Source: Primary data/Consultant, 2022

4.14.7 Combustion Gaseous Emission Concentrations (Flue Gases)

There is no official record of secondary flue gas emission data due to non-availability of a regular flue gas emission monitoring program for flue gas conditions or emissions. The main sources of air pollutant emissions are from diffuse sources such as combustion of carbon-containing fuels in a limited oxygen gas supply. Air quality was measured under this project. The samples were collected from onsite points of the project site by using Digital Gas Analyser HD4400. The present condition of the air quality is presented in Table 4.21 for the proposed project site. From the test results, it is found that the site has no gaseous contaminants of all flue gases such as Sulphur dioxide (SO_2), Carbon monoxide (CO) and Nitrogen oxides (NO/NO_X). On the other hand, flue temperature content was far below air temperature and the atmospheric environmental standards for both the residential and industrial areas thus; were within acceptable Tanzania Bureau of Standards (TBS) limits. This Environmental and Social Impact Assessment (ESIA) used the Tanzanian standards TZS 845:2019(E) Air Quality – Specification[8] and this is one of the nine compulsory environmental standards developed by the Tanzania Bureau of Standards and collated in the National Environmental Standards Compendium. In general, the air quality standards contain the same tables of limit or guideline values as the regulations as shown in Table 4.21.

[8] https://www.tbs.go.tz/uploads/files/list%20of%20compulsory%20tanzania%20standard%20as%20of%20september%202021.pdf

Table 4.21: Findings of Flue gases at proposed Mkuyuni Fish Market project site

Date (dd/mm/yy)	**Location**	**Coordinates** (Degrees)	**Temperature** (◦F)	**Relative Humidity** (%)
28.12.2022	Point A	S02.560248 E32.911984	33.2	45.8
28.12.2022	Point B	S02.560128 E32.912363	29.0	50.5
28.12.2022	Point C	S02.560135 E32.912019	30.0	52.8

Source: Primary data/Consultant, 2022

4.14.8 Ground Vibrations

Ground vibrations were measured at 3 points of the proposed Mkuyuni Fish Market project site that represented onsite and offsite receptors. The detached probe-type vibration meter model TA8663 was utilized to quantify the ground vibration in the study area. The meter has an accuracy of ±5% ±2 digits, acceleration of 1-199.9 m/s^2, a wide frequency ranges of 1 Hz to 15 kHz for capturing almost all possible vibrations for workplace assessments. This meter adopts piezoelectric effect of artificial polarized ceramic for design. It is suitable for monitoring all kinds of vibrating mechanical facilities, especially the vibration measurement of rotating and reciprocating machinery. Based on ground vibrations measurements collected, the average recorded level was 0.067 mm/s (Table 4.22). The proposed project has the potential to increase the ground vibration levels from its construction activities like movements of heavy equipment and trucks, etc., as well as during operation phase due to vehicle movement on the proposed road.

Table 4.22: Ground vibration levels at the proposed Mkuyuni Fish Market project site

Location	**Coordinates** (Degrees)	**Ground vibrations** (mm/s)
Point A	S02.560248 E32.911984	0.1
Point B	S02.560128 E32.912363	0.0
Point C	S02.560135 E32.912019	0.1
Average		0.067
Environmental Management (Standards for the Control of Noise and Vibrations Pollution) Regulations, 2015		**5 mm/s PPV at all times**

Source: Primary data/Consultant, 2022

4.14.9 Water Quality (Nyakurunduma River near the proposed Mkuyuni Fish Market project site)

Nyakurunduma River borders the proposed Mkuyuni fish market on its southern part. It is the proposed receiving body of the treated wastewater from the market activities. Water quality analysis of the river was carried out in order to establish a basis for monitoring of the quality changes of the river water that may be resulted from the received treated wastewater from the proposed market. Onsite water quality analysis of the Nyakurunduma River was carried out to determine pH, electrical conductivity (EC), total dissolved solids (TDS) and Dissolved

Oxygen (DO) by using portable pH meter, e-1 portable TDS and EC meter and a digital DO meter (Model 51970-88, Hach Co., USA) respectively. The average levels of determined pH, EC, TDS and DO of 3 water samples drawn from 3 different points of the river were 7.303, 3185 µS/cm, 1592.3 mg/L and 7.5 mg/L respectively. The pH levels were all within the acceptable TBS and WHO standards for water resources except those of TDS and EC. Therefore, the proponent will be required to carry regular monitoring in order to ensure these levels are not altered to above the standards and cause aesthetic problems to the river and Lake Victoria as well as their ecology.

Table 4.23: Water quality findings for Nyakurunduma River near the proposed Mkuyuni fish market project site in comparison with TBS/WHO standards

Sampling point	**pH**	**EC** (µS/cm)	**TDS** (mg/L)	**DO** (mg/L)
Point A	7.66	2936	1468	6.1
Point B	6.91	4177	2088	8.5
Point C	7.34	2442	1221	7.9
Average	**7.303**	**3185**	**1592.3**	**7.5**
TBS standards	**6.5 – 8.5**	**-**	**1000**	**-**
WHO standards	**6.5 – 9.2**	**2500**	**1000**	**-**

Source: Primary data/Consultant, 2022

CHAPTER FIVE

STAKEHOLDER CONSULTATIONS AND PUBLIC INVOLVEMENT

5.1 Introduction

Public consultation is an essential requirement of the environmental impact assessment process; its aim is to ensure the public acceptance of the project as well as to limit adverse impacts; it also helps to uncover issues that the preparation team may not have been identified nor addressed in the ESIA. If the community participates in the early stages of project preparation, then it should be possible to develop a close relationship between the community and the project team, thereby allowing the community to put forward valuable proposals before project implementation.

5.1.1 Objectives of the Stakeholder Consultations

The Objectives of public consultation are to:

- Share information about project components and proposed project activities with the community in the project areas, and also with relevant stakeholders.
- Gather different viewpoints and opinions, and to understand the concerns and sensitivities of local authorities and communities on environmental problems in the project areas, especially problems which were not identified by the ESIA team. Using this information, public concerns can be addressed in time, during project design and when selection between alternative solutions are made
- Perform a thorough and comprehensive evaluation of all environmental impacts and propose the most effective mitigation measures that exactly address the expected adverse environmental impacts of the project.

5.2 Public Consultation Process

5.2.1 Stakeholders Consulted

Preparatory activities conducted by the team of consultants aimed at engaging the stakeholders to take full part in the consultation process. This included sending information to Wards leaders requesting their assistance in the preparation of public meetings within their respective constituencies. Stakeholders' consultations done at Government Authorities, ward level and Villages/Vitongoji located along the proposed roads within Mwanza City Council and was gender disaggregated (**Table 5.1**). The comments received and issues raised from these public participation exercises have incorporated not only to enrich the report but also attached as **Appendix IVA** for reference. Indeed, the consultations greatly helped in determining mitigation measures for the project.

Table 5.1**:** Number of Consulted Stakeholders by Gender in Mwanza City Council

Sub Project	**Date**	**Stakeholders' Category**	**# of Participants**	**# of Females**	**# of Males**
Construction of Mkuyuni Fish Market	14/1/2022	City Council	6	1	5
	15/1/2022	Ward Leaders	10	8	2
	15/1/2022	Mtaa Leaders	3	1	2
	15/1/2022	BMU	3	1	2

	15/1/2022	Market Administration	1	0	1
	15/1/2022	Local Communities	290	134	156
	Sub-Total		313	145	168

Different groups of people in the project areas participated fully in the public consultative meetings during the study, the categories of interested people who participated are as exemplified but not limited to the ones shown here under. The list of participants is attached as **Appendix IVA** while minutes of the stakeholders meeting are attached as **Appendix IVB.**

- Mwanza City Council Office (City Director with all the project teams)
- Mwanza Water Supply and Sanitation Authority (MWAUWASA)
- TANESCO Mwanza Regional Office
- Tanzania Forest Services Agency (TFS)
- Lake Victoria Basin Water Board (LVBWB)
- Association of traders at Mkuyuni fish market
- Mkuyuni ward leaders,
- Mkuyuni mtaa leaders
- Representative of the fisheries department (fisheries officer)
- Representatives of the Beach Management Unit (BMU),
- Communities' members surrounding Mkuyuni fish market

5.2.2 Public Meetings with Local People

The meetings intended to ensure that the communities near the project roads discuss issues related to the construction of the roads in an open manner thus fostering a community participatory approach prior to project implementation. Clarifications and affirmations made with regard to the expected impacts on individuals and community in general.

The Major issues raised during stakeholders' discussion were:

-Pollution of the lake due to its close proximity. There is a high possibility of causing river pollution during construction due to waste generation and the close proximity of the lake from the proposed site for Mkuyuni fish market.

-Soil; during construction, the contractor should be careful with causing soil pollution due to oil spillage and other waste which will be generated during construction.

-Priority for employment opportunities for labourers should be given to local communities within the project areas to reduce conflicts among the incoming labourers and the local community. Labourers from outside the construction areas should only be considered if not found within the area.

-Health and safety issues are key during construction to avoid any impacts to labourers and nearby communities. Incidents/accidents and fatalities should be avoided to workers and nearby communities at all times using all costs.

The concerns and comments of all stakeholders were recorded and are presented here in **Table 5.2.**

Table 5.2: Stakeholders concerns and comments

S/N	STAKEHOLDERS	VIEWS/ CONCERNS/QUESTIONS	RESPONSE
1	**Mwanza City council** - Sekiete S.Y. (City Director) - Sima C. Sima (Mayor) - Stanslaus S. Mabula (Member of Parliament) - Bertilcer Massawe (CEPO) - Eng. Tunaye N Mahenge (Ag. CE) - Acreys Biseko (Procurement Officer-TACTIC)	• They have been waiting for this project for so long and finally it came to a reality. • The ward executive officers are aware of the proposed subprojects investments and they are ready to cooperate with city council to ensure the project is successful. • This subproject investment will be a "rescuer" to traders of Mwalo Mswahili fish market as they have been working in a difficult environment for so long. • It is expected that, even the hawkers *("Machinga")* will be accommodated in the new market. • All the encroachers of the proposed market site were given notices to vacate the area. • It is expected that after the completion of the new fish market and the landing site; the number of people and vehicles will increase significantly thus, there is a need of constructing a pedestrian bridge at the area for more safety. • The existing traders should be registered as soon as possible and given a first priority during space allocation in the new fish market.	• The proponent will take note of all the concerns and consider them so that the proposed Mkuyuni Market benefits the community as it serves its purpose.
2	**Construction of Mkuyuni Fish Market** - Donatha Y Gapi (Ward Councilor) - Said Abdallah (Chairman) - Leah Deus (CDO) - Ibrahim Hamad (WEO) - Rehema Moyo (Fisheries officer)		
3	**Public Meeting at Mwalo Mswahili Fish Market and Landing Site** - Donatha Y. Gapi (Ward - Councilor) - Said Abdallah (Chairman) - Leah Deus (CDO) - Ibrahim Hamad (WEO)	• Both the market administration and the traders were engaged by the council therefore the are aware of the project and are eagerly waiting. • The site for the proposed construction of Mkuyuni fish market is owned by city council. • The City council authority has done all necessary preparations to make sure the place is clear for the project to take off including serving notes for the encroachers to start demolishing their houses	• All the required infrastructures shall be well designed and constructed to carter for each and every market user's needs and ensure that the proposed market benefits everyone either

	- Rehema Moyo (Fisheries officer) - Ramadhani Hamad (MEO) - Leonard B Mpemba (Chairman BMU) - Robert Charles (Secretary BMU); and - **Traders at Mkuyuni Fish Market**	and other structures on which some of them have already demolished them. • The current open fish market at Mwalo Mswahili landing site is serving more than 4000 people (fishers, fish mongers, other traders and general customers) per day but it lacks necessary infrastructures for conducive working environment. • They are expecting that, there will be employment opportunities and government revenues will increase due to improvements of market facilities. • Traders should be provided with training on processing of fish products so that they can increase their values and earn more income. • The current fish market does not have a drying area therefore during high and rainy season a large number of fish get spoiled. Therefore, the new market should include areas for processing, drying and storing fish and other fisheries products such as sardines and shrimps *("Uduvi").* • Drying area should be provided with solar dryers to enable fast drying and large number of fish at a time especially during rainy season. • The market design should consider zoning based on different types of businesses currently operating at the market e.g., area for Nile perch fish, Tilapia fish, sardines, shrimps, petty trading, food vending, fishing gears shops, and workshop area for repairing fishing boats and canoes. • Currently the fishers are selling their fish in the boats which makes difficult for women to get into waters competing to get fish. Also, some fishers go to park their boats to the quay at Ilemela side as a result all the income goes to Ilemela council. • The construction of the new fish market should also consider the construction of a quay which should be extended from the existing Mwalo Mswahili landing site.	directly and indirectly.

		• The new market should be provided with a parking lot with loading and offloading facilities for trucks and other customers' vehicles coming to the market. • The traders and fishers currently working at Mwalo Mswahili should be given first priority in allocation of space at the new fish market. • Once the project is completed the council should set reasonable renting fees.	
4	**MWAUWASA** - Eng. Salim Lossindilo (Director of Water Supply and Sanitation - DWSS)	• There are MWAUWASA infrastructures for water supply and sewerage in the proposed project area. • The proposed Mkuyuni Fish Market can be connected to the sewerage system but may require pumping because there is a slope in the proposed project site. • The proponent should write a letter to request for clean water supply and sewer connection for the proposed Mkuyuni Fish Market specifically during the operation phase.	• The proponent shall liaise with the contractor to make sure that all the necessary procedures are followed to avoid any losses or effects to the community that may result from affected MWAUWASA infrastructures.
5	**TANESCO - Mwanza Region** - Eng. Abdallah Mitenda (Ag. Regional Manager)	• The proposed project will be beneficial since the number of customers will increase and through relocation in some areas TANESCO infrastructures shall be upgraded. • The proposed market will require its own transformer.	• The proponent will make take all these into consideration and work on them accordingly.
6	**Tanzania Forest Services Agency (TFS)** - Bakari S. Mohamed (Zonal Manager) - Thomas Moshi (Assistant Zonal Manager)	• There are no forest reserves in the proposed project area. • Solid waste should be well managed so that no waste is disposed of into the lake or rivers. Where necessary, dustbins and skip buckets should be places along those areas. • Environmental conservation education should be provided among the communities this will make the city upgrade of infrastructures more meaningful. • Plant trees within the market to provide shade and increase air circulation and ventilation especially during hot seasons.	• The environment shall be well conserved by tree and grass planting where necessary and waste from the project activities shall be well managed.

7	**Lake Victoria Basin Water Board (LVBWB)** - Eng. Renatus Shinhu (Basin Water Director) - Batuli Seif (Community Development Officer – CDO)	• The proposed project is beneficial to the city and the country at large. • The proponent shall make sure that the contractor obtains water use/ abstraction permit during the mobilization phase prior construction for water obtained directly from sources. This is necessary because a lot of water is used during construction activities such as compaction in road or foundation works which cannot be from MWAUWASA but can be obtained either directly from Lake Victoria or Nyashinshi River by using boozers. • There needs to be a wastewater treatment plant at the proposed fish market and solid waste from it should be disposed of properly in the nearby dumpsite to avoid pollution of water in Lake Victoria and Nyakurunduma River. • Water from MWAUWASA is readily available in all areas hence if the proponent may require connection especially during operation phase, they can all get connected.	• The proponent will take necessary actions to ensure permits are obtained on time and the water sources are not affected by the project activities throughout the implementation phase.
8	**Beach Management Unit (BMU)** - Lukas Kissibo (Secretary BMU) - Rehema Ain Moyo (Fisheries Officer) - Patricia Mashauri (Fisheries Officer) - Issa Omary (Sanitation Agent) - Mwanahamisi Mfaume (Sanitation Agent) - Mwala Gervas (Sailor) - Rehema Buna (Member) - Elenestina Charles (Member)	• The project is beneficial since there will be a modern fish market/improved river hence beautified city. • The proponent should make sure to involve the BMU in all project phases for constructive discussion about the conservation of the Lake Victoria and the rivers around project areas. • There needs to be modern drying beds and baking stoves for sardines (dagaa/uduvi). • There needs to be a technology for wastewater treatment from fish remains and spoils from cleaning fish to make food for animals and chicken. This will benefit the community with the produced food and reduce pollution of the lake and environment at large. The treater wastewater can be used for irrigation. • There needs to be enough toilets, changing and nursing rooms even for women and nursing mothers respectively.	• The BMU will be fully engaged in the project to ensure that their opinions are accommodated and help with the implementation of the beach conservation strategy to avoid any pollution or other effects to the environment that may result from project activities.

	- Charles L. Fashion (Member) - Salma Kasim (Member) - Emmanuel Danifodi (Member) - Mwajuma Chamulio (Member) - Ikama Magori (Member) - Militoni Wilibadi (Member) - Salumu Masakiwa (Member) - Ibrahim Kajoro Joseph (WEO - Mkuyuni) - Ramadhani Hamisi – (MEO – Mkuyuni) - Said Abdallah (Chairperson - Mkuyuni)	• There needs to an emergency room in case of emergencies such as accidents where people can get First Aid and temporal treatment/ rest.	

CHAPTER SIX

ASSESSMENT OF IMPACTS AND IDENTIFICATION OF ALTERNATIVES

6.1 Introduction

This section outlines the process of impact identification and assessment of the impacts in each stage of the proposed project. It takes into account all relevant environmental and social risks and impacts of the project. This chapter includes the environmental and social risks and impacts specifically identified in ESS2-8, and any other environmental and social risks and impacts arising as a consequence of the specific nature and context of the project, including the risks and impacts identified in ESS1, paragraph 28.

6.2 Proposed Project Phases

6.2.1 Mobilization Activities

This is the initial phase of project implementation; this phase will commence when all necessary permits and processes have been accomplished. In this case the required permits are the Environmental certificate from the National Environmental Management Councils (NEMC) and the preparation of environmental and social management plan (ESMP). During this phase the contractor shall recruit all necessary administrative and engineering staff for the project including transportation of construction equipment to the site. Mobilization phase also entails establishment of offices on site, assembling equipment, as well as construction of materials and workforce.

6.2.2 Construction Activities

The major construction activities include excavation of foundation, transportation of the construction materials to the site, concrete work, vertical construction, structural work, installation of electrical and water conduits, finishing work, painting and other minor associated civil works. Main activities of the proposed project during construction will include but not limited to the following:

- Earthworks: This entails excavation of soil / earth to required foundation level, hauling away excavated material and depositing at the designated site for disposal, dewatering of excavated area, protection of excavated sites from falling, backfilling with the excavated material around the foundations and walls, hard-core filling.
- Acquisition and transportation of construction materials from tendered suppliers.
- Concrete works; Steel reinforcement, cutting, bending and fixing, concrete mixing, transportation, vibrating, curing, masonry walling and plastering.
- Roofing of the main structure and other supporting structures like power house, pump house and others.
- Metal and Glass works for the entire structure.
- Electrical installation works; lying of PVC especially for the construction of the market and the mini bus stand, conduits in structural members, electrical wiring and such other related works.

- Plumbing for the market and the mini bus stand and drainage works for all the three proposed facilities; installation of drain pipes, water distribution pipes, water tanks and general plumbing.

Materials to be used for construction phase

The materials that will be used for the construction of the proposed infrastructure at Mkuyuni Fish Market Area includes cement, sand, aggregates, steel reinforcement bars, timber, bricks, roofing sheets, water and sanitary ware; some components like power from TANESCO and water supply from MWAUWASA. Most of materials to be used for the proposed building will be sourced from within the district and if not available from within the country. The exact quantities of materials needed will be specified in the later stages during detailed design and development of the Bill of Quantities (BoQ).

The list of materials to be used is in tandem with the **ESS 3 on Resource Efficiency and Pollution Prevention and Management** where raw materials will be sourced from the natural resources which upon their usage will cause pollution to various receiving bodies. As stated in the Environmental and Social Standards applicable to this project, implementation of most of the investment subprojects will involve construction activities that will source raw materials and generate dust, erosion, sediments, solid and liquid wastes that will be properly managed via ESIAs, ESMPs and WMP. More or less similar impacts are likely to be experienced during operation phases and will be managed by the same tools as well as operation and maintenance plans.

Machinery and Equipment

Various equipment and machinery will be used during construction activities at Mkuyuni fish market as shown in **Table 6.1.**

Table 6.1**:** Types of equipment and machinery to be used during construction

S/No	Machinery/Equipment	Activity required
	Construction Equipment: Type and Characteristics	
1.	Backhoe excavator	General earthworks, e.g., excavation of drains
2.	Bulldozer with ripper	General earthworks
3.	Wheel loader	General earth works and transport of concrete
4.	Motor grader	General grading works, including earth works
5.	Vibrating/sheep foot roller compactor	Compaction works
6.	Truck-mounted crane	Lifting of construction materials e.g., pre-cast culverts
	Construction Machines	
1.	Concrete batching plant	Preparation of concrete (batch concrete mixing)
2.	Concrete truck mixer (mobile concrete mixer)	Concrete mixing
3.	Concrete mixer	Concrete mixing
4.	Small site dumper	Transport of construction and waste materials

5.	Quarry dump trucks	Transport of stones and aggregates
6.	Dump trucks	Transport of construction materials and wastes
7.	Concrete batch plant	Concrete mixing in a concentrated way
8.	Equipment for geotechnical investigations	Geotechnical investigation works
9.	Concrete vibrator and poker	Vibrating concrete
10.	Dewatering pump	Dewatering to allow for waterless construction
11.	Generator, mobile workshop, welding facilities	Repair and maintenance of machinery and equipment
	Transport Facilities	
1.	Light duty vehicles	Transport of light construction materials, stationery machines, and staff
2.	Water tanker truck	Dewatering of earth surfaces to attain effective compaction, minimizing generation of dust
3.	Dump trucks	Transport of construction materials (sand, gravel, aggregated, cement etc.)

Source: Field visit, January 2022.

Labour to be used during construction

During construction, there will be manpower need which will comprise of skilled and unskilled labour as described in **Table 6.2.**

Table 6.2: Manpower needed for construction activities at Mkuyuni Fish Market

Manpower	Skilled	50	Contractor	Social unrest and conflicts
	Unskilled	150	Local People	

Table 6.2 is also in tandem with the Environmental and Social Standard (ESS) 2 on Labour and working conditions. A number of project workers will be employed for the implementation of the project including construction of different investment subprojects. Project workers will be provided with information and documentation that is clear and understandable regarding their terms and conditions of employment. The information and documentation will set out their rights under national labor and employment law (which will include any applicable collective agreements), including their rights related to hours of work, wages, overtime, compensation and benefits, as well as those arising from the requirements of this ESS. This information and documentation will be provided at the beginning of the working relationship and when any material changes to the terms or conditions of employment occur.

In order, to ensure fair treatment of workers, the Project will ensure that terms and conditions of employment (hours, rest periods, annual leave, non-discrimination and equal opportunity in recruitment and employment), respect for workers organizations, inclusion of redundancy plans, the prohibition of forced labor and of worst forms of child labor, occupational health and safety, including use of Personal Protective Equipment (PPE), and operation of a worker

grievance mechanism for workers to address employment-related concerns, including sexual harassment, are aligned with the requirements of national law and ESS2. To protect workers, the project will ensure the application and implementation of all appropriate Occupational Health and Safety (OHS) measures, to avoid and manage the risks of ill health, including in relation to COVID-19, accidents and injuries. Labour Management Procedures (LMP) have been prepared to ensure these requirements of ESS2 and national law are observed and included in the specifications for contractors. The project will manage any labor influx and work camps for project workers in accordance with the provisions ESS2 and ESS4. As the situation permits and depending on the public health circumstances, the project will ensure compliance with national law, policies and protocol requirements as well as World Health Organization and World Bank guidance[9] regarding the COVID-19 situation in relation to stakeholder consultations, project worksites and related areas. Table 12 shows the estimated types and the amount of labour forces which will be needed during construction phase.

6.2.3 Demobilization of construction phase

This phase involves activities related to the completion of the construction phase of the proposed project. Activities to be conducted during this phase include demolition of temporal structures that will be installed to support the construction phase, removal of installations and equipment from the workshop and transportation of all remain construction materials from site back to contractor office. Also, all machines used during construction phase will be removed from site. Trees will also be planted at this stage before operation of the infrastructures.

6.2.4 Operation Phase

This will include use of roads, market and the mini bus stand at Mkuyuni Fish Market area. The duration of use of the proposed project infrastructure is expected to be 30 years.

6.2.5 Decommissioning Phase

Since the building lifespan will be 30 years with proper maintenance and service, therefore the activities that will be undertaken are to demolish all structures and propose a completely new structure or different development project. The area may also be used for other activities.

6.3 Waste Generation and Management

6.3.1 During construction Phase

Major wastes generation associated with the project construction and their treatment/ disposal methods are described in the **Table 6.3.**

[9] World Bank Technical Note: Public Consultations and Stakeholder Engagement in WB-supported operations when there are constraints on conducting public meetings. March 20, 2020; and "ESF/Safeguards Interim Note: COVID-19 Considerations in Construction/Civil Works Projects", April 7, 2020.

Table 6.3: Waste Generation and its management during Construction Phase

Type of waste	Sources	Disposal / Management procedure
Debris and Rubble (overburden)	-Site clearance -Excavation for foundation and storm water channel especially for the market and mini bus stand.	Collected and stockpiled near construction site and to be used as a base material in other construction works. Also, shall be used for site leveling after construction
Biodegradable materials mainly domestic waste (food, paper, wood	-Construction crew - offices	Collected into area designed for temporary solid waste collection while waiting to be taken to authorized dump site (engage a private company)
Non- biodegradable materials (Plastic, glass, cut piece of reinforcement	-Construction crew	Collected into special area designed for hazardous waste temporary storage while waiting to be taken by authorized dealers for hazardous waste disposal
Domestic wastewater	Toilets and floor cleaning	Collected into septic tank for management and once it is full cesspit emptier truck will be employed to empty it to final disposal at nearest WSP
Gaseous emission	Trucks delivering construction materials and machines used during compaction	All used machines will be regular serviced its engine for avoiding incomplete fuel burning and used fuel will be one accepted by EWURA of low sulphur contents
Dust emission	Excavation, trucks passing on unpaved road and construction materials at site	Water spray practice shall be employed twice a day for all area where dust emission expected, All stockpiles found at site shall be covered

Source: Field work, January 2022.

6.3.2 Operation Phase

-Solid Wastes

Solid wastes such as waste papers, packaging materials, plastics, oil leakage, market waste and other organic waste (vegetables/food waste) are expected during the operation phase. The project will ensure that all solid wastes are sorted at the source for proper solid waste management. Collected recyclables will be sorted out by type such as papers, bottles, plastics, food and general waste, paper, cardboard, and printer cartridges/ribbons. All decomposable waste will be taken into separate area designated at the market and the mini bus stand before collected by vendors to dump site in Buhongwa while plastic bottles will be collected into separate chamber and taken bay authorized dealers for disposal.

-Liquid waste

Generated liquid waste will include domestic wastewater to be generated from washrooms, kitchen and toilets. Domestic wastewater will be directed into onsite septic tank for management and once a septic tank is full cesspit emptier truck will be employed to empty it for final disposal at nearest WSP owned by MWAUWASA.

-Hazardous waste

During project operation hazardous waste will include electrical equipment like bulb, damaged parts of learning machines for tannery process and other metal waste. Generated

hazardous waste shall be collected into special dustbin named for hazardous waste collection into area designed for hazardous waste storage while waiting to be disposed by authorized dealer.

-Storm water management

There will be storm water drains in Mkuyuni Fish Market area to accommodate roads, mini bus stand and the market. After the construction phase, the project developer must ensure that the constructed area is covered with concrete pavement to allow storm water flows to the drainage systems more easily.

6.3.3 Decommissioning Phases

In the decommissioning phase much of demolition waste for the market and mini bus stand will be generated, these will be demolished concrete from foundations, mild steels from piping network, electrical and firefighting equipment and some paint remains. The anticipated types of wastes to be generated at this phase are in **Table 6.4**.

Table 6.4**:** Wastes Generated during Decommissioning Phase

S/N	Types of Waste	Management
1	Mild steel	To be sold to authorized dealers registered by NEMC
2	Concrete	reuse for street road maintenance
3	Electrical wires	To be sold to authorized dealers registered by NEMC
4	Timber	Reused as fire wood
5	Plastics	Collected by authorized dealers for recycling
6	Scrap metal	To be collected and sold to authorized dealers for scrap waste management (with permits for scrap wastes collection and disposal)

6.4 Environmental and Social Risk Classification of the project as per the World Bank ESF

Environmental and social risks are rated as Substantial due to environmental and social impacts likely to be caused by project activities. The main impacts of the proposed projects will emanate from the physical construction activities. No major land use change is expected because these activities will be implemented within the Mwanza City Council in existing land uses. Mwanza City Council already have a master plan therefore this project will finance implementation of activities which are already pre-determined within their areas. The cumulative impact of the works and presence of contractors and machinery on the project sites is unknown at the moment, but careful supervision will be needed to avoid accidents, loss of cultural assets and potential conflicts with local communities. Other potential impacts are related to (i) waste generated at construction sites which can pollute land and water bodies (cement mixing areas, metal, wood and paint residues, diesel, used electronics equipment and other residues); open pits in the soil can cause accidents; (ii) food residues can attract disease causing organisms; (iii) cutting of trees to use as building material (although this will not be allowed and construction materials will be supplied with the authorized vendor); (iv) road accidents; amongst others.

Review of designs and architectural drawings will include E&S aspects in order to increase safety and reduce negative environmental effects and increase sustainability of the works, which will require strong willingness by the Mwanza City Council and the PORALG to implement the changes in case the proposed mitigation measures need significant changes.

Safety aspects specially to deal with the impacts of earth quakes are important to be considered and quality assurance guaranteed. Other potential environmental and social risks and their mitigation measures are elaborated in the relevant section of the appraisal summary. This ESMF for TACTIC project provides for initial risk assessment and classification based on the available documentation and data. Implementation of the project activities will be positive and urgently needed.

6.5 Impact Identification

The impacts are categorized into Pre-Construction phase impacts, Construction phase impacts and Operational phase impacts. The main receptors of impacts associated with the anticipated Infrastructure Upgrading include physical resources (hydrology, surface water quality, soils, air quality and noise); ecological resources (vegetation); material assets, public health and safety, aesthetics and landscape.

The following impacts were identified to be likely to occur during pre-construction phase;
Impacts during pre-construction phase;

- Job creation and increased income

Impacts during construction phase;

- Benefits to communities resulting from employment
- Loss of Employment and Income
- Disturbance to traders and community
- Dust pollution
- Noise and Vibrations
- Safety and Health of workers and nearby residents
- Waste management problems during construction
- Construction Vibration
- Soil Erosion
- Population influx

Impacts during operational phase;

- Benefits to communities and municipality at large resulting from employment and other economic activities linked to project
- Availability of Conducive space for business
- Increase of health and hygiene
- Increased revenue to the Mwanza City Council and Country as a whole
- Health and safety risks due to fire hazards
- Increased pressure on the Municipal services
- Waste management problems during operations

Impacts during Demobilization Phase phase;

- Increased noise, vibration and dust
- Occupational Safety and health risks
- Increased Waste

6.6 Impact Evaluation

Taking a step further, the ranking in all phases (mobilization, construction and demobilization) signified the magnitude of each and combined phases. Various methods are available for impacts evaluation including *matrices*, *network diagrams* and *map overlays*. In this EIA *a matrix* were used. The matrix consists of a horizontal list of development activities against a vertical list of environmental factors. Thus it identifies impacts by methodically

checking each development activity against each environmental consideration to ascertain whether an impact is likely to occur.

As a result the more the score illustrated the severity the impact the road project or section has. The following factors were used to ascertain the significance of the impacts;

General

- Magnitude
- Extent
- Non-conformity with environmental standards
- Level of public concern
- Social impacts resulting from environmental change
- Scientific and professional evidence concerning:
    - resource loss/ecological damage
    - negative social impacts
    - foreclosure of land and resource use options
- Environmental loss and deterioration
- Probability and acceptability of risk
- Environmental sensitivity

Ecological

- Reduction in species diversity
- Habitat loss, degradation or fragmentation
- Affecting threatened, rare and endangered species
- Impairment of ecological functions

Social

- Displacement of people
- Human health and safety
- Decline in important local resource
- Loss/gain of valued area
- Disruption of community livelihoods
- Demands on services and infrastructure
- Public concern
- Political concern

The above factors were used to create six criteria which were used to determine the significance of the impacts in the Matrix these include;

- **Spatial Scale-** The spatial dimension encompasses the geographical spread of the impacts regardless of whether they are short term or long term. **Table 6.5** describes the ratings used in the Simple Matrix as far as spatial scale is concerned.

Table 6.5: Spatial Rating

International (I)	Trans-boundary
National (N)	Within country
Regional (R)	Within Region
Local (L)	On and adjacent to site

- **Temporal Scale-** Temporal boundaries refer to the lifespan of impacts. **Table 6.6** describes the ratings used in the Simple Matrix.

Table 6.6: Temporal Rating

Short-Term (ST)	During construction
Medium-Term (MT)	Life of project
Long –Term (LT)	Residual impacts beyond life of project

- **Reversibility of the impact-** Every impact was checked if its effect can be reversed or not. Letter R was used to denote reversible impacts while IR was used to denote Irreversible impacts

- **Cumulative Impacts-** These are Impacts that cause changes to the environment that are caused by an action in combination with other past, present and future human actions. **Table 6.7** show types of cummulative impacts;

Table 6.7: Types and Characteristics of Cumulative Impacts

Type	Characteristic	Example
Time crowding	Frequent and repetitive effects	Forest harvesting exceeds rate of re-growth
Time lags	Delayed effects	Bioaccumulation of mercury
Space crowding	High spatial density of effects	Numerous small mining enterprises on river
Cross-boundary	Effects occur away from the source	Atmospheric pollution and acid rain
Fragmentation	Change in landscape pattern	Fragmentation of habitat by agriculture
Compounding effects	Effects arising from a multiple sources or pathways	Synergistic effect of POPS in humans and rivers
Indirect effects	Secondary effects	Forest areas opened up as a result of new highway
Triggers and thresholds	Fundamental changes in system functioning	Climate change

- **Residual Impacts-** These are long term impacts which go beyond the lifetime of the project in other words Residual impacts refer to those environmental effects predicted to remain after the application of mitigation suggested by the ESIA i.e. they are non-mitigable.

- **Timing-** During which phase of the construction is the impact likely to occur. The phases included Mobilization, Construction, Demobilization and Operation.

The impacts were further rated at a scale of "–3" to "+3" through "0" in the following manner (**Table 6.8**);

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

Table 6.8: Environmental and Social Impacts Matrix for the Proposed Mkuyuni fish Market

		Impact Rating Criteria					Impact Significance Rating			
S/N	Environmental parameters/Impacts	Spatial Scale	Temporal Scale	Reversibility	Cumulative Effects	Residual Impact	Mobilization Phase	Construction Phase	Demobilization Phase	Operation and Maintenance
1.	Benefits to communities resulting from employment	R	MT	R	-		+1	+3	+1	+2
2.	Loss of business and Income	L	ST	R			0	-3	0	0
3.	Disturbance to traders and community	L	ST	R			0	-3	0	0
4.	Waste management problems	L	MT	R	-		-1	-2	-1	-3
5.	Dust	L	ST	R	-		-1	-2	-1	-1
6.	Noise pollution	L	ST	R	-		-1	-2	-1	-1
7.	Vibrations	L	ST	R			-1	-2	0	0
8.	Safety and Health of workers and nearby residents	L	ST	R	-		-1	-2	-1	-2
9.	Soil Erosion	L	ST	R				-2	-1	0
10.	Improve health and hygiene	L	LT	R			0	0	0	+3
11.	Availability of Conducive Business Space for rent	R	LT	R	•		0	0	0	+3
12.	Increased revenue to the Mwanza City Council	R	LT	R	•		0	0	0	+3
13.	Health and safety risks due to fire hazards	L	LT	R	•	•	-1	-1	-1	-2
14.	Increased pressure on the municipal services	L	MT	R			0	-1	0	-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); Adverse (-2); Mild Adverse (-1); No impact (0); Mild Beneficial (+1); Beneficial (+2); highly Beneficial (+

6.7 Impacts Analysis

Sections which follow in this chapter give the analysis of the identified significant impacts. The team focused on significant positive and negative impacts that were rated +2, +3 and -2, -3 respectively and proposed mitigation measures. The impacts during mobilization was found to be not significant (duration and magnitude) and therefore are not discussed here.

6.8 Significant Impacts during construction phase

The construction phase will take place for the duration of 1.5 years (eighteen (18) months)

Positive Social Impacts

6.8.1 Benefits to communities resulting from employment

The proposed project development will benefit nearby communities and the region at large in terms of employment and creating linkages with local economy by the supply of goods and services during construction. The local people either shall be employed directly by the contractor or indirectly by other businesses linked to it (i.e., selling of food to workers. About 30 people are expected to be employed during this phase.

Negative Social Impacts

6.8.2 Loss of Employment and Income

Currently there are about 150 traders doing business on the existing market. All of them shall be given notice to vacate to pave way for the construction of the proposed new market. Construction phase shall cause loss of employment/business and eventually income to these traders. This market is the source of income and livelihood to more than 150 families. On top of that there are matching guys, taxi drivers and bodaboda drivers who earn their income at the existing market due to availability of readily customers shall suffer during the construction phase of this project.

6.8.3 Disturbance to traders and community

The project shall involve shifting of the existing market to a temporary shelter. The temporary market might not have some of the services and utilities which are available at the existing market, including paved roads, shades, water supply, toilets, mama lishe etc. This shall cause disturbance to the traders and community that shall use the temporary market during construction phase.

Negative Environmental Impacts

6.8.4 Increased Noise pollution

Construction activities normally generate a lot of noise. Noises will also arise from various construction machinery at site. During construction noise levels are expected to reach 100dBA if not controlled. Most of the deterrent noises shall be confined during the construction period only, which is rather a shorter period compared with the lifetime of the proposed market.

6.8.5 Increased Dust

Construction activities such as transportation and offloading of materials, site clearance, and foundation trench excavation always involve production of a lot of dust. During construction dust levels are expected to be around 0.2ppm if not well controlled. If not properly controlled, the dust can cause bronchitis to the workers at site and people living/working near the project site.

6.8.6 Construction Vibrations

Construction activity can result in varying degrees of ground vibration, depending on equipment and Method Employed. Vibration will be produced by construction vehicles, plant and machinery during delivery of materials, processing of materials, and actual construction work. The Construction activities that typically generate the most severe vibrations are blasting and impact pile driving for foundation. Due to an increase in activities and number of operational vehicles, the impacts vibration will cause disturbance to neighbours and physical damage to properties near the construction site.

6.8.7 Waste management problems during construction

Site clearance and construction activities will generate a lot of rubble and spoil soils. The waste generated need adequate haulage facilities and at the right time. Inadequate management of the waste shall create unsightly condition on site. The quantities of wastes expected have been described in chapter 2.

6.8.8 Safety and health risks

Construction of the Buildings will expose the labourers and the general public to bronchial and other respiratory tract diseases. Also, poor use (or not using at all) of the safety gears during construction phase will result into loss of lives or injuries during construction. The incidence rate of water borne diseases such as cholera and diarrhoea will increase if there will be no proper sanitation practices at the construction site.
Operation of heavy-duty machines at the site will result into a small significant impact of vibration. This vibration has got no effect to the human health and his/her properties as the machine are not that huge.

6.8.9 Erosion of Cleared Areas

Clearance and excavation work related to construction of the proposed market will expose soils in the project areas which may leave area vulnerable to erosion by surface run-off or wind and create the threat of water turbidity and sediment deposition in nearby storm water drainages and eventually to the water bodies. This situation will exist only for the duration of the construction works before landscaping.

6.8.10 Loss of Scenic Quality

Scenic quality deterioration will occur due to stock piling of construction materials and discoloration of plant leaves and houses in the vicinity of the roads due to windblown dust. Excavation works as well as presence of construction vehicles, plant and equipment will also add to scenic quality deterioration. Scenic quality deterioration will also occur off-site, at the sources of construction materials, the quarries and sand mines. If these are not made well, they may

become an eyesore. Scenic quality deterioration can destroy the economic and aesthetic value of public and/or private property including land. Scenic quality degradation effects will be significant, short term and direct. They will, in spite of everything, be manageable given proper site operation and prior warning as well as issuance of site operation guidelines.

6.8.11 Population Influx

The proposed project in the city will attract population increase especially in the areas where the project will be carried out. This is because the project will increase employment opportunities as well as opportunities for other income generating activities. The population influx into the areas would also increase pressure on both resources and social services due to increased demand on the services and resources. This may lead to extra demands for resources which might cause conflicts in the community.

6.8.12 Increased Traffic congestion and Road Accidents

Increased traffic congestion during construction and poor road safety measures like absence of diversion (where necessary) during construction and road safety awareness campaigns will result into unnecessary road accidents to people especially schoolchildren and old people.

6.8.13 Increased Incidences of Diseases and Ill Health

The concentration of a large number of people within the proposed project area could contribute to increased levels of communicable diseases, which facilitate the spread of diseases such as Sexually Transmitted Diseases (STDs), HIV/AIDS, Covid 19 and other ailments.

6.8.14 Risk of SEA/SH in project areas

Female labourers are at risk of SEA/SH while participating in construction works. This can include expectations of sexual favours in return for work favours from supervisors, sexual assault, verbal sexual harassment amongst others. SEA/SH may affect female labourers and perpetrators can also include male supervisors, other male labourers and none project workers. The identification of SEA/SH risks during operation will be considered further as part of the GBV Action Plan.

6.9 Significant Impacts during operational phase

Duration

The operation phase is expected to be more than 30 years

Positive Social Impacts

6.9.1 Benefits to communities resulting from employment

The proposed project development will benefit nearby communities in terms of employment and creating linkages with local economy by the supply of goods and services to the users of the buildings during operational phase. The local people either shall be employed directly (cleaners etc) or indirectly by buildings users or other businesses linked to it.

6.9.2 Availability of conducive business space for rent

One (1) or two (2) floors market building can accommodate more customers than what the municipality can do at the moment. This is a very good news to people of Mwanza City Council and Mwanza region at large where there is a problem of business spaces for rent.

6.9.3 Increased revenue to the Municipality and Country as a whole

As discussed earlier, the programme is intending to capacitate Urban Local Government Authorities to implement projects for improving urban physical infrastructures so as to enhance self-sustainability of LGA through increasing their capacity for revenue collection and proper financial management. The proposed project shall improve revenues to Mwanza City Council trough increased collection from the new Increased collection from the Mkuyuni fish Market (Monthly fees from businessmen).

6.9.4 Improved Health and Hygiene

The existing market is outdated and always overcrowded with retail sellers. Hygienically the market is dirty and the situation becomes worse during rainy season when mud can be seen all over the market. The water supply system is also not sufficient for the users of the market. Waste collection system is also very poor since it is done manually. The proposed New Mkuyuni fish Market shall be a modern market that shall take care all of the above shortcomings. This shall improve the hygiene of the area and improve the health of the sellers and buyers.

Negative Social Impacts

6.9.5 Increased pressure on social services and utilities due to population influx

The proposed construction of new Mkuyuni fish market is expected to accommodate more people at a time as compared to the number of people that were accommodated by the present market. The increase in the size and people it accommodates has the potential to increase pressure on social services and utilities such as water, electricity, roads etc. The demand may strain the existing service delivery system in one way or the other. This is also a result of increased population in Mkuyuni area and Mwanza City due to increased economic value that will be brought by the proposed projects.

6.9.6 Health and safety risks due to fire hazards

Buildings which accommodate many people are very prone to fire hazards because of different types of combustible materials and machines which, are used and installed, respectively. Electrical fault is by large the main culprit in fire accidents in buildings in Tanzania. The components of a fire are fuel (combustible substance), heat and oxygen. Unless all three are present fire will not occur. Fire can cause the following effects:

- Loss of lives
- Serious Injuries
- Loss of properties etc.

Negative Environmental Impacts

6.9.7 Increased wastes during operations

This is the Major impact that is associated with Market business. During the operation phase it is expected a lot of solid and liquid wastes will be generated from the activities that will be taking

place in the market. Solid waste will mainly comprise of market wastes, garbage, food waste, papers, boxes etc. Liquid waste will mainly consist of wastewater from bathrooms, kitchen, pantry and lavatories. If these wastes are not properly managed, they have the potential to change the aesthetic scenery of the Market and the surrounding areas as well as cause public health problems.

6.10 Significant Impacts during Decommissioning Phase

Positive Impacts

6.10.1 Employment opportunities

Temporary employment opportunities will be created for the demolition of road and river structures. Works may include transporting waste materials and recycling activities of the demolished structures and materials. Stimulation of local economy through truck hiring and selling of recycling materials and re-use.

6.10.2 Rehabilitation of the environment

It is envisaged that the proposed Mkuyuni fish market will operate for many years but if decommissioning becomes necessary in future, rehabilitation of the project site will be carried out to restore the site to its original status or to a better state than it was after the decommissioning.

Negative Impacts

6.10.3 Increased noise and vibrations

Demobilization activities normally generate a lot of noise and vibrations. Noise and vibrations can arise from vehicles during demolition of temporary structures and transportation of rubbles. During demobilization noise levels are expected to reach 80dBA if not controlled. Most of the deterrent noises shall be confined during the demobilization period only, which is rather a shorter period compared with the lifetime of the proposed project.

6.10.4 Increased dust levels

Demobilization activities such as demolition of structures, transportation of rubbles and landscaping always involves production of a lot of dust. During demobilization dust levels are expected to be around 0.2 ppm if not well controlled. If not properly controlled, the dust can cause bronchitis to the workers at site and people living/working near the project site.

6.10.5 Impairment of environmental quality due to mismanagement of solid wastes

Demobilization activities will generate a lot of rubble, spoil soils and many types of waste. The waste generated need adequate haulage facilities and at the right time. Inadequate management of the waste shall create unsightly condition on site.

6.10.6 Increased traffic due limited road access

During demobilization phase, the roads may be inaccessible and cause increased traffic jams in other roads. These will make it hard for the transportation services hence all other economic activities will be affected in the area.

6.10.7 Occupational health and public safety hazards

Demolition works will inevitably expose workers and the public to occupational health and public safety risks: in particular, working with heavy equipment, handling and use of tools engender certain risks. The construction workers are also likely to be exposed to risk of accidents and injuries resulting from accidental falls, falling objects, injuries from hand tools and other equipment. *This impact is considered to be negative, long term of high significance.*

6.11 Project Alternatives

Consideration of project alternatives is crucial in ensuring that the developer and decision-makers have a wider base from which they can choose the most appropriate option. The following alternatives have been considered and are examined hereunder:

6.11.1 No project Alternative

The no project alternative entails retaining the current status quo (No construction of the proposed office building). Adopting this option would mean avoiding most of the negative effects associated with the presence of the Mkuyuni fish Market and missing all the positive benefits such as Benefits to communities resulting from employment, Improved health and hygiene, Increased Income to Mwanza City Council etc.

6.11.2 Alternative Site

The option of using another site apart from that of the proposed one (existing) was also considered. However, the Proposed site was observed to have the following advantages over others;

- The site is owned by Mwanza City Council, (No need to buy a new piece of land).
- It is currently used for the same purpose, so customers are used to it
- The plot is located on a favourable piece of land; it is at the CBD area.
- Availability of all necessary utilities such as electricity and water supply network
- Good road network, shall make it easily accessible

6.11.3 Design Alternative

The proposed project will involve construction of multi-functional building that will provide availability of adequate and conducive place for market business. This is the appropriate design given the nature of the use and the available space. Also, the National Human Settlement Policy encourages multi-storey buildings against horizontal expansion as strategy for space minimization. Prime land is becoming a scarce commodity and therefore optimal use is encouraged.

6.11.4 Energy Alternative

The use of other alternative energy sources apart from power from the National grid and diesel generators were considered. As it is the case in most of developing countries, supply of electricity from national grids is not reliable as it mostly originates from hydroelectric power generators, which depend on rainfall frequency, intensity and pattern. On the other hand, diesel generators which are mainly used during power interruptions, emit a lot of greenhouse gases especially when they are run for a long time. Solar energy was considered and the design team shall explore the feasibility of using this alternative.

6.11.5 Technology and Building Materials Alternatives

Construction technology involves the choice of building materials and the technique and means used to erect a building. As with the market design process, cautious consideration of contextual conditions is crucial to developing appropriate construction technologies. In addition, any selected technology must be constantly reviewed and, if necessary, upgraded during the construction process. A number of construction technologies were considered. The following criteria was used to select the most suitable technology options for this building;

- The use of locally available, low-energy-consumption building materials, especially those produced with renewable energy sources;
- The use materials from sustainable production chains (e.g., avoid use of timber from savage deforestation);
- The use non-toxic materials; and
- The use materials easily dismantled (and recyclable as building materials or energy sources).

6.11.6 Collection, Treatment and disposal of Sewage alternative

Two alternatives was considered for wastewater collection and disposal which includes the use of offsite sanitation or onsite sanitation. Onsite sanitation is including treatment and disposal of liquid wastes on site (i.e., Septic tanks etc) while offsite sanitation means collection of wastewaters from the site for treatment and disposal outside of the site (i.e., Sewerage system). The offsite sanitation (sewerage) was disqualified due to the following reasons;

- There is no sewerage system near the project area
- It is very costly to construct a sewerage system and wastewater treatment plant

6.11.7 Water Alternative

The option of using another water source was considered apart from that from MWAUWASA the and water boozers shall be used to supply water from Lake Victoria and other water vendors in time any inconvenience.

CHAPTER SEVEN

IMPACTS MITIGATION MEASURES

7.1 Introduction

This chapter is devoted to describing measures or interventions that shall be implemented so as to minimize the potential impacts identified in the preceding chapter. Many of the mitigation measures put forward are good engineering practice that shall be adhered to during all the project phases.

7.2 Enhancement Measures for Positive Social Impacts during Construction Phase

7.2.1 Benefits to communities resulting from employment

The contractor shall be encouraged to employ local, unemployed yet willing to work hard, manpower to the extent viable subject to a maximum of 60% unskilled labour. This will ensure that local people are more benefited out of the project.

i. Employment should be on equal opportunities for both gender
ii. Contractor shall provide on job training
iii. Local communities shall be encouraged to produce quality goods and services in the shops surrounding the project site

7.3 Mitigation Measures for Environmental and Social Impacts during construction phase

7.3.1 Loss of Employment and Income

i. Mwanza City Council shall provide enough space that can accommodate all the existing traders currently doing business at Mkuyuni fish Market to be used as a temporary market during construction.
ii. Traders at Mkuyuni fish market shall be involved in the process of selecting area for the temporary market if and when needs be.
iii. The existing businessmen at the current market shall be given first priority to rent space in the new proposed Mkuyuni fish market
iv. The temporary market shall have ample space for taxi, bajaji and bodaboda

7.3.2 Disturbance to traders and community

i. Mwanza City Council shall at any cost provide all necessary services (water, toilets etc) at the temporary market
ii. Early notice shall be given to the public concerning the construction of the new market and where the temporary market shall be located

7.3.3 Increased Noise Levels

i. Vehicles carrying construction materials shall be restricted during peak hours of the day.
ii. Machine operators in various sections with significant noise levels shall be provided with noise protective gear.
iii. Construction equipment shall be selected, operated and maintained to minimize noise.
iv. The workforce shall be educated on the issue of maintaining tranquility

7.3.4 Increased Dust

i. Water sprinkling shall be applied to open earth construction areas to reduce dust emission; this will be done twice a week.
ii. Trucks transporting construction materials shall be covered if the load is dry and prone to dust emissions.
iii. The construction area shall be fenced by iron sheets; this will prevent the dust at the ground to be picked up by the wind.
iv. Building under construction shall be covered by hessian net to prevent dust from reaching the neighbouring area.

7.3.5 Construction Vibration

i. Demolition, earth moving and ground impacting operations shall be phased so as not to occur in the same time period because vibrations are additive.
ii. Night time activities shall be avoided as people feel more vibrations during night time hours.
iii. Demolition methods not involving vibration impacts shall be selected
iv. Vibratory rollers and packers shall be avoided near vibration sensitive areas
v. The Earth moving equipment shall be operated as far away from vibration sensitive areas as possible

7.3.6 Waste management problems during construction

i. The contractor shall have adequate facilities for handling the construction waste (i.e collection points and separation units for hazardous and nonhazardous materials) before transported to Buhongwa landfill.
ii. Topsoil shall be stock piled and used for reclamation or re-vegetation practice at the site during landscaping.
iii. Demolition debris shall be sold to recyclers. Other Buildings materials shall be reused or recycled.
iv. Wastewater shall be treated in a septic tank and disposed via soak away system at the Site

7.3.7 Safety and health risks

i. Appropriate working gear (such as nose, ear mask and clothing) and good construction site management shall be provided. Health and Safety Management Plan is provided in **Appendix VI**.
ii. During construction the contractor shall ensure that the construction site is fenced and hygienically kept with adequate provision of facilities including waste disposal receptacles, sewage, firefighting and clean and safe water supply.
iii. The contractor may be required to drill a borehole for obtaining water for construction. This will help to increase quantity of water required for sprinklings and minimization of dust at site
iv. A well-stocked First Aid kit (administered by medical personnel) shall be maintained at each construction site.
v. The medical personnel shall also be responsible for primary treatment of ailments and other minor medical cases as well as providing some health education to the workforce.

7.3.8 Erosion of Cleared Areas

i. The contractor shall deliberately re-cover exposed soils with pavements for smooth operations and unpaved area shall be covered with grass to overcome erosion by moving water in the area.
ii. Mwanza City Council shall monitor areas of exposed soil during periods of heavy rainfall throughout the remaining construction phase.
iii. The project site shall be fenced by iron sheets to prevent the effect of wind
Proper drainage channels shall be provided to direct water to designated area

7.4 Enhancement Measures for Positive Social Impacts during Operational Phase

7.4.1 Benefits to communities resulting from employment

i. Mwanza City Council should engage local people for maintenance and cleanliness of the market during operations

7.4.2 Availability of conducive spaces for business

i. The rent shall be affordable
ii. Enough parking shall be provided within the project area
iii. Adequate and reliable utilities shall be guaranteed

7.4.3 Increased revenue to the Municipality and Country as a whole

i. Mwanza City Council shall pay all required taxes promptly and on time
ii. Mwanza City Council shall improve and perform all necessary maintenance of the market on timely basis.

7.4.4 Improved Health and Hygiene

i. Mwanza City Council shall employ experienced cleanliness firm to undertake cleanliness of the market premises on daily basis.
ii. Enough solid waste collection facilities shall be provided.
iii. Enough toilet rooms shall be provided.

7.5 Mitigation Measures for Negative Environmental and Social Impacts during Operation Phase

7.5.1 Increased pressure on social services and utilities

Alternative measures like use of solar power shall be explored and implemented if found feasible. For instance, use of energy savers bulbs shall be given high priority

i. Consultation with the utility companies to determine their capacity to service the market shall be made and modalities of service delivery shall be established
ii. Potentially use of ground water and rain water harvesting will be explored

7.5.2 Health and safety risks due to fire hazards and Disease outbreak

i. All traders shall be educated about the fire hazards, firefighting methods and precautionary measures against fire outbreak.
ii. Adequate number of portable fire extinguishers shall be placed at strategic locations.
iii. Good housekeeping shall be maintained at all sites to reduce the fire risk.
iv. The design of the market shall strictly adhere to the Fire Safety Standards
v. Fire escape routes have been conveniently located for ease of evacuation in case of emergencies.
vi. Health officer of the market shall Provision of health education to the people
vii. Fire assembly area shall be located near the garbage collection area

7.5.3 Increased wastes during operations

i. Two (2) large refuse containers/skip buckets shall be provided
ii. The skip bucket shall be emptied and Garbage collection area every day and taken to the authorized Buhongwa landfill twice a week
iii. Collection and disposal will be the responsibility of the Mwanza City Council
iv. All liquid wastes shall be directed to the Septic Tank and disposed into the land via Soak away Pit taken at the authorized Buhongwa landfill.

7.6 Enhancement Measures for Positive Environmental and Social Impact during Decommissioning Phase

7.6.1 Employment opportunities

The LGA will ensure that the people around the area and close by benefit from the project by getting employed during the decommission phase of the project.

7.6.2 Rehabilitation of the environment

The LGA will have to ensure that the contractor responsible for decommissioning carries out all activities on time and all waste is managed accordingly to leave it safe from any hazards and risks that may impact the community as well as the environment nearby.

7.7 Mitigation Measures for Negative Environmental and Social Impact during Decommissioning Phase

7.6.3 Increased noise and vibrations

- Use sound construction equipment, with noise sinks;
- Provide machine operators in various sections with significant noise levels with noise protective gear;
- Construction equipment shall be selected, operated and maintained to minimize noise and unnecessary vibrations; and
- Community nearby shall be informed of the works if they will produce noise and vibrations and that they should stay alert and report if any property or person are affected.

7.6.4 Increased dust levels

- Water sprinkling shall be applied to open earth to reduce dust emission;
- Trucks transporting construction materials shall be covered if the load is dry and prone to dust emissions; and
- Community notification shall be undertaken where appropriate where work is likely to cause dust impact on the public and nearby residents.

7.6.5 Impairment of environmental quality due to mismanagement of solid wastes

- Wastes arising will be used wherever possible in the reinstatement of the site such as concrete, gravel, and sand. Also, they reused for filling in damaged street roads which are yet to be upgraded and where there is serious soil erosion from floods. Other materials such as Iron sheets and other iron materials and plastics can be recycled. Any excess stored material will be disposed on off-site (Buhongwa landfill) in full accordance with National Environmental Management Council guidance to minimize the risk of pollution and degradation of habitats.
- The contractor shall follow health and safety regulations and best practice guidelines to ensure that risks to personal safety and equipment on site are minimized.

7.6.6 Increased traffic due limited road access

- The demolition activities will be done mostly at night and in a short period of time to avoid traffic and community disturbance.
- The contractor will employ enough workers and machines, so that the works are done fast enough to make way for transportation activities and avoid causing economic losses to people.

7.6.7 Occupational health and public safety hazards

- All workers will be sensitized before the exercise begins, on how to control accidents related to the demolition exercise.
- A comprehensive contingency plan will be prepared before demolition begins, on accident response.
- Adherence to safety procedures will be enforced at all stages of the exercise.
- All workers, pursuant to labor laws, shall be accordingly insured against accidents.
- All workers will be provided and instructed to wear protective clothing during demolition, including helmets.
- Demolition work will be limited to daytime only avoid workers accidents due to poor visibility.

CHAPTER EIGHT

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

8.1 Impact Management plan

Plans for the implementation of mitigation measures for the proposed project are provided below. The Plans indicate institutional responsibilities, time to take the action and estimated costs. The proposed costs are only indicative, should the proposed development proceed with the suggested changes, the developer will work out on actual costs and include them in the overall cost of the project. Based on the EMA (URT 2004), NEMC is required to ensure compliance of all the agreed conditions for authorization. The measures are given in Table 8.1. Mwanza City Council is committed to implement the mitigation measures suggested by the Environmental and Social Impact management Plan (ESMP).

8.2 Implementation of the Management Plan

The environmental and social mitigation measures incorporated in the detailed engineering design shall be handed over to the contractor during construction period. The Contractor shall take stock of the contents of the Environmental and Social Management Plan of the Project. The contractor shall implement the ESMP during the construction period under close supervision of Mwanza City Council Management. During the Operation Phase, Mwanza City Council Management and the real estate firm that will manage the buildings will implement the ESMP.

8.3 Environmental and Social Cost

The principal environmental and social cost includes the cost for implementing the mitigation measures proposed. These costs are indicated in **Table 8.1.** Mwanza City Council shall cover all the costs proposed in the ESMP.

Table 8.1: Environmental and Social Management Plan (ESMP) for the Proposed Mkuyuni fish market

Identified Impact	Mitigation Measure	Responsible Institution	Time of mitigation	Relative Annual cost (TZS)
Mobilization Phase				
Relocation and displacement of private assets.	○ Resettlement Action Plan shall be prepared and observed - Compensation shall be done according to Tanzania laws and World ESF-ESS5: Land Acquisition, Restriction on Land Use and Involuntary Resettlement.	Mwanza City Council	Design and Mobilization phase	Shall be determined during RAP
Construction Phase				
Loss of Employment and Income	- Mwanza City Council shall provide enough space that can accommodate all the existing traders currently doing business at Mkuyuni fish Market to be used as a temporary market during construction. - Traders at Mkuyuni fish market shall be involved in the process of selecting area for the temporary market - The existing businessmen at the current market shall be given first priority to rent space in the new proposed Mkuyuni fish market ○ The temporary market shall have ample space for taxi, bajaji and bodaboda	Mwanza City Council	Construction phase	15,000,000
Disturbance to traders and community	- Mwanza City Council shall at any cost provide all necessary services (water, toilets etc) at the temporary market - Early notice shall be given to the public concerning the construction of the new market and where the temporary market shall be located.	Mwanza City Council	Construction phase	5,000,000
Increased Noise	- Vehicles carrying construction materials shall be restricted during peak hours of the day. - Machine operators in various sections with significant noise levels shall be provided with noise protective gear. - Construction equipment shall be selected, operated and maintained to minimize noise.	Mwanza City Council	Construction phase	5,000,000

Identified Impact	Mitigation Measure	Responsible Institution	Time of mitigation	Relative Annual cost (TZS)
	- The workforce shall be educated on the issue of maintaining tranquillity			
Increased Dust	- Water sprinkling shall be applied to open earth construction areas to reduce dust emission. - Trucks transporting construction materials shall be covered if the load is dry and prone to dust emissions. - The construction area shall be fenced by iron sheets; this will prevent the dust at the ground to be picked up by the wind. - Building shall be covered by hessian net to prevent dust from reaching the neighbouring area	Mwanza City Council	Construction phase	5,000,000
Construction Vibration	- Earth moving and ground impacting operations shall be phased so as not to occur in the same time period because vibrations are additive. - Night time activities shall be avoided as people feel more vibrations during night time hours. - Demolition methods not involving impact shall be selected - Vibratory rollers and packers shall be avoided near sensitive areas - The Earth moving equipment shall be operated as far away from vibration sensitive areas as possible	Mwanza City Council	Construction phase	8,000,000
High water table and Flooding	- During design stage, geotechnical analyses shall be conducted to provide geotechnical recommendations for building foundations, slope stability, site class ground improvement and subsurface concrete. - All surface runoff in paved areas will be collected through slotted drain pipes that direct water flows to either to Victoria Lake or to the proposed channel. - The area will be provided with open mid channel (30m width) that will direct the flow of Nyankunduma river to Lake Victoria. The	Mwanza City Council	Design and Construction Phase	To be provided in the BoQ

Identified Impact	Mitigation Measure	Responsible Institution	Time of mitigation	Relative Annual cost (TZS)
	stream will be lined using stone pitching for the purpose of its protection.			
Waste management problems during construction	-The contractor shall have adequate facilities for handling the construction waste. At least 1 skip bucket shall be provided. -Topsoil shall be stock piled and used for reclamation or re-vegetation practice at the site during landscaping. -Demolition debris shall be sold to recyclers. Other block materials shall be reused or recycled. -Wastewater from toilets shall be treated in the properly designed temporary septic tank before discharged into the soak away pit.	Mwanza City Council	Design and Construction Phase	6,000,000
Safety and Health risks	-Appropriate working gear (such as nose, ear mask and clothing) and good construction site management shall be provided. -The contractor shall ensure that the construction site is fenced and hygienically kept with adequate provision of facilities including waste disposal receptacles, sewage, firefighting and clean and safe water supply. -A well-stocked First Aid kit (administered by first aider) shall be maintained at each construction site. -The first aider shall also be responsible for primary treatment of ailments and other minor medical cases as well as providing some health education to the workforce.	Mwanza City Council	Construction phase	6,000,000
Erosion of Cleared Areas	-The contractor shall deliberately re-cover exposed soils with pavements for smooth operations and unpaved area shall be covered with grass to overcome erosion by moving water in the area. - Mwanza City Council shall monitor areas of exposed soil during periods of heavy rainfall throughout the remaining construction phase. -The project site shall be fenced by iron sheets to prevent the effect of wind	Mwanza City Council	Construction phase	6,000,000

Identified Impact	Mitigation Measure	Responsible Institution	Time of mitigation	Relative Annual cost (TZS)
	-Proper drainage channels shall be provided to direct water to designated area			
Operational Phase				
Increased pressure on social services and utilities	- Alternative measures like use of solar power shall be explored and implemented if found feasible. For instance, use of energy savers bulbs shall be given high priority - Potential of using ground water and rain water for water supply shall be explored - Consultation with the utility companies to determine their capacity to service the buildings shall be made and modalities of service delivery shall be established	Mwanza City Council	Operation phase	10,000,000
Health and safety risks due to fire hazards and disease outbreak	- Adequate number of portable fire extinguishers shall be placed at strategic locations. - Good housekeeping shall be maintained at all sites to reduce the fire risk. - The design of the office building shall strictly adhere to the Fire Safety Standards. - Provision of health education to the workforce on personal hygiene this will be done by Market health officer.	Mwanza City Council	Operation phase	9,000,000
Increased spread of HIV/AIDS and COVID-19	○ Safety, Health and Environment (SHE) induction course ○ Support HIV/AIDS campaigns ○ Provision of condoms - Observe COVID-19 protocols and other guidelines: ESF/Safeguards Interim Note: Covid-19 Considerations in Construction/Civil Works Projects, issued on April 7, 2021 and the National Guidelines by the ministry of health.	Mwanza City Council	Construction Phase	50,000,000

Identified Impact	Mitigation Measure	Responsible Institution	Time of mitigation	Relative Annual cost (TZS)
Increased solid waste wastes during operations	- A private cleanliness firm with adequate number of staff shall be commissioned to clean the market daily. - Two (2) large skip bucket shall be provided at a strategic area to collect all the waste from the market and premises. - The skip bucket shall be emptied by Municipal truck to the authorised Buhongwa landfill daily. - Sanitary water will be managed through sewer system that will be designed by taking into consideration the topography, peaking factor, location of the agreed upon discharge points; depth of excavation; and pumping requirements.	Mwanza City Council	Operation phase	6,000,000
Effluent management during operations	- Effluent will be managed through sewer system that will be designed by taking into consideration the topography, peaking factor, location of the agreed upon discharge points; depth of excavation; and pumping requirements.	Mwanza City Council	Operation phase	To be provided in the BoQ
High water table and Flooding during operation	- During design stage, geotechnical analyses shall be conducted to provide geotechnical recommendations for building foundations, slope stability, site class ground improvement and subsurface concrete. - All surface runoff in paved areas will be collected through slotted drain pipes that direct water flows to either to Victoria Lake or to the proposed channel. - The area will be provided with open mid channel (30m width) that will direct the flow of Nyakurunduma river to Lake Victoria. The stream will be lined using stone pitching for the purpose of its protection.	Mwanza City Council	Operation Phase	To be provided in the BoQ
Decommissioning phase				
Increased noise and vibrations	-Use sound construction equipment, with noise sinks; -Provide machine operators in various sections with significant noise levels with noise protective gear; -Construction equipment shall be selected, operated and maintained to	Mwanza City Council		

Identified Impact	Mitigation Measure	Responsible Institution	Time of mitigation	Relative Annual cost (TZS)
	minimize noise and unnecessary vibrations; and -Community nearby shall be informed of the works if they will produce noise and vibrations and that they should stay alert and report if any property or person are affected.			
Increased dust levels	-Water sprinkling shall be applied to open earth to reduce dust emission; -Trucks transporting construction materials shall be covered if the load is dry and prone to dust emissions; and -Community notification shall be undertaken where appropriate where work is likely to cause dust impact on the public and nearby residents.	Mwanza City Council		
Impairment of environmental quality due to mismanagement of solid wastes	-Wastes arising will be used wherever possible in the reinstatement of the site such as concrete, gravel, and sand. Also, they reused for filling in damaged street roads which are yet to be upgraded and where there is serious soil erosion from floods. Any excess stored material will be disposed on off-site in full accordance with National Environmental Management Council guidance to minimize the risk of pollution and degradation of habitats. -The contractor shall follow health and safety regulations and best practice guidelines to ensure that risks to personal safety and equipment on site are minimized.	Mwanza City Council		
Increased traffic due limited road access	-The demolition activities will be done mostly at night and in a short period of time to avoid traffic disturbance. -The contractor will employ enough workers and machines, so that the works are done fast enough to make way for transportation activities and avoid causing economic losses to people.	Mwanza City Council		
Total cost of mitigation measure (TZS)				**141,000,000**

CHAPTER NINE

ENVIRONMENTAL AND SOCIAL MONITORIG PLAN

9.1 Environmental and Social Monitoring

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

The Tanzanian EIA regulations require the developer to prepare and undertake monitoring plan and regular auditing. Monitoring is needed to check if and to what extent the impacts are mitigated, benefits enhanced and new problems addressed. Recommendations for monitoring have been included in the ESMP (**Table 9.1**). The ESMP implementation is the responsibility of Mwanza City Council. However, the divisional/ward/village environmental committees and supervisory consultant will participate in the long-term daily monitoring of the Mkuyuni fish market especially during operation.

9.1.1 Monitoring Parameters

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

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

Table 9.1: Environmental and Social Monitoring Plan for the Proposed Mkuyuni fish market

Environmental Aspect	Parameters	Monitoring frequency	Sampling Area	Measurement Units	Method	Target level/ Standard	Responsibility for monitoring	Annual costs estimate (TSH)
Pre-construction Phase (For Baseline Data)								
Air Quality	Dust (PM_{10})	Once before construction	Project site	mg/m^3	*Micro-dust Pro (TZS 837 Part 3)*	<250	Mwanza City Council	9,000,000
Noise Baseline	Noise level	Once before and after construction	Project site	dBA	*Noise Level Meter*	<55 (Day Time) <45(Night Time)	Mwanza City Council	9,000,000
Provision of adequate temporary space to be used as a market	Enough space with all utilities	Once before and after construction	Temporary area	-	Observations	-Large area - Electricity -Toilets -Water supply	Mwanza City Council	10,000,000
Construction Phase								
Air Quality	Dust (PM_{10})	Once in 3 months	Project site	mg/m^3	*Micro-dust Pro (TZS 837 Part 3)*	<250	Mwanza City Council	7,000,000
Noise pollution	Noise level	Once in 3 months	Project site	dBA	*Noise Level Meter*	<55 (Day Time) <45(Night Time)		10,000,000
Waste Management	Solid and Liquid waste collection facilities	Once a week	Project site	No of Skip Buckets and Number of Septic tanks and Soak away	Observations	2 Skip buckets 2 septic tank and Soak	Mwanza City Council	10,000,000

Environmental Aspect	Parameters	Monitoring frequency	Sampling Area	Measurement Units	Method	Target level/ Standard	Responsibility for monitoring	Annual costs estimate (TSH)
				pits		away		
Job Creation and Increased Income	Percentage of local construction laborers	Twice a year	Project site	Number of local people employed in the project	Records, inquiries and observation	>50	Mwanza City Council	9,000,000
Safety and health risks	Number and type of safety equipment such as mask, helmet gloves and ear plugs. Health and sanitation facilities in site.	Twice a year	Project site	Number of safety measures provided	Records, injuries and inspection	PPE for every worker	Mwanza City Council	9,000,000
Operation stage								
Safety risk due to fire and communicable diseases	Awareness and Signage, number of fire extinguishers, washing hands places sinks	Once a year	Project site	Number of safety and health measures provided	Records, injuries and inspection	No fire outbreak and disease outbreak	Mwanza City Council	10,000,000
Waste Management	Solid and Liquid waste	Once a week	Project site	Presence of 2 skip buckets and a well performing sewer system	Observations	Premises are very clean	Mwanza City Council	7,000,000
Total monitoring costs								**90,000,000**

9.2 Capacity Development and Training

To support timely and effective implementation of environmental and social project components and mitigation measures, the ESMP draws on the environmental and social assessment of the existence, role, and capability of responsible parties on site or at the agency and ministry level. Specifically, the ESMP provides a specific description of institutional arrangements, identifying which party is responsible for carrying out the mitigation and monitoring measures (e.g., for operation, supervision, enforcement, monitoring of implementation, remedial action, financing, reporting, and staff training). To strengthen environmental and social management capability in the agencies responsible for implementation, the ESMP recommends the establishment or expansion of the parties responsible, the training of staff and any additional measures that may be necessary to support implementation of mitigation measures and any other recommendations of the environmental and social assessment.

9.2.1 Capacity Development and Training

Training Needs to Environmental and Social Specialists and Other Project Staff

For successful implementation of the E&S issues, capacity enhancement through training will be done to institution project team. The training can be in the form of the whole project staff or Training of Trainers (TOT), and it can be in the form of short or long workshop. This training will ensure that the project specialists are able to manage and monitor the environmental and social aspects of project activities. The workshop will take place in early stages of HEET project implementation. The workshop can be conducted by an external consultant with substantial knowledge on the environmental management requirements for Tanzania, including World Bank ESF and its ESS requirements. Other relevant staff members of the institution can be included in the training in order to widen the familiarization of the E&S issues of the project. However, before selection of specific trainings that will be conducted, training need assessment will be conducted to identify gaps of knowledge, skills and abilities for employee who will be involved in implementation of E&S related activities. The gap between existing capacity and required one for successful implementation/supervision of environmental and social related actions will be used for identification of specific training. Thus, key training areas can include, but not limited to the following;

(a) Environmental and Social assessment process:

- Screening process;
- Impact prediction and identification;
- Formulation of mitigation measures;
- How to prepare terms of reference for environmental and social impact assessment;
- How to integrate environmental and social management considerations in project design and preparation of contract documents for constructions;
- Reviewing, approving ESIAs;
- Formulation of environmental and social management plan;
- Public participation in ESIA process; and
- Monitoring and reporting of project implementation.

(b) Environmental and Social policies, procedures and guidelines:

- How to incorporate Environmental and social policies and legislation according to the nature of project;

- World Bank Environmental and Social Standards (ESS);
- Review of ESIA and ESMP; and
- Collaboration with relevant institutions.

(c) Occupational Safety and Health issues:
- Hazard identification
- Hazard assessment and management
- Risk assessment and management
- Emergency preparedness plan and Response
- Risks and crises management
- Stakeholder engagement and grievance management, including in relation to the worker grievance mechanism, for the social and environmental staff.

(d) Other key topics on environmental and social issues:
- How to prepare Environmental and Social Management System;
- How to screen projects; appraise and approve ESIAs;
- How to review of environmental and social screening and assessment process;
- How to supervise and report the implementation of the project components;
- How to create baseline information prior to project implementation;
- Environmental pollution;
- Waste management; and
- Protection of water resources against pollution.

(e) Capacity building for GRM focal persons and members of the Grievance Redress Integrity Committee (GRIC): Focal persons (Grievance Handling Officers - GHOs) and members of the Grievance Redress Integrity Committee (GRIC) of the eligible Institutions will have to get trained on the use of GRM guide which include grievances handling, reporting and escalation to the respective authorities. The guide has to be prepared in a manner that GRM could capture and report Sexual Exploitation, Abuse and Harassment (SEAH) and Gender Based Violence cases. In order to ensure optimal utilization of the GRM by the PAPs at work places, publicization and sensitization on the existence of GRM is mandatory and has to be done by the responsible institution.

9.2.2 Implementation Schedule and Cost Estimates

For all three aspects (mitigation, monitoring, and capacity development), the ESMP provides (a) an implementation schedule for measures that must be carried out as part of the project, showing phasing and coordination with overall project implementation plans; and (b the capital and recurrent cost estimates and sources of funds for implementing the ESMP. These figures are also integrated into the total project cost tables.

9.2.3 Integration of ESMP with Project

Measures and actions to be implemented will be clearly specified in the ESMP (either stand alone or as incorporated into the ESCP), including the individual mitigation and monitoring measures and actions and the institutional responsibilities relating to each, and the costs of so doing will be integrated into the project’s overall planning, design, budget, and implementation.

9.3 Grievances Redress Procedures

9.3.1 Purpose

A Grievance Redress Mechanism (GRM) is necessary for addressing the legitimate concerns of the project affected persons. Grievance handling mechanisms provide a formal avenue for affected groups or stakeholders to engage with the project on issues of concern or unaddressed impacts. Grievances are any complaints or suggestions about the way a project is being implemented, and they may take the form of specific complaints for damages/injury, concerns around resettlement and compensation, concerns about routine project activities, or perceived incidents or impacts. The stakeholder engagement process will ensure that the PAPs are adequately informed of the procedure. The GRM is designed with the objective of solving disputes at the earliest possible time, which will be in the interest of all parties concerned and therefore, it implicitly discourages referring such matters to a tribunal/court for resolution.

9.3.2 Principles

A functional GRM has to be established and/or strengthened at the Mwanza City Council in order to ensure grievances emanating from the TACTIC project implementation are reported and raised accordingly. GRM is necessary for addressing the legitimate concerns of the project affected persons (PAPs). In addition, GRM provide a formal avenue for affected groups or stakeholders to engage with the project on issues of concern or unaddressed impacts. In the interest of all parties concerned, the GRMs are designed with the objective of solving disputes at the earliest possible time. Such mechanisms are fundamental to achieving transparency and voicing PAPs' concerns about overall project activities.

9.3.3 Construction GRM

This will be administered by the respective project implementing contractors and will address grievances associated with the construction of Mkuyuni fish market.

Step One: Submission of Grievances

The affected person shall file their grievance to the GHO, which will be recorded in writing. The grievance note should be signed and dated by the aggrieved person. A grievance can be submitted to in a number of ways as follows:

- through suggestion box (which will be in accessible locations including at construction site).
- during regular meetings held with stakeholders;
- through the Local Consultative Forums established in the affected locations;
- during informal meetings;
- through communication directly with management – for example a letter addressed to site management/ city council; and
- email, what's app messages and telephone (where appropriate).
- all complaints about abuse in service, potential corruption must be channelled to proper authorities no more than 5 days after the complaint is received.

Step Two: Logging the Grievance

The CGC keeps records of all complaints received, whether and how the CGC resolved them, and which complaints were forwarded to the city council. Once a grievance has been received it must first be logged in the grievance database register by the CGC. A sample grievance logging form is provided in **Appendix VII**.

Anonymous grievances will be accepted recognizing that this may limit the possibility of investigation and resolution. Those who collect grievances will be trained on how to collect grievances related to GBV in the appropriate manner (see below).

Step Three: Providing the Initial Response

The person or community or stakeholder that lodged the initial grievance will then be contacted within 2-3 days to acknowledge that CGC has received the complaint. This response will either accept or refute responsibility for the grievance. This notification will include details of the next steps for investigation of the grievance, including the person/department responsible for the case and the proposed timeline for investigation and resolution which will depend on the severity of the incident. In some cases, it may be necessary to provide an immediate response to avoid further harm while more detailed investigations are undertaken eg in the case of fatalities, workplace accidents, community safety pollution of natural resources, conflict with communities etc.

Step Four: Investigating the Grievance

The CGC will aim to complete investigation within two weeks of the grievance first being logged. Depending on the nature of the grievance, the approach and personnel involved in the investigation will vary. A complex problem may involve external experts for example. A simpler case may be easier, and quicker to investigate. The CGC will involve the aggrieved person/people in this investigation, where possible, to ensure participation. The CGC will continually update the aggrieved on the progress of the investigation and the timeline for conclusion. Unless highly complex, the investigation will be completed within 14 days, although efforts should be made to complete this process faster.

Step Five: Communication of the Response

The CGC will outline the steps taken to ensure that the grievance does not re-occur and any measures needed to resolve the complaint. The response will be communicated within 1 day of the resolution being determined.

Step Six: Complainant Response

If complainant is satisfied then SGC will seek their sign off from the complainant and determine what if any follow up is needed to monitor the implementation of the resolution. The resolution will be implemented promptly. This may happen at the time the resolution is proposed or within a timeframe agreed between the CGC and complainant but ideally within 5 days.

Step Seven: Grievance Closure or Taking Further Steps if the Grievance Remains Open

Once the measures have been implemented to the complainant's satisfaction the grievance will be closed. If, however the grievance still stands then the CGC will initiate further investigation and determine the steps for future action. Once all possible redress has been proposed and if the compliant is still not satisfied then they will be advised of their right to appeal to the next level as outlined above.

If the grievances cannot be resolved at the Mwanza City Council or PIU at PORALG, the complainant will be advised of their right to legal recourse.

9.4 Gender Based Violence (GBV)

The Project may result in incidences of Gender Based Violence (GBV) and Sexual Exploitation and Abuse (SEA) affecting workers and the community. GBV cases are different from other complaints that are typically handled through the grievance redress mechanisms. As outlined in the ESMF, a GBV action plan will be developed for the Project and will be modified for each PIUs once service providers have been identified. A GBV referral pathway will be identified within Mwanza City Council with the appropriate capacity and quality of service delivery. The CGC will be trained on how to manage GBV related grievances including matters of confidentiality, treating survivors with empathy and what non-identifiable data will be collected and how to close the case.

In cases involving a Project Worker, the contractor and PIUs will be advised about the case who will in turn inform the GBV Specialist at the national level who will instigate any investigation required involving the contractor, PIUs, services providers etc. They will then recommend action to be taken by the contractor/CGC in ensuring that administrative sanctions are taken against an alleged perpetrator of sexual assault.

9.5 Adaptation for Vulnerable Groups

This GRM will be presented to Vulnerable Groups and adapted as needed to meet their requirements and decision-making processes while maintaining the principles underlying the mechanism and the roles and responsibilities. Such adaptations will be discussed and agreed during the preparation of the Vulnerable Groups Plans but may include roles for traditional leaders and decision-making processes for example in addressing land issues. The aim for this adaptation is to ensure that vulnerable groups are able to raise their concerns in a manner they feel will be listened to and which they feel is accountable to them.

9.6 Operational GRM

Grievance emanating from the operational activities, will be handled at the Mwanza City Council ideally through the appointed *Grievance Handling Officers (GHOs)*. At the council level a Grievance Handling Officers comprising of TACTIC Project Coordinator, Environmental Officer and Community Development Officer/Sociologist will be responsible for addressing all grievances related to Project performance. The GHOs shall maintain records where grievances

and complaints, including minutes of discussions, recommendations and resolutions made, will be recorded as outlined below which will be adapted, where relevant, to align with the council while maintaining the requirements outlined.

To ensure effectiveness and efficiency, GRM the procedures for handling grievance will be simple. The GHOs shall maintain records where grievances and complaints, including minutes of discussions, recommendations and resolutions made, will be recorded. Quarterly reports on grievances received, registered, resolved or channelled to the appropriate departments staff for explanation or resolution as well as grievances referred to the responsible Government Institutions for further scrutiny such as the *Prevention and Combating Corruption Bureau-PCCB, Commission for Human Rights and Good Governance-CHRGG, security and legal recourse*, will be submitted to the Grievance Redress Integrity Committee (GRIC) for discussion and way forward.

The GRM has the following steps:

Step 1: The Project Affected Person (PAP) shall file the grievance through a special e-mail established for receiving grievances, suggestion boxes, meetings or directly to the GHO who will record grievances/complaints receipt and resolution form. Grievance will be recorded in the grievance/complaints register. All alternative ways of submitting grievances to the management of the Mwanza City Council will be made known to the PAPs for easy communication.

The GHOs will keep records of all complaints received and the responses made in order to track the resolution of grievances. The GHO will acknowledge the complaint has been received. The response will either accept or refute responsibility for the grievance and next step will be the investigation and resolution or immediate actions to be taken. The GHOs will aim at completing investigation within two weeks of the grievance first being logged and will involve the aggrieved person/people in this investigation to ensure their views are incorporated.

If complainant is satisfied, the GHOs will seek their sign off and determine if any follow up is needed to monitor resolution implementation. Once the measures have been implemented the grievance will be closed. If the grievance still stands then the GHO will initiate further investigation and determine the steps for future action.

Step 2: If the PAP is not satisfied with decision of GHOs, the grievance is referred to the Grievance Redress Integrity Committee (GRIC) respond within 2 weeks' time from the submission. The GRIC members would preferably be senior staff who would be required to present the status of Grievance handling to the decision organ of the responsible Institution for discussion and decision on proposed mitigation measures. GHOs will present the report of the number of grievances registered and attended to the Grievance Redress Integrity Committee (GRIC) for discussion and way forward.

Step 3: If the PAP is not satisfied with decision of GRIC, the grievance is reported to the TACTIC Project Implementation Unit at the council.

Step 4: If the PAP is not satisfied with decision of the council, the grievance(s) is reported to PORALG. If the PAP is not satisfied with decision of PORALG, he/she is will channel the grievance to legal redress.

The TACTIC project GRM flow chart is presented in **Figure 9.1.**

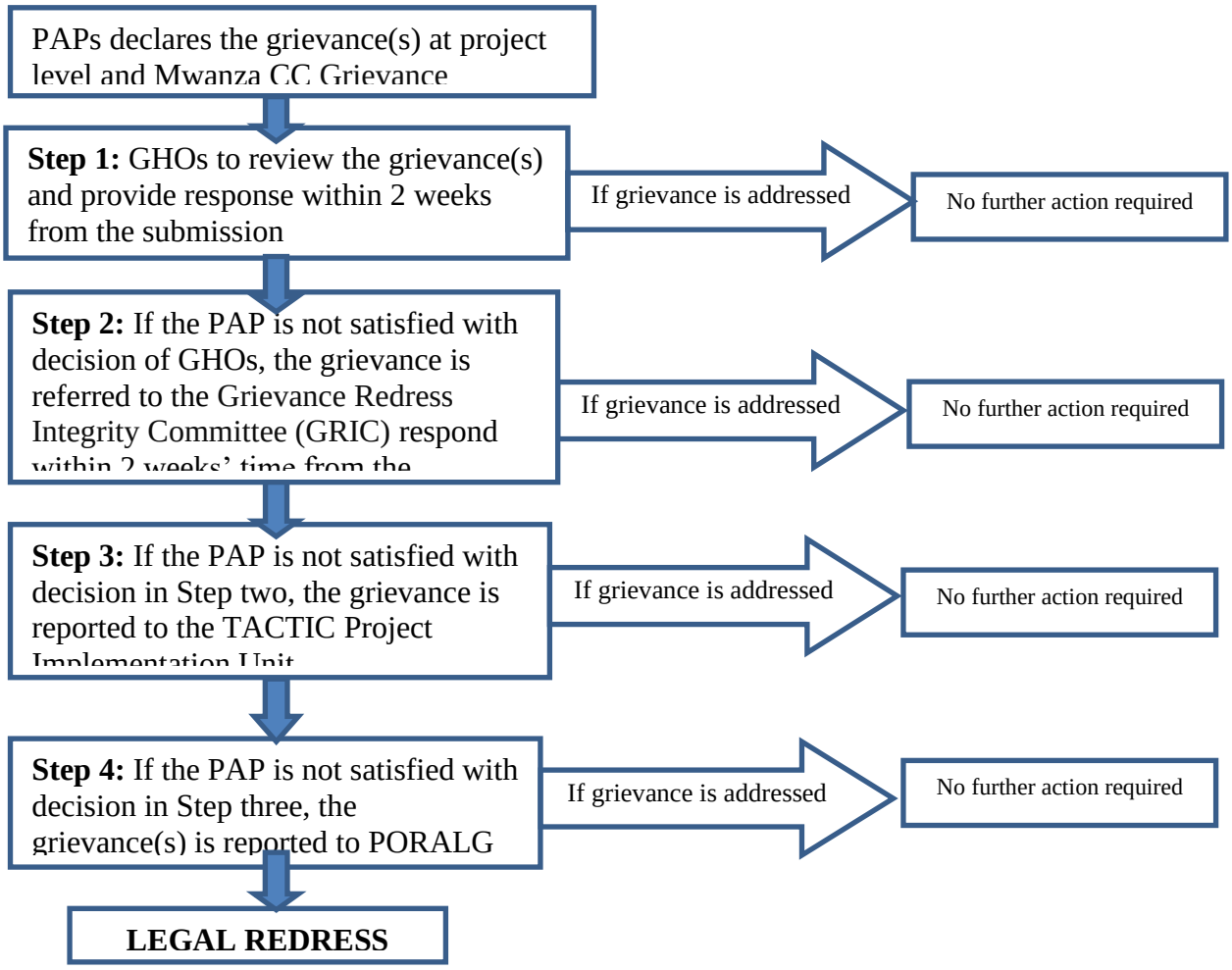


Figure 9.1 **:** The flow chart for steps in Construction and General GRM

9.7 Gender Based Violence (GBV) Grievance Redress Mechanism

In case of complaints related to Gender Based Violence (GBV), the GHO will treat these grievances with due confidentiality. Specific provisions will be included for complaints related to Sexual Exploitation and Abuse (SEA) that could be derived from the project to ensure the survivor's confidentiality and rights. The GRM will ask for, or record, information on three aspects related to the GBV incident: (a) the nature of the complaint (what the complainant says in her/his own words without direct questioning, (b) if, to the best of their knowledge, the perpetrator was associated with the project, and (c) if, possible, the age and sex of the survivors. Survivors will be advised of their right to referral pathways include security and legal recourse,

health services and, psychosocial counselling. Details of the GBV GRM will be included in the GBV action plan.

9.8 Resettlement Grievance Redress Mechanism

Resolution of involuntary resettlement and construction related grievances will be handled by the existing land dispute resolution structures established at the village/mtaa level to the Ward and District level. The project affected persons (PAPs) shall file the grievances to the local government (village/mtaa) office for mediation and resolution of disputes emanating from resettlement issues.

In situations where PAPs are not satisfied with the mtaa government decision on resettlement disputes, the PAPs can approach the Mtaa Adjudication Committee (MAC) for mediation. The VLC will try as much as possible to arrive at a compromise for the complaints raised. This may be obtained through series of conciliations, mediations and negotiations exercises between the two parties *(the PAPs, the subproject proponents and City Director).* If disagreement on the resolutions persists, the PAPs will be allowed to submit their appeal to the Ward tribunal, District land and Housing tribunal, Ministry of Land, Housing and Human Settlement Development before being transferred to the court of law and court of appeal, where necessary, with a view to determine claims validity and compensation required. The response time for cases handled will depend on the issues addressed but it will be as short as it is possible.

9.9 Records Keeping of GRM

All comment responses and, grievances are to be logged using grievance logging forms and registers. This includes details of the claim/grievance/complaint, the claimant/aggrieved, and ultimately the steps taken to resolve the grievance. A master database will be maintained by the CGC to record and track management of all grievances. Regardless of the actual establishment of such a database, typically documentation on grievances keeps track of the following:

9.10 Monitoring of GRM

It is vitally important to monitor the effectiveness of the grievance mechanism. Appropriate measures for this include monthly reporting on the number of grievances received, resolved and outstanding and associated timeframes. This will be undertaken by the CGCs and reported to City Council/PORALG. As part of stakeholder engagement and consultation, involving the views of the stakeholders for whom the Grievance Mechanism is designed will be part of PORALG Monitoring.

CHAPTER TEN

COST BENIFIT ANALYSIS

10.1 Introduction

This section presents a brief financial analysis and an extended cost-benefit analysis for the proposed project. The cost benefit analysis provided here uses approximate values as the project is still in the procurement process therefore real values cannot be used at this venture.

10.2 Income

The source of income shall be from the building in term of renting of business space. The market price at Mwanza City Council is estimated at 10,000 TZS per square meter per month. Given the space which will be available in the new market, Mwanza City Council is expected to generate significant amount of revenue.

10.3 Total Annual Cost Computation

10.3.1 Capital Cost

The estimated total project cost, including respective consultant's fees but excluding the cost of land is estimated at 8 billion as shown in **Table 10.1** below.

Table 9.1: Breakdown of the capital cost

Item	Billion
Demolitions and substructure	0.5
Civil Works	6
Equipment	1
Pre-operational Expenses	0.5
Total Capital Cost (Estimate)	**8**

Source: Consultant's analysis, 2022

10.3.2 Operational and Maintenance Expenses

The total operational and maintenance costs are estimated to be **TSHS 371 million** Market operational expenses shall typically cover the following (Table 10.2):

Table 9.2: Operational and maintenance expenses

ITEM	AMOUNT (IN MILLION TSH)
Salaries and wages	60
Vehicles running expenses	30
Electricity	Paid direct by tenant
Water	Paid direct by tenant
Maintenance / Repairs	20
Administration Overheads	30
Environmental Management and Monitoring	231
Total	**371**

Source: Consultant's analysis, 2022

10.3.3 Environmental Costs

The proposed development has been designed to adhere to all the current environmental requirements of the law as well as other good practice requirements that may not necessarily be required by the law and it is the intention of the developers to fully comply with the environmental clearance requirements. The EIA has estimated the annual environmental costs (Management and Monitoring) to be **TSH 231,000,000/=**.

CHAPTER ELEVEN

DECOMMISSIONING

11.1 Introduction

As decommissioning is not anticipated to take place in the remote future, the specific conditions for mitigation are generally inherently uncertain. In view of this, specific mitigation measures pertaining to environmental impacts of decommissioning works cannot be proposed at the moment with a reasonable degree of certainty. A detailed decommissioning plan that takes environmental issues into consideration shall be prepared by the developer prior to the decommissioning works. Should it be done, decommissioning may entail change of use (functional changes) or demolition triggered by change of land use. Therefore what is presented here is just a Preliminary Deccommissioning Plan which give light to what shall be done if the need for decommissioning arise.

11.2 Preliminary Decommissioning Plan

This Section provides a brief outline of the works required to demolish the Proposed infrastructures on the site incase it happen. This Plan will be used as a reference document that provides the framework to ensure that demolition activities on the site do not adversely affect the health, safety, traffic or the environment of the public and neighbouring properties. The Contractor will be required to prepare a detailed Demolition Plan and Construction Management Plan to the satisfaction of the Proponent and relevant Authorities prior to the commencement of works on site.

11.2.1 Demolition Methods

It is anticipated that the Contractor will prepare a detailed Demolition Plan prior to the commencement of work on site, however, the indicative demolition methodology will be as follows:

- The strip out and removal of non-structural elements will be undertaken utilising manual labour and small plant including – bobcats, 3-5t excavators and dingo type loaders.
- The materials will be removed from site using small to medium sized trucks.
- The structures will be demolished using larger plant and equipment including 15-40t hydraulic excavators. These machines will be equipped with rock breakers, pulverisers and the like which would be used in a sequential manner.
- During the demolition process erosion control measures will be established. These will include treatment of dust and potential discharge into stormwater systems.

11.2.2 Materials Handling

Materials handling will be by mechanical plant (including excavators and bobcats) loaded into trucks (bogie tippers and semi trailers). The debris will be carted offsite to an approved waste facility or recycling centre. The contractor shall submit a Demolition Waste Management Plan to Mwanza City Council which outlines the objectives of:

- maximisation, reuse and recycling of demolition material
- minimisation of waste disposal
- evidence of implementation for specified arrangements of waste management

On-site storage of reusable materials will occur at Site. Recycling and disposal containers will also be accommodated at this location for collection vehicles. Hazardous materials will be treated separately. A hazardous materials inspection will be undertaken by an accredited consultant and a report issued. Hazardous materials will be removed in accordance with EMA 2004. A final clearance report will be provided by the hygienist which will include the provision of tip dockets from waste centres.

11.2.3 Proposed Sequence

The Contractor will be required to prepare the following documentation prior to the commencement of demolition and/or excavation works:

- Dilapidation Survey
- Construction Waste Management Plan
- Demolition Management Plan

11.2.4 Protective Measures

An A Class hoarding will be erected around the perimeter of the construction site prior to the commencement of demolition works. Additionally, wherever the risk arises of material falling into public areas, overhead protection will be provided in the form of a B Class hoarding. Scaffolding will be erected to facades where materials could fall in excess of 4m. The scaffolding will be clad with chainwire and shadecloth to enclose debris and dust onto the site. During the demolition, dust control measures will be used to minimise the spread of dust from site. The Contractor will have a senior representative on site at all times to ensure compliance with the safety guidelines and agreed work methods.

11.2.5 Traffic Management

The management of construction traffic during the deccommissioning phase will be subject to the provision of a detailed traffic management plan. This plan will be prepared by the Contractor for the various stages of demolition. During demolition, all traffic will be held within the site boundaries. The site will remain closed to pedestrian traffic and will be generally manned by security.

11.2.6 Occupational Health and Safety

A detailed OH&S Policy will be provided by the Contractor prior to work commencement. A detailed Site Safety Plan will be prepared for the specific project.

11.2.7 Environmental Management Plan

A detailed Environmental Management Plan will be provided by the Contractor prior to the commencement of the work.

11.2.8 Potential Impacts and Mitigation Measures

Dust and Noise Pollution

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

Mitigation Measures

- Water sprinkling shall be applied to open earth to reduce dust emission.
- Trucks transporting construction materials shall be covered if the load is dry and prone to dust emissions.
- The demolition area shall be fenced by iron sheets; this will prevent the dust at the ground to be picked up by the wind.
- Community notification shall be undertaken where appropriate where work is likely to cause dust impact on the public and nearby residents.
- 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.
- Construction equipment shall be selected, operated and maintained to minimize noise.

Increased Waste

A lot of demolition waste is expected as a result of the demolition of these blocks. These shall include, concrete, reinforcements, pipes etc. Most of the block materials shall be salvaged and recycled.

Mitigation Measures

- All materials which can be reused shall be reused
- Materials that cannot be reused shall be sent to the authorized landfill

11.2.9 Costs for Undertaking the Mitigation Measures

The cost for undertaking Mitigation measures during deccommissioning is estimated to be TSH 75,000,000.

CHAPTER TWELVE

SUMMARY AND CONCLUSION

12.1 Summary

The EIA study results show that although there are some limited negative environmental implications of the project, the modern Market will have high socio-economic benefits to the people of Mwanza City Council and Mwanza region in totality. The associated negative impacts, to a large extent have been minimized through good engineering design and envisaged construction practices. Specific mitigation measures have been suggested in this report to offset som'e of the inherent adverse impacts. Implementing these mitigation measures would increase environmental soundness of the project Markets.

12.2 Conclusions

It is, therefore, concluded that, implementation of the proposed project will entail no detrimental impacts provided that the recommended mitigation measures are adequately and timely put in place. The identified adverse impacts shall be managed through the proposed mitigation measures and implementation regime laid down in this EIS. Mwanza City Council is committed in implementing all the recommendations given in the EIS and further carrying out the environmental auditing and monitoring schedules.

REFERENCE

United Republic of Tanzania (2005), EIA and Audit Regulations

United Republic of Tanzania (1997), Regional and District Act No 9, Dar es salaam , Tanzania.

United Republic of Tanzania (2008), The HIV and AIDS (Prevention and Control) Act, Dar es salaam , Tanzania.

United Republic of Tanzania (1997). National Environmental Policy (1997), Dar es salaam , Tanzania.

United Republic of Tanzania (2003). Construction Industry Policy (2003), Dar es salaam , Tanzania.

United Republic of Tanzania (1995). Land Policy (1995) , Dar es salaam , Tanzania.

United Republic of Tanzania (2000). National Human Settlements Development Policy (2000), Dar es salaam , Tanzania.

United Republic of Tanzania (2002). National Gender Policy (2002), Dar es salaam , Tanzania.

United Republic of Tanzania (1992). Energy Policy (1992), Dar es salaam , Tanzania.

United Republic of Tanzania (2004). Environmental Management Act No. 20 (2004), Cap. 191, Dar es salaam , Tanzania.

United Republic of Tanzania (2009). Water Supply and Sanitation Act No. 12 (2009), Dar es salaam , Tanzania.

United Republic of Tanzania (2007). The Land Act, 1999, Dar es salaam , Tanzania.

United Republic of Tanzania, (2007), The Urban Planning Act, Dar es salaam , Tanzania.

United Republic of Tanzania (2003). Occupational Health and Safety (2003), Dar es salaam , Tanzania.

United Republic of Tanzania (2004). Employment and Labour Relations Act No. 6 (2004), Dar es salaam , Tanzania.

United Republic of Tanzania (2007). Engineers Registration Act and its Amendments 1997, Dar es salaam , Tanzania.

United Republic of Tanzania (1997). The Contractors Registration Act (1997), Dar es salaam , Tanzania.

United Republic of Tanzania (1997). The Architects and Quantity Surveyors Act (1997), Dar es salaam, Tanzania.

United Republic of Tanzania (2009). Public Health Act (2009), Dar es salaam , Tanzania

United Republic of Tanzania (2000). The Tanzania Development Vision (2000), Dar es salaam , Tanzania.

United Republic of Tanzania (2014). Mwanza City Council socio economic profile. Mwanza, Tanzania.

United Republic of Tanzania (2005). Impact Assessment and Auditing Regulations (2005), Dar es salaam , Tanzania.

United Republic of Tanzania (2007). Environmental Management (Water Quality Standards) Regulations, 2007, Dar es salaam , Tanzania

United Republic of Tanzania (2014). Environmental Regulations 2014 (Standards for control of noise and Vibrations), Dar es salaam , Tanzania

APPENDICES

Appendix I: Terms of References

Environmental and Social Impact Assessment for the Proposed Upgrading of Mkuyuni Fish Market Located Along Mwanza Shinyanga Road, at Mkuyuni Sokoni Mtaa, Mkuyuni Ward, Mwanza City Council in Mwanza Region

1. INTRODUCTION

The detailed scope for undertaking Environmental and Social Impact Assessment is intended to guide the Consultant to address relevant environmental and social issues during the assessment process. Among others, the ESIA shall be conducted in accordance with the requirements of the Environmental Management Act (2004). The Consultant shall do everything necessary to meet the objectives of the services and not less than the following task that should be undertaken during the Environmental and Social Impact Assessment. In the process of consultation (Scoping process) with relevant stakeholders like environmental authorities, the Consultant may further be required to finalize the TOR according the agreement with these stakeholders.

2. SCOPE OF WORK

Task 1: Description of the Proposed Project

The Consultant shall provide a brief description of the relevant parts of the project using maps of appropriate scale where necessary and include the following information: -

- Project justification;
- Location;
- General layout, size, and capacity;
- Area of influence of construction works
- Pre-construction activities
- Construction activities
- Schedule of project activities
- Staffing and support;
- Facilities and services
- Operation and maintenance activities
- Life span

Task 2: Description of the Environment

Assemble, evaluate, and present baseline data on the relevant environmental characteristics of the study area. Include information on any changes anticipated before the project commences. Modify the lists below to show the critical information for this project category or which is relevant to it. Environmental characteristics of the study area shall be presented on a map to facilitate the understanding of the study area

- Physical environmental: This shall cover geology; topography; soils; climate and meteorology; physical structures at site, utilities and services available.
- Biological environment: All flora and fauna present at the project site (if any).
- Socio-cultural environmental; population, land use; planned development activities community structure; , goods and services; recreation; public health; Gender issues and HIV/AIDS, Cultural/ historic properties and attitudes to the project.

Task 3: Legislative, Policies, Administration Framework

Describe the pertinent regulations and standards governing environmental quality, health and safety, protection of sensitive areas, protections of endangered species, siting, and land use control at international, national regional and local levels, The Consultant shall undertake a review of policies, legislation and administrative framework within which the environmental management of the proposed construction of the Mkuyuni fish market will be carried out. The following and any other relevant legislation and policies shall be reviewed: -

6 Environmental Management Act No. 20 of (2004), Cap. 191
7 The Water Supply and Sanitation Act No. 12 of 2009
8 The Urban Planning Act (2007)
9 Land Use Planning Act (2007)
10 Occupation Health Safety (2003)
11 Employment and Labour Relations Act No. 6 0f 2004
12 Engineers Registration Act and its Amendments 1997 and 2007
13 The Contractors Registration Act (1997)
14 The Architects and Quantity Surveyors Act (1997)
15 The HIV and AIDS (Prevention and Control) Act of 2008
16 The Local Government Laws (Miscellaneous Amendments) Act (1999)
17 The Tanzania 2025 Development Vision
18 Environmental Impact Assessment and Auditing Regulations (2005)

Apart from country policies and legislation the World Bank Environmental and Social Framework (ESF) which describes ten (10) Environmental and Social Standards (ESS) will also be used. The ten ESSs as per the WB ESF are: ESS 1: Assessment and Management of Environmental and Social Risks and Impacts; ESS 2: Labor and Working Conditions; ESS 3: Resource Efficiency and Pollution Prevention and Management; ESS 4: Community Health and Safety; ESS 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement; ESS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources; ESS 7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities; ESS 8: Cultural Heritage; ESS 9: Financial Intermediaries; and ESS 10: Stakeholder Engagement and Information Disclosure. Given the nature of activities of this project, with the exception of ESS 9: Financial Intermediaries almost all the ESSs will be relevant.

Task 4: Assist in Interagency Coordination and Public/NGO Participation

Assist in coordinating the EIA & SIA with other government agencies, in obtaining the views of local NGOs and affected groups, and in keeping records of meetings and other activities, communications, and comments and their disposition. Establish the views of the public with regards to the potential impacts of the proposed construction of Mkuyuni Fish Market. Identify the different groups of stakeholders, and then use the most appropriate method to establish their views. Particular attention shall be paid to the disadvantage groups (e.g., children, the elderly and women) that may be affected by the proposed Construction of the Proposed Market.

The Consultant shall undertake an open and transparent consultation process to ensure that the views of interested and affected parties are and approximately incorporated in the project design.

Task 5: Analysis of Alternatives to the Proposed Project

Describe alternatives that were examined in the course of developing the proposed project and identify other alternatives, which would achieve the same objectives. The concept of alternatives extends to siting, design, technology selection, construction techniques and phasing, and operating and maintenance procedures. Compare alternatives in terms of potential environmental and social impacts; capital and operating costs; suitability under local conditions; and institutional, training, and monitoring requirements. When describing the impacts, indicate which are irreversible or unavoidable and which can be mitigated. To the extent possible, qualify the costs and benefits of each alternative, incorporating the estimated costs of any associated mitigating measures. Include the alternative of not constructing the project to demonstrate environmental and social conditions without the project.

Various environmental and social criteria should be developed to select the best alternatives.

Task 6: Identification, Analysis and Assessment of Potential Impacts

The Consultant shall identify, analyze and assess environmental and social impacts of the proposed construction of the Mkuyuni fish Market. The Consultant shall distinguish between positive and negative impacts, direct and indirect impacts, and immediate and long-term impacts. Identify impacts that are unavoidable or irreversible. Wherever possible, describe impacts quantitatively, in terms of environmental components affected (area, number), environmental and social costs and quality of available data, explaining significant information deficiencies and any uncertainties associated with the predicted impacts.

The assessment should focus on the potential for negative environmental and social impacts caused by resettlement of people, pressure on social services.

The assessment should also examine the potential for resettlement of the people that occupy the area now. An overview shall be provided of different groups of people and their cultural, ethnics and socio-economic characteristics, and how they are likely to benefit and / or be negatively affected by the project. Negative impacts may include but not be limited to physical relocation, loss of land or other physical assets, or loss of access to livelihood.

The significance of impacts of the proposed construction of the Mkuyuni fish shall be assessed, and the basis of this assessment shall be specified. The Consultant should take into consideration existing by-laws, national and international environmental standards, legislation, treaties, and conventions that may affect the significance of identified impacts. The Consultant shall use the most up to date data and methods of analyzing and assessing environmental and social impacts. Uncertainties concerning any impact shall be indicated.

Task 7. Mitigation Measure

The Consultant shall suggest cost-effective measures for minimizing or eliminating adverse impacts of the proposed construction and operation of the Mkuyuni fish Markets. The costs of implementing these measures shall wherever possible be estimated and presented. If compensation is recommended as one form of mitigation, the Consultant shall identify all the names and physical addresses of people to be compensated.

Proposed mitigation measures and cost estimates shall be grouped in a separate Bills of Quantities (BOQ) for the project and should also include cost of supervision for the implementation of mitigation measures.

Task 8. Environmental and Social Management Plan (EMP)

The Environmental Management Plan focuses on three genetic areas: implementation of mitigation measures, institutional strengthening and training, and monitoring. The Consultant shall prepare an Environmental and social Management Plan, which will include proposed work programme, budget estimates, schedules, staffing and training requirements and other necessary support services to implement the mitigation measures. Institutional arrangements required for implementing this management plan shall be indicated. The cost of implementing the monitoring and evaluation including staffing, training and institutional arrangements must be specified. Where monitoring and evaluation will require inter-agency collaboration, this should be indicated.

Identify institutional needs to implement environmental assessment recommendations. Review the authority and capability of institutions at local, regional, and national levels and recommend how to strengthen the capacity to implement the environmental and social management and monitoring plans. The recommendations may cover such diverse topics as new laws and regulations, new agencies or agency functions, inter-sectoral arrangements, management procedures and training, staffing, operation and maintenance training, budgeting, and financial support.

Prepare detailed arrangements to monitor the implementations of mitigating measures and the impacts of the project during construction and operation. Include in the plan an estimate of capital and operating costs and a description of other required inputs.

In the case of land acquisition, a Resettlement Action Plan should be prepared and implemented in according to the National Land and Village Land Act 1999. All properties to be affected by the project should undergo valuation for compensation.

3. REPORTING

The ESIA reports should be concise and limited to significant environmental Issues. The Main text should focus on findings, conclusions, and recommended actions supported by summaries of the data collected and citations for any references used in interpreting data. Detailed or un-interpreted data are not appropriate in the main text and should be presented in appendices or separate volume. Unpublished documents used in the ESIA may not be readily available and should also be assembled in appendices. Organized the ESIA may not be readily available and should also be assembled in appendices. In organizing the ESIA reports according to the outline in the Environmental Impact Assessment and Audit Regulations (2005). The main report contains separate an Executive Summary both in English and Swahili.

4. STAFFING

The Consultant should employ an Environmental Impact Assessment Expert (Registered by NEMC), Environmental Engineer and Socio-Economist to carry out the EIA study. In addition, the Consultant may wish to absorb other supporting staff to facilitate efficient expedition of the work.

Appendix II: NEMC letter for TOR approval

THE UNITED REPUBLIC OF TANZANIA

VICE PRESIDENT'S OFFICE
UNION AND ENVIRONMENT

NATIONAL ENVIRONMENT MANAGEMENT COUNCIL
(NEMC)

In reply please quote:
Ref: **EC/EIA/2022/6959** **Date: 10/06/2022**

MWANZA CITY COUNCIL,
P.O. BOX 1333,
MWANZA

RE: APPROVAL OF TERMS OF REFERENCE (ToR) FOR THE PROPOSED UPGRADING OF MKUYUNI FISH MARKET LOCATED ALONG MWANZA SHINYANGA ROAD, AT MKUYUNI WARD, MWANZA CITY COUNCIL, MWANZA REGION

Reference is made to the above captioned subject.

2. The National Environment Management Council (NEMC) acknowledges receipt of Terms of Reference (ToR) and Project brief for undertaking Environmental and Social Impact Assessment (ESIA) study for the above mentioned project.

3. The Terms of Reference have been reviewed and found generally to be adequate to guide the Environmental and Social Impact Assessment (ESIA) study of the named project. The ESIA report should therefore observe requirements of ESIA and Audit Regulations, 2005 specifically Regulation 51 and 52. Furthermore the following should also be included in the ESIA report: -

i. All key stakeholders are consulted including neighbours and the Local Government Authorities. Their views and concerns should be addressed. Records of meetings, communication and comments should be provided with proof of service. Consultation forms should bear **date** and each consulted stakeholder should **sign** against his/her **name** as the law requires;
ii. Ensure all copies of relevant documents/certificates including the land acquisition process documents showing properties impacted by the project are appended to the report;
iii. Compliance status of all applicable legal and policy frameworks and their respective requirement is addressed in the ESIA report;
iv. The EIA report should discuss the management of the hazardous waste i.e., used oil;
v. Only registered environmental experts should appear on the cover page of the ESIA report.

All correspondence should be addressed to the Director General

4. Upon submission of the ESIA report, the Council will arrange for a technical review of the document by the Cross-sectoral Advisory Committee (AC). Prior to review, representatives of the AC will visit the project area to inspect the site and verify adequacy of the ESIA Report. As you submit the ESIA report you will be required to as well pay to the Council review cost through a control number to be generated by the system.

5. We look forward to your cooperation on this matter.

A. N. Sembeka
For: **Director General**

Cc: Rosemary Cliford Nyirenda
P. O. Box 68376,
DAR ES SALAAM

All correspondence should be addressed to the Director General

Appendix III: Title Deed for The Proposed Mkuyuni Fish Market Site

Land Form 23 A.

TANZANIA

THE LAND ACT 1999
(NO. 4 OF 1999)

CERTIFICATE OF OCCUPANCY

(Under Section 29)

Date of Issue: 11-04-2022
Title Number: 00649 LR Mwanza
Land Office Number: 681397
Land: PLOT NO. 74 BLOCK 'BIII' MKUYUNI - MWANZA CITY

Term: NINETY NINE YEARS

TITLE No: 100649 LR. Mwanza
REGISTERED ON: 11-04-2022
AT: 1000 M
Senior Asst. Registrar of Titles

Land Form No. 22

TANGANYIKA STAMP DUTY ACT
Stamp Duty Shs: 100/= Paid
Receipt No: 92098102108265
of: 08-04-2022
Stamp Duty Officer

THE UNITED REPUBLIC OF TANZANIA

THE LAND ACT, 1999
(NO. 4 OF 1999)

CERTIFICATE OF OCCUPANCY
(Under Section 29)

Title No. 100649 LR. Mwanza
L.O. No.**681397**
L.D.No. MCC/L/**90991**

The 11th day of April 2022

THIS IS TO CERTIFY that **MWANZA CITY COUNCIL, an Urban Authority** of P.O Box 1333, MWANZA, Established under the Local Government **(Urban Authorities)** Act No. **8 of 1992 (RE in 2002)** (hereinafter called ("the Occupiers") are entitled to the Right of Occupancy (hereinafter called "the Right") in and over the land described in the Schedule hereto (hereinafter) called "the Land") for a term of **Ninety nine (99)** years from the first day of **January,** two thousand **and twenty two** according to the true intent and meaning of the Land Act and subject to the provisions thereof and to any regulations made there under and to any enactment in substitution therefore or amendment thereof and to the following special conditions:-

1. The Occupiers having paid rent up to the thirtieth day of June **2022**, shall thereafter pay rent of shillings **five thousand (Tshs 5,000/=)** only a year in advance on the first day of July in every year of the term without deduction **PROVIDED** that the rent may be revised by the Commissioner for Lands.
2. The Occupiers shall:-
   (i) Be responsible for the protection of all beacons on the land throughout the term of the Right Missing beacons will have to be re-established at any time at the Occupier's expenses as assessed by the Director responsible for Surveys and Mapping.

TANGANYIKA STAMP DUTY ACT
Stamp Duty Shs: 400/= Paid
On Original Receipt Shs:
of: 08-04-2022
Stamp Duty Officer

(ii) Do everything necessary to preserve the environment and protect the soil and prevent soil erosion on the land and do all things which may be required by the authorities responsible for environment and to achieve such objective

(iii) Build on the land buildings (hereinafter called "the buildings") in permanent materials designed for use in accordance with the conditions of the Right and which conform to the building line (if any) decided by the **Mwanza City Council** (hereinafter called "the authority");

(iv) Building plans to be submitted to the **Mwanza City Council** within six months from the commencement of the Right.

(v) Building construction to begin within six months after the approval of the plans.

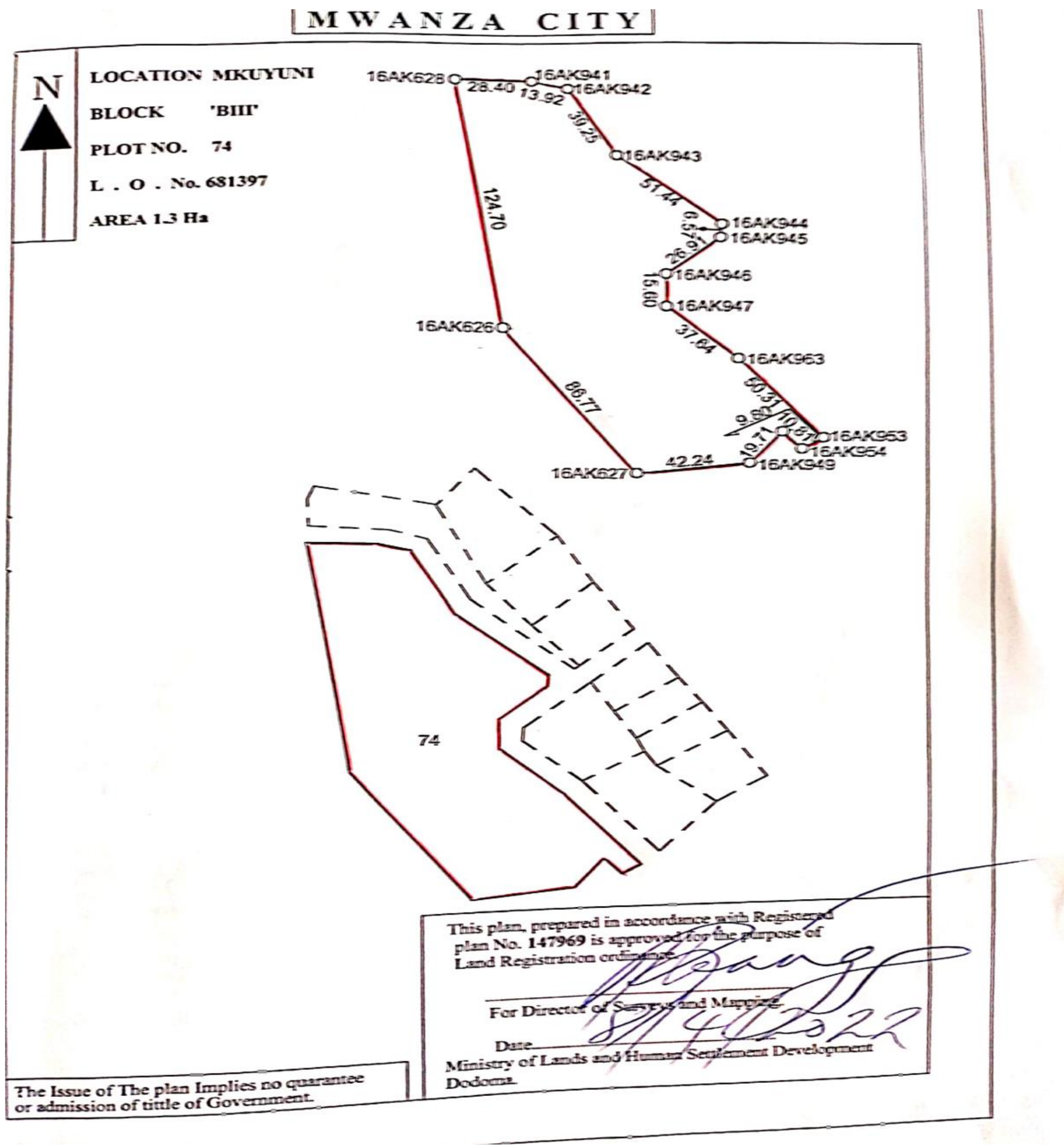
(vi) Buildings to be completed within thirty-six months from the commencement of the Right.

3. **USER: The land and the buildings to be erected thereon shall be used for Fish Market purposes only; Use Group 'E' Use classes (a), (b) and (e) as defined in the Urban Planning (Use Groups and Use Classes) Regulations, 2018.**

4. The occupiers shall not assign the right within three years of the date thereof without the prior approval of the Commissioner.

5. The Occupiers shall deliver to the Commissioner notification of disposition in prescribed form before or at the time the disposition is carried out together with the payment of all premia, taxes and dues prescribed in connection with that disposition.

6. The President may revoke the right for good cause or in public interest.


MWANZA CITY
N
LOCATION MKUYUNI
BLOCK 'BIII'
PLOT NO. 74
L . O . No. 681397
AREA 1.3 Ha
16AK628
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16AK941
13.92
16AK942
39.25
16AK943
51.44
124.70
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16AK945
16AK946
15.60
16AK947
16AK626
37.64
16AK963
88.77
16AK953
16AK954
42.24
16AK627
16AK949
74
This plan, prepared in accordance with Registered plan No. 147969 is approved for the purpose of Land Registration ordinance.
For Director of Surveys and Mapping
Date
Ministry of Lands and Human Settlement Development
Dodoma.
The Issue of The plan Implies no quarantee or admission of tittle of Government.

SCHEDULE

ALL that Land known as Plot No. **74** Block **'BIII'** situated at **Mkuyuni** in **Mwanza City** containing **one decimal point three (1.3)** hectare shown for identification only edged red on the plan attached to this Certificate and defined on the registered Survey Plan numbered **147969** deposited at the Office of the Director for Survey and Mapping at Dodoma.

Given under my hand and my official seal the day and year first above written.

ASSISTANT COMMISSIONER FOR LANDS

The within named **MWANZA CITY COUNCIL** hereby accept the terms and conditions contained in the foregoing Certificate of Occupancy.

SEALED with the **COMMON SEAL** of the said)
MWANZA CITY COUNCIL and)
DELIVERED in the presence of)
this 12 day of April 2022.)
)
Signature.....)
Name.....SERIETE S. YAHAYA.....)
.....)
Qualification CITY DIRECTOR.....)
)
Signature.....)
Name.....SIMA CONSTANTINE SIMA)
.....)
Qualification.....VALUATOR.....)

Appendix IV: List of stakeholders who participated in the study and minutes of the stakeholders meeting

Appendix IVA: List of participants to the study

ORODHA YA WADAU WALIOSHIRIKI KATIKA MAJADILIANO KUHUSU UJENZI NA UBORESHAJI WA MIUNDOMBINU KATIKA JIJI LA MWANZA

STAKEHOLDERS CONSULTATION FOR THE PREPARATION OF ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT, STAKEHOLDER ENGAGEMENT PLAN, RESETTLEMENT ACTION PLAN, LABOR MANAGEMENT PROCEDURES AND DESIGN DRAWINGS OF THE PROPOSED INFRASTRUCTURE CONSTRUCTION IN MWANZA CITY COUNCIL

TAREHE NA MUDA / DATE AND TIME: 15/1/2022 SIKU/DAY: SATURDAY

MKUYUNI FISH MARKET

PARTICIPANTS LIST

No	Jina / Name	Cheo / Position	Namba ya Simu / Tel. Number	Anuani ya barua pepe / Email Address	Sahihi / Signature
1	DONATA .Y. GAPI	DIWANI	0754-435544	donatayusuph292@gmail	
2	SAIDI ABDALLAH	M/KITI	0757 898288	Saidy K[illegible]	
3	LEAH Y. JOSS	CDO	0757559304		
4	RAHEMA A. MOYO	FSO	0755-495787	Rahema moyo 26@gmail.com	
5	RAMADHANI HAMIS	MCD	0754849221	Kyamba7@gmail.com	
6	IBRAHIM K. JOSEPH	WEO	0764243727	ibukajo@gmail.com	
7	MWAJUMA CHAMLIHO	MJUMBE BMU	0768-5[illegible]594		
8	LEONARD B. MPEMBA	M/KITI BMU	0769753968		
9	ROBERT CHARLES	KATIBU BMU	0767-683568		

ORODHA YA WADAU WALIOSHIRIKI KATIKA MAJADILIANO KUHUSU UJENZI NA UBORESHAJI WA MIUNDOMBINU KATIKA JIJI LA MWANZA

STAKEHOLDERS CONSULTATION FOR THE PREPARATION OF ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT, STAKEHOLDER ENGAGEMENT PLAN, RESETTLEMENT ACTION PLAN, LABOR MANAGEMENT PROCEDURES AND DESIGN DRAWINGS OF THE PROPOSED INFRASTRUCTURE CONSTRUCTION IN MWANZA CITY COUNCIL

TAREHE NA MUDA / DATE AND TIME: 15/1/2022 **SIKU/DAY:** SATURDAY

MKUYUNI FISH MARKET

PARTICIPANTS LIST

No	Jina / Name	Cheo / Position	Namba ya Simu / Tel. Number	Anuani ya barua pepe / Email Address (biashara yako)	Sahihi / Signature
1	GABRIEL NGUNYMALI	MJASILIAMALI	0755-065533		[signature]
2	FAUSTINI GEREVAS	MALIBULE	0752862127		[signature]
3	AISHA ISMAIL	(KIBANDA) M-PESA MJASILIAMALI	0767630090		[signature]
4	MUHAMMAD S LYZ	MJASILIMALI	0655189120		[signature]
5	SABINA TIMOTHY	MKRIO	0752928553		Sabina
6	JOHN ANTHONI	mnkikiti	0755701324		[signature]
7	REBEKA MATHIAS	mjasiriamari	0765031197		R. mathias
8	HALIMA MUHAMUDY	Mjasiliamali mdogomdogo	0684887652		H Muhamudy
9	ZACHARIA ERASTO	Mjasiliamali	0765114544		[signature]

MKUYUNI FISH MARKET

10	THERESIA J ISINGO	MJASIRIMALI	0756085744		T.J.ISINGO
11	NSHOMAL TIMOTHY	MJASIMALI	0752928583		
12	MARIAM S. ENOMI	MJASIRIAMALI.SAMAKI	0699644411		M. E.
13	SHAMIRA RASHIDI	MJASIRIAMALI.SAMAKI	0686803103		
14.	SARA - DANIELY	MJ.SAMAKI	0767099003		S.D
15	CHRISTINA HASSAN	SAMAKI	0752261577		
16.	FRAISKA TRYPHONE	UDUVI	0766111362		
17	SABINA HONZELA	UDUVI			
18	MARY HONZELA	UDUVI			
19	MWANAIDI RAMADHAN	UDUVI	0755221761		
20	VERONICA PHILIPO	MJASILIAMALI	0746467361	UDUVI	VERA
21	SABINA PELEMBE	SAMAKI	0762504288		S.P.
22	ZULENA MUSA	UDUVI	0763793926		
23	FEZA MUSA	UDUVI	0757317664		
24	HERIMAN RASHIDI	MJASILIAMALI	0765755836	MUBEBAI	

PARTICIPANTS LIST

No	Jina / Name	Cheo / Position	Namba ya Simu / Tel. Number	Anuani ya barua pepe / Email Address	Sahihi / Signature
1.	ELENESTINA - CHARLES	MAMA-LISHE	068938011	–	Charles
2	JOHN MASANJA	Mvuvi	0762-90992		
	PASCHAL SOLLY	Mvuvi	0745247938		
	EMMANUEL MACHIBYA	Afisa mipango Nguvu ya 1000	0753170984		
	RAMADHANI LEAHY	–			R.Clauter
	ENO JAPHET	–	0682651751		
	ADAM YASSIN	–	0764439785	0	
	EMMANUEL MACHIBYA	SHOP	0753170984		
	HEEMA LICHEDI	MAMA LISHE	0784114188		H. LICHAI

KETI

MKUYUNI

10.	ANEEMA - PAULO	BIASHARA/Dada	0754812744		
11	ZACHARIA - ERASTO	MJASILIAMALI	NAPAKA 0708174544		
12.	MONICA - CAMILLENA	Mama Samaki	0765716302		M. Camilena
13	ZAWADI - DENIS	Mama Dada	07		Zdenis
14.	HELENA - JOHN	MAMA RISHE			H. John
15	ESTA SAMSON	ANA ANIKA LUCIA	0747263953		SAMSON
16.	ESTA - COSIMAS	MAMA YIAZI			E/Cosimas
17	THEODORA - EDWARD	MAMA DADA			Th/Edward
	DEVID PAULO	BIASHARA - YADUKA	0754812744		

AFISA MTENDAJI WA KATA YA MKUYUNI JIJI LA MWANZA

PARTICIPANTS LIST

No	Jina / Name	Cheo / Position	Namba ya Simu / Tel. Number	Anuani ya barua pepe / Email Address	Sahihi / Signature
1	Remigius R. Sebastian	Mjasiliamali Kit	0785803102	DUKA	[illegible]
2	BAHARI HAMIS		0762867482		B.H.
3	SAID SALMH SAID	Mjasiliamali	0692119882	Duka	[illegible]
4	GABLIERY KOSIMUS	MJARIAMARI	0753274551	NAFAKA	[illegible]
5	MARKO KALAMU	Fundi mashine za uvuvi	0752392757		[illegible]
6	JOEL UDA-ODUDO	MAA-ANIKA UDUVI	0752-098670		J-ODUDO
7	GRACE REVOCATUS	MAMA LISHE	0787222776		GR
8	SPEMBA MAGANGA	MJASIRIAMAL	0787456295		S. MAGANGA
9	ARESINA JOSEPH	MUUZA SAMAKI	0766986174		A. Manilabona

	Hyasinta Albogast	UDUVI	0753494214		Hyasinta
	ZUHURA NASIBU				Z.N
	MAGDALENA VEDASTO	UDUVI	0753637487		M.V
	SALIMA OMARI	UDUVI	0757131568		SO
	ZUWENA AFHUMANI	UDUVI			Z A
	ANISIYA LUBASA				A L
	JACKLINE SLIVESTA	DA			J.S
	SHARIFA JAFARI	DAGAA	0683222464		S J
	Aisha Masud	MYANJA	0742281976		[illegible]
	AMINA KAISE	MAMA LISHE			
	ZUWENA MUSA	UDUVI			
	Kulwa Amiri	UDUVI	0756520783		K.AMIRI
	Mwajuma Mambo	UDUVI	0747824278		[illegible]
	ASHA NESTORY	UDUVI			
	KALEKWA JUMANNE	MAMA RISHE			

PARTICIPANTS LIST

No	Jina / Name	Cheo / Position	Namba ya Simu / Tel. Number	Anuani ya barua pepe / Email Address	Sahihi / Signature
	BARAKA JAWADU	M/K UWM	0673407096		
	JAPHET MAGESSE	BIDHAA YA MYUMBANI	0765590088	japhetmagesse@gmail.com	
	MARITHA DISHON	MUUZAJI WA VYOMBO	0762 197671		
	FIDELIS MAGAIWA	VIATU	0689835[illegible]		
	Baudi.h; Daniel:	fagaa	0		
	GODILIVA SASIA	dagaa	0766531988		G.S
	MONICA SOKIA	DAGAA	0756585667		
	FRANK DANIEL	VIATU	0743855815		
	ZAKAYO MARCO	NDIZI	0762882988		

PARTICIPANTS LIST

No	Jina / Name	Cheo / Position	Namba ya Simu / Tel. Number	Anuani ya barua pepe / Email Address	Sahihi / Signature
	MADUHIA-LUSEKWA		0765947832		
	RAMADHANI-JOSEPH		0742309109		
	ALLY JUMA		0694149851		
	Sibe Mamboya		0753892805		
	SIMON DOMINICK		0764173954		
	RIZIKI MAGESA NYABANGE	MWASIRIAMALI	0747824870		
	Shukuru John		—		
	AHMED BAKSH		0763370116.		
	JOYCE BOAZ	MAMA LISHE	0757433371		

	PILLY JUMA	M. PESA	0762759845		P. Juma
	MWAVAISHA SALUMU	~~MAKA LATIFAKA~~	0758 9844 16		M Salumu
	STEVEN CHACHA		0744608718		St. chacha.
	ANANIAS BENEDICTO	MKUU	0756319862		A.B.
	JOHN WANDWE		0756044825		
	DONGSIA DESOMBA	MAMA LISHE	0768718745		Donesia J
	JESKA MSAFIRI	MAMA LISHE	0682972650		MA. Baraka.
	SALOME JOSEPHAT	MKUZA DAGAA	0787156147		SALOME
	NEEMA MAKONGO	DAGAA	0783596678		NEEMA
	REBECA MATIAS	DAGAA	0765031197		De Beca
	AMINA HASSORA	MAMA LISHE	0759-982446		A. Hassora.
	GEIRUDA S. MALLAGI	DAGAA/UDUVI	0754889680		Mallagi.

PARTICIPANTS LIST

No	Jina / Name	Cheo / Position	Namba ya Simu / Tel. Number	Anuani ya barua pepe / Email Address	Sahihi / Signature
1.	MUGAYA MARWA IMORI	UVUVI	0769625947		
2.	TABASAM JOHN	UVUVI	0756012461		
3.	MARIAM MASUDI	MAMA LISHE	0759069777		
4	MUTO ISMAIL	UVUVI	0743546976		
5	HABIBA SELEMANI	UVUVI	0757495590		
6	ZUBEDA ABED	UVUVI	0753122244		
7	KEZIA WILLIAM	UVUVI	0685566716		
7	ESTER JUMA	MPESA	0768177114		
9	ADAM ISAKA	UVUVI	0765139439		

	ZAINAB - MLASA	MAMA LISHE	0752-664289		
	MEGRETH ELIAS	MAMA LISHE	0683388190		
	HAPPINESS ZAULENT	MAMA LISHE	0754951321		
	ADIJA OCCARI	MAMA LISHE	0758390426		
	SHABANI ABDALLAH	MWUZA VITAA	0757819218		
	ADIJA EDUADI	DUKA LA NAFAKA	0784555573		
	MARIAMU KULWA	MAMA LISHE	0765 8469		
	SAMWEL JOHN	MWUZA			
	STEVEN CHACHA	MWUZA MBOGA	0744608713		
	FAIDA BAKARY	SAMAKI	0766 209313		
	KHADIJA ISSA	SAMAKI	0672 415292		
	MARIA KISEKO	SAMAKI	0763 369352		
	MWATATU ADAM	DUKA LA NAFAKA	0756192424		

PARTICIPANTS LIST

No	Jina / Name	Cheo / Position	Namba ya Simu / Tel. Number	Anuani ya barua pepe / Email Address	Sahihi / Signature
1	Veronika Bonasi	Udumfi na dagaa	0756612706		V. Bonas
2.	YAHELA -JOSEPH	Uduvi			V. Joseph
3.	EDINA -JEMS	Uduvi			E. Jems.
4	malimu Gangara	uduvi na dagaa			M. Gandala
5	Gaspar Makingi	Nguo na Samaki	0762229973		[illegible]
6	FOCUS J. KABAZU	MGAHAWA	07673916		[illegible]
7	ERNEST REVELIAN	TIZANGA			uduvi
8	Meli Rubeni	mwale			mkaa
9	Daynes malamba	usasilia madagaa	0762967408		dagaa

PARTICIPANTS LIST

No	Jina / Name	Cheo / Position	Namba ya Simu / Tel. Number	Anuani ya barua pepe / Email Address	Sahihi / Signature
1	EGIDA JOSEPH		0767314139	UDUVI	Egseph
	PILI MALIKA		0766597087	UDUVI	P. MALIKI
	FATUMA MALIKI		0782443094	UDUVI	F MALIKI
	THEO LUCAS		0756616286		
	MWAJUMA ABEDI		0755737258	UDUVI	M Abedi
	FATUMA SALEHE		0685975481	UDUVI	
	CHRISTINA MATABA		0694211184	UDUVI	Cm
	ZENA STIVINI		0752999890	UDUVI	Z.S
	ASHA ASANI		0758786963		ASHATI

PARTICIPANTS LIST

No	Jina / Name	Cheo / Position	Namba ya Simu / Tel. Number	Anuani ya barua pepe / Email Address	Sahihi / Signature
1	JAMILA C BASHEKHE	MAMA LISHE	0759212177		
	ANGELINA JOHASI	MBOGAMBOGA	0-763013845		
	MARIA S. MASHAURI	MAMA LISHE	0742227724		
	MARIAM ATHUMANI	MKAA	0782667554		
	CHRISTINA J. NILAKIGWA	MBOGA NA VIAZI	0748629771		
	NEZIA RAPHAELY	VIUNGO VYA MBOGA	0712325258		
	MARIAM ALBAGASHI	NYANYA CHUNGU	0787 159695 0715766443		
	JUSTA SALVATOR	BIDHAA MCHANGANYIKA	07626934702		
	MWATIMUA ISA	VIAZI VITAMU	0745162118		

	HABIBA HABIBU	SAMAKI	0686908692		HABIBA
	HADIJA ISUMARI	UBUVI	0743871327		H. Ismail.
	FATUMA NASIBU	MBOGAMBOGA	0755294947		F. Nasibu
	VALENTINA JACKOBO	UBUVI NA DAGAA	0758757327		
	NEEMA JOHN	MIHOGO	0673678329		
	JEDI RUCHOMA	MBOGA	0692445268		T. R
	DEBORA OBED	MAMRISHE	0623450444		D. O
	ANNASTAZIA ZAKARIA	UBUVI DAGAA	0748255825		A. Z
	ASHURA HARUNA	MIHOGO	0758244974		A. H
	ASIMAMA NASIBU	MIHOGO	0763137578		A. M
	JOIS JORAMU	UBUVI DAGAA	0788856087		J. J
	SALOME MGANGA	UBUVI DAGAA	0753030143		S. M
	JESKA JAPHET	MBOGAMIHOGO	0769123120		J. J
	AGNES MTAKI	DAGAA	0755420375		A. M
	BRADINA SPRIANO	CHUMVI MAFUTA	0754980644		B. S

1	MAGRETH Tinawitte	0763224982	BOGAMBOGA		
2	AMINA ISSA	0748205266	VIUNGO		A. Issa
3	CHIKU MRISHO	0762 002618	IDUVI	CH. MP.	
4	Levania Venansi	0766-688971	Majaketi	~~Bogambo~~	L. V.
5	Kabura John				
6	Aisha -masoud	0742192876		Nyanya	
7	TABU Jumpa	0743 737770		UDUVI	
8	SHARIFA RAMADHANI	0784-138704		Nyanya	
9	ANASTAZIA SAIMONI	0766857808			A Saimo
10	PENDO SAMSON	0743-624081		MBOLAMBOLA	P. Samson
11	NOVESTA SOLOMON	0		MAMA RISHE	N. Solomoni
12	MARY ROUBEN	0768-107788		UDUVI	M R
13	VERONICA MUSSA			MUUZA NYANYA	V. M.
14	RASHIDI ABDALLAH	0684631996		KIBANDA	R. Abdallah

PARTICIPANTS LIST

No	Jina / Name	Cheo / Position	Namba ya Simu / Tel. Number	Anuani ya barua pepe / Email Address	Sahihi / Signature
	ZABIBU NASORO	VIAZI	0753199305		Z-N
	MUDI MASHAURI	UDUVI	0674773893		M-M
	JAUS ALLY	VIAZI	0723914902		J.A
	REISKA DOMISIANI	MA. RISHE			P.D
	SADA ALLY	MA. RISHE	0784534483		SADA
	LESTUTA SHABAN	UDUVI			LESTUTA
	SWAUM ABDALLY	MIHOGO	0757163685		S.A

ORODHA YA WADAU WALIOSHIRIKI KATIKA MAJADILIANO KUHUSU UJENZI NA UBORESHAJI WA MIUNDOMBINU KATIKA JIJI LA MWANZA

STAKEHOLDERS CONSULTATION FOR THE PREPARATION OF ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT, STAKEHOLDER ENGAGEMENT PLAN, RESETTLEMENT ACTION PLAN, LABOR MANAGEMENT PROCEDURES AND DESIGN DRAWINGS OF THE PROPOSED UPGRADING OF MKUYUNI FISH MARKET LOCATED AT PLOT NO. 74, BLOCK BIII – MKUYUNI, ALONG MWANZA SHINYANGA ROAD, AT MKUYUNI WARD, MWANZA CITY COUNCIL, MWANZA REGION

TAREHE NA MUDA/ DATE AND TIME: 28/12/2022 SIKU/DAY Wednesday

LIST OF STAKEHOLDERS

S/N	Jina/ Name	Taasisi/ Institution	Cheo/ Position	Namba ya Simu/ Phone No.	Anuani ya barua pepe/ email address	Sahihi/ Signature
1	Eng Salim Lossindilo	MWAUWASA	DWSS	0756291029	salim.lossindilo@mwauwasa.go.tz	
2	Renatus Shinhu	LVBWB	Basin Water Director	0752220142	renatus.shinhu@lvbwb.go.tz	
3	Bahili Seif	LVBWB	CDO	0755443696	bahiliseif283@gmail.com	BS
4	Eng Abdallah Mitenda	TANESCO	Ag RM	0714583007	abdallah.mitenda@tanesco	
5	BAKARI S. MOHAMED	TFS - Mwanza	Zonal Manager	0787720566	bakari.mohamed@tfs.go.tz	
6	MWALA GERVAS	BMU	BAHARIA	0747019364		
7	LUKAS KISSIBO	KATIBU (BMU)	KATIBU	0682083801	—	
8	Thomas Moshi	TFS - MWZ	Asst Zonal Manager	0754436616	thomasyeue@yahoo.co.uk	

ORODHA YA WADAU WALIOSHIRIKI KATIKA MAJADILIANO KUHUSU UJENZI NA UBORESHAJI WA MIUNDOMBINU KATIKA JIJI LA MWANZA

STAKEHOLDERS CONSULTATION FOR THE PREPARATION OF ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT, STAKEHOLDER ENGAGEMENT PLAN, RESETTLEMENT ACTION PLAN, LABOR MANAGEMENT PROCEDURES AND SESIGN DRAWINGS OF THE PROPOSED UPGRADING OF MKUYUNI FISH MARKET LOCATED AT PLOT NO. 74, BLOCK BIII – MKUYUNI, ALONG MWANZA SHINYANGA ROAD, AT MKUYUNI WARD, MWANZA CITY COUNCIL, MWANZA REGION

TAREHE NA MUDA/ DATE AND TIME: 28/12/2022 SIKU/DAY Wednesday

LIST OF STAKEHOLDERS

S/N	Jina/ Name	Taasisi/ Institution	Cheo/ Position	Namba ya Simu/ Phone No.	Anuani ya barua pepe/ email address	Sahihi/ Signature
1	SOSAI ABOKELA	M/kiti mtaa	M/kiti	0757-848280	1333	
2	CHARLES L. FASHION		MJUMBE	0758384288		
3	SALMA KASIM		MJUMBE	0 -		KA
4	EMANUEL Daniford		MJumbe	0744011258		
5	MWAJUMA Chamulio		MJumbe	0768518894		
6	IKRAMA MABORI		MJUMBE	0786513800		
7	MIGITONI WILIBADI		Mdau	0765459009		
8	Samuel Masokwa			0768217252		

ORODHA YA WADAU WALIOSHIRIKI KATIKA MAJADILIANO KUHUSU UJENZI NA UBORESHAJI WA MIUNDOMBINU KATIKA JIJI LA MWANZA

STAKEHOLDERS CONSULTATION FOR THE PREPARATION OF ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT, STAKEHOLDER ENGAGEMENT PLAN, RESETTLEMENT ACTION PLAN, LABOR MANAGEMENT PROCEDURES AND SESIGN DRAWINGS OF THE PROPOSED UPGRADING OF MKUYUNI FISH MARKET LOCATED AT PLOT NO. 74, BLOCK BIII – MKUYUNI, ALONG MWANZA SHINYANGA ROAD, AT MKUYUNI WARD, MWANZA CITY COUNCIL, MWANZA REGION

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LIST OF STAKEHOLDERS

S/N	Jina/ Name	Taasisi/ Institution	Cheo/ Position	Namba ya Simu/ Phone No.	Anuani ya barua pepe/ email address	Sahihi/ Signature
9	PATRICIA MASHAURI		AFISA UVUVI	0767910006	1333	
10	ELEMESTINA – CHARLES		MJUMBE	0659381011		
11	ISSA OMARI		MVAKILIA USAFI	0678923966	1333	
12	REHEMA AIM MOYO	MCC	AFISA UVUVI	0755-495787	Rehemamoyo.26@gmail.com	
13	Rehema Buna		Mjumbe	0684200160		
14	[illegible]		WAKALA USAFI	0767021165	1337	
15	[illegible]	MKUYUNI KATA	MEO	0625911260	J.L.P 1333	
16	IBRAHIM KAJORO JOSEPH	MCC - MKUYUNI WARD	WEO	0764243727	1333-MWANZA	

Appendix IVB: Minutes of the stakeholders meeting

MUHTASARI WA MKUTANO WA WAPANYABIASHARA WA MWALO WA MSWAHILI - MKUYUNI KUHUSU ELIMU NA MAONI JUU YA UJENZI WA MWALO MPYA WA KISASA MKUYUNI ULIOPANGIKA LEO TAREHE 15/01/2022 SIKU YA JUMAMOSI

AGENDA.

01. KUFUNGUA MKUTANO.

02. ELIMU JUU YA UJENZI WA SOKO LA KISASA

03. KUFUNGA MKUTANO.

AGENDA 01. KUFUNGUA MKUTANO

Mwenyekiti wa mandeleo kata ya mkuyuni alifungua kikao mnamo saa 12:40 mchana na kukaribisha wawezeshaji kuendelea na elimu.

AGENDA 02. ELIMU JUU YA UJENZI WA SOKO LA KISASA

- Wawezeshaji waliwaelimisha wananchi wa eneo la mwalo juu ya ujenzi wa soko la kisasa la mkuyuni eneo la mwalo wa mswahili.
- Mwezeshaji aliwaambia wananchi kuwa wanatakiwa kutenga maeneo ya wafanyabiashara kulingana na bidhaa husika

MAWAZO KUTOKA KWA WANANCHI

Baraka Jawab.

Kaomba kuwepo kwa eneo la kuanikia bidhaa zitokanazo na mwalo hili kubakiza mapato mwaloni na kuondoa adha ya wavuvi kuanikia bidhaa katika maeneo ya mwalo jirani kama bwiru, kirumba na igombe na kigoto

Robert charles.

- Kaomba kuwepo na ujenzi wa vitengo vya bidhaa zitokanazo na ziwa na vitengo vya bidhaa ziendanazo na bidhaa za mwaloni
- Kaomba kuwepo kwa eneo la solar dry kwa ajili ya ukaushaji wa bidhaa kama ugoli na dagaa kutoka ziwani wakati wa masika.

Baraka Jawab.

- Kaomba kujengwe vyumba vya bei nafuu hili kupatikane kwa wapangishaji kwa bei nafuu kasa mama lishe na wanaopangisha vyumba kwa ajili ya sfoo kwa bidhaa za mwalo.

Mohameed Shabani

- Kaomba kujengwe na kuwepo kwa maeneo ya pakingi za boti hili wanaonunua bidhaa kutofika katika maeneo ya maji na pia kutoongesha vitega vyao

Maengila Jacob.
Kaomba kujengwe kivuko kwa ajili ya kupunguza ajali zinazotokana na waenda kwa miguu kwenda mwaloni kwa ajili ya kununua bidhaa

Mwekezaji aliwapa chimo kuwa hizi ni taarifa za awali za ambazo wamezibeba na zitafanyiwa kazi pia sio kuwa ushirikishaji utaisha hapo bali kutakuwepo vikao na mikutano mingi juu ya ujenzi wa soko la kisasa la mwalo wa mwaloni litalokuwa mkuyuni.

AGENDA 0.3. KUFUNGA MKUTANO.
Mwenyekiti alifunga mkutano mnamo saa 13:35 mchana kwa kuwashukuru wawekezaji na wananchi wote waliohudhuria mkutano.

Mwenyekiti

Katibu

MWENYEKITI
KAMATI YA MAENDELEO
KATA YA MKUYUNI
JIJI LA MWANZA

AFISA MTENDAJI WA KATA
KATA YA MKUYUNI
JIJI LA MWANZA

Appendix V: Resettlement Action Plan

1. INTRODUCTION

The President's Office, Regional Administration and Local Government (PO-RALG) has received fund from the World Bank to implement the Tanzania Cities Transforming Infrastructure and Competitiveness Project (TACTIC). The project intends to support urban management performance and deliver improved basic infrastructure and services in participating urban local government authorities.

Mwanza City Council (MCC) is among the four (4) beneficiary LGAs under TACTIC Tier 1. The council plans to develop community infrastructures, strategic roads, and drainage system within the town council to contribute in attaining the National Development Vision 2025. These investments are expected to benefit socio-economic development and revenue collection at in MCC. Specifically, the MCC is expected to implement the following project sub-investments: Construction of Igoma Buhongwa road 12 km to bitumen standard; construction of Mkuyuni fish market; and improvement of Mirongo River.

Implementation of these sub-investment projects will affect individuals' private assets including land, buildings/houses and crops. This Resettlement Action Plan (RAP) is prepared to address relocation impacts associated within the proposed projects within MCC. Its preparation is done in accordance with the national laws, World Bank Environment and Social Framework Standards (ESS5) and the TACTIC project's documents including Resettlement Policy Framework (RPF).

1.1 Project Objectives

The main objective of the proposed subprojects investments is to improve urban transport infrastructures, community services and the storm water drainage in the city. Specifically, the proposed sub-investment aim Mkuyuni fish market aims to address challenges of fish subsector related to market by improving market infrastructure consequently increasing revenue for the city council from business fees and levies; creating employment opportunities; and enhancing of socio-economic status of the community.

1.2 Status of the Proposed Project Sites

The proposed Mkuyuni Fish Market The proposed site is located at Plot No. 74, Block BIII - Mkuyuni Ward. It is owned by the MCC with the Title Deed No. 100649. It is boarded by the Lake Victoria in the north-west side; and Mwalo Mswahili landing site and furniture industry to the north and Lake Victoria (wet land) on the west. On the south is the Ceramic Industry and Modern rice paddy industry and residential houses and shops to the access road on the east. No erected structure at the site except for the grasses and several planted trees, small vegetable garden and few residential houses along access road towards the site. On the opposite side of the current Mkuyuni fish market there is a drying site used by fishermen to dry their fish.

1.3 Rationale and Objective of the RAP

The proposed construction of Mkuyuni Fish Market in Mwanza MCC will involve permanent land acquisition in some areas which are legally owned by private individuals. A total of 4

individuals owning land, houses and/or trees will be affected. This RAP aims at addressing long-term impacts on PAPs livelihoods, loss of individuals' income and decline of standard of living that are likely to be triggered by the proposed projects. RAP is also prepared to ensure that, the project sub investments comply with the national laws and the World Bank Environmental and Social Framework Standards (ESS5).

Specifically, RAP is prepared to achieve the following key objectives which also constitutes its scope:

- Put in place Compensation Schedule which will detail affected assets, magnitude of impacts and subsequent entitlements;
- Define the valuation process and methods of compensating impacted assets;
- Identify the consultation approaches to be employed in the RAP process;
- Define the monitoring and evaluation arrangements including Grievance Redress Mechanisms (GRM); and
- Define the institutional and implementation arrangements.

2. RAP PREPARATION METHODOLOGY

The World Bank ESS5 requires for project implementers (Client) to prepare RAP regardless of the number of affected populations. This RAP therefore has been developed in accordance with WB ESF-ESS5 Annex 5: Involuntary Resettlement: 60-64pp. It addresses economic and physical displacement of individual assets at the proposed Mkuyuni Fish Market.

Diverse methods were employed to prepare RAP such as review of project documents; stakeholders' consultation meetings; and key informant interviews as well as direct field observations. Asset, census, and socio-economic surveys were also employed to collect baseline information on affected assets along corridor of impact.

3. RELEVANT LEGAL FRAMEWORK

The consultant reviewed all relevant laws related to compensation and construction in Tanzania. The PIU is required to abide to them during execution of different sub investment projects in MCC and during effecting compensation. The following are the legislations and regulations which should be adhered to during project implementation: Environmental Management Act (2004) of the Land Act (No. 4 of 1999) and The Land Act, Cap 113 R.E. 2002, as amended from time to time, Land Acquisition Act (1967) (and its subsequent amendments), Land (Compensation Claims) Regulations, 2001, Land (Assessment of the Value of Land for Compensation) Regulations of 2001, Land (Compensation Claims) Regulations, 2001, The Land Disputes Court Act. 2002 (Act No.2/2002) and The World Bank Environmental and Social Framework (ESS5), Comparison of National Legislation and WB ESS5.

4. PUBLIC CONSULTATION AND DISCLOSURE OF INFORMATION

Consultation of PAPs and other stakeholders formed an essential part in the development of this RAP. It is a requirement of both, the Tanzanian laws and the WB-ESF' Standards. The latter requires a meaningful, continuous, transparent and communication between the project

implementers, PAPs and other interested stakeholders. Consultations mainly covered PAPs at the project areas and along the proposed road corridors and drainages, local government officers, government agencies, and other interest groups from project areas. In addition, regular meetings were held with MCC and PO-RALG to discuss specific issues that required particular attention in the preparation of RAP.

Disclosure of information and participation of PAPs will continue in the whole period of RAP implementation, monitoring and evaluation of RAP Completion Audit. This will assist in achieving outcomes that are consistent with the requirements of the RAP.

4.1 Stakeholders' Identification

The identification of stakeholders for this RAP followed the procedures outlined in WB-ESF ESS10, ESS5 and the SEP prepared specifically for TACTIC subprojects investments in MCC. The identified stakeholders included directly affected persons, indirectly affected persons and interested parties. In this regard, the identification of stakeholders under this RAP was based on stakeholder's roles and responsibilities and possible influence/interest of the stakeholder on the proposed sub-project.

4.2 Methods of Stakeholders Engagement

The stakeholders were engaged by using different technics such as key informant interviews, formal meetings, FGDs, public meetings, and one-on-one meetings. Key informant interviews and discussions were being guided by a checklist of questions and questionnaires. Therefore, a number of regular formal and public meetings were held often as was deemed necessary with the PAPs, government authorities/departments, and other stakeholders to discuss RAP-specific arising issues and procedures. There were separate consultation meetings for the PAPs during the whole period of RAP preparation.

To ensure maximum participation, PAPs including women and vulnerable groups were effectively informed and invited to attend the meeting through village leaders. The village leaders invited their people by using speakers, word of mouth and phone calls. Minutes of meeting were recorded and documented accordingly as guided in the RPF.

4.3 Key Issues Raised By PAPs and Other Stakeholders During Consultation Meetings

1. ***Economic Benefits to be realized after Completion of Project:*** All consulted stakeholders including the PAPs were in the opinion that the proposed sub-projects investments are vital for socio-economic development of Mwanza city. In particular, many stakeholders pointed out that roads will reduce transport cost, congestion and open-up the project areas for other economic opportunities and foster economic growth for MCC.
2. ***Public Awareness:*** Stakeholders argued the MCC to enhance public awareness and it should be central to the project to avoid unnecessary grievances, conflicts, and misconceptions.
3. ***Compensations of assets that may be affected during construction phase:*** The PAPs were keen to know if the properties that will be affected during excavation works will be compensated and the procedures that will be put in place as in most cases procedures are not clear and the contractors are reluctant to compensate the damages.

4. ***Community Health and Safety:*** During construction phase, the issues of community health and safety should be well considered especially in areas with high population to avoid possible accidents and ill health due to air pollution from dusts generated by construction works.
5. ***Access Road:*** During construction period, the Contractors has a tendency of closing large sections of the road without providing alternative temporary access roads/divergence roads or providing informative temporary road signs which causes a disturbance to road users.
6. ***GBV and sexual harassment:*** The experience shows that road project is usually associated with the issues of early pregnancies of young girls, child labor, GBV and sexual harassment. These issues should be well addressed to safeguard our communities.
7. ***Employment of local people:*** Local people in the project areas should be considered and given priority in the employment opportunities especially during mobilization and construction phases. Contractors in collaboration with MCC, Ward and Street offices to ensure that hired staff are fairly paid according to provisions of existing legislations.
8. ***Commercial buildings:*** PAPs wanted to know the compensation procedure for the houses that are used for residential and commercial uses, i.e. the rooms used for commercial will be considered in compensations?
9. ***Compensation procedure for deceased properties:*** PAPs wanted clarification on who will stand to represent the family during valuation exercise and compensation especially if the deceased didn't write the will.

5. ASSET INVENTORY AND VALUATION

5.1 Asset Inventory

Survey for asset inventory was conducted in May 2022. The consultant Land surveying team, Valuation teams, urban planners from MCC and street leaders worked hand in hand to identify the affected plots and structures within project areas. The land surveying methodology based on the adjudication methods. Where the adjacent PAPs jointly identified the size, area and locations of their common neighbor. Each PAP had to be recognized by his/her surrounding neighbors to claim the ownerships of his/her property unit. The coordinates of the edges /corners of an adjudicated parcel were taken by using handheld GPS. The surveyors recorded the coordinates of each parcel and sketch its geometrical figure.

5.2 Marking of the property

The marking of the properties involved enumeration of each asset and assigning of unique identification number for reference. The reference numbers include details on project type, location and parcel for example, a plot in Igoma ward is labelled as VAL/COMP/IMC/BSL/001. These numbers are marked on the front wall of the affected structures.

5.3 Identification of the owners and other users

Census and identification of owners of individual assets was conducted. During this census details of the owners' information including names, location contact and their photograph were recorded. And every PAP was assigned a unique reference number. In addition, tenants were also

identified and assigned a unique identification number different from that of the owners as they include an additional letter to indicate their status.

5.4 Valuation Methods

Under the existing land laws in Tanzania, land can be acquired by the state for public purposes. The Land Acquisition Act No. 47 of 1967 is the main piece of legislation that governs land acquisition in Tanzania. It is the 'Mother Act' when it comes to land acquisition. The Land Act of 1999 has not amended any of the land acquisition provisions in Land Acquisition Act No. 47. However, the provisos on assessment are elaborated by the Land Act 1999, Part II; Section 3(1) paragraph "g" of the Land Act No.4 and 5 of 1999 which provides:

"To pay full, fair prompt compensation to any person whose right of occupancy or recognized long standing occupation or customary use of land is revoked or otherwise interfered with to their detriment by the State under this Act or is acquired under the Land Acquisition Act."

The Land (Assessment of the Value of Land for Compensation) Regulations, 2001 made under Section 179 of the Land Act No. 4 of 1999 which became operational in May 2001 provide assessment of compensation on land to be based on the following:

1. Market value of unexhausted improvements
2. Disturbance Allowance
3. Transport Allowance
4. Loss of Profit
5. Accommodation Allowance

5.4.1 Basis of Valuation

The basic principle governing valuation for compensation is that none of the affected people should be made worse or better off compared to the situation he was in before the land was acquired. The element of compulsory acquisition of land is well treated in most legislation worldwide including Tanzania emphasizing the right to receive a fair compensation to those who occupy land that is subject to acquisition by the State for specific declared objectives.

Decision on what Valuation Methods to adopt was guided by a provision in the Land Act No. 4 of 1999 and Valuation and Valuer Registration Act 2016 which provides for market value as the basis of valuation.

5.4.2 Valuation of Building Improvements

Guided by the above inquiry, and experience in valuing similar properties in the subject area, the Replacement Cost Method was adopted to arrive at the replacement values of various building units. The Replacement Cost method refers to the cost of re-building similar building/improvements at the date of valuation. This implies rebuilding a similar building to the same standard of workmanship and specifications, design and layout, inclusion of an allowance for professional fees.

5.4.3 Land Valuation

Direct Sales Comparison Method was applied to assess the land values. Recent sales of similar parcels of land in the subject area were analyzed and compared with the subject to arrive at the

value of the subject sites. The resultant land values were added the improvements value to arrive at property values.

5.4.4 Disturbance Allowance

Disturbance Allowance is payable as a percentage of land and buildings value in compliance with the provisions of the Land Act of 1999. It is calculated by charging interest on the value of Land and Buildings by average percentage rate of interest offered by commercial banks on fixed deposits such as the 12 Months fixed deposit at the time of loss land.

Hence:

5.4.5 Disturbance Allowance = (Land Value + Building Value + Crops Value) x i.

Where: i. = interest rate offered by commercial banks on 12 Months fixed deposits.

In this valuation, the average rate of 6% per annum was used in calculating disturbance allowance.

5.4.6 Accommodation Allowance,

According to the Land (Assessment of the Value of Land for Compensation) Regulations, 2001 Accommodation allowance is calculated by considering market rents of affected properties. These are multiplied by 36 months being the duration of constructing another house thus:

Accommodation Allowance = Rent/p.m. x 36 Months.

5.4.7 Transport Allowance

Transport allowance is calculated by considering the actual cost of transporting 12 tons of luggage by rail or road (whichever is cheaper) within 20 Kilometers from the point of displacement. i.e.

Transport allowance = 12tons x Actual Cost/ton/km x 20km

5.5 Rates Used in Land Price and Construction Materials per Square Meters

Land value rates was decreased from Main Road business center towards the neighbourhood/locality starting from Tshs. 10,000 per square meters up to Tshs. 8,000 per square meters depending on the location of such land, and ongoing transaction of land of the same location. Building constructed with sand cement block walls and corrugated iron sheets roof coverings material ranges from the rate of Tshs. 300,000-500,000 per square meters depending on quality of finishing and fittings.

6. ELIGIBILITY AND ENTITLEMENT

6.1 Types of PAPs

As explained earlier, this RAP has identified two major types of PAPs:

(i) *Individual Land Owners* which include individuals having crops, trees and structures within the project sites;

(ii) *Tenants and workers:* PAPs who obtain their livelihood from the affected land/structure/resources.

However, within these groups a third group of PAPs that requires special attention, i.e., Vulnerable PAPs is also found. This includes PAPs with additional and special needs – poor households, people with disabilities, old PAPs, female headed households, children headed households, chronically ill.

6.2 Eligibility

All individual PAPs that will be affected by sub-project investments in terms of asset loss, loss of livelihoods, and temporary loss of access to community facilities are eligible for compensation and or assistances. The Tanzania national laws and ESS5 suggest the following types of affected people eligible for compensation and their respective entitlement:

(i) Those who have formal rights to land (including customary/village land, traditional, and religious rights recognized under Tanzanian law);

(ii) Those who do not have formal legal rights to land at the time when census began, but have a claim to such land or assets, provided that such claims are recognized under the national; and

(iii)Those who have no recognizable legal right or claim to the land they are occupying, using, or obtaining their livelihood from.

From the identified groups, all PAPs who have occupied the land before cut-off date, irrespective of their status will be eligible for some kind of assistance and or compensation. However, people who will encroach the area after the census and valuation are not eligible for compensation or any form of resettlement assistance.

6.3 Cut-off Date

As per the Valuation and Valuers Registration Act of 2016, Sect. 53(1&3); a cut-off date is the "date of commencement of valuation" and that "Upon commencement of valuation, a person shall not add or improve anything to the land or such premises". Under this RAP, a cut-off date was **30th of April 2022.** This date was disseminated publicly in the project area whereby all affected persons, Street leaders and other government authorities were informed of this date through community meetings and personal interviews during the onset of asset inventories. Therefore, any person came to the project area after this date is not eligible for compensation or any resettlement assistance.

Table 1: Compensation Schedules in Mwanza City Council

MWANZA CITY COUNCIL MKUYUNI FISH MARKET								
Number of PAPs	**Land Value**	**Crops Value**	**Fence**	**Replacement Cost**	**Disturbance Allowance**	**Transport Allowance**	**Accommodation Allowance**	**Total Compensation**
3		388,600	8,160,000	64,741,550	4,397,409	300,000	18,000,000	95,987,560

7. LIVELIHOOD AND INCOME RESTORATION PLAN

In MCC there are no major impacts on livelihood as most of affected assets are residential houses and plots most being partially affected. In this regard, there will will be no direct Livelihoods Restoration Programs that will be implemented in the area. However, PAPs will be allowed to salvage construction materials from their buildings and trees remains from their plots. PAPs who are able and willing to work in the project shall be given priority at the construction site.

Additionally, to ensure judicious use of money PAPs will be provided with financial literacy to avoid misuse of compensation fund. The financial literacy will cover issues on:

(i) Guidance and counseling on investment options.
(ii) Opening bank accounts for PAPs who don't have one;
(iii) Investing in time deposit scheme offered by formal financial institutions. These are reliable instruments for investment with guaranteed returns.
(iv) Purchasing of income generating assets: This can be done by using a part of compensation amount and invest on economic asset such as cattle, farm tools or even take lands on rent if available.

7.1 Identification of Vulnerable Groups (VG):

The identified vulnerable groups will be eligible for additional support to enable smooth relocation and settlement in new areas as recommended by the **ESS5.** In addition to their compensation amount, the vulnerable groups will receive the following:

- An allowance of 20% of the total compensation amount or a lump-sum equivalent to 6months to one year of living subsistence allowance rates provided by TASAF programme (Whichever is higher)
- Enrolment in special livelihood restoration programs
- Logistical support during movement.

8. INSTITUTIONAL ARRANGEMENT FOR RAP IMPLEMENTATION AND COMPENSATION

The following entities will be involved in implementation of this RAP implementation: WBCU Safeguards Unit, Local Government Authorities (Sub-ward and wards), Ministry of Finance, Project Implementation Unit (PIU), District Commissioner, Regional Commissioner, and Chief Government Valuer, The Bank (RAP Paying agent). The preparation of compensation schedule along with PAPSs involvement in the whole process will be done by the Council. The WBCU Safeguards Unit will oversee the process. The roles and responsibilities of each involved part is detailed in Table 2.

Table 2: Institutional Arrangements for RAP Implementation

Institutions	Description of responsibilities	Remarks

Institutions	Description of responsibilities	Remarks
WBCU Safeguards Unit	• Oversee RAP implementation through quality control and ensuring that national laws and WB ESF standards are observed. • Ensure that the LGAs have done meaningful stakeholders Consultation • Identifying training needs of all parties involved in RAP implementation.	• To be supplied with RAP document. • To be supplied with stakeholders' consultation reports (evidence)
Sub-ward/Streets Local Governments	• To participate in stakeholders' consultation meetings • To participate in asset inventory and census, • To sign compensation schedules • To participate in identification of missing PAPs • Identification of relocation sites • To participate in grievance management.	To be integrated throughout the project cycle To commence consultations prior to project start
Ministry of Finance	Approve and disburse to LGAs the requested compensation funds	The MoF is the highest government structure to approve for utilization of the public funds. Thus, it has a lead role in decision making.
Local Government Authorities	• Ensure compliance to the WB safeguard standards and Got rules and procedures • To work with consultant in preparation of sub project design and drawing • Undertaking stakeholders' consultation with relevant PAPs • Ensure PAPs needs and concerns are integrated • To identify corridor of impacts and owners of different assets along way leave • Prepare compensation schedules • Agreement with PAP's about expropriation. • Publication of the notice for the expropriation – declamation • Grievance management • Submit compensation schedules to relevant approval organs. • Identification of special groups and determine the required assistances • Make due compensation to PAPs before civil works begin in coordination PO-RALG and WBCU • Information sharing to all eligible PAP regarding compensation amount and size of land	• Ensure fair evaluation of the properties • The procedure must be followed carefully and respecting the right of the third persons to prevent the complaint to the Court • The expropriation will be done for the persons who will accept to be compensated with the conditions published. • Ensure that compensation is done with respect (amount and time) of agreements signed by interested parties and before starting the project implementation

Institutions	Description of responsibilities	Remarks
	offered for compensation before effecting of cash payment or land compensation • Sign the compensation agreements and issuance of PAP ID cards • Help in the identification of alternative land for those PAPs displaced from within the way leave • Monitoring and evaluation • Contribute to the GRM by designating members to the committees	
PAPs	• Participate in consultation meetings • To participate in asset inventory and valuation exercise • To participate in choosing restoration sites and livelihoods restoration programs • Opening a Bank Account • To vacate the site after compensation	The PIU to coordinate
PIU	• Spearhead RAP preparation and implementation process • Ensure that they work closely with PAPs • Formulate GRM and communicate it to the PAPs • Formulate Resettlement Committee • Participate on Monitoring and evaluation • Participate in Grievance management • To implement SEP • Arrange and coordinate PAPs financial literacy awareness	
Design consultants and LGA engineers	Providing designs to the RAP development team including explanations of the critical section that may require additional PAPs	coordinating with the RAP team to make sure the two processes are well aligned to(i) ensure that resettlement impacts are minimized at an early stage, (ii) ensure that designs reflect the findings of the RAP and stakeholder inputs.
District Commissioner	• To oversee RAP implementation • To endorse compensation schedules • To participate in GRM	To be supplied with compensation schedules on time.
Regional Commissioner	• To oversee RAP implementation • To endorse compensation schedules • To participate in GRM	To be supplied with compensation schedules on time

Institutions	Description of responsibilities	Remarks
Chief Government Valuer	• To assess and endorse compensation schedules	To be supplied with compensation schedules on time
Land Resources and urban Planning Department	• Identifying and verifying property boundaries and ownership • Consistence of the proposed projects with urban planning	• To be supplied with project designs • To be involved in valuation exercise
The Bank (RAP Paying agent)	• Train PAPs on their financial services and management of compensation money • Ensuring PAPs are paid timely and in accordance to the payment schedule • Confirm eligibility of PAPs for compensation on the basis of his/her national identity card, driving license, or passport • Notify the PIU when payment has been done and proof of PAPs payments and their photographs	To be provided with payment schedule
Contractor	• Provide to PIU the final schedule of construction to be communicated to the communities in the wayleave and project areas • List and communicate all possible obstruction sections. • Prepare Site Specific Environmental and Social Management Plans • Provide labor requirements and consider employing local population and pay wages as per applicable norms • Compensate for any damages to assets outside of wayleave, in accordance with rates established in the and final RAP. • Traffic management during construction • Observe grievance redress procedures for construction-related impacts • Implement codes of ethical conduct to protect local population and contractor's workers against spread of HIV/Aid, STDs, GBV and COVID-19.	To observe ESIA, RPF, and RAP

8.1 RAP Implementation Committee

To implement this RAP, Consultant propose three committees:

a) ***Resettlement Committee:*** This will constitute of PIU Coordinator, Representatives from the Ministry of Land and Housing and Human Settlement Development, Representative

of District Commissioner, Municipal Valuer, Representative of street/ward office, RAP Consultant, paying agent (Bank), and Representative of PAPs.

b) **Compensation Committee:** This will involve Representative of District Commissioner (Chair), Representative of Principal secretary of PO-RALG, Independent lawyer from recognised NGOs, RAP Consultant, payment agent, Valuator, and Representative of PAPs.

c) **District Grievances Redress Committee:** Municipal Director (Chair), Representative of Ministry of Lands/chief valuator, Valuator, Representative from PO-RALG, Street leader, Facility grievance committee chair, Representative of PAPs, and Representative of a local NGOs.

9. RAP IMPLEMENTATION ACTIVITIES AND SCHEDULE

This section presents the RAP implementation activities and schedule to be followed as detailed below:

9.1 Necessary Activities for RAP Implementation

The necessary activities for implementation are grouped into three phases: preparations for compensations; activities prior to construction works; and activities for the completion of RAP.

A. Preparations for compensations:

To ensure a smooth and appropriate compensation exercise, the Council through PIU will have to undertake these activities:

i) Disclosure of the RAP document with subsequent instituting of RAP implementation committees, Grievance Management Committees.

ii) Stakeholder's familiarization and operationalization of the GRM and RAP. This will be done through workshops to be organized by the PIU in collaboration with the RAP consultant.

iii) Arrangement and finalization of contracts with RAP implementation supporting agencies. This includes the bank responsible for disbursement of compensations as well the financial education agency; the contractor who will be responsible for construction of replacement houses in case of replacements in kind; and consultant for RAP implementation.

iv) Disclosure of compensation amount to the individual PAPs and signing of compensation agreements forms. In addition, PAPs will be given a final chance to confirm their selected mode of payments. Any change will be updated in RAP database and shared to the payment agent and construction contractor.

v) Provision of financial education to PAPs. This will be organized by the PIU in collaboration with the resettlement and compensation committees and procured financial agent. The PAPs will be required to open Bank Account or present their bank details, and issued with identity cards.

B. Activities to be completed before the beginning of construction works

i) Conduction of additional Outreach Activities such as posters, radio programs. Additionally, some *streets* meetings will be held to counsel PAPs and inform them on the compensation processes, RAP implementation and expected dates for the beginning of construction works.

ii) Payment of compensation, Provision of notices to PAPs on duration to vacate the project sites and subsequent vacation of land: The payment agent will affect compensations to PAPs. During this exercise, the payment agent will have to confirm eligibility of PAPs through checking of PAPs IDs or government IDs (NIDA). Selection of modes of monetary payment will be based on the compensation thresholds indicated in Table 3.

Table 3: Payment Modes by Threshold Amounts

Amounts payable (in Tanzanian TZS)	Payment Modes/Options
Below 200,000	Cash
200,000 to 500,000	Cheque
Over 500000 to 2,000000	Cheque or bank account
Above 2,000000	Only bank

iii) Handover of vacated site to contractor: Once all properties on the wayleaves and project areas are vacated, the site will be handed over to constructor ready for commencement of civil works.

9.2 RAP Implementation Schedule

This RAP will be implemented in 14 months. Table 4 summarizes the month-wise activity schedule.

Table 4: RAP Implementation Schedule for TACTIC sub-projects in Mwanza City Council

S.NO.	ACTIVITY	MONTHS													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
Activities for the Preparations for Compensations															
i.	Disclosure of the RAP document														
ii.	Creation of RAP implementation committees, Grievance Management Committees														
iii.	Familiarization and operationalization of the GRM and RAP														
iv.	Arrangement and finalization of contracts with RAP														

S.NO.	ACTIVITY	MONTHS													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
	implementation supporting agencies														
v.	Disclosure of compensation amount to the individual PAPs, signing of compensation agreements forms and confirmation of mode of payments														
vi.	Procurement of financial expert and provision of financial education to PAPs														
vii.	PAPs opening of Bank accounts or provision of account details														
viii.	Creation of Livelihoods Restoration Committee (LRC)														
Activities to be completed before the beginning of construction Works															
ix.	Procurement of training professionals and conduction of livelihood restoration trainings														
x.	Conduction of outreach activities and streets counselling meetings														
xi	Payment of compensation and vacation of land														
Xii	Handover of														

S.NO.	ACTIVITY	MONTHS													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
	vacated sites to contractors														
Activities for Completion of RAP															
Xiii	Preparation of Periodic Internal Monitoring Reports														
Xiv	Annual Project Review Workshop														
Xv	Preparation of RAP Implementation Completion Audit														
Xvi	Submission of RAP Implementation Completion Report														

10. GRIEVANCE REDRESS MECHANISM

TACTIC project in Mwanza City Council will use the existing grievance resolution procedures through local government system i.e., grievance resolution through negotiation and mediation at local government offices and through existing laws (court of law). All PAPs will be informed on the existence of a Grievance Redress Mechanism (GRM). These will include information on accessibility of the GRM; the procedures involved in logging of grievances; and the right and procedures to appeal if not satisfied with the resolution made. This information will be provided through respective "*Street"* leaders and awareness meetings that will be held during the preparation of the detailed RAP

10.1 Grievance Resolution through Negotiation and Mediation

This grievance procedure is simple and administered at the local level to facilitate accessibility, flexibility, cost effectiveness, transparency to various proofs and timely settlement of the grievances. Under this system, the aggrieved PAPs can log their complaints by either reporting the matter directly to the "*Street"* offices *(usually verbally)* or to the subproject's grievance redress committee. If reported to the Street office, the chairperson will record the complaint in the grievance log book, and the matter is referred to the "*Street"* advisory committee for resolution. Depending on the matter, the "*Street"* chairperson will also notify Ward Office and/or Councilor.

Alternatively, if the aggrieved PAPs can log their complaints by reporting the matter directly to the subproject's grievance redress committee or at PIU office in Mwanza City Council, he/she will fill special grievance forms. The subproject's grievance committee members will consist of

the members from relevant District functional department (i.e. Land Office/Valuer in case of land disputes), Ward and "Street" offices, and a representative of the complainant and the perpetrator. The committee will consult the lower local government levels and other records to determine the validity of claims. If claims are valid, the committee will recommend appropriate remedial measures and or compensation. The GRC through "Street" office will notify the complainant on the recommended settlement.

10.2 Time Frame for Negotiation and Mediation

Under negotiation and mediation procedure, the time frame for grievance resolution will be as follows;

- Grievance committee will acknowledge receipt of a grievance in writings within five (5) business days from the day complaint was reported.
- Within ten (10) days of receipt of the grievance, grievance committee will conduct the investigation and provide a response to the complainant.

The resolution of the grievance through negotiation method shall be reached within twenty (20) days of receipt of the grievance.

10.3 Disputes Procedures under Existing Laws

If the PAP is not satisfied with decisions of the GRC, the aggrieved party is obliged to take the matter to the court as specified in the Tanzania Land Acquisition Act 1967. The matter will be filed to the local courts and/or the Land Tribunals whereby if not settled; the matter will be referred to the High Court for resolution. The High Court of Tanzania and Court of Appeal is the highest appellate "judge" in this system and its decision would be final.

The procedures for compensation dispute resolution prescribed by the Land Acts are cumbersome and costly, taking into account the fact that most of the PAPs have limited knowledge about legal issues and their rights with respect to the laws. Thus, all grievances should be amicably resolved before a decision to go to court is undertaken by the PAP.

11. RAP COST AND BUDGETING

This RAP budget is prepared in order to carefully assess and estimate costs to be incurred during implementation. In this RAP, quantities and unit costs per item are based on magnitudes of displacement-related impacts as well as on the eligibility considerations and entitlement matrix outlined in Chapter 6. Therefore, this budget has been prepared based on the valuation survey as of May, 2022.

The budget took into account the costs of compensation for loss of land, structures and crops; and their associated allowances (accommodation, loss of profit, transport and disturbance allowances). The budget also included special assistance to the vulnerable groups, management and administration costs, contingencies, costs for consultancy services (hired service providers for implementing RAP activities); and monitoring and evaluation costs by internal implementing teams (PIU) and external monitors as they are not yet identified.

Based on the above items, the RAP implementation cost is calculated as Tanzania Shillings; two billion eighty-eight million seven thousand seven hundred seventy-seven and sixty-four hundredths **(2,088,007,777.64**) as detailed in table 5.

Table 5: Itemized compensation budget

S/N	Item	Cost (Tzs)	Quantity (Affected Assets)	Source of Fund	Channel of Disbursement	Timing
1	Compensation of Land	25682670	2,853.63 m^2	Annual Council's budgets approved through parliament.	MCC	November 2022-January, 2023
2	Compensation of Buildings and fence /Structures	1,274,431,450	55	Annual Council's budgets approved through parliament.	MCC	November 2022-January, 2023
3	Compensation of Crops and tres	2,113,950.00	106	Annual Council's budgets approved through parliament.	MCC	November 2022-January, 2023
4	Compensation fence	8,160,000.00	1	Annual Council's budgets approved through parliament.	MCC	November 2022-January, 2023
5	Compensation grave	3,900,000.00	3	Annual Council's budgets approved through parliament.	MCC	November 2022-January, 2023
6	Accomodation, transport, and disturbance allowances	477,993,284.20	5	Annual Council's budgets approved through parliament.	MCC	November 2022-January, 2023
Sub-Total		**1,792,281,354.20**				
7	Management /administration	268,842,203.13	NA	Annual Council's	MCC	November 2022-

	monitoring & evaluation assistance (15% of total compensation cost)			budgets approved through parliament.		January, 2023
8	Contingency (10% of Management /administration cost)	26,884,220.31	NA		MCC	November 2022-January, 2023
Sub-Total		**295,726,423.44**				
Total RAP Budget		**2,088,007,777.64**				

11.1 Funding Sources

Funding to be processed and effected through the project's financial processing arrangements. Funds for implementing inventory assessments and resettlement plans to be provided by the implementing agency (LGAs). The funds to be obtained from annual Council budgets approved through parliament; Local taxes and levies collected in the LGA and /or Loans from commercial Banks.

12. MONITORING AND EVALUATION

TACTIC Coordination Unit in Mwanza City Council will be responsible for the M&E of implementation for the resettlement/compensation plans at Municipal level.

Once this RAPs have implemented, a final review is required in order to assure that the plans have been properly implemented- resettlement and compensation final report (RFR). The M&E objective will be to make a final evaluation to determine:

a) If PAPs have been compensated in full before implementation of subproject activities; and
b) If PAPs are now living at a higher standard than before subproject implementation, living at the same standard, or if they are poorer.

12.1 General Objectives of Monitoring and Evaluation

RAP implementation monitoring is critical to solve challenges in the areas of mobilization, compensation, relocation grievance redress etc. While process monitoring will enable the council to assess whether due process is being followed, performance monitoring will mainly relate to achievement in measurable terms against the set targets. Mwanza City Council will monitor performance of this RAP which shall cover aspects such as staff involved RAP implementation, timeliness of implementation of proposed activities and various indicators and benchmarks. Internal monitoring of process and output indicators by TACTIC Coordination Unit in Mwanza City Council and the TACTIC coordination Unit at PO-RALG. External monitoring by an

independent monitoring agency or an independent consultant to check the extent to which resettlement and rehabilitation objectives have been met is also recommended.

12.2 Internal Monitoring

Internal monitoring should involve the concurrent checking of implementation activities to ascertain whether these activities are being implemented in accordance with the approved RAP and thereby enable the LGA to take appropriate action to address any gaps, deviations, etc. and ensure timely delivery of compensation and resolution of matter of concerns for PAPs and other stakeholders. The subproject's management unit and supervising consultant will be responsible for internal monitoring and share RAP implementation progress and periodic monitoring reports with PO-RALG TACTIC Coordination Unit and the World Bank. The census of PAPs and inventory of losses will constitute a base line for monitoring of RAP progress and at subproject supervision level. Specific monitoring topics for the internal monitoring will be:

- Information on consultation with PAPs;
- Status of land acquisition and payments on land compensation;
- Compensation payment progress for affected structures and other assets;
- Payments for loss of income according to the details provided in the RAP;
- Income restoration activities
- Supplemental compensation for unforeseen losses
- Relocation of PAPs;
- Grievance management

12.3 Indicators for M&E

A number of socioeconomic indicators to be used to determine the status of affected people which includes: Comparison to pre-project, land being used, standard of house, and level of participation in project activities, how many children in school, health standards, and others. These indicators aim at achieving three major socioeconomic goals by which to evaluate subproject's success:

1. Affected individuals, households, and communities are able to maintain their subproject standard of living, and even improve on it;
2. Local communities remain supportive of the project; and
3. Absence or prevalence of conflicts.

The indicators in Table 6 below will be used to monitor and evaluate the implementation of resettlement and compensation plans.

Table 6: Indicators for internal monitoring

Parameters	Indicators	Timeline
Institutional set-up and strengthening	RAP implementation and monitoring institutional set-up is in place.	Monthly
	Budgeted RAP costs released and placed at disposal of land acquisition and resettlement implementation entities.	Monthly
	Number of trainings provided to the committees (GRCs)	Monthly and Quarterly
	Grievance redress mechanism established and explained to	Monthly

Parameters	Indicators	Timeline
	the PAPs and affected communities	
Delivery of PAPs' Entitlements affected assets and livelihoods	Number of Affected assets compensated (based on category of losses set out in the entitlement matrix).	Quarterly, annually
	Number of replaced trees and structures	Quarterly, annually
	Number of restored livelihoods and income including transitional support provided	Quarterly, annually
	Social infrastructure and services restored as and where required.	
Financial (compensation/ establishment)	Amount of total compensation disbursed	End Term Evaluation
	Amount of compensation paid to PAPs by LGA, Location (sub-ward)	End Term Evaluation
	Number of PAPs paid compensation (disaggregated by gender) in cash/cheque/bank account	End Term Evaluation
	Number of PAPs already having bank accounts and those yet to open	End Term Evaluation
	Number of PAPs who were not found and not paid	End Term Evaluation
Restoration of living standards and income	Number of residential structures reconstructed/ restored at relocation sites outside RoW limits.	Quarterly
	Number business structures (shops/stalls) constructed/relocated outside RoW limits and business/ income activity restored.	Quarterly
	Number of PAPs who shifted to other unaffected parcels by area	Quarterly
	Number of PAPs who continue to reside in the same areas as before	Quarterly
	Number and percentage of displaced peoples covered under livelihood restoration and rehabilitation programs (youths, women, and vulnerable groups).	
	Number of total PAPs enrolled into ongoing government programs (by type)	Quarterly
	Number of No of PAPs including vulnerable groups (youths and women) employed in construction works by type of services provided	Quarterly
	Number of emerging PAPs due to unforeseen construction impacts	Monthly
	Number of Encroachers existing within the compensated corridor	Monthly
	Number of Consultations meetings held with communities	Quarterly, Midterm and End Term
	Time taken for issuance of expropriation order and date of vacating the land	Quarterly, Midterm and End Term
	Time taken to identify alternate lands for PAPs	Quarterly, Midterm

Parameters	Indicators	Timeline
		and End Term
	Number of displaced peoples who have successfully restored their income and livelihood patterns (youths, women, and vulnerable groups).	Quarterly, Midterm and End Term
Compensation usage	Number of men and women built new homes to replace the demolished/impacted ones	Midterm and End
	Number of men and women planted trees to replace the lost ones	Midterm and End
	Number of men and women built new homes to replace the demolished/impacted ones	Midterm and End

12.4 Reporting

Apart from periodical progress reports that will be submitted by the consultant on monthly and quarterly basis, there should be two essential monitoring reports to be produced by RAP implementers:

- A Resettlement and Compensation Monitoring Report (RMR) to be prepared by the M&E consultant at the end of the assignment.
- Resettlement and Compensation Final Report (RFR) to be prepared by the RAP implementation Agency and be approved by the client.

Appendix VI: Health and Safety Plan

1.0 Introduction

Health Safety Management Plan (HSMP) helps in implementation, maintaining and continually improve Health and Safety management system in accordance with the requirements of Occupational Health and Safety Assessment Series (OHSAS) standards. It is therefore important that this is reflected in the operations and responsibilities of every level of management within an organization. This plan shall help to implement the Safety and Health direction of the upgrading of Mkuyuni fish market. It clearly states the requirements of donors, legislations, suppliers, management and employees in Safety and Health management.

1.1 Health and Safety Policy Statement

The management acknowledges that, the activities will have the potential to harm employees, customers and all other people who will be into contact with directly or indirectly. We firmly believe that all people will have the right to live and work in a safe environment that is not detrimental to their health and safety during the execution of the activities.

1.2 Purpose

The purpose of this Health and Safety Management plan for construction of Mkuyuni fish market is to provide an overview of the contractor Management System that enables its health and safety policies and business objectives to be achieved by successfully performing the project work in compliance with donor requirements as well as the legal requirements of United Republic of the Tanzania. This plan shall define the execution strategy and methodologies for implementation to achieve the aforementioned purpose. Project shall in undertaking the works, aspire to:

-Achieve zero fatalities, zero permanent disabilities and improve safety performance year on year through

-Complying with all current Health and Safety Legislation and approved Codes of Practice

-Ensuring compliance with Contractors' and donor safety requirements and publish these as part of the Project requirements

-Project shall in aspiration provide a Safe and Health Working Environment for its employees

This HSMP shall be implemented in alongside site-specific Environmental and Social Management Plan (ESMP) as submitted to Employer.

1.3 Scope

This HSMP will be applicable to the upgrading of Mkuyuni fish market and other relevant stakeholders including Mwanza City Council as Client of the Project and the Contractor while in the course of duties associated with the Project.

Definitions

Table 1.1: Definitions to be used by contractor on the construction of the Mkuyuni fish market at Mwanza City Council

Client	Mwanza City Council
Corporate	Generic term used to refer to the corporate level of management.
Employee	An employee is any person directly employed by a contractor, whether on an agency, limited Client, temporary, permanent staff, part time or full-time basis.

Environmental incident	An "Impact" which results in the accidental emission or discharge of a substance, categorised as harmful, to the environment.
Hazard	The potential for human injury or loss of life, damage to the environment or to material assets or a combination of these.
High Potential near miss (Hi-Po)	A near miss where the potential consequences could have resulted in a high-risk incident. The potential consequences are those that could reasonably be expected if one further barrier had failed, e.g., if a fall arrestor had not functioned or a different position of an individual could have resulted in a more serious injury.
Incident	Term to define an unplanned event or chain of events that results in harm to people, damage to property or the environment, loss of process.
Likelihood	Indicates the possibility of something to happen
Lost Workdays	Number of days where an employee could not return to work due to a work-related injury. No of LTI's X number of day's persons absent.
Lost Time Injury Frequency Rate (LTIFR)	The frequency of lost time injuries per 1,000 000 hours worked/at risk. $\text{LTIFR} = \frac{(\#\text{ of F} + \#\text{ of LTI}) \times 1{,}000{,}000}{\text{manhours worked}}$ where F is the Fatality, LTI is the Lost Time Injury/Illness
Lost Time Injury/Illness (LTI)	Work related occurrences, or related to the wider activities that resulted in a fatality, permanent disability or the person being incapable of performing any work on one day/shift or more, on any calendar day subsequent to the day of the occurrence occurring or the illness being identified. Due to inconsistencies of the medical profession in granting time off to a patient, contractor "may" challenge the decision of a medical practitioner if it is considered the medical practitioner has been overzealous in granting time off. Fatalities arising from suicide, inexplicable personal behavior or natural causes shall be excluded.
Medical Treatment Case (MTC)	Is a work-related injury or illness that requires treatment from a qualified medical practitioner (Note: if the treatment was given by a qualified medical practitioner but could have been performed by someone less qualified the category will be first aid case). They must be treated only by physician or licensed medical personnel if the injury or illness is of a nature where: They impair bodily function (i.e., normal use of senses, limbs, etc.): They result in damage to the physical structure of a non- superficial nature (e.g., fractures); or They involve complications requiring follow-up medical treatment. Physicians or registered medical professionals, working under the standing orders of a physician, routinely treat minor injuries. Such treatment constitutes first aid. In addition, some visits to a doctor do not involve treatment at all. For example, a visit to a doctor for an examination or other diagnostic procedure to determine whether the employee has an injury does not constitute medical treatment. Conversely, medical treatment can be provided to employees by laypersons; i.e., someone other than physician or registered medical personnel. The following are generally considered medical treatment. Work-related injuries

	for which this type of treatment was provided or should have been provided are almost always recordable: Treatment of infection Application of antiseptic during second or subsequent visit to medical personnel Use of prescription medications (Except a single dose administered on first visit for minor injury) Application of hot or cold compress(es) during second or subsequent visit to medical personnel Cutting away dead skin (Surgical debridement). Use of whirlpool bath therapy during second or subsequent visit to medical personnel. Admission to a hospital or equivalent medical facility for treatment. Medical treatment does not include first aid treatment even though provided by physician or registered professional personnel. If you have already counted the case as a lost workday or restricted workday case, do not count the case as a medical treatment case. This category is for cases in which medical attention (beyond first aid) is administered and the employee returns to his or her regular duties for the next scheduled shift.
Near Miss	Incidents, which, strictly by chance, do not result in actual or observable injury, illness, death, or property damage. These are measured by their potential rather than actual outcome.
Occupational illness and disease	An abnormal condition or disorder, other than one resulting from an occupational injury, caused by exposure to environmental factors associated with employment. It includes acute and chronic illness or diseases that may be caused by inhalation, absorption, ingestion or direct contact. Chronic conditions should be reported once in the period during which the condition was first diagnosed. Injuries are caused by instantaneous identifiable events in the working environment. Illnesses are caused by anything other than identifiable instantaneous events e.g. if repeated or prolonged exposure is involved the outcome is considered an illness. Additionally, a judgment needs to be made as to whether or not this exposure was work-related.
Occupational injuries and illness examples	General: Death (If work related) Injury sufficient to require medical treatment Loss of consciousness Restriction of work or motion Transfer to another job Significant injury or illness diagnosed by a physician or other licensed health professional, such as; Cancer (If work related) Chronic irreversible disease (If work related) Fractured or cracked bone, or Punctured eardrum Food poisoning Epidemic disease Specific:

	Needle sticks and cuts from sharp objects that are contaminated with another person's blood or other potentially infectious material Occupational hearing loss (current hearing test must show 10dBA shift from current baseline and total cumulative hearing loss must be 25 dBA or move above audiometric zero)
Property damage	Incidents that damage to property (contractor and/or third party). All incidents shall however be reported.
Recordable case	Recordable cases are the sum of the number of Fatalities, Lost Time Injuries, Restricted Work Cases and Medical Treatment Cases. Guidance note: Where contractor supplies resources to a customer and the control of management does not rest with contractor, this is deemed not to be recordable and all related data associated with any incident; (injuries, illness, environment, property damage and vehicle) will not be collected and maintained. However, where these resources are provided to a customer, contractor shall make all reasonable endeavours to ensure that effective HSE measures and arrangements are in place to ensure the health and safety of contractor personnel.
Restricted Work Case (RWC)	Is a work-related injury or illness which results in the person being incapable of performing the full range of their normal duties on any day/shift subsequent to the day of the injury occurring or the illness being identified, but is capable and has been assigned to "other" duties.
Risk	A combination of the likelihood of a hazardous event and the severity of the possible consequences of that hazardous event.
Road traffic incident	A work-related incident that takes place on any road (public or private) which results in damage to a project vehicle and/or a vehicle used in the execution of contractor business. Where damage to the vehicle is such that it has to be taken out of service "immediately" for repair and/or causes any injury to any person and/or damage to a third party. Incidents taking place within fenced yards or similar areas shall normally be treated as property damage. Note: In the event of an injury to contractor/subcontractor personnel arising from a road traffic incident, these injuries shall also be reported in their respective categories i.e. Lost Time Incident.
Road Traffic Incident Rate	The number of vehicle incidents per one million kilometres driven. $\frac{\text{No of Road traffic incidents x 1,000,000}}{\text{No of KM driven}}$
Subcontractor	Any company that has been contracted by the contractor to provide work and/or services.
Worked man-hours	The total number of hours of direct working activities within the project site boundaries, including paid overtime and training, but excluding leave, sickness and other absences.
Work related	Work relationship is established when the incident/injury/illness results from an event or exposure in the work environment. The work environment consists of: "Project premises" and other locations where employees/contractors are engaged in work related activities or are present as a condition of their employment. Travel on contractor business is considered work related, but this is limited to

	journeys where transport and/or purchase of airline, rail, and sea tickets have been provided by contractor. A hotel while being used on contractor business as a place of abode (sleeping, eating) shall be considered as "home" and any incident arising from this is not work related. Travel between home and work is not work related, unless the transport provided is provided by contractor. Injuries or illnesses that occur to employees or contractors while participating in voluntary activities (i.e. those that are provided or made possible by contractor but in which participation is voluntary and for personal benefit such as fitness facilities) shall not be considered work related. Unless the injury/illness was as result of the provision of faulty materials/equipment or unsafe premises by contractor.

2.0 PLANNING

2.1 HAZARD & RISK MANAGEMENT

Contractor shall establish and maintain procedures for the ongoing identification of hazards, assessment of risks and the implementation of necessary control measures to upgrading of Mkuyuni fish market. These include:

iv. Routine and non-routine activities.

v. Activities of all personnel having access to the workplace (including all visitors).

vi. Activities on site, whether provided by contractor or others.

vii. Contractor will ensure that the results of these assessments and the effects of these controls are considered when setting its OH&S objectives. The contractors shall continue to keep document and other information up to date.

viii. Contractor believes that effective planning is a cornerstone of HSMP improvement, which performs assessment of legal requirements and the hazards of the project that can influence HSMP performance.

ix. Before undertaking any hazardous job, Contractor will ensure:

x. Complete hazard analysis, this can be either a Risk Assessment or Job Safety Analysis depending on Client requirements.

xi. Ensure that all work permits required for performing the work is available as required.

xii. Before starting works all workers should attend toolbox talk

xiii. All personnel involved are aware of the hazards and control actions.

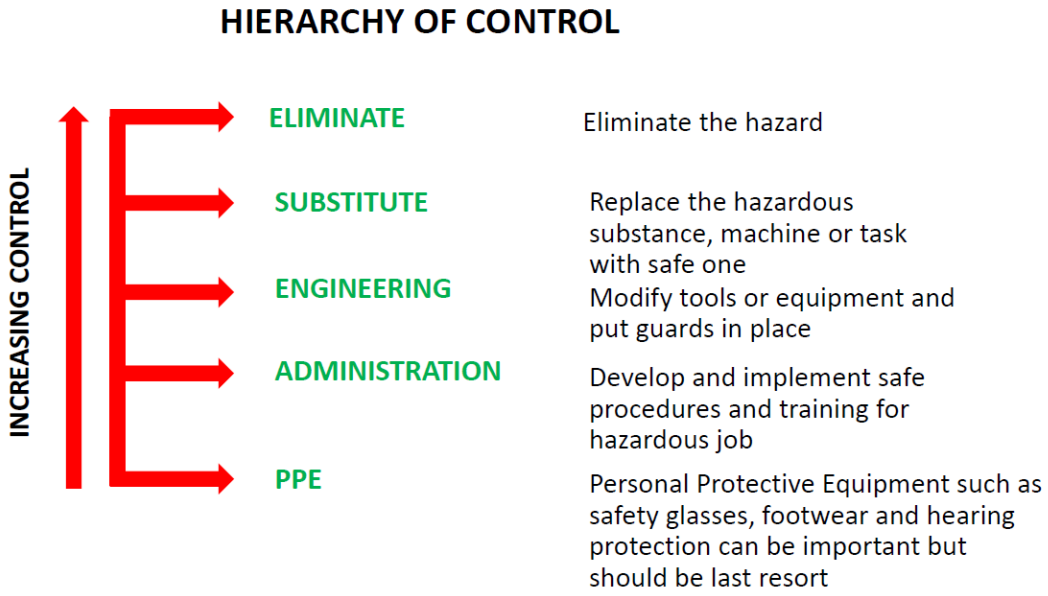
xiv. Ensure the job is adequately supervised.

xv. A risk register will be maintained on site and will be a live document. This document will be reviewed on annual basis by Project Risk Assessment Teams and approved by Project Manager to ensure all risk assessments have been incorporated. This document if applicable may be submitted for approval to the Client prior to work commencing.

2.1.1 Risk Assessment

Contractor is committed for controlling and managing risk through a process of identifying hazards, assessing their likelihood and severity, analyzing the cause and implementing control measures.

The risk management process involves the development of the appropriate controls and reduction measures for each hazard.
The degree of risk control required is dependent upon the level of risk for each hazard. The methods of control are implemented using a hierarchy as follows:



2.1.2 Risk Register

The project risk register should list all types of hazards (physical, chemical, biological, ergonomic) identified for the type of activities present during the works.
Its purpose is to provide a system that will enable the project to identify and review hazards, assess potential risks and implement appropriate control measures.
The risk register is used as a database to record data obtained from several sources that deal with potential hazards.
The risk register, which will be kept by the business unit, will be progressively developed and initially contain where applicable the (HIP/HAZCON/SIMOPS) review listing of hazards. A duplicate risk register will be kept by project EHS team that includes all the risk assessments carried out.

2.1.3 Job Safety Analysis

Job safety analysis, commonly known as JSA, is a process used to determine hazards arising from and safe procedures for each specific step of a job.
JSA is used to assist in planning the safety of a job before it starts.
A specific job or work assignment can be broken down into a series of relatively simple steps; the hazards associated with each step can be identified, and solutions (treatment options) can be developed to control each hazard.
Where appropriate, either a RA or JSA will be developed independently or as part of work method statements

2.1.4 Simultaneous Operations

Where applicable, Simultaneous Operations (SIMOPS) studies will be carried out if there is scope for interaction to occur between major hazardous activities, and the design and construction intent is to carry out these activities concurrently.

The purpose of these studies is:

(1) To identify the additional levels of risk introduced by simultaneous operations

(2) To assess the acceptability of additional risks and to identify risk reduction methods

Findings and recommendations from the SIMOPS studies will be used to develop the simultaneous operations procedures.

2.1.5 Safe Work Instructions

Contractor is committed to control and manage risk through a process of identifying hazards, assessing their likelihood and consequence, analyzing the cause and implementing control measures.

To assist this process and for use on common activities a series of safe work instructions shall be develop to be use on the project.

2.1.6 Engineering Risk Assessment

Typically, during the engineering phase of the project, contractor assess potential hazards, and their associated risks, and ensure that adequate safety, loss prevention, and environmental requirements are included within the facility design to protect personnel and the environment by using Hazard Identification (HAZID), Safety Integrity Level (SIL) or the likes.

3.0 IMPLEMENTATION AND OPERATION

Organizational Chart and Responsibility

The chart provides an organizational chart for the implementation of this HSMP

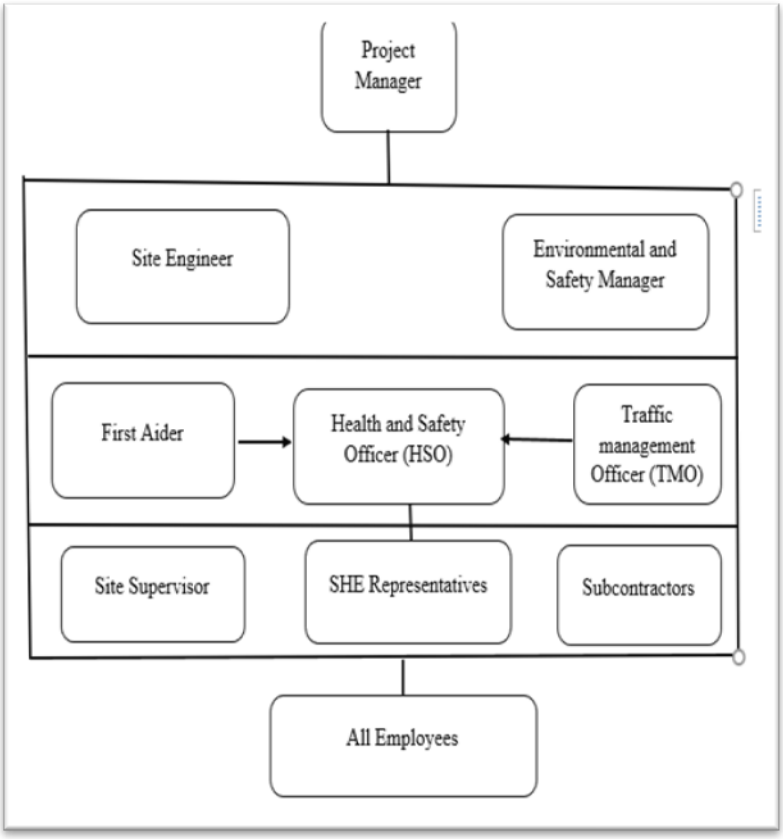


Figure 3.1: Contractor's Organization chart for Implementation of HSMP

3.1 STRUCTURE AND RESPONSIBILITY

The roles, responsibilities and authorities of personnel, who manage, perform and verify activities having an effect on Occupational Health and Safety (OHS) risks have been defined, documented and communicated in order to facilitate OHS Management.

3.1.1 Project Manager Responsibility

Ultimate responsibility for Safety and Health actions and the co-ordination of these actions with our workers and the general public

Provide all employees under their direct control with adequate support, supervision, information, instruction and training to enable them carry out their work safely and without risks to their health and safety

Establish effective lines of communication and consultation on safety and health issues among all employee

Ensure that suitable arrangements are in place for effective health and safety management

Allocate specific duties to key personnel to ensure that this health and safety management plan is produced, updated and effectively implemented

Ensure adequate provision of resources necessary to implement the Safety and Health management plan

Set objectives and performance targets and ensure they are regularly monitored, reviewed and communicated within the company

3.1.2 Health and Safety Manager Responsibility

Safety manager will be responsible for the provision of Safety and Health support and advice, and for promoting a culture of continuous improvement in safety performance throughout the projects.
Monitor performance against the requirements of Safety and Health plan and the relevant legislation.
Liaise with, and assist Project Manager and all workers in ensuring that a satisfactory level of Safety and Health awareness exists.
Co-ordinate and supervise the activities of Safety and Health representatives
Assist the HR Officer in the development and delivery of suitable Health and Safety training or induction program to new employer and company in general
Undertake a program of site Safety and Health inspections and audits in accordance with the policy.
Produce, implement and maintain a safety performance measurement, review and reporting system which comply with both statutory and corporate requirements.
Collect and report safety performance data and trends analysis in accordance with this policy.
Manage the development, regular review and update of the Safety Management System in order to ensure that it is comprehensive, relevant and up-to-date
Be familiar with current Safety and Health legislation relevant to undertake activities and advise senior management accordingly.

3.1.3 Site Engineer Responsibility

Site Engineer will be responsible for operation of the safety policies on their sites or projects. They should monitor each site to ensure the implementation of safety instructions. Responsibilities include
Understands the company policy and appreciate the responsibilities allocated to each grade.
Ensure adequate information is received regarding matters which might affect health and safety in order to determine the planning stages:
Most appropriate order and method of working
Allocation of responsibility to site controllers and subcontractors
Facilities for welfare and sanitation
Ensure Risk Assessment is undertaken and method statement prepared before work commenced on site.
Check over working methods and precautions with site management before work commenced on site
Ensure that once work started, it is carried out as planned and in conformity to relevant legislations.
Make sure that all workers on the project understand that management of Health and safety will be taken in to account when bonus and promotion is considered.
Release employees for SHE training

3.1.4 Site Controllers Responsibility

Site controllers are responsible to the project managers for ensuring the day-to-day implementation of safety policy and safe working practices. Main responsibilities
Organize site so that work is carried out to the required standard at a minimum risk to workers, equipment and material – and to give all subcontractor representatives precise responsibilities for correct working methods

Implement health and safety plan and provide relevant information to the subcontractors.
Regularly monitor site rules and other instructions are complied with.
See to it that all health and safety legal requirements are complied with on site. That are registers, records and reports are in order and the competent person appointed has sufficient knowledge to operate safely.
Plan and maintain a tidy site
To implement arrangement with workers and other subcontractors on site to avoid any confusion about area of responsibility
Ensure that all hazardous materials are properly marked to enable adequate precaution to be taken
Make sure that appropriate PPE is available on site and won all the working time
Ensure that first aid and emergency rescue materials are always on site and in good condition.
Create, ensure and encourage safe working environment
Reenforce positive safety initiatives and behaviour
Report unsafe acts and conditions

3.1.5 All other Employee Responsibility

All workers are responsible for ensuring the health and safety of themselves and others who might be affected by their actions and for co-operating at all times on health and safety matters. In particular, they should:

iv. Follows safety rules procedures
v. Participate in toolbox talks/meetings
vi. Wear PPE as required
vii. Safeguard life equipment before maintenance
viii. Knows own responsibility
ix. Create a safe work environment for employees

3.1.6 Subcontractors Responsibility

All sub-contractors at present;

iii. Understand and comply with the arrangements, rules defined in the health and safety plan
iv. Allocate sufficient resources to ensure effective management of risks arising out of their work activity
v. Provide information to employees, including details of risk arising out of work activities
vi. Follow any directives of the company staff to enable them to comply with their duties under health and safety requirements
vii. Inform the company of any injury, ill health, near miss or dangerous occurrence
viii. Provide adequate PPE for their employees
ix. Make sure that all their employees are inducted before allow to work on site
x. Provide the company with all relevant confirmation of competence of employees working on the project
xi. Take liabilities of health and safety breaches/penalties of their employees.

3.2 TRAINING, AWARENESS AND COMPETENCE

Personnel are competent to perform tasks that may impact on HSE in the workplace. Competence defined in terms of appropriate education, training and/or experience. Includes applied skills, knowledge experience and ability towards correct attitude.
The Health and Safety Officer ensures that only personnel with suitable qualification and experience are employed on work tasks which have the potential to cause harm, will take action to ensure that training requirements are met and that the effectiveness of training to meet requirements is monitored.
Health and Safety Officer ensure that all persons understand the importance of training and experience and how they can work effectively to ensure safe working, will also ensure that personnel are aware of the health and safety consequences of their work activities and the benefits of following safe working practices.

3.2.1 Awareness and Information

Contractors shall make daily arrangements to check that personnel are provided with Health and Safety Information. All personnel attend the toolbox meeting prior to commencement of work on site, and arrangements made to all workers to carry out regular Tool Box Talks, the program and content of which will be communicated to contractor. In conformity with the laws of Tanzania, the company did not engage in acts that constitute child labor. If there is a need to engage students who are on educational attachment and are less than 18 years of age, special training was provided to them.

3.2.2 Induction Training

The company will ensure that all their staff on site/office receives adequate Health and Safety training for their duties, a training record is held in the company safety department. Subcontractors will also ensure that their employees hold the appropriate training and competences to perform their jobs effectively.

3.3 CONSULTATION AND COMMUNICATION

The company will communicate matters or sharing information regarding Occupational Health and Safety to internal and external stakeholders. This may include health and safety newsletters, legislation changes, policy and procedure updates, annual reports and significant incident and injury trends and information relating to OHS training.
Health and Safety Manager will communicate the following information to employees:
The risk profile (OHS Risk Register) of the workplace;
Policies and procedures specific to the workplace;

v. Risk assessments; and
vi. The following information should be prominently displayed both in company Offices and Sites
vii. Location of First Aid Boxes
viii. Identity of First Aiders
ix. Emergency Procedures and emergency phone numbers e.g., fire brigade
x. Insurance Details
xi. Statutory Notices
xii. Site Rule
xiii. Assembly point

3.3.1 Consultation

The company always consult employees on Health and Safety issues. This leads to creating and maintaining a safe and healthy working environment. This consultation involves not only the company Management giving information to employee but also listening to, and taking into account of what employees say before they make any decision on health and safety. Consultation to be carried out include

Any change that may considerably affect their health and safety at work, for example changes in procedure, equipment or methods of working

The health and safety consequences of introducing a new technology

The planning for health and safety training

3.3.2 Toolbox talks

Health and Safety manager will carry out toolbox talks on regular basis with workers every day or depending on timetable in the morning before work. A toolbox talk is carried out to give awareness on a new hazard or risk is identified, e.g., the introduction of new plant, equipment or a substance or in response to any health and safety related trends or in response to the needs of Risk Assessments and/or Method Statements.

3.3.3 Health and Safety Communication Procedure

The company will be committed to maintaining a safe and healthy working environment for all employees and non-employee members and would ensure that any complaint is dealt with in an expeditious and constructive manner.

Part of the continual systematic improvement of the OHS Management System is dependent on the feedback and reporting mechanisms from employees. Employees are actively encouraged to communicate issues or concerns relating to health and safety with their health and safety representative or management.

In the event that an employee reports a health and safety concern to their officer and they feel that there has been no action regarding the issue, they should discuss their concerns with the health and safety representative.

In attempting to resolve a matter that may be a risk to health and safety, Health and Safety Officer must use the applicable health and safety consultation arrangements and formally refer the matter to the manager. Management will consider the matter and respond in a timely manner.

If the matter is not resolved after the management have been given a reasonable opportunity to consider and respond, the health and safety representatives may request an investigation of the matter by the enforcing authority

3.3.4 Site Safety Meetings

Site safety meetings will be held on a monthly pre scheduled basis and will be shared and nominated by Project Manager

The Site safety meetings are to be attended by all workers who are currently working on site, or whose start is imminent.

Minutes will be prepared and circulated to all stakeholders

3.3.5 Safety Site Meetings Agenda

i. Introduction

ii. Approval of Previous Minutes
iii. Matters arising
iv. Accidents, diseases and dangerous occurrences – Review Site Details including lessons learnt.
v. Safety Inspection
vi. Safety performance monitoring
vii. Health and safety planning interface with public.
viii. Safety Training – inductions/Toolbox Talks etc.

1.3.6 Safety Promotion

The organization is committed to safety promotion. As part of this commitment, the OHS Management System Manual will be made fully available to all employers and employees.
General safety promotion exercises will be conducted regularly throughout the year. These will involve both employers and employees, and are designed to raise everyone's awareness of health and safety issues within the workplace.

4.0 HEALTH AND SAFETY MANAGEMENT PLAN

4.1 SAFE WORKING PROCEDURE FOR HIGH-RISK ACTIVITIES

4.1.1 Safe Work Procedures – Housekeeping on Construction Sites

A basic concept in any effective prevention endeavor will be a good housekeeping during construction and camp activities. The importance of good housekeeping must be emphasized from the beginning through to the final clean-up. The degree of attention given to housekeeping will normally be reflected in the accident record as well as the installation efficiency.
The company ensure that any waste generated by their work activities shall be cleared upon completion of a work process, or as minimum at the end of the shift/day. Failure to comply with these requirements shall result in a 'Clear up Notice' being issued.

4.1.2 Safety Instructions

Prior to commencement of work Supervisor must be appointed
Before excavation starts, the company will make sure the exact location of any underground electrical cables, water and sewage and telecommunications cables is well known. Do not rely solely on-site plans and drawings, as these are sometimes not accurate or complete. Seek assistance from the local services and distribution companies. Even then, proceed with caution. Older installations may not have been recorded.
The excavation work must be planned and the method of excavation and the type of support work, (if any) required decided. The stability of the ground must be verified by a competent person.
If necessary to prevent danger, land must be cleared of trees, boulders and other obstructions.
No load, plant or equipment shall be placed or moved near the edge of any excavation where it is likely to cause its collapse and thereby endanger any person unless precautions such as the provision of shoring or piling are taken to prevent the sides from collapsing.
Make sure all workers in excavations always wear safety gloves, safety helmets and applicable safety boots.
Safeguard workers and the public from falling into excavations. Make sure trenches, shafts and excavations are properly barricaded, covered or isolated to prevent people.

Employees must be protected from loose rock or soil that could pose a hazard by falling or rolling into the excavation.
Warning vests or other highly visible clothing must be provided and worn by all employees exposed to vehicular traffic.
Supervisors must ensure workers stand away from vehicles being loaded or unloaded.
Employees must be prohibited from going under suspended loads.

4.2 SAFE WORK PROCEDURES

4.2.1 Instruction, Training and Supervision

All operators shall receive information and training, including safety instructions provided by the manufacturer.
All operators must be instructed in safe work procedures specific to tasks done at the workplace and be made aware of the hazards and associated risks. This requirement has special significance when dealing with young, inexperienced workers.
All workers on site must receive induction training covering all possible hazards and risks, including hazards and risks that may occur during the use of concrete mixers or when hand mixing concrete. Proof of such induction must be available on site.
The site must be kept tidy in terms of waste / rubbish removal, storage and stacking of materials and of hazardous materials. Dangerous parts of plant and equipment must be guarded.

4.2.2 Safety Instructions – Manual Handling

Hand tools must be of good design and construction, taking into account, as far as possible, health and safety and ergonomic principles.
Hand tools and other equipment must be regularly inspected for safe condition. Ensure tool handles are free of splits and cracks and handles are wedged tightly in the heads of all tools.
Workers must be trained for the safe use of shovels, wheelbarrows, screeds and vibrating equipment.
Workers must be trained in safe manual lifting and proper working postures when required to work in fixed working positions or when they are carrying out repetitive work and keep a hand tool inspection register on site
Suitable alkali-resistant gloves, coveralls and gum boots must be worn by all members of the team involved in concrete mixing and pouring.
Sufficient rest periods must be allowed.

4.2.3 Hazards Peculiar to Concrete Production

Potential hazards for workers in concrete mixing include:

9 Exposure to wet concrete can result in skin irritation or even first-, second- or third-degree chemical burns. Compounds such as hexavalent chromium may also be harmful.

10 Eye, skin, nose, mouth and respiratory tract irritation from exposure to cement dust;

11 Inadequate safety guards on equipment;

12 Inadequate lockout/tag out systems on machinery;

13 Overexertion and awkward postures, slips, trips and falls.

4.3 SAFETY GUIDELINES

Prevent or minimize skin contact with wet cement through wearing proper PPE like dust mask, gloves
Clothing or insides of shoes soiled with cement must be removed and cleaned before re-use.
Maintain good personal hygiene.
Eat and drink only in dust-free areas to avoid ingesting cement dust.
Do not use barrier cream on damaged skin.
Treat minor cuts and abrasions promptly.

4.4 PPE REQUIREMENTS

Eye and respiratory protection must be worn if dry cement dust is significant.
Wear alkali-resistant gloves, overalls with long sleeves, full-length pants and waterproof boots where there is uncontrolled risk of skin contact with wet / drying cement.

4.5 FIRST-AID

Rinse eyes splashed with wet concrete with water and then go to the hospital or clinic for further treatment.
Skin contact - wash with soap and water immediately. Contact a doctor if irritation or pain is persistent.

4.6 SAFE WORK PROCEDURES – BACKFILLING AND COMPACTION

4.6.1 Instruction, Training and Supervision

All workers involved in backfilling and compaction must receive information and training, including safety instructions. All workers must be instructed in safe work procedures specific to tasks done at the workplace and be made aware of the hazards and associated risks. This requirement has special significance when dealing with young, inexperienced workers. Workers must be made aware of hazards and risks when mobile earth moving and compacting equipment is being used.
One-to-one supervision must be provided for people receiving training, or who are unfamiliar with the use of hand tools and compacting equipment.
General supervision must be provided for all backfilling and compaction work.
Safety signage, i.e., protective clothing requirements, restricted area etc must be conspicuously placed on site.
All workers on site must receive induction training covering all possible hazards and risks, including hazards and risks that may occur during the backfilling and compaction process.
All backfilling and compaction work must be supervised by a competent person and all operatives doing the work must be given clear instructions.
The site must be kept tidy in terms of waste / rubbish removal, storage and stacking of materials and of hazardous materials. Dangerous parts of plant and equipment must be guarded. There must be full recognition that work near a public interface may need additional control mechanisms.

4.6.2 Safety Instructions

Ensure that any underground electrical cables, gas lines, water and sewage and telecommunications cables that may be present inside the excavated area are properly sleeved or otherwise protected, before backfilling and compaction commence. Extreme caution must be exercised around such installations when backfilling and compacting.

If earthmoving plant is being used for backfilling:
Check that plant operators are appropriately qualified and competent.
Make sure unattended front-end loaders, backhoes and excavators are always left with the bucket fully lowered to the ground.
If backfilling is done manually ensure:
Hand tools should be good design and taking into account, as far as possible, health and safety and ergonomic principles.
Hand tools and other equipment are regularly inspected for safe condition; tool handles are free of splits and cracks and handles are wedged tightly in the heads of all tools; cracked handles are replaced promptly, not repaired or covered with tape.
Workers must be trained for the safe use of shovels and wheelbarrows.
Workers must be trained in safe manual lifting and proper working postures when required to work in fixed working positions or when they are carrying out repetitive work since improper lifting, awkward postures and repetitive motions can lead to sprains, strains and other musculoskeletal disorders.
Warning vests or other highly visible clothing must be provided and worn by all employees exposed to public vehicular traffic.
Supervisors must ensure workers stand away from mobile plant.
Employees must be trained to use personal protective and other rescue and first aid equipment.
Supervisors have the authority to remove workers from the excavation immediately. Be that for reasons of imminent danger or for noncompliance to safety rules.

4.6.3 Safety Procedures

Before working, barricade was put around the working area to prevent coming traffic from crashing into the operator and to keep workers and bystanders out of harm way.
Work area has to be clear of debris and other objects that could cause damage to the compactor or bodily injury.
No untrained person is allowed to operate construction equipment.
KEEP hands and feet and loose clothing clear of rotating and moving parts as they will cause injury if contacted.
DO NOT operate or refuel a petrol or diesel motor in a confined area without adequate ventilation.
Not to come in contact with the muffler when the engine is hot, since it can cause severe burns.
ENSURE that petrol is only stored in an approved storage container. DO NOT refuel the motor while it is in operation or hot.

4.7 TRANSPORTING OF MATERIALS

All materials transported in a vehicle must be secured against excessive movement. Vehicles must not be overloaded in terms of weight and bulk.
Where goods or material are transported in the back of vehicles there is a risk that these items could cause injury or death to the driver or passengers in a collision, cargo barriers must be fitted.
Transportation of material has to be done during the night so that to reduce disturbances and spread of pollutants

4.8 DRIVER RESPONSIBILITIES

All employees who drive company vehicles must have the appropriate training for the type of vehicle and conditions. They must have read and understood the policies, procedures and safety guidelines before allowed to drive

Employees using the company vehicles must be familiar with routine maintenance before driving the vehicle. Such procedures include:

v. No employee may use a vehicle that they deem to be unsafe or which has been withdrawn from use for repair.
vi. Know what the correct fuel is when filling
vii. Checking the oil regularly and the water regularly
viii. Ensure vision is unimpaired
ix. Ensure windscreen, windows, mirrors and lights are clean
x. Ensure seat belts, lights and indicators work
xi. Ensure no other hazards are apparent
xii. Correct footwear must be worn whilst driving. Bare feet, sandals (flip-flops) and muddy boots are not allowed.
xiii. In the event of an accident employees must follow the procedure as outlined in the guidelines provided with the vehicle.

4.8.1 DRIVERS GUIDELINES

Driver Fatigue

Driver fatigue is commonly thought of as filling asleep at the wheel. Falling asleep is the extreme stage of fatigue. You can be fatigued to the point of having your driving impaired well before you 'nod off" at the wheel.

The signs and symptoms for fatigue include forgetfulness, being fixated, poor decision making, apathy, slowed reaction times, lethargy, moodiness, poor communication and nodding off.

Fatigued drivers have slower reaction times, endangering themselves and others when they encounter unusual, unexpected or emergency situations.

Fatigue often combines with other factors such as drug/alcohol, loss of sleep, sleep disorders, stress, speed and circadian rhythms (in-built body clock in the brain that co-ordinates daily cycles experienced as the worst times of the day when you experience physical and mental performance of the day).

How to stay alert:

Wear a seat belt

Do not exceed speed limits.

Eat sensibly avoiding large meals.

Do not drink alcohol and drive

Avoid driving or take extra care driving in congested road especially in the campus

Driving at night is more hazardous than during the daytime so extra care is needed.

Speed

Speeding or driving too fast is putting you and other road users at risk. Contractor's drivers will abide safety travel. High speed may result to;

The faster you travel on a road, the more likely you are to crash.

The faster you travel the more likely you are to miss important hazard clues.

Higher speeds result in more severe injuries and damage.

The severity of injuries to a pedestrian is greater if the impact is greater due to the speed. The risks are higher for the elderly and young children.

Drug and Drink Driving

Once alcohol is absorbed into your bloodstream it is taken up by cells in your vital organs including the brain resulting in slower reactions, dulling your judgment and vision and impairing your ability to drive.

The chances of crashing are greater and you are three times more likely to be involved in a crash if your blood alcohol level is at the legal limit (80 mg per 100 ml) than if you have not had a drink.

No driver will be allowed even to enter into the site when suspected to be drunk.

1. Everyone's perception of how much you can drink is different. The law is precise. If you are an adult, the legal blood alcohol limit is not more than 80 mg of alcohol per 100 ml of blood.
2. If you are under 18 years of age, you should not drink any alcohol before you drive. Your limit is 30 mg per 100ml.

Prohibited (including controlled substances) and medicinal drugs impair mental and physical functions and can potentially contribute to road accidents.

Combination of prohibited or medicinal drugs with alcohol greatly increases the risk factor for an accident.

Many prohibited and medicinal drugs can directly affect the central nervous system therefore has an effect on the psychomotor performances and driving.

Medical and Health Conditions

A person with a medical condition such as allergies (bees/wasps), diabetes, epilepsy, dementia, poor vision or who has had a head injury, heart attack or stroke, must seek medical advice before driving.

Disabilities such as broken arms or legs, migraines etc., may not stop the person driving but may complicate their safety and the safety of other road users.

Inform your assistant project manager or the person responsible for the vehicle if any of these conditions

5.0 EMERGENCY PREPAREDNESS AND RESPONSE

5.1 Procedure for Emergency Preparedness Response

The contractor will establish and maintain plans and procedures up to date to identify the potential for, and responses to, incidents and emergency situations, and for preventing and mitigating the likeliness and injury that may be associated with them. Possible Emergency situations will include but not limited to the following;

Incidents leading to serious injuries or ill health. In an event that incidents leading to serious injuries or ill health occur, the following procedure will be followed.

-Inform the first aider around to receive first aid treatment.

-Report to the nearest medical facility for further treatment

-The incident should be reported to your site operator or assistant project manager to be recorded in the Incident register by the Health and Safety Officer.

-Loss time of injury or ill health should be reported and recorded in the register.

-Fires and explosions,

-In an event of fire and explosion the company employee should follow the following

5.1.1 Fire Exist Plan

The preservation of life shall override all other considerations, such as saving property and extinguishing the fire. If a fire is discovered, the alarm shall be raised immediately however small the fire. All staffs are empowered to raise a fire alarm if they believe there is a fire; no authority should be sought from any other person. In the event of fire, the three most important actions are, in chronological order, to:

-Raise the alarm
-Dismiss the fire brigade
-Evacuate the building
-When firm is alarm sounds: All nonemergency committee personnel will go out the first available exit that is safe and then to the parking lot.

5.2 Fire Response Instructions

-Without endangering yourself, notify any employees, or guests in immediate danger zone of smoke, heat, or fire.
-Close all doors to prevent the spread of the fire.
-If possible, and if trained to do so, help extinguish the fire by using one of the public/department fire extinguishers.
-Never permit the fire and or smoke to come between you and your route of escape.
-Advice all employees, students/ guests of the nearest safe fire exit.
-Do not attempt to use the elevator under any circumstances.
-If you encounter smoke in a hallway, stairwell, anywhere, stop; go back to a safe area and look for another means of escape.
-Keep doors and windows in the area of the fire closed, to minimize further fire spreading.

Traffic accidents.
-Procedure for Traffic Accident shall be:
-Report to the nearest police station and obtain Police form to go to the hospital
-Report the incident to your line manager

5.3 Evacuation Plan

Evacuation of the building should be done quickly and calmly. Safety of staffs, students and guests should be the primary concern. Each department will appoint one of its staffs to oversee fellow staff members' and students' evacuation from the building. This employee will be responsible for needed supplies and the general safety of the department's staff members.

5.4 Emergency Equipment

The contractor shall at all-time keep possible emergency equipment that will be used during an emergency situation and employees will be trained in the use of those equipment.

6.0 CHECKING AND PROTECTIVE ACTION

6.1 Protection of Workers against Dust

Dust control will be initiated prior to any activity in dusty condition. Such control will adopt but not limiting to de-dusting procedures. In case of unavoidable dust emissions, use of PPE will be

adopted and in any case no personnel shall be exposed directly to harmful airborne contaminants of Silica, Rust (ferrous oxide), Blasting grit, Asbestos, Glass wool & Paint solvent mist. Water sprinkling shall be done at least three times in a day to control the dust on all identified areas of the project to prevent damaging dwellings or causing nuisance to persons and traffic or any other measures as directed by RE. Construction safety nets will be used as appropriate.

6.2 Protection of Workers against Noise

The Contractor shall comply with the applicable Tanzanian laws, orders and regulation concerning the prevention, control and abatement of excessive noise. Industrial deafness is cause by over exposure to high levels of noise from plant, machinery or construction processes. No employees shall be exposed to noise dose that exceeds 85 dB (A), unless they are wearing suitable hearing protectors, which effectively reduce the sound level at the user's level to or below 85 dB (A). Consideration shall be given first to reducing the noise level at source. The precautionary measures for the exposure limits shall be as follows:

-80 to 85 dB (A) – Provide hearing defenders with proper training to use them.

-85 dB (A) – Signposts shall be erected to inform all employees that usage of ear muffles is mandatory in the area.

-115dB (A) – No exposure to steady noise irrespective of hearing protection.

-135 dB (A) – No exposure to impulse noise irrespective of duration of hearing protection.

In case of blasting, the use of Jackhammer, pile driving, rock crushing or other operational producing high intensity impact noise may be performed at night upon approval of the RE and giving prior (at least 24 hours) notice to the nearest receptors.

6.3 Protection of Workers against Hazardous Substances

Material Safety Data Sheet (MSDS) of all hazardous materials that are used on site shall be obtained. An inventory shall be kept of all such materials with the relevant MSDS and shall be available for the inspection by RE. An assessment shall be conducted in relation to the intended usage of the hazardous substances on site and adequate precautionary and control measures shall be taken according to the assessment. Such MSDS shall be available for inspection from Tanzania Health and Safety law in force. An assessment shall be conducted in relation to the intended use of the hazardous substances on site and adequate precautionary and control measures shall be taken according to the assessment.

6.4 Communication Arrangements

The results of OHS performance measuring exercises are to be communicated to all relevant personnel. Safety reviews are carried out monthly by the company health and safety officer. Lessons learned in terms of standards achieved compared with the standards set will be applied for future work where applicable. Safety reviews is used in updating this safety plan, and on completion of the project, an overall safety review will be held, the lessons learned contributing to future projects.

6.5 Indicators of OH&S Performance

The company will monitor the Health and Safety performance of its projects, employers and employees as a whole to ensure that we achieve what we have planned and work to improve. Site

safety performance shall be measured in the same way, with projects being monitored against set Key Performance indicators. These KPI's will be with the use of checklist use during:
-Site inspections
-Equipment inspection
-Workplace condition standards and inspection
-The areas in the table below will also be considered in the performance assessment.

Table 6.1: Consideration area for Performance assessment

1	Project Team health, safety and Environmental Training	2	Risk Assessment
3	Standard Operation procedures (SOPs)	4	Site Inductions
5	Employer and employee Meetings	6	Accident Follow ups
7	Skills Certification	8	Safety Committee Meetings
9	Tool Box Talks		

6.6 Evaluation of Compliance

The company establish and maintain procedures for defining responsibility and authority for the handling and investigation of:
-Accidents
-Incidents
-Non-conformances
-The procedure adopted by the company is the use of Accident, incident and Non-Conformance form in the evaluation of compliance.

7.0 REPORTING OF ACCIDENTS/INCIDENTS

All workers and subcontractors will be familiar with these requirements and ensure that all personnel on site report any accident/incident, near miss or disease to them immediately. All injury accidents will be recorded in the project Accident Book. A copy of the entries is made available to the health and safety management team. The following accidents should be reported as soon as they occur to Health and Safety Officer or Assistant Project Manager.
-Fatal accidents/major Injury and Dangerous occurrence
-Environmental incident

7.1 INVESTIGATION

Health and Safety Officer and Project Managers shall ensure that for any incident/accident full investigation is carried out to determine the cause of the event. The investigation may require the taking of statements from witnesses, preparation of sketches and drawings and taking photographs. Areas where fatalities, major injuries or dangerous occurrences occur are to be sealed off, no further work undertaken until the investigation is complete and the enforcing authority through the company Manager.

7.1.1 Internal Audit

Contractor shall conduct audit as per its procedures in order to assess the implementation of OHSMP and its performance.

7.1.2 Management Review Meeting

The contractor top management shall carry out management review of Health and Safety management system, on a monthly basis. The review shall focus on the overall performance of the OH&S management system and not on specific details.

7.3 GENERAL SITE RULES

The following Site Rules will be briefed to all personnel during the Site Induction Course and will be displayed in all site offices. Visitors to site are advised and accompanied by members of the company team.

Rules:

-Site tidiness: a clean site is a safe site.

-PPE: these must be worn at all times. Employer provides safety helmets, Hi Visibility jackets and safety footwear, Gloves and Safety Glasses.

-Accidents: all accidents no matter how minor must be reported to the company Health and Safety officer or Assistant Project Manager immediately.

Alcohol and Drugs and Smoking: alcoholic liquor and drugs are not to be brought onto, or consumed on the project sites. Do not enter the site if you are under the influence of either. Smoking will only be permitted in designated smoking zones.

-Electricity: do not tamper with, or alter, electrical installations. A qualified electrician must always carry out repairs and alterations.

Plants, machines and Equipment: before using plant and equipment, personnel must receive adequate training and whenever possible Certificate of competence must be registered

-Security: materials, plant and equipment must not be removed from site without written authority from the company Site Controller. All individuals and subcontractors are responsible for security of their own property, including tools.

-Fire: take note of the emergency plan – Escape routes, Assembly Points and Fire points. Do not tamper with Fire Extinguishers: they are there for the safety of all. Smoking is not permitted at camp site and to highly flammability equipment during road construction.

-Radios: radios, CD's, personal stereos are not permitted at workplace during working time

-Safety violation: Safety violation notices is issued to any individual not complying with the site rules after a verbal warning (yellow card). On receipt of a second violation (red card) of the same rule the individual will be removed from site.

Appendix VII: Grievance Receipt and Resolution Form for Project Affected Persons (PAPs)

Grievance/Complaint Registration Number: ……. Date: ……

A. COMPLAINANT

1. Important information of the Complainant

First Name .....Middle Name .....Last Name: .....
Occupation:.....Tittle.....
Address:.....
Mob. Phone..... E-mail:…….....

2. Who is complaining

i. Project Affected Persons (PAPs)..... ☐

Specific PAPs are:

- Municipal staff..... ☐
- Labourer ..... ☐
- Representative of complainant. ☐
- Others ..... ☐

ii. Technicians/Local Fundis ..... ☐

B. EXPLANATION OF THE GRIEVANCES

1. Source of Grievance/ Complaint.....
2. Brief explanation of the Grievance/Complaint emanating from the project implementation.....
   .....
   .....
   .....
3. Event/person being complained about .....
   .....
4. Place where the event occurred .....
5. Date of the event .....
6. Have you ever filed the same grievance before? .....**Yes**..... ☐.....**No.**..... ☐

C: LODGING THE GRIEVANCE/COMPLAINT

1. Method used to lodge the grievance/complaint

☐ Letter ☐ Phone ☐ Face to face ☐ E-mail ☐ Others

(Mention).....

2. Name of Person registered and Filed the complaint Name……Position…….Date…….
3. Agreed time frame for feedback on the processed grievance/complaint:
   (a) Immediately ☐ (b) Three days ☐ (c) One week ☐ (d) Two weeks …… ☐

GRIEVANCE/COMPLAINTS RESOLUTION

1. Date of conciliation session.....☐.....
2. Was the complainant present? **Yes** ☐ **No** ☐
3. Was field verification of complaint conducted? **Yes** ☐ **No** ☐
4. Findings of field investigation…
   ……
   ……..
   .....
5. Summary of Conciliation Session……
   .....
   .....
   .....
6. Was agreement reached on the issues? **Yes** ☐ **No** ☐
7. If agreement was reached, give the details of the agreement
   ……
   ……
8. If agreement was not reached, specify the points of disagreement and promise given to the client
   .....
   .....

Signed (Arbitrator/ Complaints handling Officer-GHO): ……Date.....
Signed (Complainant).....Date.....
Signed (Independent Observer) .....Date.....

Appendix VIII: Hydrology and Hydraulic Study Report for Mkuyuni Fish Market

1.0 Background of the study

1.1 Introduction

General

The overall objective of this project is to facilitate economic growth of Mwanza residents and the Tanzania at large, as it will boot fish business and fish industry in general. These potentials will be fully exploited when there is a reliable fish market with good infrastructures.
Construction and upgrading of the proposed fish market to the said standard will require a detailed analysis in the Engineering design, Environmental aspects and other many social and economic aspects. These analyses are vital in arriving at an acceptable standard of the market design and tender documents for construction of the fish market.

In order to arrive at a right design of the fish market, a clear understanding of the hydrology of the rivers and streams draining the project area is a core part of the design. This report discusses the hydrology and hydraulic of the proposed fish market.

1.2 Location of the study

Location/ approach

The study area is located at Nyamagana district within the Mwanza city (See figure 1). The market area covers a total area of approximately 6.9 Hectors. The proposed fish market area is situated near the lake shore. The market is purposely positioned at the lakeshore purposely due to the fact that, fishes are sold directly after fishing on a daily basis.

Figure 2: Location of the study area- Mkuyuni Fish Market

2.0 Terms of Reference

Introduction The Terms of Reference (ToR) require hydrological and hydraulics studies to be done along the project area with an aim of determining design peak flood discharges across the Mkuyuni fish market. These peak floods will be the basis for the designs of the hydraulic structures with the required capacities.

The rainfall-runoff relationships and catchment characteristics for each catchment are to be determined basing on the topographic maps/DEMs and field investigations and then used in the TRRL/ EAFM to estimate the design peak floods. However, to some of the catchments which will appear to be bigger than the upper limit of application of the TRRL EAFM, that is 200 km^2, regionalization technique/Soil conservation method, which is free from this constraint, will be used/applied. On other hand the Rational method will have to be used for catchments with smaller sizes less than 1km^2.

2.1 Stakeholders Consultation

Introduction Stakeholders were consulted during the site visiting conducted in the months of February and March 2022. The purpose was to collect all necessary concerns and inputs to enable successful design of all hydraulic structures and sizing them.

2.4 Stakeholders concerns

Stakeholders Generally, the stakeholders concern was to address major two things regarding hydraulic infrastructures

- The existing stream/channel at the border of the Mkuyuni market area should be properly studied and considered so as to mitigate its effect to the market.
- Drainage infrastructures from the Market area should be carefully designed in terms of their hydraulic capacities so as they can properly drain all collected storm water properly.

3.0 The Methodology summary

General These Hydrological and Hydraulics (H&H) studies are along the following five exercises. However, its detailed information is well presented in section 5 of this report:

Exercise 1: Demarcation of the catchments to determine their coverage (km^2) based on the available topographic maps and digital elevated models (DEM)

Exercise 2: Carrying out field investigations to determine the catchment characteristics including land use and cover and the hydraulic parameters like the value of Mannings roughness coefficient, extent of flooding and flood marks on river/stream banks and channel stability.

Exercise 3: Estimation of peak flood discharges that cross roads sections for

given frequencies.

Exercise 4: Estimation of the hydraulic capacities of the existing drainage structures
along the project area and checking their adequacy basing on the computed design peak floods.

Exercise 5: Determination of the types, sizes, shapes and number of proposed structures required to adequately pass the design peak discharges, followed by computation of the scour depths for determination of extent of protection works required.

4.0 Climate

4.1 Rainfall and Temperature

Mwanza The area under study has a tropical type of climate with a slight bi-modal rainfall regime. The rainfall season starts in late October and ends in early May. A small trough is observed in February. June, July, August and September are the dry months. The following is the rainfall data (30 years) from TMA.

MWANZA TMA MONTHLY TOTAL RAINFALL (mm)												
Year	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
1991	87.4	106.9	150.0	185.2	66.0	24.6	0.0	40.1	0.8	259.5	53.5	156.0
1992	36.7	95.4	102.4	97.0	61.2	35.7	0.4	0.3	6.8	64.2	110.9	181.6
1993	187.4	50.0	137.2	117.9	163.1	30.7	0.0	1.9	0.0	7.8	113.5	66.7
1994	181.0	56.4	152.8	180.2	94.9	16.3	1.5	69.4	0.2	97.5	344.2	65.2
1995	132.4	88.0	189.0	194.4	34.5	38.6	0.0	0.0	96.3	154.2	112.0	172.7
1996	149.2	137.4	119.9	116.4	33.0	9.3	48.9	40.9	30.0	26.9	112.2	46.4
1997	160.6	23.7	170.6	376.1	59.4	48.3	2.0	1.2	1.0	147.9	249.3	171.0
1998	153.7	121.7	85.4	234.3	100.9	80.2	1.2	0.0	16.3	45.4	133.0	27.6
1999	124.1	0.1	259.4	165.0	8.4	0.0	0.0	59.2	4.4	55.2	235.0	125.4
2000	143.0	42.0	51.3	68.3	13.7	5.9	0.0	0.6	0.0	51.8	157.5	136.9
2001	214.6	113.5	72.3	164.2	25.2	1.6	25.4	38.3	31.1	104.7	219.6	139.6
2002	140.4	68.0	240.5	206.1	122.6	0.0	0.0	0.0	1.1	61.1	143.0	299.2
2003	44.7	14.9	186.0	154.1	86.2	0.5	13.0	21.1	6.4	14.1	85.8	251.4
2004	121.0	82.3	266.6	106.7	32.4	0.0	0.0	77.0	29.5	151.8	189.3	210.1
2005	123.1	77.2	217.0	117.4	185.1	0.0	0.0	60.8	164.7	86.8	34.5	104.5
2006	79.0	156.9	212.4	70.0	131.0	6.1	1.6	38.2	37.4	80.7	276.0	337.3
2007	174.7	166.2	151.0	192.0	63.0	84.1	0.0	23.6	119.8	62.4	111.7	148.3
2008	80.4	60.1	153.2	68.4	37.5	8.1	3.5	1.0	78.1	206.5	129.9	53.8
2009	118.9	87.6	100.0	290.9	62.8	1.4	0.0	0.0	58.6	226.8	113.8	202.4
2010	125.5	216.8	239.4	108.8	78.1	51.7	0.6	1.4	11.8	156.9	76.4	74.2
2011	95.6	68.0	86.1	132.9	75.8	58.1	0.0	40.5	24.4	104.9	226.7	219.1
2012	2.1	36.8	37.0	322.6	158.2	60.2	0.0	10.7	65.6	336.4	105.8	172.1
2013	105.4	26.1	221.2	162.8	39.3	0.0	0.0	39.6	98.9	54.4	208.5	169.4
2014	137.7	74.1	90.0	95.7	17.3	0.6	11.6	38.7	64.5	167.8	153.1	120.3
2015	45.8	36.4	62.6	421.0	50.2	48.2	0.0	0.0	54.2	219.4	343.1	249.8
2016	207.1	88.6	183.2	152.3	66.7	62.7	8.6	4.7	43.1	55.5	118.4	48.4
2017	3.4	94.6	169.4	88.4	40.5	2.8	19.0	0.9	103.4	134.4	195.8	19.6
2018	71.8	55.6	175.6	281.7	110.1	21.2	0.0	37.5	1.4	142.1	125.5	130.5
2019	30.9	107.6	97.9	157.7	60.4	58.2	13.5	5.9	95.6	214.5	98.1	213.7
2020	132.9	108.4	256.4	161.9	30.9	16.8	0.0	56.2	22.8	125.7	170.7	65.5

Table 1: Total monthly rainfall (mm)

The average total rainfall was estimated from the above data and the following is the rainfall histogram.

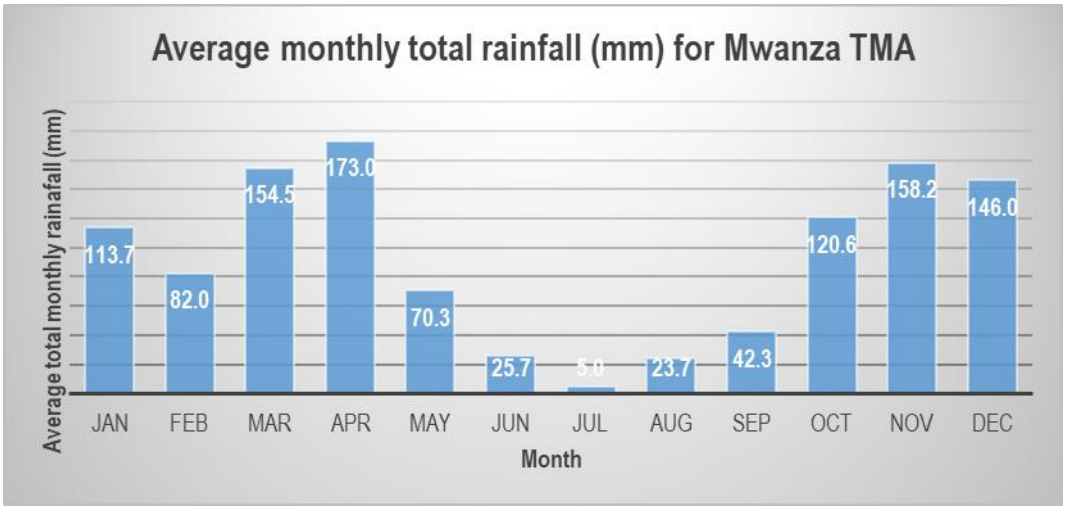


Figure 2: Histogram for average total monthly rainfall

MWANZA TMA MAXIMUM 24 HOURS RAINFALL (mm)												
Year	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
1991	23.2	61	59.8	58.1	12.2	18.7	0	36	0.6	70.9	15.4	39
1992	9.2	34.5	42.7	20.6	24.8	30.4	0.4	0.3	3.1	16.1	35.4	59.9
1993	52.4	26.8	57	25.6	60.5	22.3	0	1.2	0	3.5	50.8	17.8
1994	46.3	23.1	30.9	108.7	66.3	10.6	1.5	38	0.2	66	52.2	16.4
1995	57.5	32.6	78.1	40.1	12.7	19.1	0	0	52.1	60	28.5	51.4
1996	67.8	35.4	34.6	46.7	12.8	8	29.7	24.6	10.5	20.6	25.2	21.2
1997	35.5	13.1	95	87.1	21.3	45.4	2	0.8	1	46.1	79.9	25.8
1998	50.3	38.8	39.7	48.2	35.4	40.7	1.2	0	11.6	32.4	52.7	10.5
1999	40.2	0.1	81.4	39.5	6.8	0	0	26.6	1.6	25.4	48.9	19.1
2000	52.1	18	14.8	23.6	5	3	0	0.6	0	15.2	28.3	26.1
2001	50.5	45.3	19.8	37	11.5	0.8	13	17.4	10.9	23.4	40.3	45.2
2002	23.8	35.1	45.9	43.8	58.4	0	0	0	1.1	20.3	28.9	148
2003	24.5	5.6	43.5	52.6	18.6	0.5	13	11.2	4.4	7	16.4	86.5
2004	46.6	28	70.5	24	16	0	0	39.1	14.3	46.3	78.3	33.6
2005	38.3	53.3	70.5	57.2	73.6	0	0	42.5	116.6	26.4	26.2	53.9
2006	45.9	47	54.2	22.9	25.4	5	0.8	25.8	36.6	60.2	66.6	39.4
2007	81.3	50.1	45.8	70.3	27.6	53.3	0	8.6	47.6	35.2	28.6	36.3
2008	23.4	31	52.5	22.5	19.7	7.6	3	0.6	47.9	49.6	24.4	21.1
2009	38	49.1	28.5	63.8	37.7	1	0	0	19.1	134	28	68.9
2010	70.4	69.2	54.3	27.4	36.8	40.7	0.6	1.4	11.8	46.5	29	23.6
2011	21.8	38.1	22.1	42	20.4	27.5	0	11.9	7.3	47.3	62	59.1
2012	1	15.7	18.8	92.3	54.3	31	0	4	25.4	136.9	31.2	44.4
2013	26	9.2	49.6	29	33.6	0	0	28	37.9	33	50.7	39.2
2014	54.8	42.7	27.8	29.4	7.3	0.4	11.6	21.7	47.4	75.4	40.1	31
2015	11.1	20.2	21.2	65	22.8	20	0	0	24.6	52.1	82.9	92.1
2016	91.1	45.7	59.2	43.9	44.4	62.4	8.6	4.7	28	28.1	37.3	36.2
2017	2.8	20.6	54.8	14.6	13.7	0.9	11.2	0.9	40.8	73.5	53.8	9.2
2018	19.1	49.6	60.4	68.1	39.1	21.2	0	14	0.6	64.7	33.2	28
2019	15.6	50	28.8	92.6	17.4	53.2	13.3	5.9	51	40.2	30.2	72.1
2020	23.7	22.8	41.4	27.6	15.5	14.9	0	25	6.7	53.8	44.3	24.1

Table 2: Maximum 24 hour rainfall (mm)

The average maximum 24 hour rainfall was estimated from the above data and the following is the rainfall histogram.

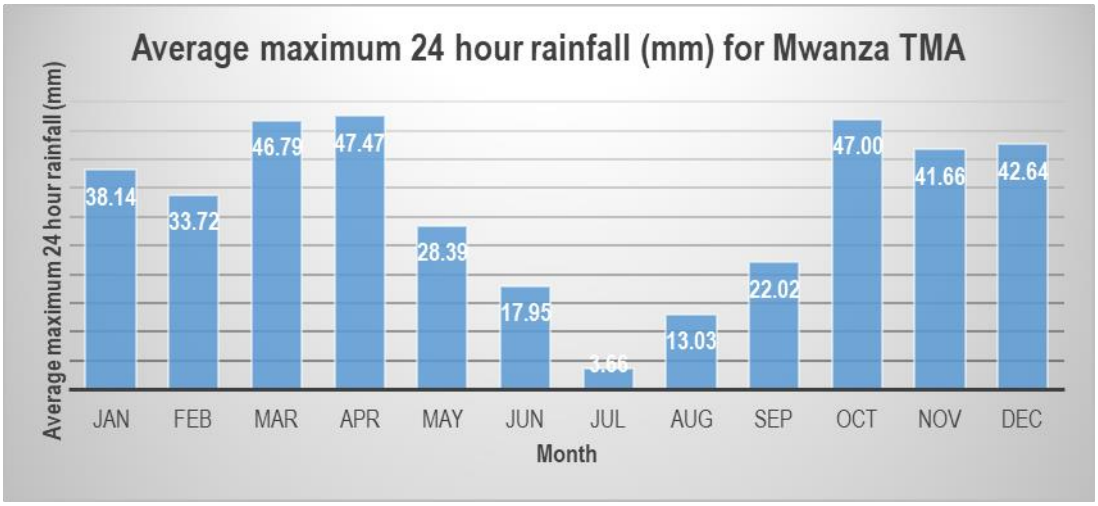


Figure 3: Average daily Max 24 hours Rainfall

The hottest period occurs between November and February and the coldest period occurs between May and August.

The Statistical analysis is made on maximum 24h rainfall to estimate the daily rainfall depth for several return periods using HEC-SSP and HEC DSS-Vue Software. The statistical analysis has been based on existing statistical distributions, such as Gumbel…and the probability distribution that best fits the data series has been considered. The maximization factor of 1.13 has been applied to the results of the statistical analysis to convert data provided by TMA from 24h rainfall to daily rainfall as described in WMO-No 168, 2009. The result of this analysis is indicated below. The value for 1.13 is applied to compensate climatic change scenarios under the study area.

RETURN PERIOD	PERCENTAGE OF EXCEEDENCE	DESIGN DAILY RAINFALL (mm)
200	0.5	189.31
100	1	175.49
50	2	161.54
20	5	142.67
10	10	127.77
5	20	111.78
2	50	86.57

Table 3: Design maximum daily rainfall

Intensity Duration frequency (mm)

The intensity Duration frequency for Mwanza station was obtained from TMA and used for analysis. The following is the Intensity duration frequency data;

	Rainfall intensity in mm/hr						
Duration (hr)	0.25	0.5	1	2	6	12	24
2yrs	85.07	62.57	44.38	26.97	10.52	5.48	2.91
5yrs	103.61	86.57	70.22	41.8	16.09	8.32	4.48
10yrs	115.88	102.47	87.34	51.63	19.77	10.2	5.52
25yrs	131.39	122.55	108.96	64.04	24.43	12.57	6.84
50yrs	142.89	137.45	125	73.25	27.88	14.34	7.81
100yrs	154.31	152.23	140.92	82.38	31.31	16.08	8.78

Table 4: Intensity Frequency data from Mwanza TMA

From these data, the curve was prepared at 100 year and the best fit eqaution was established as follows;

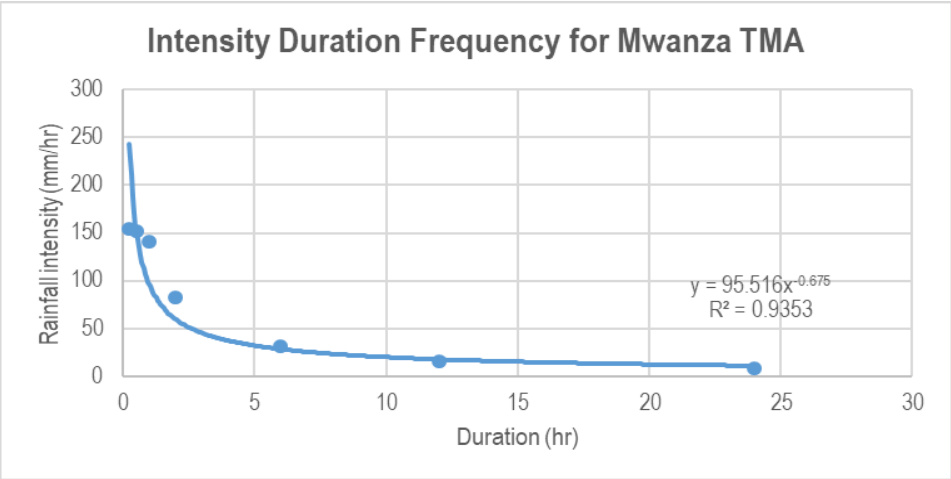


Figure 4: Intensity Frequency curve for Mwanza TMA

Temperature data analysis (mm)

The Mwanza TMA station which is located at Latitude -2.467 South and Longitude of 32.9167 East will be used in this project because it is near the project area and it has good temperature data distribution. The following is the temperature data (30 years) from Mwanza TMA.

MWANZA MONTHLY AVERAGE MINIMUM TEMPERATURE (°C)												
YEAR	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**
1985	18.5	18.2	18.4	18.3	18.1	16.5	16.1	16.4	18.1	19.0	18.6	18.7
1986	18.2	17.9	18.2	18.5	18.1	15.3	14.5	16.1	18.5	19.1	18.9	18.3
1987	18.3	18.3	18.9	18.8	18.3	16.5	15.7	16.3	18.3	18.7	18.0	18.0
1988	17.7	18.0	18.0	18.5	18.0	16.6	15.9	16.9	17.9	18.7	18.4	18.1
1989	17.5	17.7	18.0	18.1	17.6	16.1	15.4	16.3	17.7	18.5	18.6	17.8
1990	17.2	18.2	m	m	m	m	14.1	15.6	16.7	17.7	17.5	17.3
1991	17.2	17.2	17.6	17.2	17.4	15.6	14.1	15.0	16.5	16.5	16.9	16.5
1992	16.9	16.9	17.2	17.2	15.9	m	14.5	16.3	18.0	18.7	18.5	18.2
1993	18.2	18.4	18.2	18.7	18.5	17.4	14.9	16.7	16.9	18.5	19.1	19.0
1994	18.2	18.1	18.3	18.3	18.1	16.1	15.9	16.1	17.2	18.6	17.9	18.2
1995	17.7	17.5	16.7	17.8	16.8	15.5	14.8	14.6	16.1	17.2	17.4	16.5
1996	16.2	16.4	17.1	16.5	16.4	15.3	13.9	14.4	15.8	15.9	16.7	16.2
1997	15.9	15.6	16.5	15.8	14.9	14.2	13.1	14.3	15.1	16.2	16.0	15.5
1998	16.0	16.2	16.0	15.8	15.3	13.0	11.6	18.7	14.1	14.8	14.4	15.0
1999	14.2	14.0	14.0	17.1	18.0	15.9	15.2	16.7	16.9	17.5	18.5	18.6
2000	18.3	18.1	18.8	18.5	18.6	17.3	16.7	17.3	18.4	18.7	19.1	18.5
2001	18.0	18.4	18.1	18.4	18.1	16.4	16.1	16.5	18.1	18.9	18.8	18.9
2002	18.6	18.1	18.5	18.9	18.5	16.1	16.2	16.7	17.7	18.5	18.8	18.3
2003	18.2	17.8	18.7	19.0	18.3	17.3	15.7	17.1	18.0	m	19.0	18.8
2004	18.7	m	18.7	18.7	18.1	16.1	15.7	16.9	17.5	18.7	m	18.5
2005	18.4	18.5	18.8	18.7	18.2	17.0	m	16.5	17.7	17.7	m	18.8
2006	18.6	m	18.3	18.5	18.2	16.1	16.2	16.4	17.3	18.5	18.5	18.5
2007	18.6	18.3	18.6	18.8	18.7	16.6	16.2	16.7	17.7	18.2	18.9	18.0
2008	18.1	17.9	18.6	18.3	17.9	14.4	13.9	15.3	18.5	18.9	18.6	18.8
2009	18.9	18.5	19.3	19.1	18.9	17.7	16.3	17.3	18.7	18.8	18.9	m
2010	18.4	19.7	18.8	19.7	19.0	17.6	15.8	16.8	18.3	18.2	18.7	17.9
2011	m	17.8	18.3	18.4	23.7	16.9	16.0	17.2	18.2	19.0	18.7	18.8
2012	18.1	m	19.1	18.9	19.0	15.9	16.2	16.8	18.3	m	m	18.8
2013	19.1	18.5	19.0	19.2	m	15.9	15.0	16.3	m	18.3	18.7	19.1
2014	18.6	18.7	19.0	19.0	18.9	18.2	17.7	17.9	18.4	19.0	19.0	18.9
2015	18.5	19.5	m	18.3	19.3	18.0	17.1	17.7	18.9	19.6	19.2	18.9
2016	19.7	19.7	20.5	19.9	18.3	17.4	15.7	16.8	18.2	19.0	18.7	19.1
2017	19.2	19.4	19.1	19.5	18.8	18.6	17.6	18.8	19.4	20.0	19.0	19.3
2018	18.7	19.5	18.9	19.2	19.2	17.1	16.6	17.4	18.8	19.6	19.7	19.2
2019	18.4	19.2	19.0	19.7	19.4	18.3	16.9	17.6	18.7	18.7	19.2	19.3
2020	19.6	19.5	19.3	19.4	18.9	17.1	16.8	17.2	17.9	19.3	19.3	19.5

Table 4: Minimum average monthly temperature (mm)

MWANZA MONTHLY AVERAGE MAXIMUM TEMPERATURE (°C)												
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1985	28.8	26.7	29.0	27.5	28.9	28.8	29.2	29.6	29.6	30.0	28.7	28.0
1986	28.0	27.7	28.1	27.4	27.8	28.1	28.1	29.8	29.9	28.6	28.0	26.7
1987	27.2	27.7	28.6	28.2	28.4	27.6	29.4	30.2	29.6	28.5	27.7	28.7
1988	26.8	28.7	27.8	28.0	28.4	29.3	27.6	27.6	28.3	28.2	27.2	28.3
1989	25.5	m	m	m	m	m	m	m	m	m	m	m
1990	m	m	m	m	m	m	m	m	m	m	m	m
1991	27.2	27.9	28.0	27.6	27.8	28.6	28.5	28.8	29.6	27.0	28.3	26.9
1992	28.3	27.1	27.5	m	m	m	m	m	m	m	m	m
1994	m	m	m	m	m	m	m	m	m	28.8	26.3	27.7
1995	27.8	27.4	28.1	28.8	27.8	28.6	28.3	30.7	29.5	28.4	28.3	28.0
1996	27.8	27.6	28.2	28.6	29.2	28.9	28.8	28.6	28.5	29.2	28.2	28.1
1997	27.8	29.0	30.6	27.6	27.4	29.2	28.7	29.9	32.1	29.6	26.7	25.9
1998	27.4	28.0	29.7	28.6	28.6	28.5	28.7	27.4	29.7	28.4	29.0	29.2
1999	27.8	30.6	27.1	27.6	28.8	29.2	28.9	29.5	28.8	28.1	27.3	26.9
2000	28.0	28.8	28.7	29.0	29.6	29.7	29.7	29.5	30.2	29.0	27.4	26.5
2001	26.1	28.4	29.0	28.5	28.9	28.9	28.4	28.5	27.9	28.5	27.4	27.9
2002	26.0	29.2	m	28.7	28.7	29.8	29.7	29.8	30.8	30.0	27.1	27.8
2003	28.1	30.2	29.8	28.9	27.5	28.9	28.9	28.9	29.8	m	29.2	27.8
2004	28.8	m	28.7	28.0	29.2	29.6	29.3	28.8	28.9	28.8	m	26.8
2005	27.7	30.3	28.5	29.3	27.6	28.7	m	28.7	27.9	28.8	m	29.5
2006	29.4	m	27.4	27.6	27.6	29.2	29.0	29.1	29.4	29.7	26.0	25.4
2007	27.0	27.6	29.0	28.6	28.5	27.7	28.2	28.8	27.7	29.0	28.4	27.2
2008	27.4	27.3	27.9	28.2	28.5	28.7	28.5	28.8	28.3	27.9	27.2	27.9
2009	27.6	28.0	29.0	27.6	28.1	29.5	29.1	29.9	29.4	28.8	27.5	m
2010	28.3	29.3	28.5	29.5	28.9	29.3	29.3	29.2	29.0	28.3	28.4	m
2011	m	m	m	m	28.8	28.7	28.6	27.8	28.3	29.4	26.9	27.0
2012	28.7	m	29.8	28.3	27.9	30.0	28.3	28.6	28.5	m	m	26.9
2013	28.8	28.9	28.6	27.6	m	30.0	29.5	29.0	m	28.6	27.9	26.8
2014	27.3	27.4	29.0	28.9	29.2	29.4	29.1	28.1	29.0	27.9	27.2	27.4
2015	27.5	28.9	29.8	26.3	28.4	27.8	28.9	29.9	29.4	27.7	26.3	26.2
2016	27.2	28.7	29.2	28.7	28.8	29.2	28.7	29.7	29.7	29.5	28.9	28.9
2017	30.0	28.8	28.4	29.6	29.5	29.1	28.5	19.2	29.4	28.8	28.0	28.6
2018	26.9	30.1	27.5	27.5	26.8	29.0	29.4	29.3	30.7	28.6	28.7	27.1
2019	28.9	30.6	29.6	29.7	29.6	28.6	29.8	30.4	30.3	29.1	27.8	25.9
2020	26.7	27.7	26.7	27.5	28.6	28.7	28.6	28.9	28.4	27.8	27.3	28.0

Table 5: Maximum average monthly temperature (mm)

From the above data, the following is the combined graph for Maximum and minimum monthly average temperature from Mwanza TMA.

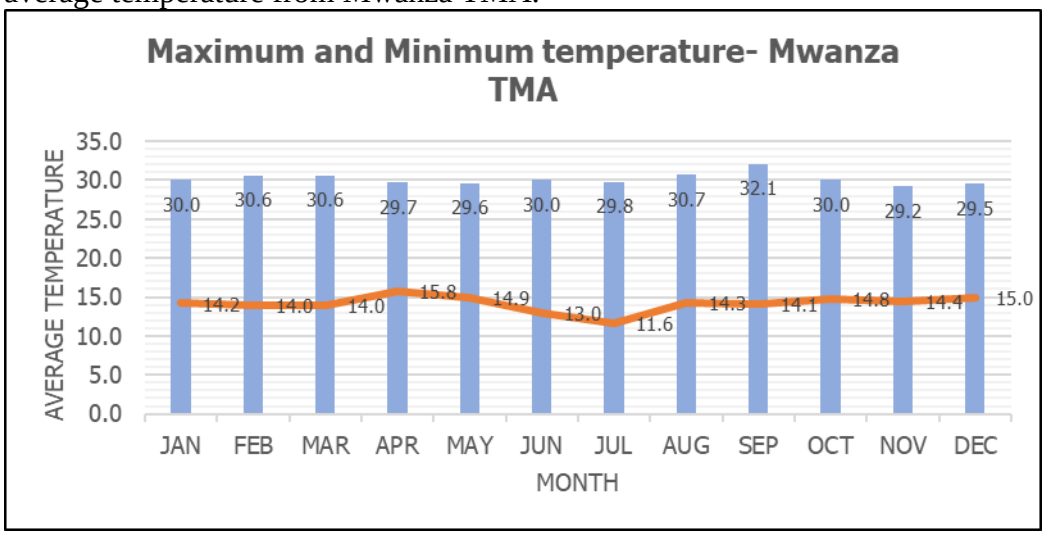


Figure 3: Maximum and minimum temperature for mwanza TMA

It was found that, there is minimum temperature from june to July and maximum temperature is in September. These data are also the basis for understanding the hydrological responses within the sub basin of Mkuyuni fish market study area.

5. 0 Methodology and Approaches to the study

5.1 Introduction

General

The very first step the consultant has undertaken regarding the hydrological investigation and its hydraulic analysis was to obtain the approved plan of the Mkuyuni fish market from the Mwanza town council. The second step was to collect DEM/DTM of the project area and topographic maps with the study are in it. These set of data were instrument for the analysis of the hydrology and hydraulic of the area as discussed in the following sub sections.

5.2 Extracting Data for Hydrological Analysis

5.2.1 The DEM through use of ArcGIS Software

DEM Data source/format and characteristics

The data (Digital Elevation Model-DEM/Digital Terrain Model-DTM) was obtained from the International Centre for Tropical Agriculture (CIAT). CIAT have derived/ processed the data from the USGS/NASA SRTM data (Shuttle Radar Topography Mission) to provide seamless continuous topography surfaces.

The data are available in ARC **ASCII** format, in decimal degrees and geographical Coordinate System datum **WGS84,** with a resolution of **90mx90m or 30mx30m** and elevations are given in metres. Five DEM sheets (Tiles) are provided to cover the whole of Tanzania. A portion of the Tanzania DEM which covers the extent of the study area was extracted.

5.2.2 Delineation Results

Results

Figure 4 below shows all the delineated catchments and sub catchments using DEM/DTM and their current features which drain the study area. The catchments provide important inputs as required by different hydrological model such as East Africa Flood Model and the Rational Method.

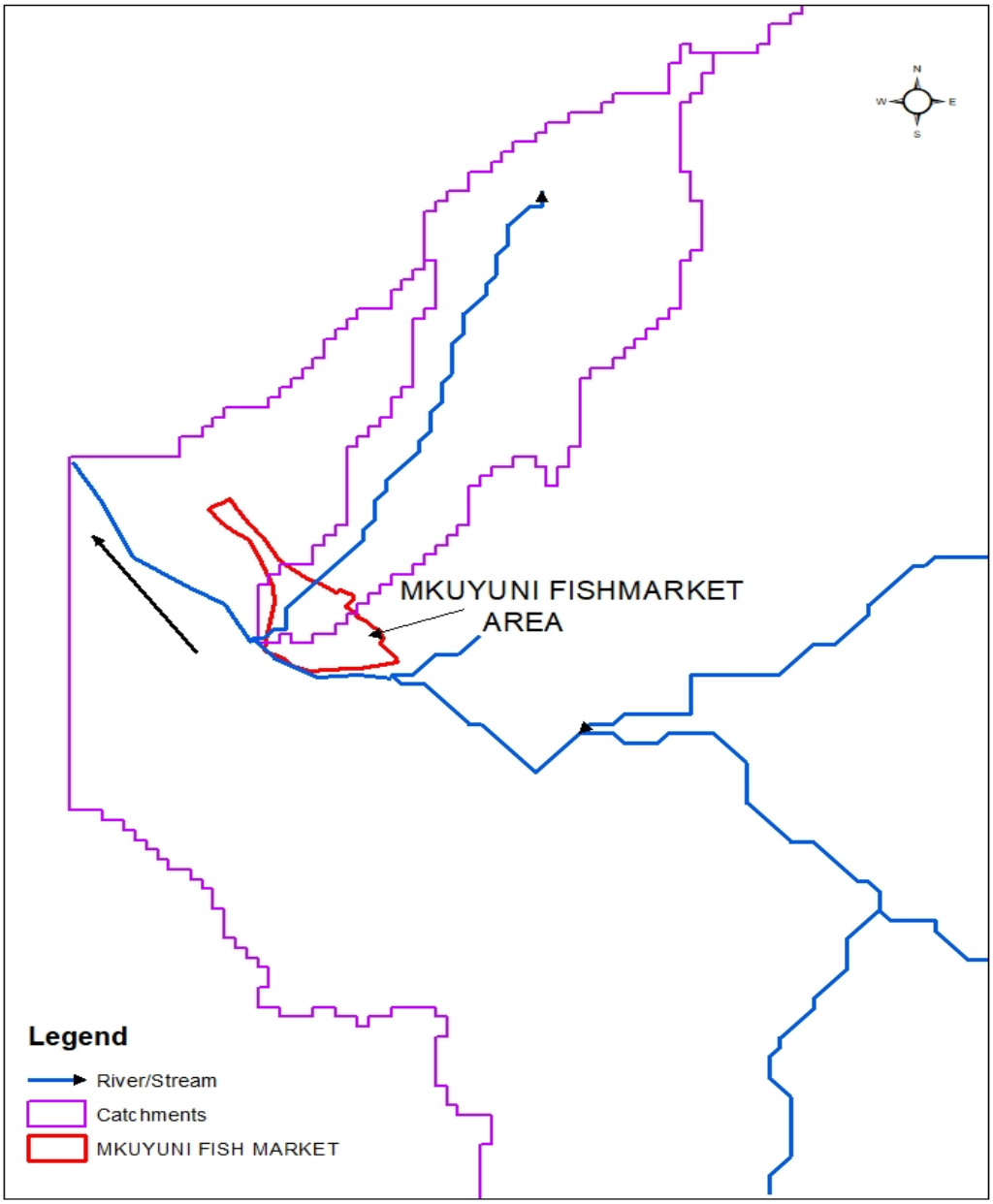


Figure 4: Delineated sub-catchments draining the study area

Appropriate model for different Catchment sizes

The areas as measured by ArcGIS indicated that some of the catchment's size of streams draining at the study are less than 1km^2 while others were above 1km^2 but do not exceed 200km^2.

Such variations of catchment sizes suggested that more than one hydrological model have to be used in determining the design discharges of rivers/stream crossings. In response to the different sizes of catchment areas measured, two methods were applied to determine the design discharges of streams: (i) Rational Method (RM) applicable for catchments with areas which are less than or equal to 1km^2, (ii) The TRRL/ East African Flood Model (EAFM) which is applicable for catchments with areas of above 1km^2 but not for catchment with areas beyond 200km^2.

5.3 Flood estimation

5.3.1 Introduction

There are a number of models which can be used to analyze both discharge from un-gauged channels and the flood flow frequencies from gauged channels. However, there are several factors which outweigh applicability of these models in different environments.

Based on this reason, the models which were applied in this study were carefully selected to meet the condition of both the study area and geographical location. With respect to the results of catchment sizes from the study area and Tanzania standards of drainage design, it was apparently revealed that the Rational model and the TRRL/East African Flood Model had to be applied to estimate the design discharge. In addition to this, other method like SCS will be applied for confirmation purposes.

5.3.2 The Rational Method of Flood Estimation

The rational method is a suitable method for small catchment areas. Thus, all the catchments with areas less than $1km^2$ in the study area have been analyzed using this method. This method has been one of the most widely used methods for predicting peak discharges on un-gauged catchments. All criteria in the use of this method has been considered and addressed accordingly. Some of the major criteria which was highly considered in the use of this methods are:

(i) Catchment areas are less that $1km^2$;
(ii) The runoff coefficient was carefully chosen for each of the catchment.

The basic equation for the rational equation is given by:

$$Q_T = \frac{CIA}{3.6} \qquad Eqn(1)$$

Where:

Q_T = The peak discharge (m^3/s);
I = The average Rainfall Intensity over the catchment (mm/hr);
C = The rational runoff coefficient;
A = Catchment area (km^2).

While the area (A) is obtained from measurement on the topo sheet/DEM, the rational runoff coefficients are read directly from the tables. The coefficients are given in Table 1.
The rainfall intensity is always provided in the form of relation with time of concentration (T_C). Time of concentration is a principal factor used to link rainfall and runoff and it can be estimated using Bransby William empirical equation (Eqn 2) below.

Table 6: Runoff coefficient values for different catchment types

Runoff coefficient (C) C = Cs + Ck + Cv

Cs (Topography)			Ck (Soils)		Cv (Vegetation)	
Very Flat	<1%	0.03	Sand and Gravel	0.03	Forest	0.04
Undulating	1-10%	0.08	Sandy Clays	0.08	Farmland	0.11
Hilly	10-20%	0.16	Clay and Loam	0.16	Grassland	0.21
Mountainous	>20%	0.26	Sheet Rock	0.26	No Vegetation	0.28

$$T_c = \frac{0.615\,x\,L}{A^{0.1}\,x\,S_C{}^{0.2}} \qquad Eqn\,(2)$$

Where: SC = Slope of the main channel;
L = Is the length of the channel (km);
A = Catchment area (km^2).

Before computing the value of Tc, it was necessary to develop the relationship between Tc and rainfall intensity. In order to develop this relationship, the rainfall intensity – duration curves at 100 years return period for the study area zone was used.

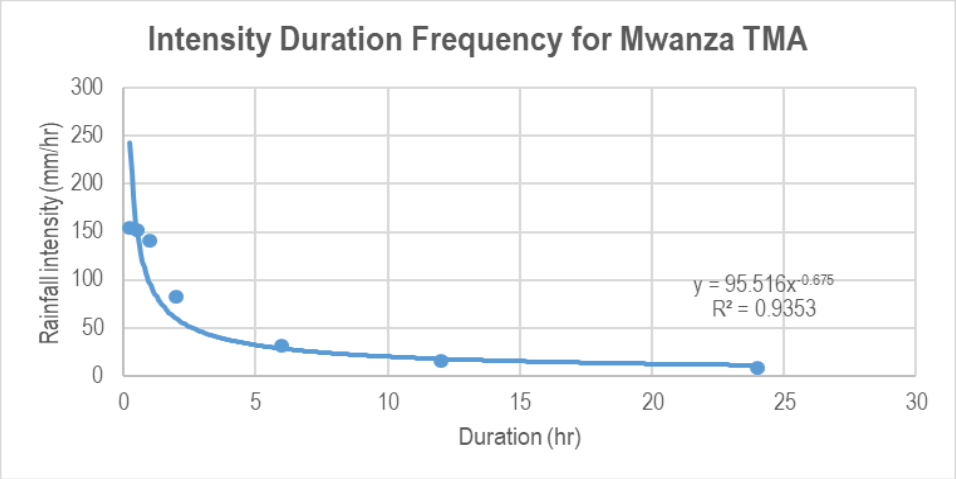


Figure 5: Rainfall Intensities duration curves for the study area (Mwanza)

5.3.3 The East African Flood Model (EAFM)

The East African Flood Model is applicable to all catchments with areas between $1km^2$ and $200Km^2$. This is the range in which the EAFM is proven to provide accurate results (D. Fiddes, 1977). Major limitations and assumptions of this method have been taken into account.

The East African Flood Model requires that the un-gauged catchment area to be between $1km^2$ and 200 km^2 for reliable estimation.
Nevertheless, the EAFM requires other catchment characteristics to be able to estimate the discharges. Table 4 below illustrates the type of data required by the model.

Table 7: Data required by the EAFM from the catchment under consideration

No.	Descriptions	Symbol	Units
1	Catchment Area	A	km^2
2	Land/Catchment Slope (s)	S	m/m
3	Channel Length (L)	L	Km
4	Elevation at the channel source	Es	M
5	Elevation at the channel exist	Ee	M
6	Catchment Type	None	None
7	Lag time (K)	K	Hr
8	Soil Type	None	Unit less
9	Standard Contributing area coefficient	C_S	Unit less
10	Rainfall Zone (dry/wet)	None	Unit less
11	Catchment wetness factor	C_W	Unit less
12	Land use factor	C_L	Unit less
13	Rainfall time	T_P	Hr
14	Rainfall time index	N	Unit less
15	2 year daily point rainfall	$R^2/24$	Mm
16	10 year: 2 year ratio	R	Unit less

The type of information required by the EAFM above from any catchment can broadly be divided into two groups. The first group consists of rainfall related information while the second group consists of soil/land characteristics.

The rainfall related information is determined by four steps:

- The 24 hrs point rainfall for 2-year return period is read from a storm rainfall isohyetal map of East Africa;
- The 2 year 24 hrs rainfall is converted to a 24 hrs storm of the desired return period by means of generalized rainfall growth curves;

- A depth – duration rainfall equation is used to calculate the point rainfall for the appropriate time of concentration of the catchment;
- The point rainfall depth is by means of an aerial reduction factor converted to an average rainfall over the catchment which is the required rainfall input for the discharge estimation models.

The group two type of information can be further sub divided into two sub groups. The first sub group includes information which can be obtained directly from the topographic map such as catchment area, land slope, channel length, elevation, and soil type and land use factor. The second sub group comprises the factors which have been defined in the EAFM TRRL laboratory report 706 (Fiddes, 1976). These factors include lag time and standard contributing area coefficient.

In addition, other information obtainable from the Google map applicable in

the TRRL, as discussed above, were carefully studied and extracted.

The results of both Rational method and TRRL/East Africa Flood model is well presented in appendix 1 &2 respectively.

6.0 Hydraulic Analysis

6.1 Methods for hydraulic design

General

Hydraulic analysis is a crucial step in design of drainage structures. It provides all the conclusions regarding the structures and their capacities. Different types of structures have different criteria for deciding their capacities.

However, there are a limited number of methods for determining sizes of structures in open channels. The most popular method is the **Manning equation** and is discussed and applied in this study. In addition, the common hydraulic structures which will be used in this design are discussed below:

The key consideration in using the Manning equation was the selection of the roughness coefficients. Due to the low variability in channel sizes, the roughness coefficient ranges will be properly selected based on structures types to be installed (Appendix 3).

$$Q_T = \frac{A}{n} \mathrm{R}^{2/3} \mathrm{S}^{1/2} \qquad Eqn\,(3a)$$

$$d = 1.39 \left[\frac{1.96 n Q_T}{S^{1/2}}\right]^{3/8} \qquad Eqn\,(3b)$$

$$A = 0.51 d^2 \qquad Eqn\,(3c)$$

7.0 Proposed Mitigation measures

Hydrology and hydraulic Design

General

The catchment characteristics extracted from the topographic maps and the DEM/DTMs provided a significant basis for the hydrological and hydraulic analysis of the Mkuyuni fish market under study. Also, the applied flood models will be used in accordance to conditions and assumptions which produce accurate results.

Three hydrological methods were used during the course of this study to arrive at the hydrological and hydraulic design of the Mkuyuni fish market drainages designed.

(i) The Rational Method (RM) which was used to estimate peak flows for all the catchments with areas of less than 1km^2.

(ii) The TRRL/East African Flood Model (EAFM) which was used to

estimate peak flows for all the catchment with areas from 1km^2 to 200km^2.

(iii) Engineering judgement; This involved the site investigation as it involved the expert to visit the site, witness the condition and decide based on the flow parten nature of the study area.

Moreover, Engineering Judgment; was used to estimate the size of the structures based on the observation of the topography, river morphology and surrounding environment as well as the existing structures available.

Designed drainages

All drainages from the Mkuyuni market was properly hydraulically designed by considering all necessary criteria and are proposed be connected to the existing stream which locates at the border of the market area (southern Side). (Table 8 shows all the proposed hydraulic structures under the project area).

The existing stream at the border of the market was hydraulically designed and protection materials to its banks evaluated and are proposed to be of stone pitching due to its scouring nature. The size of the stream drainage is well presented in **table 8** of this report & Figure 6 in summary (Proposed hydraulic structures)

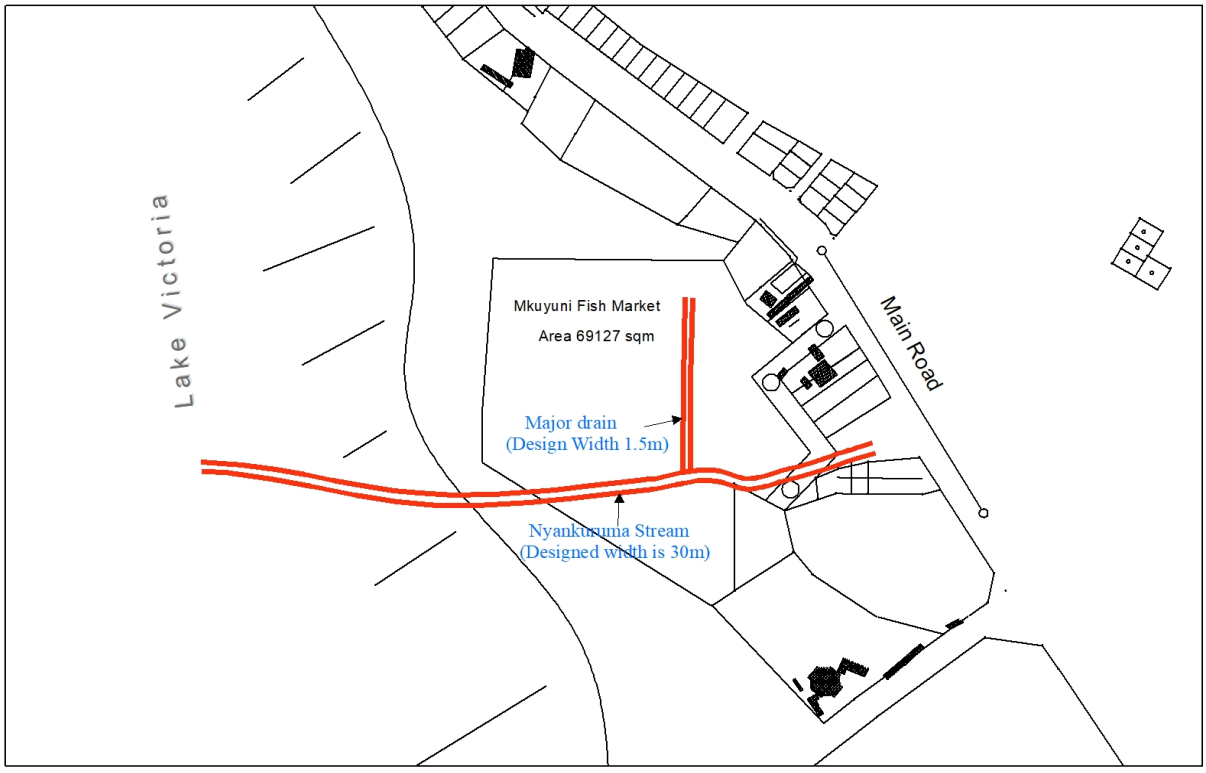


Figure 7: Proposed hydraulic structures for the Mkuyuni market study area

Table 8: SUMMARY OF PROPOSED STRUCTURES UNDER THE MKUYUNI MARKET STUDY AREA

TABLE 8:List and Location of all structures at Mkuyuni Fish Market										
ID				**Existing Structure**			**Proposed Structure**			**Remarks**
Major/Minor Structures	UTM Easting	UTM Northing	UTM Zone	Type	BRG = Span x Depth; CBC = Span x Depth; CPC= Diameter; Units (m), OP =(Span xDepth	No. of Cells	Type	OPEN DRAINAGE PROPOSED SIZES	No. of Cells	
1	490107.3	9716900.76	36S				OD	30.0X3.0	1	New Proposed structure due to discharge
2	490152.17	9717049.72	36S				OD	1.5X1.2	1	New Proposed structure due to discharge
3	490219.09	9716928.02	36S				OD	1.5X1.5	1	New Proposed structure due to discharge

KEY		BRG =	Bridge
		CBC =	Concrete Box Culvert
		OD	Open Drainage

APPENDECES

Appendix 1: Rational method Results

APPENDIX 1: Results from the Rational Methods of Flood Estimation (Catchment Size of less than 1km^2)

				Input Data							Hydrological Analysis							Hydraulic Modeling			Hydraulic Design				
S/No.	Road-Name	Easting	Northing	A	L	Es	Ee	C_S	C_K	C_V	S	C	T_C	T_C	I	Q		Box Culvert/Bridge		Pipe Culvert	**Open Drain Size**		Open Drain		Head water elevention above invert diameter
				km^2	km	m	m	unitless	unitless	unitless	m/m	unitless	hr	Minutes	mm/hr	m^3/s	Slope	Span (l)	Height (h)	Diameter (d)	Span (l)	Height (h)	No of cells	Diameter (d)	Hw/D
1	**Mkuyuni Stream-2**	490152	9717050	0.5123	16.03	1268	1137	0.08	0.16	0.28	0.008	0.52	43.48	2608.67	3.54	0.26	0.015	0.6	0.5	0.6	1.5	1.2	1.0	0.9	0.71

Appendix 2: TRRL/East Africa Flood Model Results

APPENDIX 2: Results from the East African Model of Flood Estimation (Catchment Size of 1km^2 - 200km^2)

PART I: INPUT DATA AND INITIAL ANALYSIS

			Catchment input data to be fed into the EAFM													Computerized analysis according the conditions and requirements of the East African Flood Model													Mean Flow and Peak Flow at 10 yrs by EAFM		Return Flows as estimated by				Hydraulic Modeling (Unit in meters			Hydraulic Design (Unit in meters)		Nos
			Sources include: Topographic map; Tables, Figures and Maps applicable to the EAFM																																			
S/No	Easting	Northing	A	s	L	Es	Ee	K	C_S	C_W	C_L	T_P	n	$R^2/24$	r	S	C_A	T_B	$R^{10}/24$	R_{TB}	ARF	P	RO	Q_m	T_A	T_B	R_{TB}	P	RO	Q_m	Q_{10}	Q_{15}	Q_{20}	Q_{50}	Q_{100}	Slope	Box Culvert/Bridges		Pipe Culvert	**Open Drain Proposed Size**		
			km^2	m/m	km	m	m	hr	unitless	unitless	unitless	hr	unitless	mm	unitless	m/m	unitless	hr	mm	mm	unitless	mm	m^3	m^3/s	hr	hr	mm	mm	m^3	m^3/s	m^3/s						Span (l)	Height (h)	Diameter (d)	Span (l)	Height (h)	
Mkuyuni Market Stream	490107.3	9716900.76	46.4334	9.092	13.10	1333	1138	1.5	0.40	1.00	1.50	0.75	0.96	60	1.64	0.01	0.60	4.20	98.40	86.47	0.83	71.86	2002123.04	123.15	0.90	5.10	88.24	73.33	2043030.98	103.45	237.93	273.10	295.86	373.44	428.27	0.02	25.0	2.0	8.0	**30**	**3**	**1**

APPENDIX 3: Manning's Roughness coefficient values for channel flow

Nature of channel and description			Minimum	Normal	Maximum
A.	**Channels or pipes that flow partially full**				
1.	Metal (ferrous)				
(a)	Cast iron				
	(i)	Black	0,012	0,014	0,015
	(ii)	Galvanized	0,013	0,016	0,017
(b)	Corrugated iron				
	(i)	Drainage pipe	0,017	0,019	0,021
	(ii)	Storm water pipe	0,021	0,024	0,030
2.	Non-metal (ferrous)				
(a)	Cement				
	(i)	Smoothly finished surface	0,010	0,011	0,013
	(ii)	Mortar	0,011	0,013	0,015
(b)	Concrete				
	(i)	Passage straight without sediment	0,010	0,011	0,013
	(ii)	Passage with sediment, curves, joints	0,011	0,013	0,014
	(iii)	Finished off	0,011	0,012	0,014
	(iv)	Unfinished steel formwork	0,012	0,013	0,014
	(v)	Unfinished, smooth wooden formwork	0,012	0,014	0,016
	(vi)	Unfinished, rough wooden formwork	0,015	0,017	0,020
B.	**Synthetic channels**				
1.	Non-metal				
(a)	Cement				
	(i)	Neat surface	0,010	0,011	0,013
	(ii)	Mortar	0,011	0,013	0,015
(b)	Concrete				
	(i)	Trowel finish	0,011	0,013	0,015
	(ii)	Bonded layer finish	0,013	0,015	0,016
	(iii)	Finished off with gravel floor	0,015	0,017	0,020
	(iv)	Unfinished	0,014	0,017	0,020
	(v)	Shot Crete, good section	0,016	0,019	0,023
	(vi)	Shot Crete, undulating section	0,018	0,022	0,025
	(vii)	On well-excavated rock	0,017	0,020	
	(viii)	On uneven excavated rock	0,022	0,027	
(c)	Bonded layer finish or floor with sides of:				
	(i)	Grouted stone pitching (selected stone)	0,015	0,017	0,020
	(ii)	Grouted stone pitching (uneven stone)	0,017	0,020	0,024
	(iii)	Plastered concrete masonry	0,016	0,020	0,024
	(iv)	Cement masonry	0,020	0,025	0,030

(v) Dry riprap	0,020	0,030	0,035

Nature of channel and description	Minimum	Normal	Maximum
(d) Gravel floor with sides of:			
(i) Cast concrete	0,017	0,020	0,025
(ii) Uneven grouted rock	0,020	0,023	0,026
(iii) Dry riprap	0,023	0,033	0,036
(e) Brickwork:			
(i) With cement mortar	0,012	0,015	0,018
(f) Mortar			
(i) Cemented undressed stone	0,017	0,025	0,030
(ii) Dry undressed stone	0,023	0,032	0,035
(g) Worked freestone	0,013	0,015	0,017
(h) Planted	0,030		0,050
C. Excavated			
(a) Earth, straight and uniform			
(i) Clean, recently completed	0,016	0,018	0,020
(ii) Clean, weathered	0,018	0,022	0,025
(iii) Gravel, uniform section, clean	0,022	0,025	0,030
(iv) Short grass with few weeds	0,022	0,027	0,033
(b) Earth, meandering, slow flow			
(i) No plant growth	0,023	0,025	0,030
(ii) Grass with some weeds	0,025	0,030	0,033
(iii) Thick weeds or water plants in deep	0,030	0,035	0,040
(iv) Earth floor with gravel sides	0,028	0,030	0,035
(v) Rocky floor with weed sides	0,025	0,035	0,040
(vi) Round boulders on floor with clean sides	0,030	0,040	0,050
(c) Drainage excavated or dredged:			
(i) No plant growth	0,025	0,028	0,033
(ii) Sides lightly bushed	0,035	0,050	0,060
(d) Cut into rock:			
(i) Smooth and uniform	0,025	0,035	0,040
(ii) Coarse and uneven	0,035	0,040	0,050
(e) Unmentioned channels, weeds and bush uncut:			
(i) Thick weeds as high as flowing water	0,050	0,080	0,120
(ii) Clean floor, sides lightly bushed	0,040	0,050	0,080

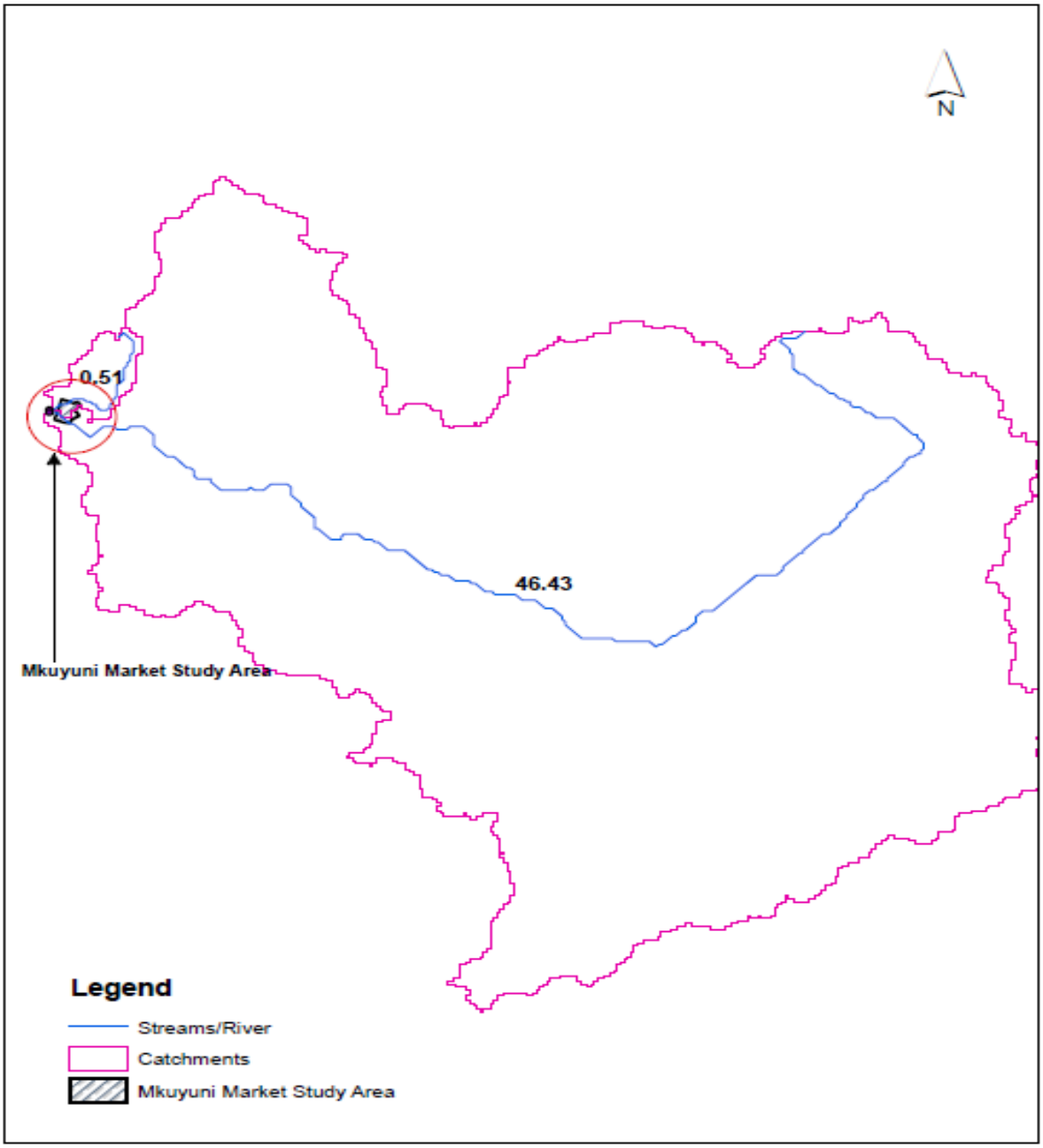
	(iii)	The same, very deep flow	0,045	0,070	0,110
	(iv)	Thick bush, deep flow	0,080	0,100	0,140

Nature of channel and description			**Minimum**	**Normal**	**Maximum**
D.	**Natural streams**				
1.	Smaller streams				
(a)	Streams on a plain				
	(i)	Clean, straight without ridges or pools	0,025	0,030	0,033
	(ii)	**As (i) with few small bushes and rocks**	0,030	0,035	0,040
	(iii)	Meandering with occasional pools and sand banks	0,033	0,040	0,045
	(iv)	As (iii) with rocks and small bushes (not many)	0,035	0,045	0,050
	(v)	As (iii) but flatter slopes and smaller diameter	0,040	0,048	0,055
	(vi)	As (iv) but with more rocks	0,045	0,050	0,060
	(vii)	Slow flowing with deep pools	0,050	0,070	0,080
	(viii)	Very thickly bushed	0,075	0,100	0,150
(b)	Mountain streams				
	(i)	Gravel and few rocks on floor	0,030	0,040	0,050
	(ii)	Clay stone with large rocks	0,040	0,050	0,070
2.	**Flood plain**				
(a)	Pasture without bushes				
	(i)	Short grass	0,025	0,030	0,035
	(ii)	Long grass	0,030	0,035	0,050
(b)	Fields				
	(i)	No plants	0,020	0,030	0,040
	(ii)	Developed, planted rows	0,025	0,035	0,045
	(iii)	Developed, harvest crop	0,030	0,040	0,050
(c)	Bush:				
	(i)	Sparse bush, many weeds	0,035	0,050	0,070
	(ii)	Sparse bush and trees during winter	0,035	0,050	0,060
	(iii)	Sparse bush and trees during winter	0,040	0,060	0,080
	(iv)	**Medium to thick bush during winter**	**0,045**	0,070	**0,110**
	(v)	Medium to thick bush during summer	0,070	0,100	0,160
(d)	Trees:				
	(i)	Thick willows	0,110	0,150	0,200
	(ii)	Cleared field with tree stumps	0,030	0,040	0,050
	(iii)	As (ii) but with many sprouts	0,050	0,060	0,080

(iv)	Thick forest with few bushes	0,080	0,100	0,120
(v)	As (iv) but flood line above branches	0,100	0,120	0,160

(Source: Koegelenberg et al, 1997)

APPENDIX 4: Delineated Catchment Area in whole



Appendix IX: Geotechnical Study Report

1 GEOTECHNICAL

1.1 Introduction

The President's Office, Regional Administration and Local Government (PO-RALG) has received a fund from the World Bank under the umbrella of the World Bank-financed Tanzania Cities Transforming Infrastructure and Competitiveness Project (TACTIC), implemented through the PORALG to support of urban management performance and deliver improved basic infrastructure and services in participating urban local government authorities. The President's Office, Regional Administration and Local Government (PO-RALG) (the Client), Tanzania, invited the Specialized Consultants to submit their proposals to undertake the Consultancy Services for the Feasibility Study, Urban Design, Detailed Engineering Design, Environmental and Social Due Diligence, Preparation of Cost Estimates and Bidding Documents for Urban Infrastructure Investments in Mwanza, Ilemela, Geita and Kahama Cities/Municipalities/Towns (Tactic Zone 2). As such, Dar as one of the main Consultants working in Tanzania with vast experience in urban design and infrastructure projects submitted comprehensive technical and financial offers that got the highest evaluation and accordingly, the project has been awarded to Dar.

The project includes 15 Subprojects distributed among the four Cities as follows:

Mwanza:

1. Mkuyuni Fish Market
2. Rehabilitation of Mirongo River (to mitigate flooding in the downstream)
3. Construction of Igoma-Buhongwa Road (14 km), part of the ring road that is economically critical for Mwanza

Ilemela:

1. Kirumba Central Market, surrounding access roads (2.9 km)
2. Buswelu - Busenga - Coca Cola Road/Musoma Road at Igoma (3.3 km)
3. Buswelu-Nyamadoke-Nyamhongolo Road (9.5km)

Geita:

1. Mkolani-Mwatulole Road (5.9 km)
2. Nyankumbu to Kivukoni Secondary school Road (3.9 km)
3. 6 km of access roads and drainage for SMEs Industrial area (including Simb-Emmamkengele-Mwabasabi Road + Nguzo mbili Samanolio Road)
4. Construction of Magogo Bus Terminal

Kahama:

1. Zongomela industrial area upgrading (12.6 km of access roads, minibus stand, and commercial area)
2. Improvement of approximately 7 km roads at Kahama Central Business District (CBD)
3. Construction of Bus Terminal at Mbula
4. Construction of 3 km Storm Water Drain
5. Upgrading of Sango Market

The main aim of this section of the report is to illustrate the adopted geotechnical design basis, design criteria, and geotechnical design and recommendations that will be used for foundation recommendations of the buildings constructed in **Mwanza City**; that would satisfy the building function; type; shape and fulfil the geotechnical requirements of safety, stability, serviceability and durability.

1.2 Project Location

The project includes the LGAs of Mwanza, Ilemela, Geita and Kahama that are located at the northern part of Tanzania as shown in Figure 1.

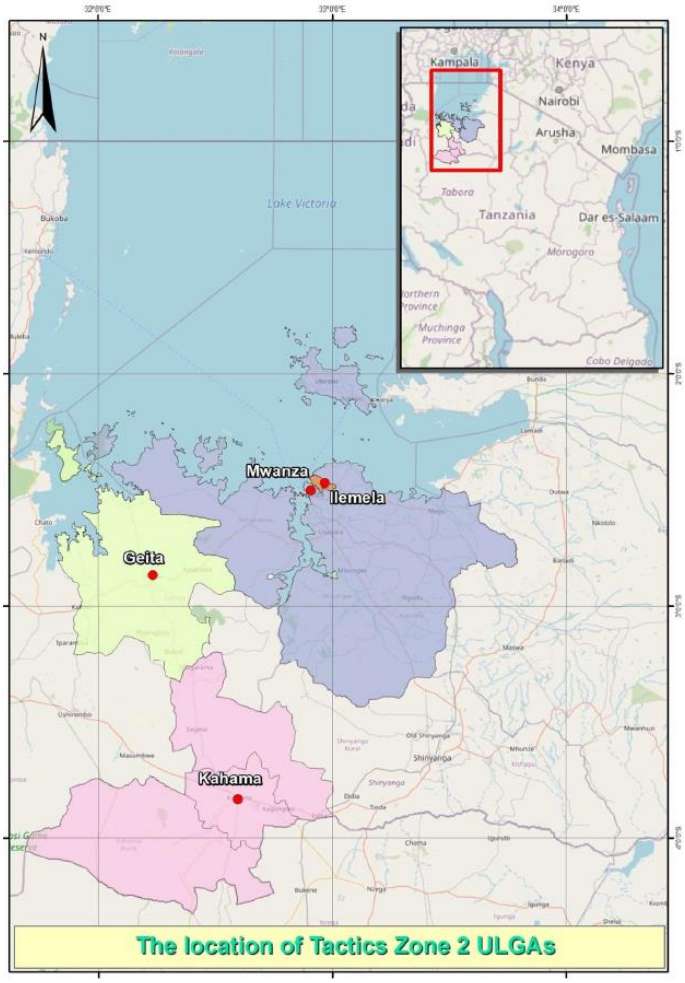


Figure 3: Location of tactic zone 2

Mwanza City comprises of Nyamagana and Ilemela Districts. In 2000, Nyamagana District attained the City status and since then it is referred as Mwanza City which is ruled by the City Council.

Mwanza city is located on the southern shores of Lake Victoria in Northwestern Tanzania.

1.3 Geological Study

The geologic setting of Tanzania is represented by several major litho-structural provinces that include different types of rocks and range in age from the Archean to the Recent. The Precambrian basement rocks cover most of the western two thirds of the country and consist mainly of Igneous and metamorphic rocks of Tanzanian Craton. The Phanerozoic is characterized by a series of sedimentary

units of Paleozoic to Mesozoic age (at western and eastern borders) which are followed by Cenozoic intrusive and extrusive phases that accompanied the active rifting phase (Semkiwa et al., 2005).

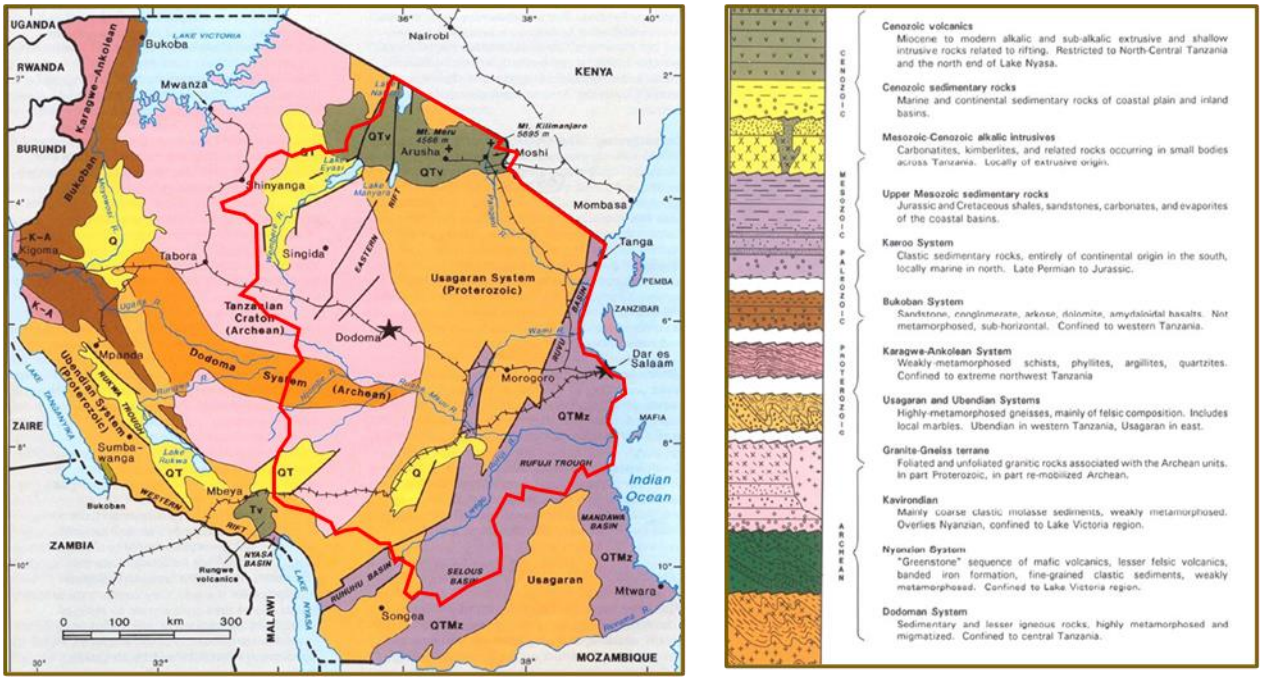


Figure 4: Google Earth satellite Images showing the site history of the project area.

1.3.1 General Geological Setting of Mwanza

The City of Mwanza is located in the north western part of Tanzania to the south of Lake Victoria. Mwanza is characterized by flat to undulating topography with isolated hills of different elevations that are dissected by subparallel northwest-oriented valleys/wadis. The rock units of the Mwanza area form a part of the Tanzanian Craton which is composed mainly of; Crystalline basement rocks (Granitic rocks) of Precambrian age and quartzite metamorphic rocks outcropped at places.

These rocks are partially covered by Tertiary to Quaternary soil layers. Joints and foliation are the most common discontinuities in the project area and the rocks are affected by two sets of faults oriented in NW and NE directions. Regarding the elevations, Mkuyuni-Fish Market is on an elevation ranging from 1133m to 1138m MSL. For the culverts in Mwanza - Mirongo River, the culverts are on an elevation ranging from 1133m to 1161m MSL.

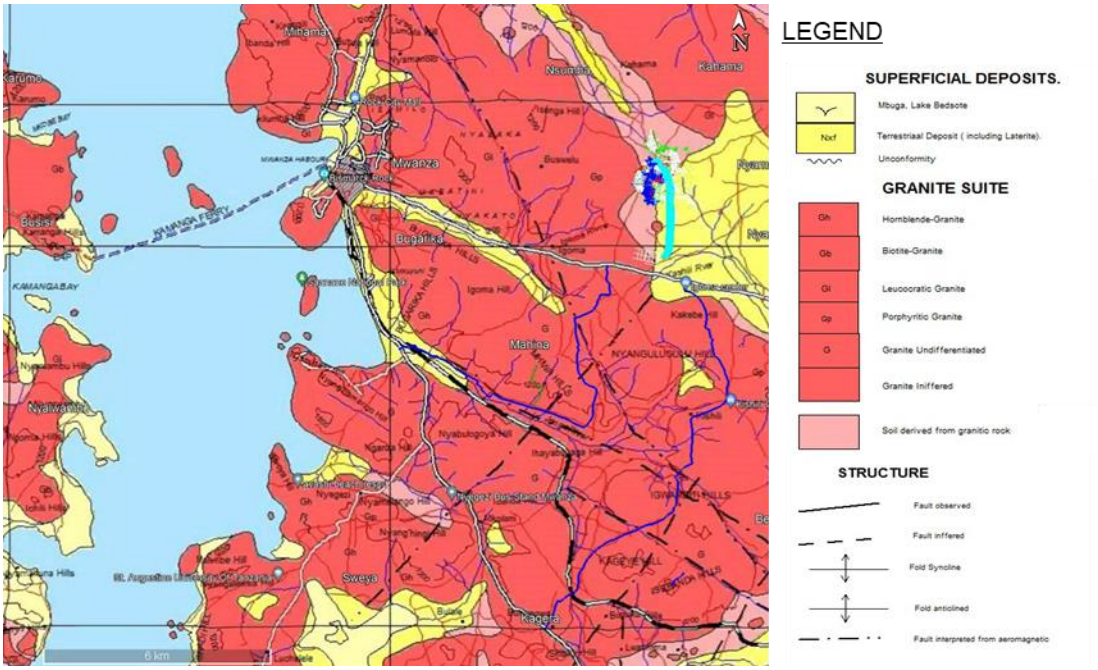


Figure 5: Geologic map of Mwanza and Ilemela, Geological Survey of Tanzania, 2002. (Scale 1:100,000)

1.3.2 Potential Geological Constraints

Based on the desk study of the available geological data, the following geological concerns are revealed to be considered:

i. Problematic soil

- The lateritic soil is weak, swampy, collapsible and contains dissolution cavities, in many places.
- The black clayey soil may have swelling/shrinking properties.

ii. Soil aggressiveness

- Mwanza is located close to the Lake Victoria. Hence, the potential corrosiveness of the soils throughout the project areas should be investigated in detail to define the soil properties.

iii. Seismicity

- The project areas are located in a low to moderate seismic zone. However, national, and international seismic codes and standards should be followed in the detailed design stage

1.4 Subsurface Investigation

The provided investigations cover the logs in-situ and laboratory test results of samples taken in 11 boreholes and 31 trial pits in the study area.

- 6 Boreholes were drilled to 10m depth (M-BH-01 & M-BH-04 + N-CU-01 to N-CU-05) and 2 BHs (M-BH-02 & M-BH-05) were drilled to 15.0m depth and one BH was drilled to 13.5m depth, logged, sampled and in-situ SPT measurements taken at about 1.0m interval wherever possible, till refusal conditions with N values >50.

Photographs of the cored samples were taken to correlate with the written logs.

- Samples of soil, broken rock and ground water were taken for classification, strength and chemical analysis to confirm the site observations and measurements.

- Trial pits were excavated to 3m depth wherever possible and logged and photographed. Samples were taken for classification and CBR strength tests.
- Permeability tests performed in selected boreholes
- Piezometers was provided in selected boreholes for further monitoring.

Test pits are usually excavated to a depth of 3.0m. However, the excavation of the trial pit shall be stopped in case of some restrictions such as ground water, hard rock or concrete.

1.4.1 MWANZA

For the Mkuyuni-Fish Market location, three (3) boreholes of depth 10m, one (1) borehole to 13.5m (M-BH-06),and two (2) BHs to 15.0m in the site (M-BH-01 to M-BH-05) in addition to two (2) test pits of 1.4m & 1.3m depth (M-TP-01, M-TP-02).

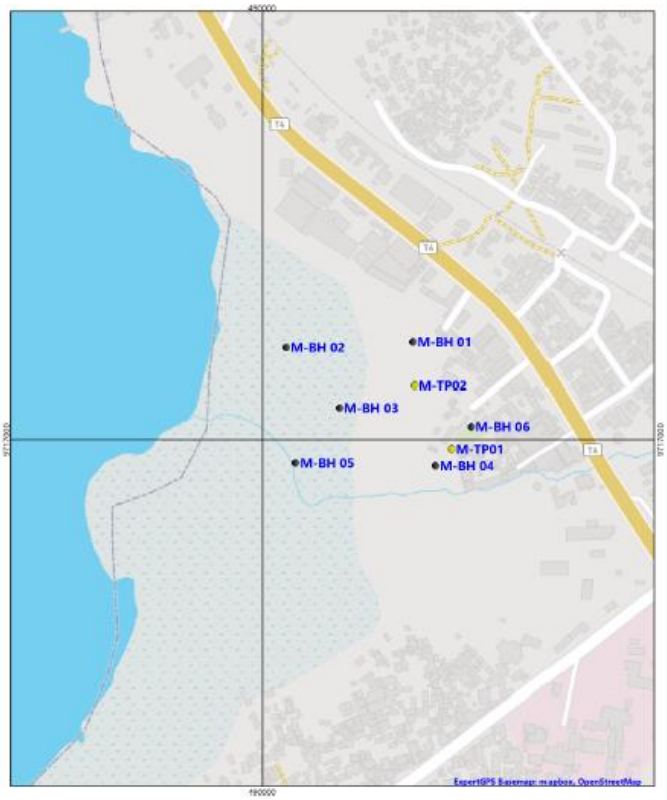


Figure 6 : Layout and coordinates of the Site investigation program in Mwanza area

ID	Easting	Northing	Depth	Area	
M-BH-01	490,184.94	9,717,118.43	10.3	Mwanza	Mkuyuni – Fishmarket
M-BH-02	490,029.14	9,717,111.88	15.2	Mwanza	Mkuyuni – Fishmarket
M-BH-03	490,094.72	9,717,038.72	15	Mwanza	Mkuyuni – Fishmarket
M-BH-04	490,212.35	9,716,968.44	10.2	Mwanza	Mkuyuni – Fishmarket
M-BH-05	490,040.71	9,716,971.78	15	Mwanza	Mkuyuni – Fishmarket
M-BH-06	490,256.08	9,717,016.10	13.5	Mwanza	Mkuyuni – Fishmarket
M-TP01	490,232.07	9,716,988.69	1.4	Mwanza	Mkuyuni – Fishmarket
M-TP02	490,186.35	9,717,066.04	1.3	Mwanza	Mkuyuni – Fishmarket

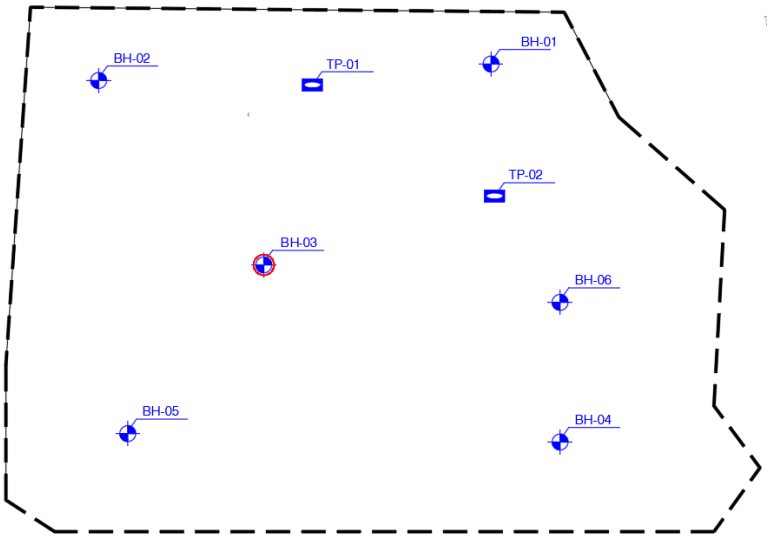
Trial pits less than 2.7m had restrictions such as groundwater, hard rock or concretes detailed on the logs

Soil Stratigraphy

The soil in the provided boreholes in MWANZA consists mainly of:

Mwanza-Mkuyuni-Fish Market

- Swamp areas with Very soft to soft Clay / Silt (U5) with SPT ranges from 0 to 6 up to 10.0m depth and continues to 13.5m in M-BH-02 & M-BH-05. The surface water in the site is encountered from 0.2m (M-BH-02) up to 2.0m above the ground surface (M-BH-05).
- Expansive Clayey Soils unsuitable for fill are found in Mkuyuni fish Market.
- Medium dense to dense silty/clayey Sand with gravels (U2) is encountered at depth to 10m in M-BH-01 (N = 30), and at depth starting from 13.5m in M-BH-02(N = 46) and M-BH-05 (N = 22)
- M-BH-06: the ground surface is found to be about 3.0m higher than other boreholes. The upper 4.0m of the borehole shows a very loose to loose Sand, U3 N= 3 to 7 (very loose Gravel, U4, from 2.2m to 2.7m, N =3), which is liquefiable layer. Then medium dense clayey Sand, U2, from 4.0m to 7.7m (N= 11, 15, and 8), followed by very loose Sand again (liquefiable) down to 10.0m depth (N=1). A very stiff Clay layer (U1) was encountered after the 10.0m depth to the end of borehole (N=18). The consolidation parameters of the Clay layer are C_c = 0.141 & 0.165, $C_{c\ avg}$ =0.153 and C_r = 0.027 & 0.023, $C_{r\ avg}$ = 0.025. $E_{oed\ avg}$ = 9.52MPa



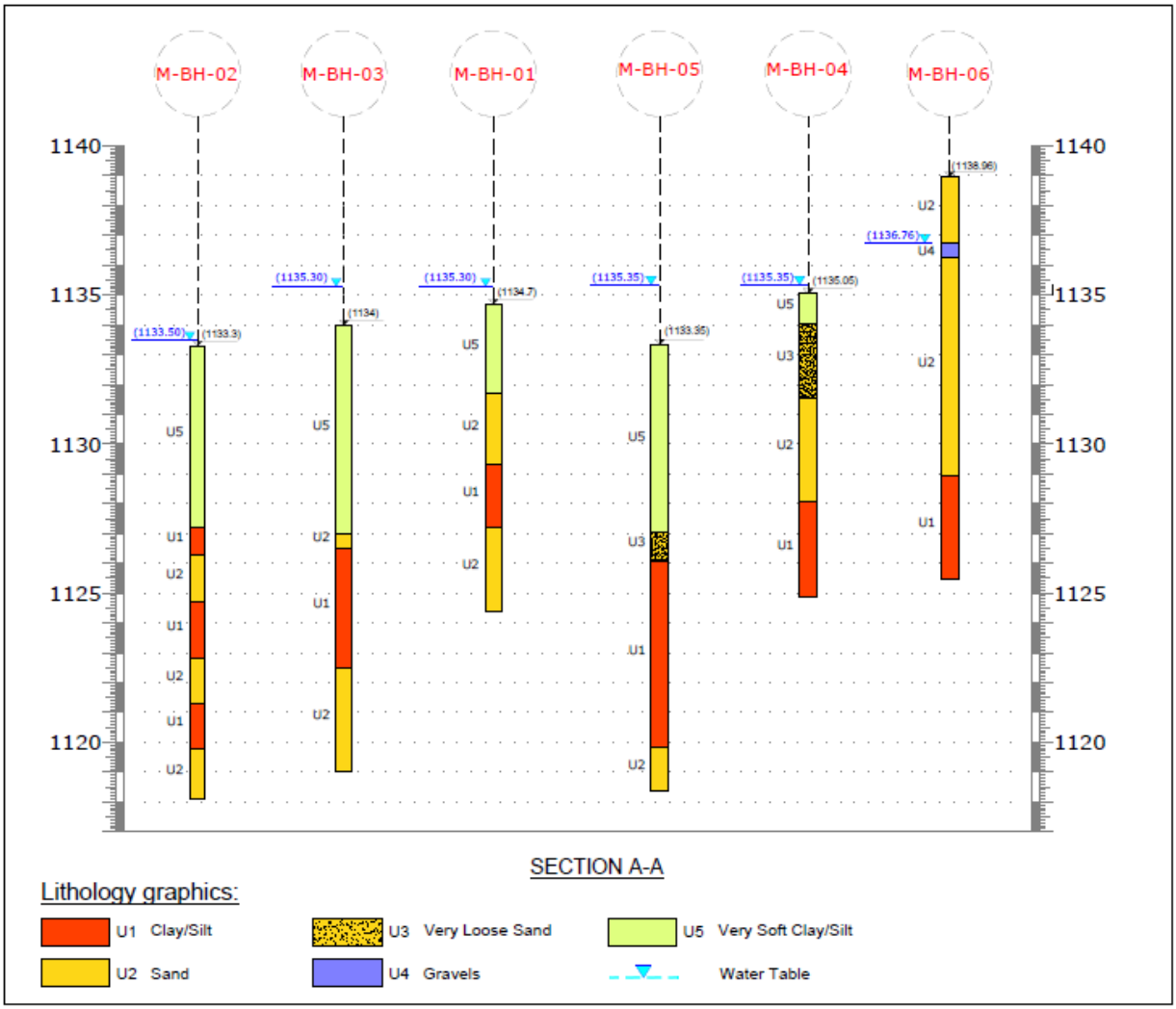


Figure 7: Mwanza-Mkuyuni-Fish Market Borehole logs

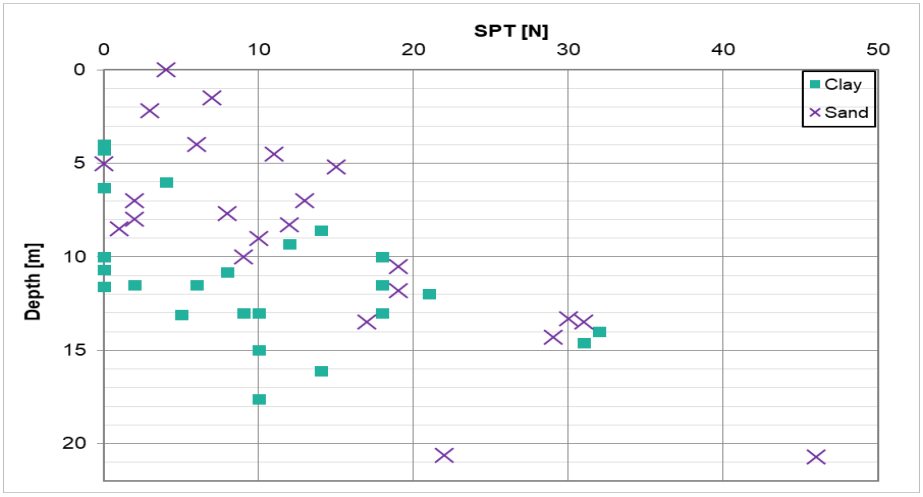


Figure 8: SPT N with Depth of Mwanza – Mkuyuni – Fish Market

Mwanza-Mkuyuni-Fish Market

- Two test pits were excavated in the site. The groundwater was encountered at the surface of the pits. The soil is classified as saturated dark grey sandy CLAY of high plasticity (PI 39 to 40%, CBR 95% =2), with roots. The upper 0.6m in one test pit shows some very clayey Sand with roots. The soil classification on the trial pit samples as per PMDM 1999 classification show that the soil is unsuitable for fill.

Chemical test results on Groundwater samples

Chemical Tests were carried out on selected samples of groundwater including the water pH, sulphate (SO_4^{2-}) content and chloride (Cl-) content. The tests were performed according ASTM D1293 Method B [pH of water by electrometric method], EPA Method 9038 [Determination of Sulphate content by turbidimetric method], D512 [Determination of Chloride Content by Silver Nitrate or Mohrs method] respectively.

- Mkuyuni-Fish Market boreholes: 6 tests were performed on the groundwater samples where adjusted pH is 8.121 to 8.61, CL- content is 130.6mg/L to 199.3mg/L, and sulphate content is 84.4mg/L to 142.38mg/L. the groundwater is considered very aggressive.
- Mkuyuni-Fish Market test pits: 2 tests were performed on the groundwater samples where adjusted pH is 8.1 & 8.3, CL- content is 103.6mg/L & 106.5mg/L, and sulphate content is 21.35mg/L & 26.75mg/L. the groundwater is considered aggressive.

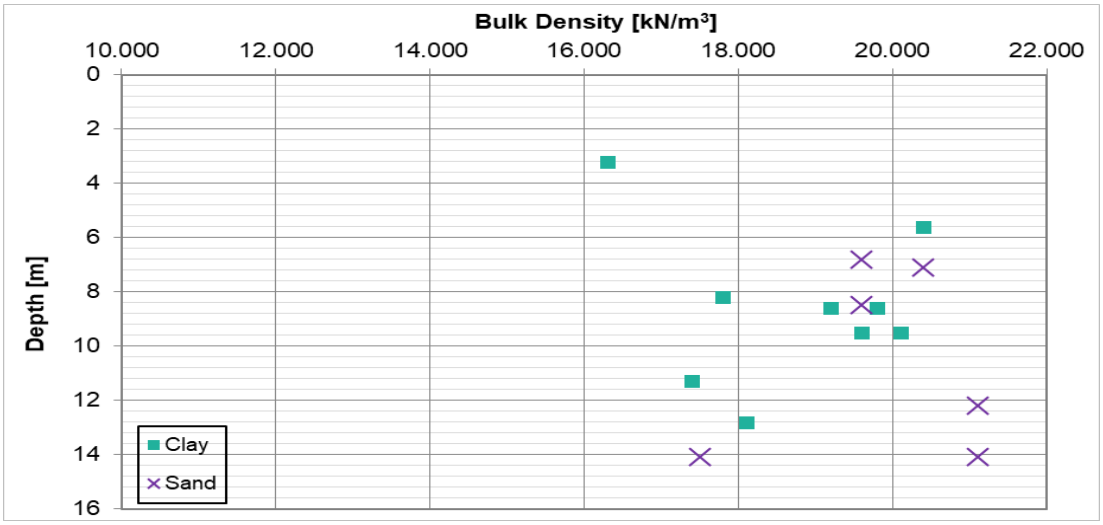
The analyses of Exposure/Environmental Conditions and Durability Requirements for Concrete are provided in item 1.7 and 1.8.3.

Chemical test results on soil samples

- Mkuyuni-Fish Market boreholes: Chemical Tests were carried out on selected samples of the soil including only the calcium carbonate content (Calcite Equivalent) as per ASTM D 4373-96 Gasometric method. The calcite equivalent was in the range of 4% to 7% with an average value of 6.75%.

Bulk density tests & unit weight

The tests were performed on the soil samples according to Standard: CML 1.6 ref BS 1377 Part 2 Mkuyuni-Fish Market: the test results are shown in the below chart.



	Clay	Sand
Minimum	16.300	17.500
Maximum	20.400	21.100
Average	18.744	19.883
Standard Deviation	1.402	1.347
Average - 0.5 x Std Dev	18.044	19.210
90th Percentile	20.160	21.100
10th Percentile	17.180	18.550
Number of Tests	9	6

Figure 7: Bulk Density with depth for soils at Mkuyuni-Fish Market

The average bulk density for clay soil is 17.2kN/m^3 and for sand soil is 18.55kN/m^3.

Specific Gravity

- Mkuyuni-Fish Market: 25 tests were performed on the clay and sand samples on different depths. The min. specific gravity of the samples = 2.380 and the max. = 2.989 with an average specific gravity = 2.669.

Atterberg Limits

- Mkuyuni-Fish Market: Atterberg limits (liquid limit LL and plastic limit PL) tests were performed on soil samples collected from M-BH-01 to M-BH-06 at different depths. The obtained results show that the majority of clay samples are low to high-plastic above the A-line.

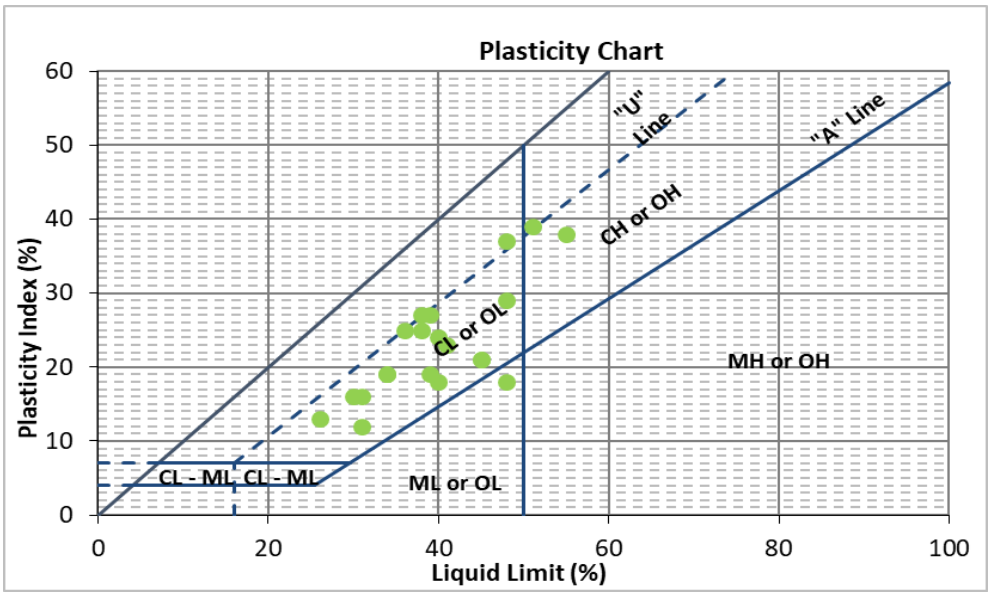


Figure 8: Atterberg limit for Clay soils at Mkuyuni-Fish Market

Direct Shear tests

- Mkuyuni-Fish Market: 4 direct shear tests were performed on the clay and one test on sand soil layers at different depths.

The below charts show that the apparent cohesion for the Sand soil at depth 14.0m is 26.7kPa and the friction angle is 34.8^o.

For the Clay layers at different depths, the cohesion ranges from 71.8kPa to 111.8 kPa (C_{avg} =73.1kPa) and the friction angle ranges from 5.3° to 20.4° (phi_{avg} = 6°).

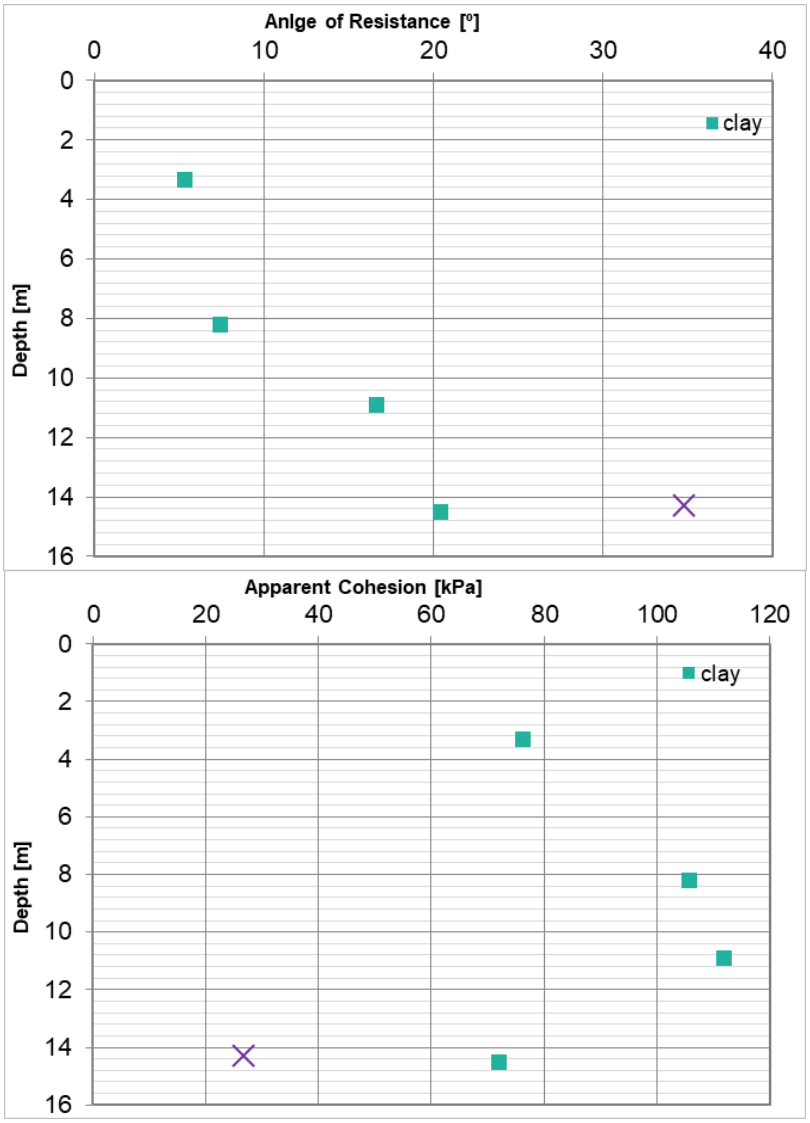


Figure 9: Direct shear test results for soils at Mkuyuni-Fish Market

Groundwater Table

Ground water at Mwanza-Mkuyuni fish market is up to 2.0m above ground level (swampy area). Access to the borehole requires a platform to be constructed. Hence no Peizometer was constructed.

The permeability of the clay layer was found $5.37x10^{-7}$ m/sec. at 8m-10m depth (M-BH-06, Sand) and $2.7x10^{-6}$ m/sec. for the clay at depth 8m to 10m (M-BH-03).

1.4.2 Hydrogeological conditions

This section presents the hydrogeologic conditions at the project site, including the available subsurface data, and measured groundwater levels from piezometers, boreholes, and test pits. Furthermore, the section provides the calculated Maximum Design Groundwater Level (MDGWL) for the project site.

As described earlier in sub-section no. 1.4.1 and based on the results of the recently carried out subsurface investigation, a gravelly SAND layer with a thickness of 10.0 m is found on the surface at the highest point, followed by a layer of stiff sandy CLAY with a maximum thickness of 12.0m. The groundwater table is encountered near the surface as shown in Figure 10, while Table 3 shows the summary of the measured depth to water and permeability values within the area of Mwanza.

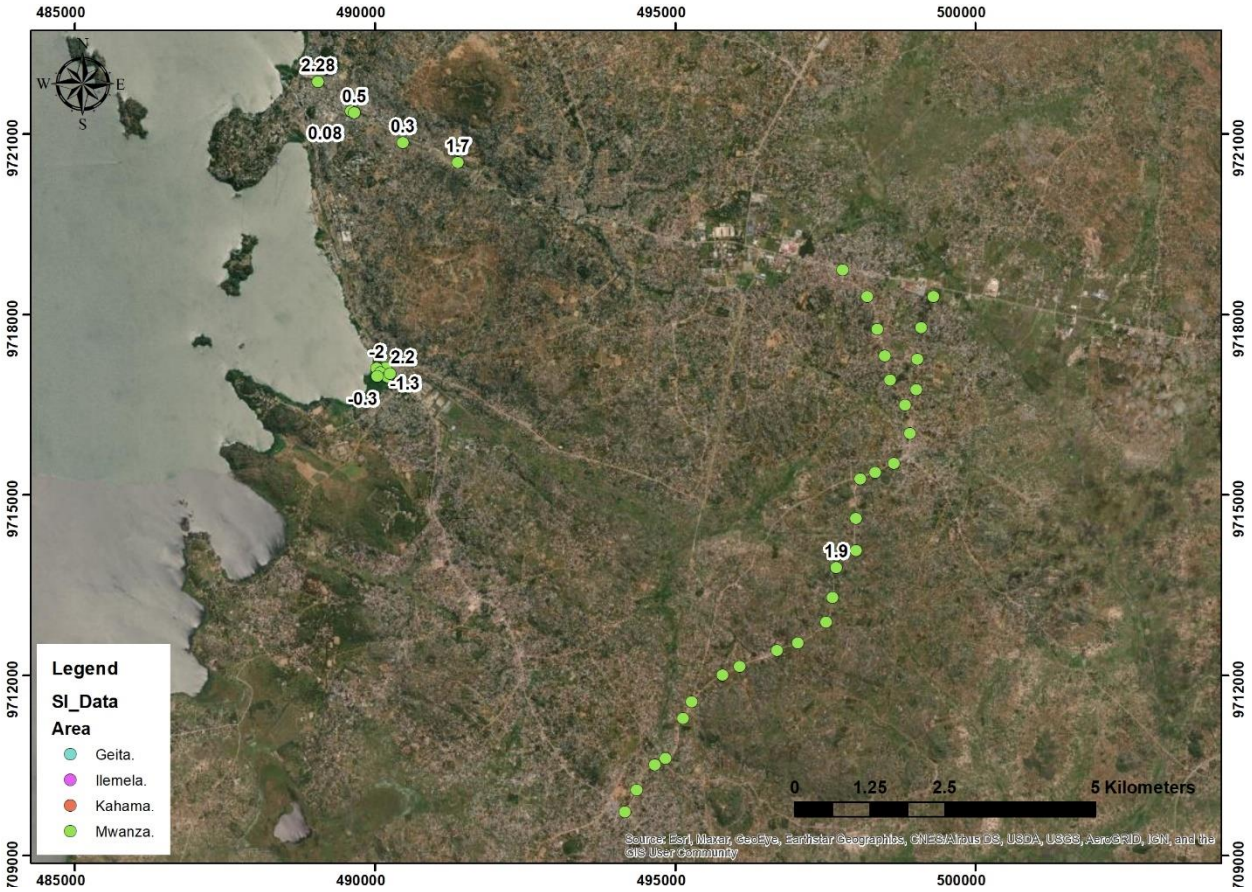


Figure 10: site investigation data carried out in Mwanza with the encountered depth to groundwater (negative values indicate the water is above natural ground level).

Table 3: Summary of the measured depth to groundwater and permeability in Mwanza

	Characteristic	Value
Depth to groundwater (m)	Average	0.22
	Min	-2.00
	Max	2.28
Permeability (m/day)	Average	0.05
	Min	0.0006
	Max	0.23

1.4.2.1 Mkuyuni Fish market

Starting with the Mkuyuni fish market, the groundwater table was encountered at an approximate level of 1135.4, which means that at some locations the water table is actually higher than the ground levels

by 2.0 m. Moreover, the permeability test results indicate low permeability ranging between .04 and 0.23 m/day.

1.4.2.2 Conclusion

Based on the results of the recently conducted SI, the groundwater level is found above the natural ground at most of the area of the Mkuyuni fish market. As such, the design water level at this location is subjective to the final grade level and soil gradation of the fill material (if any).

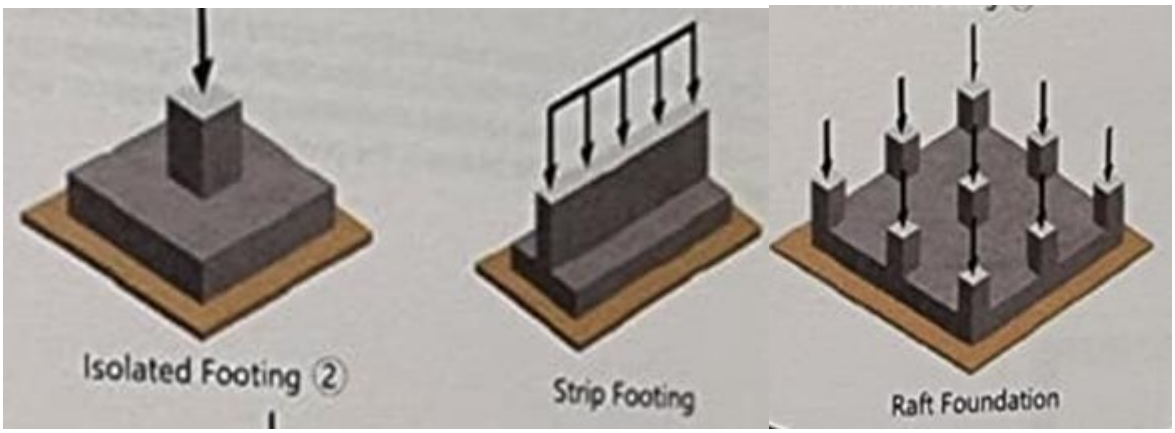
1.5 Concept Design

The selection of foundation type is based on the soil/rock conditions encountered at the Site and magnitude of structural stresses applied to the ground. Shallow foundations are proposed for the planned structures. The following section presents the design basis for shallow foundations.
Shallow Foundations shall satisfy the following criteria:

Stability Considerations: A minimum safety factor of 3 shall be considered to safeguard against the occurrence of a bearing capacity failure of the foundation soil under the imposed loads.

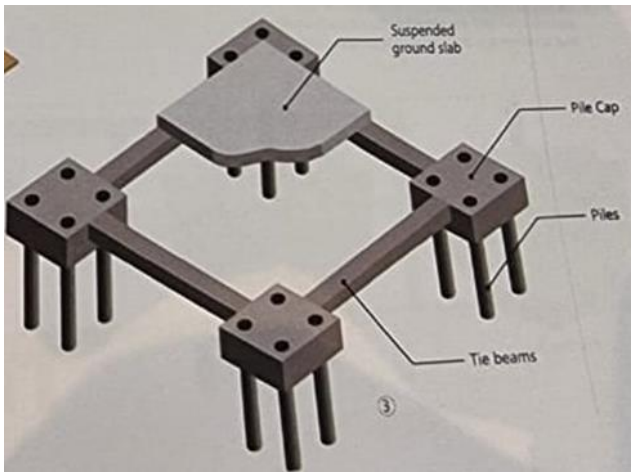
Serviceability Considerations: The settlement induced by the structural service loads should not impair the functionality of the structure. The total and differential settlements of shallow foundations shall be controlled within permissible limits. Using the calculated allowable bearing pressure value, the total settlement (short term + long term) for isolated/strip footing and raft foundation shall follow the ECP recommendations. However, BS EN 1997-1:2004+A1:2013 also stated that larger settlements may be acceptable provided the relative rotations remain within acceptable limits and that the total settlement does not cause problems with the services entering the structure. The allowable angular distortion as per BS EN 1997-1:2004+A1:2013 is 1: 500.

Due to the weak soil of the subsurface materials, relatively high fines content and very soft soils /loose and liquefiable sands, and for the structural safety and to avoid any excessive differential movement between the footings, the foundation soil is needed to be improved with a probable method to be defined in detailed stages. The improvement may include a soil replacement layer below the foundations or an improvement technique such as stone columns, or other relevant methods depending on the actual soil conditions and the applied stresses form the buildings.
Generally, shallow foundations are commonly used in the applications where ground conditions are suitable to withstand the average loads of typical low-rise buildings. The below figure shows some types of shallow foundations



The use ops shallow foundation allow for limited excavation works and no requirements for specialist contractor, but can be limited by the ground conditions to relatively low bearing capacities not suitable for high-rise buildings and long span structures.

The use of Deep foundations is limited to either weak soil condition or special applications such as deep basements, high uplift loads, high overturning moments, and high applied loading in high rise buildings.



Generally, the type of foundations is determined by the structural applied loads to design the most probable type and hence, the needed improvement system under the foundations.

1.6 Basis for the design

This section presents the design basis for the foundations of various proposed structures, retaining walls, pavements, site class, subsurface concrete.

Design Basis for Foundations

The selection of foundation type is based on the soil/rock conditions encountered at the Site and magnitude of structural stresses applied to the ground. Shallow and deep foundations are proposed for the planned structures. The following sections presents the design basis for shallow and deep foundations.

1.6.1 Shallow Foundation

Shallow Foundations shall satisfy the following criteria:

Stability Considerations: A minimum safety factor of 3 shall be considered to safeguard against the occurrence of a bearing capacity failure of the foundation soil under the imposed loads.

Serviceability Considerations: The settlement induced by the structural service loads should not impair the functionality of the structure. The total and differential settlements of shallow foundations shall be controlled within permissible limits. Using the calculated allowable bearing pressure value, the total settlement (short term + long term) for isolated/strip footing and raft foundation shall be within 25mm & 50mm respectively. However, BS EN 1997-1:2004+A1:2013 also stated that larger settlements may be acceptable provided the relative rotations remain within acceptable limits and that the total settlement does not cause problems with the services entering the structure. The allowable angular

distortion as per BS EN 1997-1:2004+A1:2013 is 1: 500. However, for machinery sensitive foundations, the angular distortion could be reached 1: 750.

Foundation depth: The foundation shall be embedded not less than 1m under the ground surface and rested on a replacement layer of 0.5m to 1.0m thickness consists of gravel or crushed stone.

Bearing Capacity Calculation for Shallow Foundation on Soil

Bearing capacity failures are rarely observed in foundation design. This is mainly due to the following main factors:

- settlement mainly governs the foundation design, the limitation of the settlement to limit tolerable limits and/or allowable angular distortions in the superstructure;
- the Factor of Safety of 3 that is relatively high and thus allowing for sufficient margin of safety;
- the minimum footing sizes also enhance the stability of the foundation.

The ultimate bearing capacity of the foundation soils under the structure's shallow foundations can be estimated using Meyerhof (1963) equation:

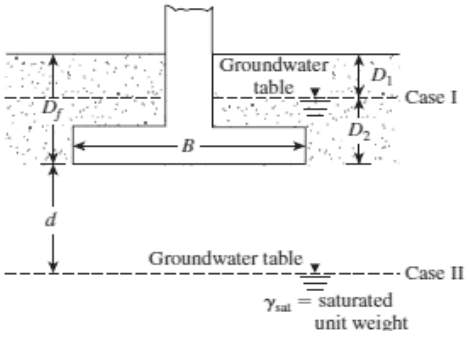
$$q_{ult} = cN_c s_c d_c + \bar{q}N_q s_q d_q + 0.5\gamma BN_\gamma s_\gamma d_\gamma$$

The allowable bearing capacity = $\frac{qult}{FS}$ with (FS = 3.0)

Where,
c: undrained shear strength
$\bar{q}$: the effective overburden (γD)
B: the width of foundation
D: the embedment depth
γ: the Effective unit weight (submerged unit wt. if below water table) of soil
N_c, N_q, N_γ: the Bearing Capacity factors
d_c, d_q, d_γ : the Depth factors
s_c, s_q, s_γ : the shape factors.
The first term accounts for the cohesive shear friction of the soil located below the footing.
The second term accounts for the soil located above the bottom of the footing. The term γ x D represents a surcharge pressure that helps to increase the bearing capacity of the footing.

The third term accounts for the frictional shear strength of the soil located below the footing.

The embedment depth D is computed taking into account the water level with respect to the foundation's bottom level. As show in Figure 4.1 below, two cases can be considered



i. Case I- If the water table is located at a depth D1 so that $0 \leq D1 \leq Df$, the factor γD in the bearing capacity equations take the form

$$\gamma D = \gamma D_1 + (\gamma_{sat} - \gamma_w) D_2$$

Where,
γ_{sat}: the saturated unit weight of soil
γ_w: the unit weight of water
D_2 is equal to D_f-D_1

ii. Case II- If the water table is located at a depth d below the foundation level so that $0 \leq d \leq B$, the term γD will take the form:

$$\gamma D = \gamma D_f$$

Settlement Calculation of Shallow Foundations

The total and differential settlements of shallow foundations shall be controlled within permissible limits given in the standards. As per BS EN 1997-1:2004+A1:2013, settlements is acceptable provided the relative rotations remain within acceptable limits and that the total settlement does not cause problems with the services entering the structure.

A maximum relative rotation (angular distortion) of 1/500 is acceptable for the structures under service loads.

For foundations rested on one layer (infinite depth)

$$\Delta = \frac{q . B' . (1 - \mu^2) . I}{E_s}$$

Where:
q: net allowable bearing capacity
B': equivalent diameter of the foundation width
□: poisson ration = 0.3
I: shape & stiffness factor (I =1.12 for square flexible footing)
E_s: Deformation modulus

For foundations rested on multilayers, the settlement is:

$$\Delta = \sum \frac{\sigma}{E_s} . h_z$$

Where:
□: applied stresses at mid-depth of the layer
h_z: depth of layer

For Settlement due to consolidation in cohesive material

$$\Delta H = \frac{c_c}{1+e_o}.H.\log\frac{\sigma'_{vo}+\Delta\sigma_v}{\sigma'_{vo}}$$

Where:

c_c: compression index, $c_c = 0.007(W_L - 10)$ for over-consolidated clay and $c_c = 0.009(W_L - 10)$ for normal consolidated clay

e_o: initial void ratio

□ ’$_{vo}$: overburden pressure at the mid clay layer

□□$_v$: additional applied stresses at the mid clay layer

Iterative process of the Detailed Settlement Analysis

In order to evaluate the foundation behaviour under the anticipated structural loads, an iterative process is carried out by the structural and geotechnical engineers. The detailed settlement analysis is conducted in 4 steps:

Step 1: the Structural Engineer conducts a finite element computer analysis of the foundation using the Geotechnical Engineer's best estimate of the modulus of subgrade reaction "K". In the first analysis a uniform value of "K" is used over the entire foundation footprint.

Step 2: using the structural load distributions from Step 1, the Geotechnical Engineer calculates the soil settlement at each node of the foundations. A new modulus of subgrade reaction is computed at each node.

Step 3: using the geotechnical modulus of subgrade reaction computed for each node in Step 2, the Structural Engineer conducts a new analysis and a new pressure distribution is obtained.

Step 4: the Geotechnical Engineer computes new settlements at each node using the pressure distributions from Step 3, and the "K" values are refined accordingly.

Allowable settlement and angular distortion values

The total and differential settlements of shallow foundations shall be controlled within permissible limits given in the standards. As per BS EN 1997-1:2004, the allowable settlement is 25mm for isolated footings and 50mm for rafts. However, BS EN 1997-1:2004+A1:2013 also stated that larger settlements may be acceptable provided the relative rotations remain within acceptable limits and that the total settlement does not cause problems with the services entering the structure foundation design for buildings

1.6.2 Deep Foundations

Deep foundations inform of piles could be adopted as an alternative to shallow foundations where relatively high column loads or other technical details could not be accommodated by shallow foundations.

Types of Piles

In consideration of piled foundation, we have taken into account those pile systems that are readily available, the existing subsoil conditions, the location or prevailing site conditions and type of structures. Consequently, any of the following types of bored piles could be adopted at the site.

i. Bored and Cast-in-situ concrete piles

ii. Bored piles, the continuous flight auger (CFA) type or Bentonite slurry system.

The subsoil condition and their engineering properties indicated that the most economical type of pile for the site should mobilize their safe working loads by skin friction and end bearing.

The use of driven piles on this type of subsoil at the site will be constrained by hard driving and the attendant vibrations with noise on adjacent structures, of which may have detrimental effect on such. Based on these, it is recommended that bored piles should be adopted, the CFA type.

Pile Termination Depth

The pile termination depths will depend on the anticipated safe working loads.

Based on the subsoil conditions and their engineering properties, the ***most economical*** type of piles could terminate in the cohesionless layers (Silty Sand with weathered rock), or embedded in rock layers.

Allowable Safe Working Loads

The safe working loads to be adopted for design will depend on type of pile, the diameter of such pile, the pile termination depths, and particularly the geotechnical engineering properties of the subsoil.

The proprietary methods of installation of bored piles generally influenced the value of the safe working load per pile. Based on these, bored piles contractor could therefore propose adequate safe working loads for their type of piles adopting data and parameters from this soil report.

The method adopted is given below:

$$Q_u = Q_b + Q_s$$

$$Q_b = \left(P_b . N_q . A_b\right)$$

$$Q_s = \sum_{H=0}^{D} K_{Hc} . P_0 . tan\delta . R . \Delta H$$

$$Q_{all} = \frac{Q_u}{FOS}$$

Where:

N_q: Bearing capacity factor

A_b: pile cross section area

K_{Hc}: factor of vertical to lateral pressure on pile sides

P_o: effective overburden pressure on the buried depth of the pile into the bearing layer.

□: friction angle between the pile and the surrounding soil

P_b: overburden pressure at the pile tip level (considering the embedded depth into bearing layer not exceed 20*D)

D: pile diameter

Safety factor for end bearing capacity is 3 and for skin friction is 2.5

Negative skin friction

In case the upper layer around the piles is a compressed soil (soft clay) or supposed to applied surcharge and settlement, a negative skin friction, Q_n, along the pile in this layer is to be considered and to be subtracted from the bearing capacity of the pile.

$$Q_n = (\alpha . C_u . \pi . D . L)$$

Where:

□: adhesion coefficient

D: pile diameter

C_u: cohesion of the soil

1.6.3 Mwanza, Mkuyuni-Fish Market

The soil in the location is swampy with very soft clay & silt down to the end of borehole (10m), or very loose sand down to 10m below the ground with N = 1 (M-BH-06), and the groundwater is above the existing ground level. The bearing layer approaches starting from depth 13.5m in M-BH-05 &

shallower at M-BH-01. As such, the most suitable foundation system is deep foundation resting on a deep bearing layer. A CFA pile type of a diameter 60cm is recommended to a depth of 22.0m with 8.5m embedment in sand layer.

It is recommended that the Contractor perform confirmatory boreholes at the site location with deeper boreholes reaching at least 25m to check the bearing layers of the piles and ensure its capacity.

The lower layer of sand starting from 13.5m depth has N = 22 at M-BH-05, □' > 30°, N_q =30, K_{Hc}=0.7 for CFA piles, □ =0.75□' = 23°.
P_b = 7 kN/m^3*13.5m + 9kN/m^3*8.5m embedment = 167.5kPa, P_o till the center of the sand layer = 129.25kPa
Q_b = 1420 kN, Q_s (for sand layer only) = 615kPa
Q_{all} =1420/3 + 615/2.5 = 719.3 kN,
Negative skin friction of the upper 13.5m soft clay (considering all layer settlement): for an average N =5 along the clay layer, C_u = 22.5kPa, Q_n = 1*22.5*□*0.6*13.5 =572 kN

Allowable bearing capacity of the pile considering the negative skin friction = 719.3-572 = 147.3 kN, use 150kN for pile 22.0m
Another option can be checked for a CFA pile type of a diameter 60cm to a depth of 25.0m with 11.5m embedment in sand layer
P_b = 7 kN/m^3*13.5m + 9kN/m^3*11.5m embedment = 198kPa, P_o till the center of the sand layer = 146.25kPa
Q_b = 1680 kN, Q_s (for sand layer only) = 942kPa
Q_{all} =1680/3 + 942/2.5 = 936.8 kN

Allowable bearing capacity of the pile considering the negative skin friction = 936.8-572 = 364.8 kN, use 360kN for pile 25.0m.

In addition, due to the surface water in the project, the whole site of the market shall be backfilled to reach the finish grade level. The first lower one meter shall be backfilled with rock, then the upper layer shall be backfilled with engineering fill in layers 250mm thickness and compacted to 95% of its maximum dry density as per modified proctor tests.
Rockfill shall be graded progressively from larger size at the lower point to a smaller size at the higher point up to the engineered fill layer. The voids are to be filled to the maximum practical extent by smaller particles.

1.7 Exposure/Environmental Conditions and Durability Requirements for Concrete

This section discusses the exposure conditions and the durability requirements in addition to the relevant measures that shall be taken into consideration for the protection buried structural concrete elements.
The exposure conditions and necessary protection measures of reinforced substructure concrete elements shall be assessed according to BS EN 206 standard and its complementary BS 8500-1 Standard. The concrete protection measures will be adopted to ensure dense and durable concrete over the project design life of 50 years for the building structures and 100 years for the infrastructure/culvert concrete.

Mwanza City

The chemical composition test results of groundwater samples obtained from test pits and boreholes drilled at the project location reveal moderate levels of chlorides with low levels of sulphates in the tested groundwater samples, as summarized in the below table. Chemical composition test results on soil samples are not available to validate the exposure.

	Water Samples		
	Chloride (as Cl), (mg/l)	Sulphate (as SO4), (mg/l)	pH
Min.	103.1	21.3	6.21
Max.	240.5	142.4	7.93
Average	163.98	99.22	7.18
Adopted in Analysis*	240.5	142.4	7.93
Count	11	11	11

* The maximum concentrations were considered for the groundwater samples.

The foundations and other substructure concrete elements are anticipated to be in contact with shallow groundwater. In absence of test data on the soil samples, the exposure conditions classified for the Mwanza city is considered to be validated at later stages once the missing data is made available for review.
The protection measures for the piling concrete and other substructure concrete elements in contact with soil/groundwater to ensure very dense and durable concrete against potential chemical and chloride attacks are in item 1.8.3 below.

1.8 Preliminary Geotechnical Recommendations

Based on the mentioned in the above section, the following recommendations shall be followed.

1.8.1 General recommendations for the site of Mwanza- Mkuyuni- Fish Market

- Due to the surface water in the project, the whole site of the market shall be graded and backfilled to reach the finish grade level.
- The upper layer up to 1.0m depth shall be backfilled with engineering fill in layers 250mm thickness and compacted to 95% of its maximum dry density as per modified proctor tests. Refer to the project specifications for the fill material properties.
- Any needed backfilling lower than 1.0m shall be backfilled with rock as per project specifications.
- Rockfill shall be graded progressively from larger size at the lower point to a smaller size at the higher point up to the engineered fill layer. The voids are to be filled to the maximum practical extent by smaller particles.

1.8.2 Deep Foundation Recommendations for Mwanza- Mkuyuni- Fish Market

- Based on conceptual soil conditions, structural requirements and geotechnical analyses, the following preliminary recommendations are developed for the projected Mwanza, Mkuyuni-Fish Market.
- A confirmatory geotechnical site investigation program at the Mwanza, Mkuyuni-Fish Market foundations should be carried out by the Contractor before start of the piles construction work

considering performing boreholes of depth greater than 3 times the pile diameter. The geotechnical site investigation report should be forwarded to the Engineer to review and check the piles geotechnical design and assumptions in order to confirm the primarily recommendations given here below with regard to the piles lengths, diameter and capacity.

- The Contractor is to check the start of the bearing layer for each pile and hence, the pile is casted into the bearing layer considering the embedment depth in the below table.
- The results of the conducted geotechnical analyses showed that 600 mm diameter, bored, cast in-situ, concrete piles shall satisfy the safety and serviceability requirements of the gateway loads.
- The pile length is measured from the bottom of the pile cap. The piles lengths, and design loads are summarized in the below table:

Option	Pile embedment length into bearing layer [m]	Total Pile length [m]	Max. Pile working capacity [kN]
1	8.5	22	150
2	11.5	25	360

- A permanent steel casing is to be derived for each pile into the swampy soil and embedded 1.0m at least into the bearing layer.
- Drilling for the piles must be kept dry without using mud or bentonite slurry while flush air may be used safely. The piles holes shall be properly supported during construction to avoid soil collapse. A casing shall be maintained to support the sides of the piles holes during construction where needed. The Contractor should ensure that the bottom of piles is properly cleaned.
- A proper dewatering system should be maintained to reach the proposed pile cap level.
- Pile capacity is to be verified based on pile load tests (preliminary/working piles) to verify its axial and lateral carrying capacity. Piles to be tested are to be selected by the Engineer. Test procedure should follow ASTM standards.
- Static axial compressive load tests are to be carried out on at least at least one (1) working pile per location. Loading tests on working piles are to be conducted up to 1.5 times the working loads. Number of tested piles shall be as specified in the project Specs.
- The pile shaft should be kept vertically plumb and as specified in the Specs.
- Non-destructive low strain integrity testing is to be carried out on all working piles.
- Non-destructive Cross-Hole Sonic Logging Shall be carried out on 25% of the executed piles.
- The soil/groundwater is considered aggressive requiring protection against chemical attack, including the use of sulphate resistant cement in substructure concrete.

1.8.3 Protection measures for the foundation and other substructure concrete elements

- Portland cement conforming to BS EN 197-1 Type CEM I 42.5N, C3A content between 5% and 8%, shall be used in the concrete mix in combination with either fly ash (21% to 35% of cementitious weight), GGBS (36% to 65% of cementitious weight) or Silica fume (5% to 10% of cementitious weight).
- Maximum water to cementitious ratio of 0.35.
- Minimum Cementitious Content of 380 kg/m3.
- The concrete shall be dense and durable with “Very Low” permeability level, satisfying minimum two test requirements out of the below specified requirements:
    - Water Absorption of 1.5% maximum when tested according to BS 1881: Part 122 standard

- Depth of penetration of 10mm maximum when tested according to BS EN 12390-8 standard.
- Chloride Ion Penetration of 1,000 Coulombs maximum when tested according to ASTM C1202.

- Minimum cover to reinforcement of 55mm for concrete in contact with blinding or prepared ground and 100 mm for concrete in direct contact with soil/groundwater.
- The application of full tanking waterproofing membrane protection is necessary for surface protection of buried concrete elements (other than piling concrete).

1.8.4 Earthwork and Excavation Support

Open cuts may be applied whenever the soil and site conditions allow for unsupported cut slopes. Otherwise, an adequate temporary shoring system will be used such as sheet pile walls, secant piles walls, and/or others. The temporary shoring system shall be designed, provided, installed, operated, maintained and dismantled (upon completion of works) by the Contractor wherever required. The Supervising Engineer shall ensure the review of the Contractor's relevant design notes, method statement, and Quality Control system.

Based on the stability and nature of the soil, it is recommended to use earth slopes not steeper than 2.0H: 1.0V at the excavation levels.

The backfill to be used behind retaining walls shall consists of well graded granular soil such as A-1-a as per AASHTO classification and should be placed in layers not exceeding 25cm in thickness and compacted to the required 95% compaction of the maximum dry density according to ASTM D-1557 specification.

In general it is recommended to use filling material classified as (A-1-a) and/or (A-1-b) according to AASHTO for structural filling works, while (A-2-4) can be used for general fill works, (A-3) can be used only in confined areas.

All fill material shall be compacted as per project specifications and approved by the Engineer, so as to produce a minimum degree of compaction of 95 percent. Clean sands and gravel fill shall be defined as cohesionless granular material meeting the following requirements: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D2940; with at least 90 percent passing a 37.5-mm sieve, maximum Plasticity index 6%, maximum percentage by Dry Weight passing #200 sieve is 12%.

1.8.5 Reuse of Excavated Materials

The table below summarizes for each borehole the thickness of material that is not suitable for use as engineered fill, such as soil with high silt/clay content.

Borehole No.	Drilled Depth (m)	Plastic Material	Thickness (m)	Remarks
M-BH-01 to M-BH-06	10/15	Sandy Clay/Silt of intermediate to high plasticity + v. loose to loose Sand	10/15	% of fines in sieve analysis is more than 20% Very loose Sand is liquefiable and not suitable for reuse

Generally, it is noticed from the table above that the majority of soil in the logs indicate soil of inappropriate quality for engineered fill. The sandy Silt or Clay is not suitable for fill due to its high percentage of fines as a compressible material. Very loose to loose Sand has high percentage of fine

sands which is liquefiable material when subjected to the high groundwater levels in the site and works as unstable material.

2.0 Material Source

Existing and Virgin Sources of gravel, rock/aggregate, sand and water were sampled and tested in the study area as detailed in this section (refer to Appendices of factual data).

The performed tests for the potential Gravel sources are:

- Grading (particle size distribution),
- Atterberg Limits,
- Moisture/density relationship,
- California Bearing Ratio (CBR)
- Any other necessary tests as per PMDM.

The performed tests for the potential sources of hard stone are:

- Los Angeles Abrasion,
- Aggregate Crushing Value (ACV) and or Ten Per Cent Fine Value (TFV),
- Sodium Sulphate Soundness,
- Bitumen Affinity,
- Specific Gravity and Water Absorption,
- Soluble salts content,
- Aggregate Impact Value (AIV),
- Any other necessary tests as per PMDM.

Moreover, the existing water sources for supplying water for construction works were identified and its quantity and quality (pH, Chloride content, and Sulphate content) were assessed. The tests on Sand sources included the gradation, fines content and the organic content.

2.1 Location of Sources of Material

The material sources and estimated quantities for Mwanza and Ilemela areas are as below:

Gravel Sources

- Mwanza-Ilemela – Ilalila: The estimated quantity is 35000 not active.

The test results on some samples show that the gravel is clayey Gravel with sand (62% Gravbel, 9% Sand, 29% fines and PMDM class is G15.

Sand Sources

- Mwanza-Ilemela Sand – Kiesa: The estimated quantity is 11000 active, pit sand.

- Mwanza-Ilemela Sand – Bujingwafela: The estimated quantity is 5500 not active, river sand.

The test results on some samples show that the sand sources had a high fines content and had too many organic impurities. They are not suitable for use in concrete work. Other sources need to be explored.

Rock sources

- Mwanza-Ilemela Quarry – Bukandwe: The estimated quantity is 285000 active quarry.

Existing Granite quarries were found at Bukandwe in Mwanza. The results of SSS on the aggregate from Bukandwe Quarry MWANZA are non-compliant for asphalt. Confirmatory testing may be carried out to verify otherwise an alternative source is to be sought.

Water source

- Mwanza-Ilemela - Lake Victoria.

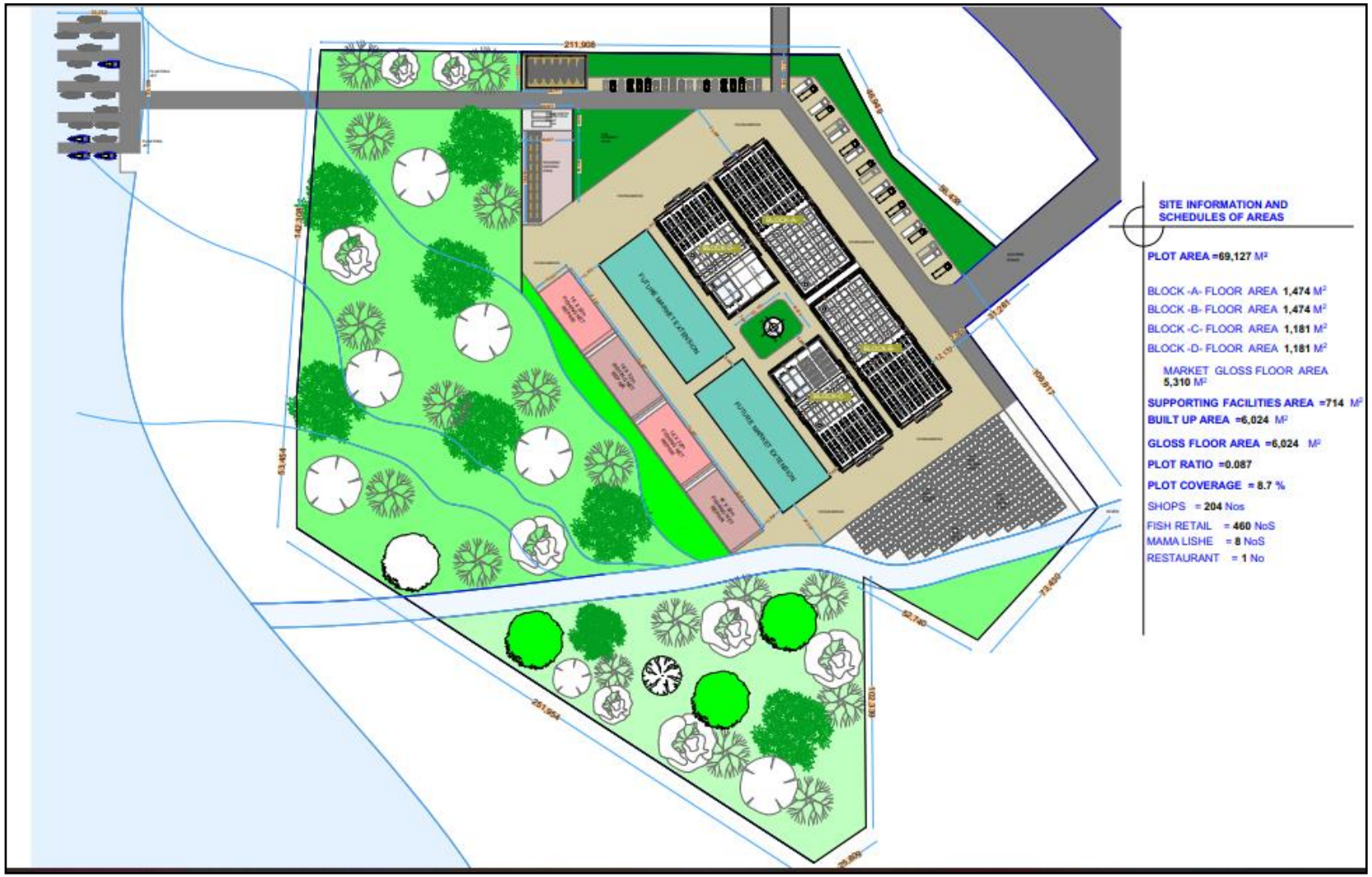
The test results on some samples show that: pH value is 7.58, Chloride content 130.6 mg/l, and Sulphate content 27.8 mg/l. The source is suitable for construction works. Care should be taken not to contaminate or deplete adjacent public water sources.

	Area	Easting	Northing	Estimated Quantity
	GRAVEL SOURCES			
1	MWANZA ILEMELA Gravel - Ilalila	503,311.20	9,734,309.50	35000 - not Active
	SAND SOURCES			
1	MWANZA ILEMELA Sand - Kisesa	510,635.00	9,720,040.90	11000 - Active Pit Sand
	MWANZA ILEMELA Sand - Bujingwafela	505,649.60	9,710,604.70	5500 - not Active river Sand
	QUARRY / Rock Sources			
1	MWANZA ILEMELA Quarry – Bukandwe	516,050.20	9,716,745.10	285000 Active quarries
	WATER SOURCES			
1	MWANZA ILEMELA – Lake Victoria	489,777.00	9,717,659.10	Lake

Figure 11: Sources of materials for Mwanza and Ilemela

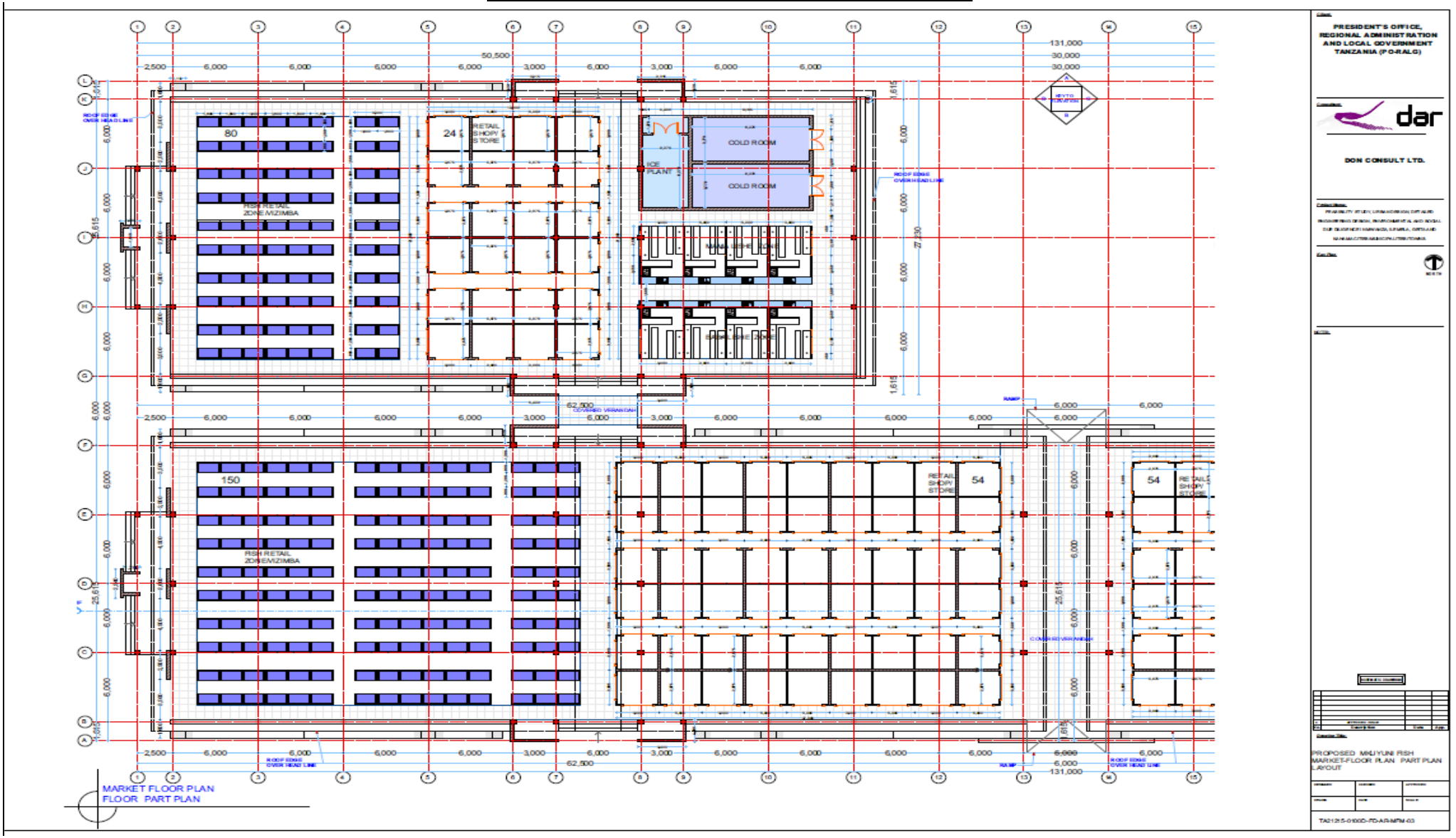
Appendix X: Architectural Drawings

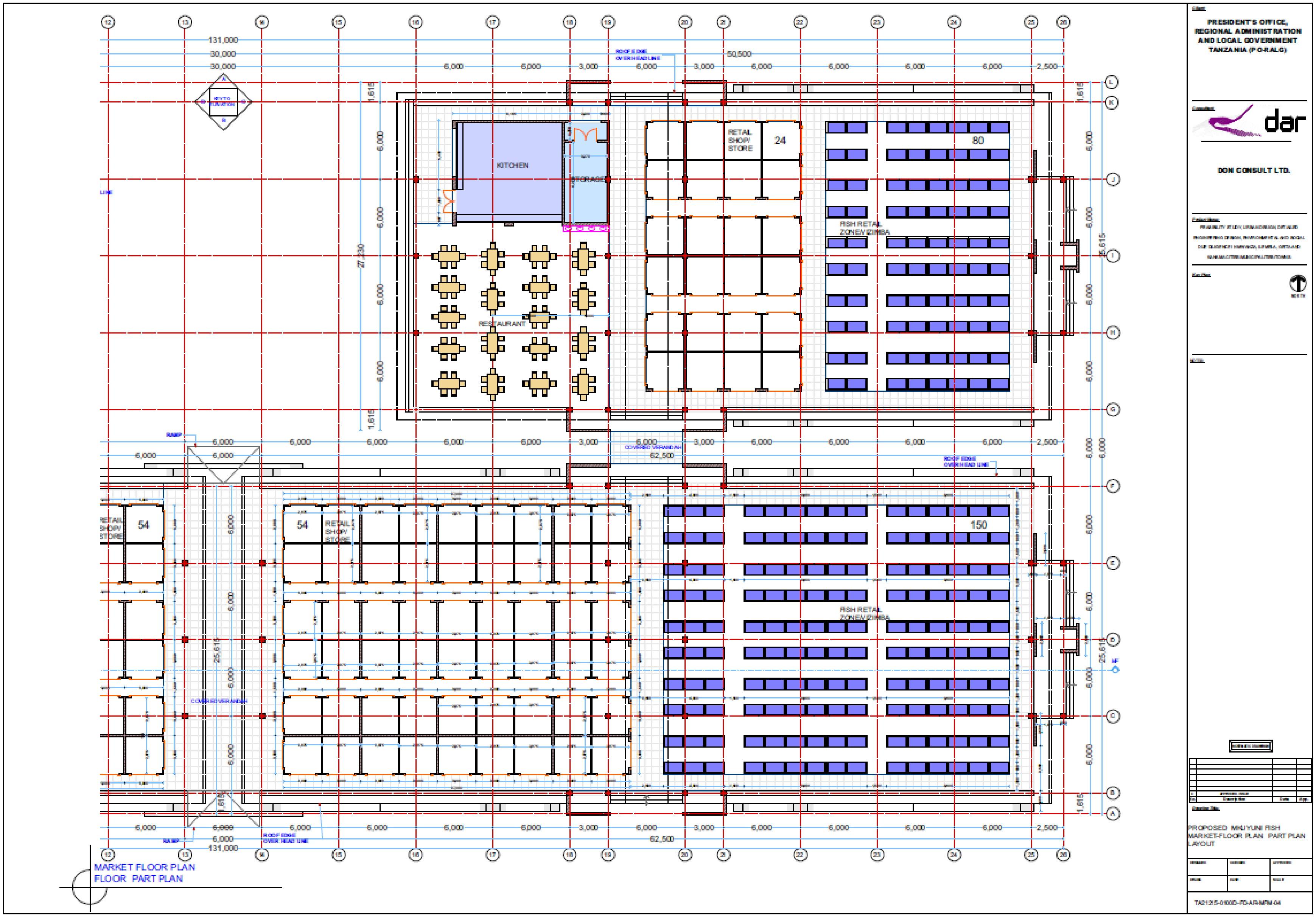
1. SITE LAYOUT PLAN

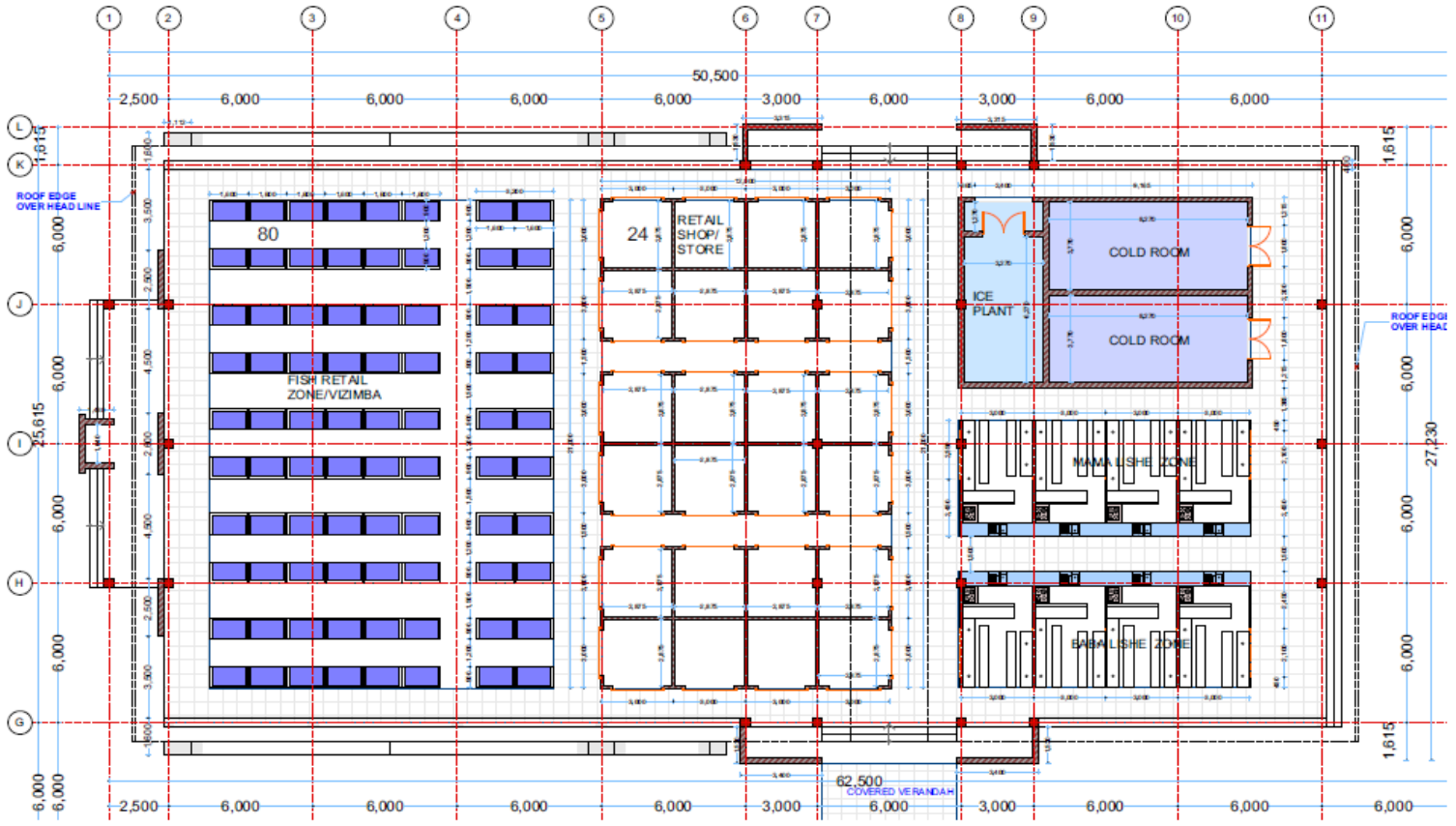


2. 3D VIEW OF THE PROPOSED MKUYUNI FISH MARKET

3. FLOOR PLAN FOR MKUYUNI FISH MARKET




PRESIDENT'S OFFICE, REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT TANZANIA (PO-RALG)
dar
DON CONSULT LTD.
KITCHEN
STORAGE
RESTAURANT
RETAIL SHOP/ STORE
24
80
FISH RETAIL ZONE/VIZIMBA
54
150
ROOF EDGE OVERHEAD LINE
COVERED VERANDAH
RAMP
131,000
62,500
50,500
MARKET FLOOR PLAN
FLOOR PART PLAN
PROPOSED MKUYUNI FISH MARKET-FLOOR PLAN PART PLAN LAYOUT



MARKET FLOOR PLAN
FLOOR PLAN AND PART PLAN

PRESIDENT'S OFFICE, REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT TANZANIA (PO-RALG)

DON CONSULT LTD.

PROPOSED MKUYUNI FISH MARKET-FLOOR PLAN PART PLAN LAYOUT

TA21215-0100D-FDAR-MFM-05

ENGLISH-SWAHILI VERSION OF NON-TECHNICAL EXECUTIVE SUMMARY FOR THE PROPOSED UPGRADING OF MKUYUNI FISH MARKET LOCATED AT PLOT NO. 74, BLOCK BIII – MKUYUNI, ALONG MWANZA SHINYANGA ROAD, AT MKUYUNI WARD, MWANZA CITY, MWANZA REGION

PROPONENT:
MWANZA CITY COUNCIL (MCC)
P.O. BOX 1333
MWANZA
Tel: +255 28 250 1375/ +255 768 520 195
Email: cd@mwanzacc.go.tz Web. www.mwanzacc.go.tz

SUBMITTED TO:
The National Environment Management Council (NEMC)
Regent Estate, Plot No. 29/30
P.O. Box 63154, Dar es salaam, Tanzania
Tel: +255 22 2774889 or +255 22 2774852
Fax: +255 22 2774901
E-mail: dg@nemc.or.tz

CONSULTANT:
ROSEMARY C. NYIRENDA
Mobile: +255 713 030 865/ +255 753 880 424
Email: rosemary.nyirenda35@gmail.com

SUBMISSION DATE: 15TH MAY, 2023

NON-TECHNICAL EXECUTIVE SUMMARY

1. Title and location of the project/undertaking

Environmental and Social Impact Assessment for the Proposed Upgrading of Mkuyuni Fish Market Located at Plot No. 74, Block BIII-Mkuyuni, Along Mwanza Shinyanga Road, at Mkuyuni Ward, Mwanza City, Mwanza Region.

2. Name of the proponent and contacts

Mwanza City Council,
P. O. Box 1333,
Mwanza, Tanzania.
Tel: +255 28 250 1375/ +255 768 520 195
Email: cd@mwanzacc.go.tz Web. www.mwanzacc.go.tz

3. Names and address of Firm of Experts conducted the EIA

ROSEMARY C. NYIRENDA
Mobile: +255 713 030 865/ +255 753 880 424
Email: rosemary.nyirenda35@gmail.com

4. Brief outline and justification of the proposed project

(a) Brief description of the project environment

The government of the United Republic of Tanzania in collaboration with development partners intends to finance the construction of Mkuyuni Fish Market in Mwanza City as part of the Tanzania Cities Transforming Infrastructure and Competitiveness (TACTIC) project financed by the World Bank (WB). Most of the fish markets in Mwanza are old and not designed or organized to accommodate a large number of traders and customers old and not sufficient to meet the growing fishing industry. The quality of service delivered offered is very poor. Also due to rapid increase in population of Mwanza hence demand there is a need to have a modern fish market which consists of all necessary services in order for it to function including but not limited to administration block, a parking bay for the fishing boats, quality checking area, auction area, vending area, fish processing area, cold rooms for fish storage, retailing area, frying area, fruits, vegetable and spices area, Mama lishe area, canteen, toilets, garbage collection points, space for ATM machines, changing rooms, women's menstrual room, sanitation and hygiene facilities, proper security and CCTV for security matters.

The EIA study was conducted in accordance with the Environmental Management Act (Cap 191) and the Environmental Management Act (Environmental Impact Assessment and Audit) Regulations of 2005 as amended in 2018. The Regulations give mandate to NEMC to oversee the EIA process, which culminates with an award of the Environmental Impact Assessment Certificate by the Vice President's Office - Ministry responsible for the Environment. The Environmental Impact Assessment Certificate is among the prerequisite approvals required before the project takes off. This project will need this approval before it is implemented.

(b) Project Description

The proposed site for the construction of Mkuyuni Fish market is located at Plot No. 74, Block BIII - Mkuyuni Ward. The site is boarded by the Lake Victoria in the north-west side (over 200m away, hence adheres to the 60 metres restrictions), Mwalo Mswahili landing site and furniture industry to the north. To the west it is boarded by Lake Victoria (wet land). On its southern part, it is boarded by Ceramic Industry, Modern rice paddy industry, while to the east it is boarded by residential houses and shops to the access road. The project site is owned by the Mwanza City Council with the Title Deed No. 100649 and the area of 69,127 sqm which is equivalent to 17.08 acres. Mwanza City Council proposes to construct a new fish market that will create conducive environment for fishermen, small scale traders and different business owners. The constructed new fish market is predicted to be effective and efficient to deliver more quality services while accommodating the projected growth of the fishing industry, traders, other business owners and customers.

The proposed fish market will include but not limited to the following facilities/areas; the construction of modern Market building will all necessary facilities such as administration block, a parking bay for the fishing boats, quality checking area, auction area, vending area, fish processing area, cold rooms for fish storage, retailing area, frying area, fruits, vegetable and spices area, Mama lishe area, canteen and garbage collection points electricity; storm water drainage and sewerage system, furnished parking for Bodaboda, Taxis and Bajaj, space for ATM machines, standard toiles, changing rooms, women's menstrual room, sanitation and hygiene facilities, proper security and CCTV for security matters.

The fish market being a community service is projected benefit more than 20,000 people who will use the market for different fishing related purposes including buying and selling those products and there will be shops/ stores for other food products. Mwanza City Council,

Ministry of Finance, PO-RALG and fishing sector and works department are the main actor in organizing and management of fund before and during construction phase. The proposed project will serve Mwanza City inhabitants and all fishing industry stakeholders for approximately more than 30 years after completion.

5. Policy, Legal and Institutional Framework

Tanzania is committed to attaining Sustainable Development Goals. A few policies and legislation that have a close bearing to urban development are but not limited to National Environmental Policy (NEP) of 2021, Construction Industry Policy (2003), National Land Policy (1995), National Gender Policy (2002), Environmental Management Act (Cap 191), Water Supply and Sanitation Act (2019), Land Act No. 4 of 1999, The Urban Planning Act (2007), Occupational Health and Safety Act (2003), Employment and Labour Relations Act (2015), Engineers Registration Act (2007), the Contractors Registration Act (1997), The Local Government (Urban Authorities) Act (Cap 288), the Architects and Quantity Surveyors Act (1997), the HIV and AIDS (Prevention and Control) Act (2008), the Tanzania 2025 Development Vision and Environmental Impact Assessment and Audit Regulations (2005) as amended in 2018.

Others are the World Bank Environmental and Social Framework (ESF) which describes ten (10) Environmental and Social Standards (ESS). The ten ESSs as per the WB ESF are: ESS1: Assessment and Management of Environmental and Social Risks and Impacts; ESS2: Labor and Working Conditions; ESS3: Resource Efficiency and Pollution Prevention and Management; ESS4: Community Health and Safety; ESS5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement; ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources; ESS7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities; ESS8: Cultural Heritage; ESS9: Financial Intermediaries; and ESS10: Stakeholder Engagement and Information Disclosure.

Given the nature of activities of this project, with the exception of ESS9: Financial Intermediaries almost all the ESSs are relevant. The World Bank's Environmental and Social Framework sets out the Bank's commitment to sustainable development, through a Bank Policy and a set of Environmental and Social standards that are designed to support Borrowers' projects, with the aim of ending extreme poverty and promoting shared prosperity. The E&S Framework comprises of: (1) Vision for Sustainable Development,

which sets out the Bank's aspirations regarding environmental and social sustainability; (2) The World Bank Environmental and Social Policy for Investment Project Financing, which sets out the mandatory requirements that apply to the Bank; and (3) The Environmental and Social Standards, together with their Annexes, which set out the mandatory requirements that apply to the Borrower and projects. Other document is the World Bank Environmental, Social, Health and Safety (ESHS) Guidelines.

6. Stakeholder Consultations and Public Involvement and the results

Generally, most of stakeholder's views and concerns support the proposed project. All the comments received from the stakeholders were compiled, summarized and sorted to identify issues that have been addressed in the full and detailed Environmental Impact Assessment. A matrix with planned schedule of visits was prepared to guide the team to consult all stakeholders that were identified. Stakeholders were identified using simple methods such as focus group discussion and key informant interviews. In all the process of stakeholder consultation professional discussion was key especially when exploring technical issues. The stakeholders identified include but not limited to The President's Office – Regional Administration and Local Government (Project Coordination Unit), Mwanza City Council, Mwanza Urban Water Supply and Sanitation Authority (MWAUWASA), Tanzania Elictric Supply Company Ltd (TANESCO), Tanzania Forest Services Agency (TFS), Beach Management Unit (BMU), Association of People with Disabilities (PwDs), Ward and Mtaa Leaders as well as neighbours

Major issues of concern raised were:

- Increased pressure on social services and utilities
- Employment opportunities
- Design of the fish market to consider the changing weather and the area's topography
- Dust and noise pollution
- Waste management problems during both construction and operation phase
- Labour issues during construction, locals to be given priority

1. Assessment of Impacts

Impact identification in this EIA aimed at ensuring that all potential significant impacts were identified and addressed. The EIA team used tools to identify various impacts particularly adverse impacts. These impacts were identified during the stakeholders' consultative

meetings, interview, literature review and observation. Some of the issues/impacts identified were thus regarded as possible impacts.

(a) Mobilization and Construction phase

- Positive Social Benefits
  i. Benefits to communities resulting from employment at the fish market
  ii. Benefits to the government resulting from revenue and tax
  iii. Benefits to businessmen due to improved transportation

- Negative Social Impacts
  i. HIV / AIDS among workers and nearby communities
  ii. Community safety caused by the influx of workers
  iii. Unwanted pregnancy

- Positive Environmental Benefits
  i. Improved environment which consists of standard drainage system
  ii. Improved air quality due to expected greenery

- Negative Environmental Impacts
  i. Loss of natural vegetation
  ii. Increased Dust and noise levels
  iii. Waste management problems during construction
  iv. Safety and health risks
  v. Population influx from labourers
  vi. Vibration pollution

(b) Impacts associated with Operation Phase

- Positive Social Benefits
  i. Benefits to communities resulting from employment
  ii. Availability of conducive business space
  iii. Increased security of the area
  iv. Improved social services
  v. Increased revenue to Mwanza City Council and country as whole

- Negative Social Impacts
  i. HIV / AIDS among workers and nearby communities

ii. Community safety caused by the influx of workers
iii. Unwanted pregnancy

- Positive Environmental Benefits
  i. Improved environment which consists of standard drainage system
  ii. Improved air quality due to expected greenery

- Negative Environmental Impacts
  i. Increased pressure on social services and utilities
  ii. Increased Dust and noise levels
  iii. Increased waste during operations
  iv. Safety and health risks due to fire hazards

(c) Impacts associated with Demobilization Phase

The following key issues are associated with decommissioning phase:

- Negative Social Impact
  i. Loss of employment which might lead to poor quality of life

- Negative Environmental Impact
  i. Production of rubble and associated disposal problems
  ii. Noise and Dust Pollution

2. Mitigation Measures

Many of the mitigation measures put forward are nothing more than good engineering practice that shall be adhered to during all the project phases. Other major mitigation measures for each of the identified impacts to be observed include;

- **Higher noise levels:** Machine operators in various sections with significant noise levels shall be provided with noise protective gear.
- **Dust emission:** Trucks transporting construction materials shall be covered if the load is dry and prone to dust emissions.
- **Waste management:** The contractor shall have adequate facilities for handling the construction waste. A large Skip Bucket shall be provided at the site.
- **Health and safety of workers:** Appropriate working gear (such as nose, ear mask and clothing) and good construction site management shall be provided. During

construction the contractor shall ensure that the construction site is fenced and hygienically kept with adequate provision of facilities including waste disposal receptacles, sewage, firefighting and clean and safe water supply.

- **Lack of employment for local community:** The contractor shall deploy locally available labour
- **Traffic management:** Adequate sign boards will be placed at the relevant location and flag man will be assigned whenever necessary.
- Pressure on community services such as water and electricity: Alternative measures like use of solar power, drilling a borehole at site, water recycling shall be explored and implemented if found feasible. For instance, use of energy savers bulbs shall be given high priority
- **Accidents and fire incidences**: The design of the fish market shall strictly adhere to the Fire Safety Standards
- **Poor maintenance of the fish market during operation**: A private cleanliness firm with adequate number of staff shall be commissioned to clean the fish market, its facilities and the surrounding daily.

7. Alternative Analysis

From the environmental safeguard viewpoint, alternative analysis is an important tool for the best selection of the project site, technology to be followed, and operational mechanism in terms of environmental acceptability of the chosen method. The following alternatives have been considered by this project.

(a) "No action" alternative of the project

The no project alternative entails retaining the current status quo (No construction of Mkuyuni Fish Market). Adopting this option would mean avoiding most of the negative effects associated with the presence of the fish market and missing all the positive benefits such as benefits to communities resulting from employment during construction and availability of conducive and adequate business spaces.

(b) Alternative Analysis for Selection of Sites

The option of using another site apart from that of the proposed one was also considered. However, the Proposed site was observed to have the following advantages over others;

- The site is owned by Mwanza City Council (No need to buy a new piece of land and does not need compensation).

- The site is located on a favourable piece of land which is close to transportation facilities (road network) and health service
- The plot is located on a favourite piece of land. It is surrounded by residential and institutional activities; it is in the CBD area.
- Availability of water and electricity mains supply

(c) Alternative Analysis for Technology and materials options

Generation of noise from the construction activities (welding, compaction, drilling, trenching etc) will raise the noise level at the site. Thus, to prevent these adverse effects to the surrounding community, the contractor will use machines that do not generated a lot of noise. Therefore, the proposed project will employ the use of locally and internationally accepted materials and equipment to achieve public health, safety, security and environmentally aesthetic requirements.

(d) Alternative analysis for energy options

The use of other alternative energy sources apart from power from the National grid and diesel generators were considered. As it is the case in most of developing countries, supply of electricity from national grids is not reliable as it mostly originates from hydroelectric power generators, which depend on rainfall frequency, intensity and pattern. On the other hand, diesel generators, which are mainly used during power interruptions, emit a lot of greenhouse gases especially when they are run for a long time. Solar energy was considered, and the design team shall explore the feasibility of using this alternative.

8. Environmental and Social Management Plan, Environmental Monitoring Plan and Auditing

The Environmental and Social Management Plan (ESMP) is presented in the Environmental Impact Statement. The options to minimize or prevent the identified adverse social and environmental impacts as well as a monitoring plan have been suggested and they are based on good engineering practices. It also, defines roles and responsibility of different actors of the plan. The plan during the implementation of the project is important in order to measure the success of the mitigation measures. The contractor shall implement components relevant to the actual construction and operation phases. Developer shall be responsible for overall implementation of proposed Plan.

The estimated costs for implementing the mitigation measures are just indicative. Additionally, the ESPM include an estimate of the costs of the measures so that the project Developer can budget the necessary funds. Appropriate bills of quantities should clearly give the actual figures. In any case, the consultant used informed judgment to come up with these figures. The project shall ensure that the activities which are causing impacts to the environment are managed in a comprehensive, systematic, planned and documented manner. Developer shall communicate the environmental and social management plan and environmental and social monitoring plan to its employees and its contractors to ensure that implementation is done accordingly.

Furthermore, Developer shall ensure availability of resources which are required for implementation of its environmental management plan. The plan shall be monitored to ensure that environmental objectives are met Mwanza City Council shall carry out routine auditing and communicate the audit report to the top management so as to ensure continued sustainability of the environmental management system.

9. Resources evaluation

Mwanza City Council has set aside a total of over two billion Tanzania shillings as initial cost for the development and construction of Mkuyuni Fish Market. All these funds will cover costs of civil and building works; electrical and Information, Communication and Technology works, procurement of medical devices; and cross cutting issues. The estimated costs for implementing impact management as well as monitoring process as outlined in Environmental Impact Statement is TZS. 90,000,000.00 and TZS. 141,000,000.00 respectively. The estimated costs for mitigation do not include the environmental costs, which could not be accurately calculated. Since some of the impacts will only be realized during construction phase, the costs for these will also be short term, especially if mitigation measures are fully implemented the project benefits outweighs the project costs by far.

10. Decommissioning

As decommissioning will take place in the remote future, the specific conditions for mitigation are generally inherently uncertain. In view of this, specific mitigation measures pertaining to environmental impacts of decommissioning works cannot be proposed at the moment with a reasonable degree of certainty. A decommissioning plan that takes environmental issues into consideration shall be prepared by the developer prior to the

decommissioning works. Should it be done, decommissioning may entail a change of use (functional changes) or demolition triggered by change of land use.

11. Summary and Conclusion

The proposed Mkuyuni fish market located along Mwanza Shinyanga Road at Mkuyuni ward in Mwanza City Council, Mwanza region. The project has large socio-economic benefits to both the Mwanza City Council and the nation at large. The project as such, entails minimal adverse environmental impacts of which adequate mitigation measures have been proposed and incorporated in the project design. It can therefore be concluded that, the proposed project will entail no significant impacts provided that the recommended mitigation measures are adequately and timely implemented. The identified impacts will be managed through the proposed mitigation measures and implementation regime laid down in this ESIA. The proponent is committed in implementing all the recommendations given in this ESIA and further carrying out the environmental auditing and monitoring schedules.

MUHTASARI USIOKUWA WA KIUFUNDI WA TATHMINI YA ATHARI ZA MAZINGIRA NA JAMII ZA UJENZI WA SOKO LA SAMAKI, KATA YA MKUYUNI, HALMASHAURI YA JIJI LA MWANZA

MUENDELEZAJI (MTEJA)
Halmashauri ya Jiji la Mwanza
S. L. P. 1333, Mwanza - Tanzania
Simu: +255-28-2520437
Barua pepe: cd@mwanzacc.go.tz tovuti: www.mwanzacc.go.tz

IMEWASILISHWA KWA:

Baraza la Taifa la Hifadhi na Usimamizi wa Mazingira (NEMC)
35 Regent Street
S. L. P. 63154, Dar es salaam, Tanzania
Simu: +255 22 2774889/ +255 22 2774852/+255 713 608938
Barua Pepe : dg@nemc.or.tz
Tovuti: www.nemc.or.tz

MTAALAMU MUELEKEZI:

ROSEMARY C. NYIRENDA
Simu: +255 713 030 865/ +255 753 880 424
Barua pepe: rosemary.nyirenda35@gmail.com

TAREHE YA KUWASILISHA: 15 MEI 2023

MUHTASARI USIO WA KIUFUNDI

1. Kichwa na eneo la mradi/shughuli

Tathmini ya Athari za Kimazingira na Kijamii kwa mapendekezo ya ujenzi wa Soko Jipya la Samaki katika Kiwanja namba 100649 kitalu BIII eneo la Mkuyuni, Kata ya Mkuyuni, Jiji la Mwanza , mkoa wa Mwanza.

2. Jina la Mwekezaji na anwani

Halmashauri ya Jiji Mwanza

S. L.P. 1333

Mwanza, Tanzania

Simu: Tel: +255 28 250 1375/ +255 768 520 195

Barua pepe: cd@mwanzacc.go.tz Tovuti. www.mwanzacc.go.tz

3. Majina na anuani za Kampuni ya Wataalamu iliyofanya TAM

ROSEMARY C. NYIRENDA

Simu: +255 713 030 865/ +255 753 880 424

Barua pepe: rosemary.nyirenda35@gmail.com

4. Muhtasari mfupi na uhalali wa mradi unaopendekezwa

(a) Maelezo mafupi ya mazingira ya mradi

Serikali ya Jamhuri ya Muungano wa Tanzania kwa kushirikiana na wadau wa maendeleo inatarajia kufadhili ujenzi wa soko la samaki la Mkuyuni katika jiji la Mwanza ikiwa ni sehemu ya mradi wa maboresho ya miundombinu na ushindani wa Miji Tanzania (TACTIC) unaofadhiliwa na Benki ya Dunia (WB). Masoko mengi ya samaki (mwaloni) ni ya zamani na hayako kwenye mpangilio mzuri wala hajasanifiwa ili kutoshelesha idadi ya wafanyabiashara na wateja hivyo hayaendani na kasi ya ukuaji wa sekta ya uvuvi. Ubora wa huduma zinazotolewa katika masoko hayo ni duni sana. Pia kutokana na kasi ya ongezeko la watu katika Jiji la Mwanza kuna haja ya kuwa na soko la kisasa la samaki ambalo litakuwa na huduma zote muhimu zinazotakiwa kuwepo katika soko hilo ikiwa ni pamoja na jengo la uongozi na utawala wa soko, sehemu ya ukaguzi wa ubora,sehemu ya manunuzi, sehemu ya kuchakatia (kusafisha) samaki, chumba cha baridi kwa ajili ya kuhifadhi samaki, sehemu ya kuuzia samaki rejareja, kukaangia samaki, sehemu za kuuzia mbogamboga, matunda na viungo, maegesho ya magari, sehemu ya maduka, vyoo, vyumba vya kubadilishia nguo, chumba cha wanawake kujistiri kipindi cha hedhi, chumba cha mawasiliano chenye vifaa vya kisasa, kituo cha polisi, eneo la kukusanyia taka na huduma zingine muhimu.

Tathmini ya Athari kwa Mazingira (TAM) ilifanyika kwa mujibu wa Sheria ya Usimamizi wa Mazingira (Sura ya 191) na Kanuni za Usimamizi wa Mazingira (Tathmini na Ukaguzi wa Athari kwa Mazingira) za 2005 kama ilivyorekebishwa mwaka wa 2018. Kanuni hizo zinaipa NEMC mamlaka ya kusimamia mchakato wa TAM, ambao unafikia kilele, pamoja na kutunukiwa Cheti cha Tathmini ya Athari kwa Mazingira na Ofisi ya Makamu wa Rais - Wizara yenye dhamana ya Mazingira. Cheti cha Tathmini ya Athari kwa Mazingira ni miongoni mwa vibali vya lazima vinavyohitajika kabla ya kuanza kwa ujenzi wa mradi. Mradi huu pia utahitaji cheti hiki kabla ya utekelezaji wake.

(b) Maelezo ya Mradi

Mradi wa soko la samaki Mkuyuni utajengwa katika Kiwanja Namba 74, Kitalu 'BIII', Kata ya Mkuyuni jijini Mwanza, mkoani Mwanza. Kiwanja kina hati miliki Na. 100649 pamoja na ukubwa upatao meta za mraba 69,127 ambazo sawa na ekari takribani 17.08. Eneo hilo lipo linapakana na Ziwa Victoria kwa upande wa Kaskazini-Magharibi (zaidi ya mita 200 hivyo linakidhi umbali wa mita 60 za eneo katazo), Mwalo Mswahili na Kiwanda cha samani kwa upande wa Kaskazini. Kwa upande wa Magharibii linapakana na eneo oevu na Ziwa Victoria, na Mashariki kuna makazi ya watu, fremuu za maduka na barabara. Halmashauri ya Jiji la Mwanza inapendekeza kujenga soko jipya la samaki ili kuweka mazingira mazuri kwa watoa wavuvi, wauzaji samaki na wafanyabiashara ndogondogo za aina mbalimbali. Soko hil la samaki litakalojengwa linatabiriwa kuwa lenye ufanisi mkubwa katika kutoa huduma bora zaidi huku kikizingatia ukuaji wa sekta ya uvuvi na ongezeko la wafanyabiashara pamoja na wateja.

Soko la samaki linalopendekezwa litajumuisha jingo la kisasa la soko lenye mahitaji muhimu kama ofis za utawala, sehemu ya kuegesha boat kwa ajili ya wavuvi, sehemu ya ukaguzi wa ubora,sehemu ya manunuzi, sehemu ya kuchakatia (kusafisha) samaki, chumba cha baridi kwa ajili ya kuhifadhi samaki, sehemu ya kuuzia samaki rejareja, kukaangia samaki, sehemu za kuuzia mbogamboga, matunda na viungo, maegesho ya magari, sehemu ya maduka, vyoo, vyumba vya kubadilishia nguo, chumba cha wanawake kujistiri kipindi cha hedhi, chumba cha mawasiliano chenye vifaa vya kisasa, kituo cha polisi, eneo la kukusanyia taka, pamoja na miundombinu saidizi ikiwamo mifereji ya kuondosha maji ya mvua, mfumo wa maji safi na ule wa majitaka, jenereta za chelezo, vifaa vya maji na umeme; mifereji ya maji ya dhoruba na mfumo wa maji taka; machine za kutolea fedha kwa njia ya kielektroniki na vifaa

vya usalama (uzio), na kamera (CCTV), vifaa vya mawasiliano vya kielektroniki na huduma nyingine muhimu..

Soko hilo jipya la Samaki ni sehemu ya huduma za kijamii, hiyvo litawanufaisha zaidi ya watu elfu ishirini (20,000) watakaokuwa wanauza na kuninua bidhaa za Samaki na bidhaa mbali mabli za chakula kwa nyakati mbalimbali. Halmashauri ya jiji la Mwanza, Wizara ya Fedha, TAMISEMI, sekta ya uvuvi na idara ya kazi watasimamia na kupanga matumizi ya fedha kabla na kipindi cha ujenzi. wauzaji wa vyakula na vinywaji. Halmashauri ya Jiji la Mwanza, Wizara ya Fedha, TAMISEMI na Sekta ya Uchukuzi na Idara ya Kazi ndio wahusika wakuu katika uandaaji na usimamizi wa fedha kabla na wakati wa ujenzi. Mradi unaopendekezwa utahudumia wakazi wa Halmashauri ya Jiji la Mwanza na wadau wote wa sekta ya uvuvi kwa takribani zaidi ya miaka 30 baada ya kukamilika.

5. Mfumo wa Sera, Sheria na Kitaasisi

Sera na sheria mbalimbali ambazo zinahusiana na zinaongoza utekelezaji wa mradi huu ni pamoja na Dira ya Maendeleo ya Tanzania 2025, Sera ya Taifa ya Mazingira ya 2021, Sera ya Sekta ya Ujenzi (2003), Sera ya Taifa ya Ardhi (1995), Sera ya Taifa ya Jinsia (2002) na Sheria ya Usimamizi wa Mazingira (Sura ya 191), 2004, na Kanuni za Tathmini na Ukaguzi wa Athari kwa Mazingira (2005) kama ilivyorekebishwa mwaka 2018. Sheria nyingine ni kama vile; Sheria ya Majisafi na Usafi wa Mazingira (2019), Sheria ya Ardhi namba 4 ya 1999, Sheria ya Mipango Miji (2007), Sheria ya Afya na Usalama Kazini (2003), Sheria ya Ajira na Mahusiano Kazini (2015), Sheria ya Usajili Wahandisi (2007), Sheria ya Usajili wa Makandarasi (1997), Sheria ya Serikali za Mitaa (Mamlaka za Mijini) (Sura ya 288), Sheria ya Wasanifu Majengo na Wakadiriaji Majenzi (1997), na Sheria ya VVU na UKIMWI (Kinga na Kudhibiti) (2008).

Pia kuna Mfumo wa usimamizi wa mazingira na jamii wa Benki ya Dunia unaoeleza Viwango kumi (10) vya Mazingira na Kijamii ambavyo vinapaswa kufuatwa wakati wa utekelezaji wa miradi hususani ile inayofadhiliwa na Benki ya Dunia. ESS1: Tathmini na usimamizi wa Hatari na Athari za Mazingira na Kijamii; ESS2: Masuala ya Ajira na Mazingira ya Kazi; ESS3: Ufanisi wa Rasilimali na Kuzuia na Kusimamia Uchafuzi; ESS4: Afya na Usalama ya Jamii; ESS5: Utwaaji wa Ardhi, Vizuizi vya Matumizi ya Ardhi na Uhamishaji wa Watu na Makazi bila Hiari; ESS6: Uhifadhi wa Bioanuwai na Usimamizi Endelevu wa Maliasili Hai; ESS7: Wenyeji/Jamii za wenyeji zenye mfumo wa kiasili wa maisha za Kiafrika Kusini mwa Jangwa la Sahara ambazo Kihistoria zimekuwa haziangaliwi

kwenye masuala ya maendeleo kutokana na mfumo wao wa Maisha na tamaduni zao; ESS8: Urithi wa Kitamaduni; ESS9: Waamuzi wa Fedha; na ESS10: Ushirikishaji wa Wadau na upashanaji wa habari/taarifa.

Kwa kuzingatia asili ya shughuli za mradi huu, isipokuwa ESS9: Waamuzi wa Kifedha; karibu ESS zote zinahusika katika mradi huu. Mfumo wa Mazingira na Jamii wa Benki ya Dunia unaweka wazi dhamira ya Benki ya maendeleo endelevu, kupitia Sera ya Benki na seti ya viwango vya Mazingira na Kijamii ambavyo vimeundwa kusaidia miradi ya Wakopaji, kwa lengo la kumaliza umaskini uliokithiri na kukuza ustawi wa pamoja. Mfumo wa E&S unajumuisha: (1) Dira ya Maendeleo Endelevu, ambayo inaweka wazi matarajio ya Benki kuhusu uendelevu wa mazingira na kijamii; (2) Sera ya Benki ya Dunia ya Mazingira na Kijamii inaweka masharti na vigezo vya lazima vya kimazingira na kijamii ambavyo Miradi ya Uwekezaji, inayofadhiliwa na Benki ni lazima ikidhi; na (3) Viwango vya Mazingira na Kijamii, pamoja na Viambatanisho vyake, ambavyo vinaweka mahitaji ya lazima yanayotumika kwa Mkopaji na miradi. Hati nyingine ni Miongozo ya Benki ya Dunia ya Mazingira, Kijamii, Afya na Usalama.

6. Mashauriano ya Wadau na Ushirikishwaji wa Umma na matokeo

Kwa ujumla, maoni ya wadau wengi yanaunga mkono mradi uliopendekezwa. Maoni yote yaliyopokelewa kutoka kwa wadau yalikusanywa, kufupishwa na kupangwa ili kuainisha masuala mbalimbali ambayo yameshughulikiwa katika Tathmini kamili na ya kina ya Athari kwa Mazingira. Jedwali lenye ratiba ya ziara lilitayarishwa ili kuiongoza timu kushauriana na wadau wote waliotambuliwa. Wadau walitambuliwa kwa kutumia mbinu rahisi kama vile majadiliano ya vikundi na usaili wa watoa taarifa muhimu wenye uelewa mkubwa wa mradi. Katika mchakato wote wa mashauriano ya wadau mjadala wa kitaalamu ulikuwa muhimu hasa wakati wa kuchunguza na kutathmini masuala ya kiufundi. Wadau hao waliobainika ni pamoja na Ofisi ya Rais Tawala za Mikoa na Serikali za Mitaa (Kitengo cha Uratibu wa Miradi), Halmashauri ya Jiji la Mwanza, Mamlaka ya Majisafi na Usafi wa Mazingira Mwanza (MWAUWASA), Wakala wa Huduma za Misitu (TFS) ,Shirika la usambazaji umeme Tanzania (TANESCO), Kikundi cha usimamizi wa ufuko wa Ziwa Victoria (BMU), Jumuiya ya Watu Wenye Ulemavu, Viongozi wa Kata na Mtaa pamoja na majirani.

Masuala makuu na maangalizo yaliyotolewa yalikuwa:

- Kuzidiwa kwa huduma za kijamii kutokana na ongezeko la watu;
- Fursa za ajira;

• Usanifu wa majengo na miundombinu ya soko kuzingatia mabadiliko ya hali ya hewa;
• Uchafuzi wa vumbi na kelele;
• Changamoto ya udhibiti wa taka wakati wa awamu ya ujenzi na uendeshaji; na
• Kutoa kipaumbele kwa wenyeji kwenye masuala ya kazi na ajira hasa wakati wa ujenzi.

7. Tathmini ya Athari

Uainishaji wa athari katika TAM hii ulilenga kuhakikisha kuwa athari zote muhimu zinazoweza kutokea zina ainishwa na kushughulikiwa. Timu ya TAM ilitumia zana kutambua athari mbalimbali hasa athari mbaya. Athari hizi zilibainishwa wakati wa mikutano ya mashauriano ya wadau, mahojiano, mapitio ya maandiko na uchunguzi. Baadhi ya maswala/athari zilizoainishwa kwa hivyo zilichukuliwa kuwa ni athari zinazorekebishika.

(a) Awamu ya Uhamasishaji na Ujenzi

• Faida Chanya za Kijamii

i. Manufaa kwa jamii yanayotokana na ajira katika soko la samaki
ii. Faida kwa serikali kutokana na mapato na kodi
iii. Faida kwa wafanyabiashara kutokana na uboreshaji wa miundombinu ya soko na uvuvi.

• Athari Hasi za Kijamii

i. VVU/UKIMWI miongoni mwa wafanyakazi na jamii ziishizo Jirani na eneo la mradi
ii. Usalama wa jamii unaosababishwa na kufurika kwa wafanyakazi
iii. Mimba zisizohitajika

• Faida Chanya za Mazingira

i. Mazingira yaliyoboreshwa ambayo yana mfumo wa kawaida wa mifereji ya maji
ii. Kuboresha ubora wa hewa kutokana na kuweka ukanda wa kijani (upandaji wa miti ya kivuli na mapambo)

• Athari Hasi za Mazingira

i. Kupoteza uoto wa asili
ii. Kuongezeka kwa viwango vya vumbi na kelele
iii. Ongezeko la taka na matatizo ya usimamizi wa taka wakati wa ujenzi
iv. Hatari za usalama na afya
v. Ongezeko la watu wanaotafuta fursa za ajira na biashara katika eneo la mradi
vi. Athari zitokanazo na mitetemo

(b) Athari zinazohusiana na Awamu ya Operesheni

• Faida Chanya za Kijamii

i. Kuongezeka kwa fursa za ajira na kuboreka kwa viwango vya maisha kwa jamii
ii. Upatikanaji wa fursa za biashara na ongezeko la kipato
iii. Kuongezeka kwa usalama wa eneo hilo
iv. Kuboreshwa kwa huduma za kijamii
v. Kuongeza mapato kwa Halmashauri ya Jiji la Mwanza na nchi kwa ujumla kutokana na kodi mbalimbali.

• Athari Hasi za Kijamii

i. Kuongezeka kwa maambukizi ya VVU/UKIMWI miongoni mwa wafanyakazi na jamii ziishizo karibu na mradi.
ii. Hatari za kiafya na usalama wa jamii unaosababishwa na shughuli za mradi
iii. Mimba zisizohitajika.

• Faida Chanya za Mazingira

i. Mazingira bora yaliyoboreshwa wa soko la samaki ambayo yana mfumo wa mifereji ya uondoshaji ya maji ya mvua.
ii. Huduma bora za usafirishaji wa abiria na mizigo
iii. Kuboresha ubora wa hewa kutokana na kijani kibichi kinachotarajiwa.

• Athari Hasi za Mazingira

i. Kuongezeka kwa shinikizo kwenye huduma za kijamii na huduma
ii. Kuongezeka kwa viwango vya vumbi na kelele
iii. Kuongezeka kwa taka wakati wa uendeshaji wa mradi
iv. Hatari za usalama na afya kutokana na hatari za moto

(c) Athari zinazohusiana na Awamu ya ufungaji wa mradi

Masuala muhimu yafuatayo yanahusishwa na awamu ya kufunga mradi:

• Athari Hasi za Kijamii

i. Kupoteza ajira ambayo inaweza kusababisha hali duni ya maisha

• Athari Hasi kwa Mazingira

i. Uzalishaji wa kifusi na matatizo yanayohusiana na utupaji wa taka za ujenzi

ii. Kelele na Uchafuzi wa utokanao na vumbi

2. Hatua za Kukabiliana

Mradi huu umezingatia njia mbalimbali za kuweza kukabiliana na athari zitokanazo na shughuli za ujenzi wa wa mradi katika awamu zote. Njia nyingi ni zile zinazohusiana na kuwepo kwa mfumo mzuri na miongozo ya kukabiliana na athari katika hatua zote za mradi kulingana na aina ya athari husika kama zilizoainishwa hapa chini.

- **Viwango vya juu vya Kelele**: Vifaa na mitambo yote ya ujenzi itafanyiwa ukaguzi na marekebisho ya mara kwa mara kama ilivyoelekezwa katika vijitavu vya maelekezo ya kifaa/mtambo husika. Waendeshaji mashine katika sehemu mbalimbali zilizo na viwango vikubwa vya kelele watapewa vifaa vya kuzuia kelele. Shuguli za mradi zinazohusisha mitambo yenye viwango vikubwa vya kelele zitafanyika nyakati za mchana.
- **Uchafuzi wa hewa kwa njia ya vumbi**: Malori yanayosafirisha malighafi na vifaa vya ujenzi yatafunikwa ikiwa mzigo ni mkavu na unaweza kusababisha utoaji wa vumbi. Wafanyakazi walio katika maeneo yenye viwango vikubwa vya vumbi watapewa vifaa vya kujikinga na vumbi. Unyunyizaji wa maji utafanyika mara kwa mara katika sehemu zote za kazi za ujenzi ikiwemo barabara za kuingia na kutoka katika eneo la mradi pamoja na katika maeneo yote ya machimbo ya malighafi za ujenzi. Kwa kuongezea, sehemu za barabara zinazopitiwa sana na magari ya ujenzi pia zitanyunyiziwa maji mara kwa mara.
- **Ongezeko la taka**: Mkandarasi ataandaa mpango maalumu wa udhibiti wa taka zitakazozalishwa wakati wa shughuli za ujenzi wa mradi. Mkandarasi atahakikisha kuwa vifaa vifaa vya kutosha vya kukusanyia taka za ujenzi vimewekwa katika maeneo yote muhimu ndani ya eneo la mradi ikiwemo vizimba na mapipa makubwa ya kukusanyia taka. Pia Mkandarasi atahakikisha kuwa, taka zilizokusanywa katika eneo la mradi zinaondolewa kwa wakati na kwenda kutupwa katika maeneo maalumu ya kutupia taka katika jiji la Mwanza. Wakandarasi waliosajiliwa na Baraza la Mazingira la Taifa tu ndio watakao husika na ukusanyaji na uondoshwaji wa taka katika eneo la mradi.
- **Afya na usalama wa wafanyakazi**: Vifaa vya kujikinga na hatari mbalimbali mahala pa kazi vitagaiwa kwa wafanyakazi kulingana na aina ya kazi wanazofanya (kama vile barakoa, vizuizi vya kelele vya kuvaa masikioni, mavazi maalum ya kazi, kofia ngumu, miwani inayofunika macho vizuri, viatu vigumu n.k.) na usimamizi mzuri wa kambi za wafanyakazi utazingatiwa. Wakati wa ujenzi mkandarasi atahakikisha kuwa eneo la ujenzi limezungushiwa uzio na kuhifadhiwa kwa usafi na vifaa vya kutosha ikiwa ni

pamoja na vyombo vya kutupa taka, maji taka, zima moto na usambazaji wa maji safi na salama.

- **Fursa za ajira kwa jamii ya wenyeji:** Mkandarasi ataandaa mpango wa ajira na kazi ambapo ataainisha idadi na aina ya fursa za ajira zitakazotolewa kwa wanachi waishio jirani na mradi.
- **Shinikizo kwa huduma za jamii kama vile maji na umeme**: Hatua mbadala kama vile matumizi ya nishati ya jua, kuchimba kisima kwenye tovuti, kuchakata maji zitachunguzwa na kutekelezwa ikipatikana inawezekana. Kwa mfano, matumizi ya balbu za kuokoa nishati yatapewa kipaumbele cha juu
- **Ajali na matukio ya moto**: Muundo wa soko la Samaki utazingatia kikamilifu Viwango vya Usalama wa Moto.
- **Matengenezo duni ya soko la samaki wakati wa operesheni**: Kampuni ya kibinafsi ya usafi yenye idadi ya kutosha ya wafanyakazi itaajiriwa kusafisha soko la samaki, vifaa vyake na mazingira yanayozunguka kila siku.

8. Uchambuzi Mbadala

Kutoka kwa mtazamo wa ulinzi wa mazingira, uchambuzi mbadala ni nyenzo muhimu kwa uteuzi bora wa eneo la mbadala la mradi, teknolojia ya kufuatwa wakati wa ujenzi na uendeshaji, na gharama zitokanazo na mbadala husika. Njia mbadala zifuatazo zimezingatiwa na mradi huu.

a) "Hakuna hatua" mbadala ya mradi

Hakuna mbadala wa mradi unahusu kubaki na hali ilivyo sasa (Hakuna ujenzi wa Soko la Samaki la Mkuyuni). Kupitisha chaguo hili kunaweza kumaanisha kuepuka athari nyingi mbaya zinazohusiana na uwepo wa soko la samaki na kukosa manufaa yote chanya kama vile manufaa kwa jamii yanayotokana na ajira wakati wa ujenzi na upatikanaji wa maeneo ya biashara yanayofaa na ya kutosha.

b) Uchambuzi Mbadala wa Uchaguzi wa Maeneo

Chaguo la kutumia eneo jingine la mradi mbali na ile lililopendekezwa pia ilizingatiwa. Hata hivyo, uchaguzi huu ulionekana kuwa na faida zifuatazo juu ya nyingine;

- Kiwanja kinamilikiwa na Halmashauri ya Jiji la Mwanza (Hakuna haja ya kununua kipande kipya cha ardhi na hakihitaji fidia).
- Eneo liko kwenye kipande cha ardhi kinachofaa ambacho kiko karibu na vyombo vya usafiri (mtandao wa barabara) na huduma za afya

- Kiwanja kiko kwenye kipande cha ardhi unachopenda. Imezungukwa na shughuli za makazi na taasisi; iko katika eneo la kibiashara la katikati ya mji.
- Upatikanaji wa maji na usambazaji wa njia kuu za umeme

c) Uchambuzi Mbadala kwa ajili ya chaguzi za Teknolojia na nyenzo

Kuzalisha kelele kutoka kwa shughuli za ujenzi (kulehemu, kukandamiza, kuchimba visima, kuchimba mitaro nk) kutaongeza kiwango cha kelele kwenye tovuti. Hivyo, ili kuzuia athari hizi mbaya kwa jamii inayowazunguka, mkandarasi atatumia mashine ambazo hazitoi kelele nyingi. Kwa hivyo, mradi uliopendekezwa utatumia matumizi ya vifaa vinavyokubalika ndani na kimataifa ili kufikia mahitaji ya afya ya umma, usalama, usalama na uzuri wa mazingira.

d) Uchambuzi mbadala wa chaguzi za nishati

Matumizi ya vyanzo vingine vya nishati mbadala mbali na umeme kutoka gridi ya Taifa na jenereta za dizeli yalizingatiwa. Kama ilivyo katika nchi nyingi zinazoendelea, usambazaji wa umeme kutoka gridi za taifa si wa kutegemewa kwani mara nyingi hutoka kwa jenereta za umeme zinazotokana na maji, ambazo hutegemea kiwango cha mvua, ukubwa na muundo. Kwa upande mwingine, jenereta za dizeli, ambazo hutumiwa hasa wakati wa kukatika kwa umeme, hutoa gesi nyingi chafu hasa wakati zinaendeshwa kwa muda mrefu. Nishati ya jua ilizingatiwa na timu ya kubuni itachunguza uwezekano wa kutumia mbadala huu.

9. Mpango wa Usimamizi wa Mazingira na Kijamii, Mpango wa Ufuatiliaji wa Mazingira na Ukaguzi

Mpango wa Usimamizi wa Mazingira na Kijamii umewasilishwa katika Taarifa ya Athari kwa Mazingira. Chaguo za kupunguza au kuzuia athari mbaya za kijamii na kimazingira zilizotambuliwa pamoja na mpango wa ufuatiliaji zimependekezwa na zinatokana na mazoea mazuri ya uhandisi. Pia, inafafanua majukumu na wajibu wa watendaji mbalimbali wa mpango. Mpango wakati wa utekelezaji wa mradi ni muhimu ili kupima mafanikio ya hatua za kupunguza. Mkandarasi atatekeleza vipengele vinavyohusika na awamu halisi za ujenzi na uendeshaji. Msanidi atawajibika kwa utekelezaji wa jumla wa Mpango uliopendekezwa.

Gharama zilizokadiriwa za kutekeleza hatua za kupunguza ni dalili tu. Zaidi ya hayo, Mpango wa Usimamizi inajumuisha makadirio ya gharama za hatua ili Msanidi wa mradi aweze kupanga bajeti ya fedha zinazohitajika. Bili zinazofaa za kiasi zinapaswa kutoa takwimu halisi. Kwa hali yoyote, mshauri alitumia uamuzi sahihi kuja na takwimu hizi.

Mradi utahakikisha kwamba shughuli zinazosababisha athari kwa mazingira zinasimamiwa kwa kina, utaratibu, mipango na kumbukumbu. Msanidi programu atawasilisha mpango wa usimamizi wa mazingira na kijamii na mpango wa ufuatiliaji wa mazingira na kijamii kwa wafanyikazi wake na wakandarasi wake ili kuhakikisha kuwa utekelezaji unafanywa ipasavyo.

Zaidi ya hayo, Msanidi programu atahakikisha upatikanaji wa rasilimali ambazo zinahitajika kwa ajili ya utekelezaji wa mpango wake wa usimamizi wa mazingira. Mpango huo utafuatiliwa ili kuhakikisha kuwa malengo ya mazingira yanafikiwa. Halmashauri ya Jiji la Mwanza itafanya ukaguzi wa kawaida na kuwasilisha taarifa ya ukaguzi kwa uongozi wa juu ili kuhakikisha uendelevu wa mfumo wa usimamizi wa mazingira.

10. Tathmini ya rasilimali

Halmashauri ya Jiji la Mwanza imetenga jumla ya zaidi ya shilingi bilioni mbili za Tanzania kama gharama za awali za uendelezaji na ujenzi wa soko la Samaki Mkuyuni. Fedha hizi zote zitagharamia kazi za kiraia na ujenzi; kazi za umeme na Habari, Mawasiliano na Teknolojia, ununuzi wa vifaa tiba; na masuala mtambuka. Makadirio ya gharama za utekelezaji wa usimamizi wa athari pamoja na mchakato wa ufuatiliaji kama ilivyoainishwa katika Taarifa ya Athari kwa Mazingira ni Tanzania shilingi. 90,000,000.00 na 141,000,000.00 mtawaalia. Gharama zilizokadiriwa za kupunguza hazijumuishi gharama za mazingira, ambazo hazikuweza kuhesabiwa kwa usahihi. Kwa kuwa baadhi ya athari zitapatikana tu wakati wa awamu ya ujenzi, gharama za hizi pia zitakuwa za muda mfupi, haswa ikiwa hatua za kupunguza zitatekelezwa kikamilifu faida za mradi zitazidi gharama za mradi kwa mbali.

11. Kufungwa kwa mradi

Kwa vile uondoaji utafanyika katika siku zijazo za mbali, hatua mahususi za kupunguza zinazohusu athari za kimazingira za kazi za uondoaji kazi haziwezi kupendekezwa kwa sasa kwa kiwango cha uhakika. Mpango wa uondoaji unaozingatia masuala ya mazingira utatayarishwa na msanidi programu kabla ya kazi za uondoaji. Iwapo itafanyika, uondoaji unaweza kuhusisha mabadiliko ya matumizi (mabadiliko ya kiutendaji) au ubomoaji unaosababishwa na mabadiliko ya matumizi ya ardhi.

12. Muhtasari na Hitimisho

Soko la Samaki Mkuyuni linalotarajiwa lipo pembezoni mwa Barabara ya Kenyata, Kata ya Mkuyuni, Jijini Mwanza, Mkoa wa Mwanza. Mradi huo una manufaa makubwa ya kijamii na

kiuchumi kwa halmashauri ya jiji la Mwanza na taifa kwa ujumla. Mradi kama huo, unahusisha athari ndogo mbaya za kimazingira ambapo hatua za kutosha za kukabiliana nazo zimependekezwa na kujumuishwa katika muundo wa mradi. Kwa hivyo inaweza kuhitimishwa kuwa, mradi uliopendekezwa hautajumuisha athari kubwa mradi hatua zilizopendekezwa za kupunguza zinatekelezwa vya kutosha na kwa wakati. Athari zilizoainishwa zitadhibitiwa kupitia mapendekezo ya hatua za kupunguza na mfumo wa utekelezaji uliowekwa katika TAM hii. Mwekezaji amejitolea kutekeleza mapendekezo yote yaliyotolewa katika TAM hii na kutekeleza zaidi ratiba za ukaguzi na ufuatiliaji wa mazingira.