UNITED REPUBLIC OF TANZANIA

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TANZANIA CITIES TRANSFORMING INFRASTRUCTURE AND COMPETITIVENESS PROJECT

(TACTIC)

THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (EIA) FOR THE PROPOSED CONSTRUCTION OF INALA BUS TERMINAL AT INALA AREA (Plot. No.1 Block ''E'') AND REDEVELOPMENT OF THE EXISTING TABORA MARKET AT CHEMCHEM AREA (Plot. No.414 Block ''M'') IN TABORA MUNICIPALITY, TABORA REGION- TANZANIA

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ABBREVIATIONS AND ACRONYMS

A.M.S.L Above Mean Sea Level

AAS Atomic Absorption Spectrophotometer

AI Area of Influence

AIDS Acquired Immune Deficiency Syndrome

BATNEEC Best Available Technology Not Entailing Excess Cost

BOQ Bill of Quantities

CBD Convention on Biological Diversity

CBO Community Based Organization

CIA Cumulative Impact Assessment

CIF Cost of Insurance and Freight

CITES Convention on International Trade in Endangered Species

CRB Contractors Board

CTC Care and Treatment Clinic

DBST Double Bituminous Surfacing Treated

DEM Digital Elevation Model

DFO District Forest Officer

DIZ Direct Impact Zone

DoE Division of Environment

EIA Environnemental Impacts Assessment

EIS Environnemental Impacts Statement

EMA Environnemental Management Act

EMP Environnemental Management Plan

ERB Engineering Registration Board

ESIA Environmental and Social Impacts Assessment

ESMP Environmental and Social Management Plan

GMP General Management Plan

GN Government Notice

GoT Government of the United Republic of Tanzania

HIV/AIDS Human Immunodeficiency Virus/ Acquired Immune Deficiency Syndrome

HSMP Health and Safety Management Plan

IRR Internal Rate of Return

LTBWB Lake Tanganyika Basin Water Board

MEAs Multilateral Environmental Agreements

MOWT Ministry of Works and Transport

MVPL Marginal Value Product of Labour

NACP National AIDS Control Programme

NEMC National Environment Management Council

NGO Non-Governmental Organization

NPV Net Present Value

NSGRP National Strategy for Growth and Reduction of Poverty

OCC Opportunity Cost of Capital

PAPs Project Affected Persons

PAs Protected Areas

PEDP Primary Education Development Programme

PLHAS People Living with HIV/AIDS

PMTCT Prevention of Mother to Child Transmission

PO-RALG Prime Ministers' Office Regional Administration and Local Government

RoW Right of Way

SEA Strategic environmental assessment

SIA Social Impacts Assessment

STD Sexually Transmitted Diseases

STI Sexual Transmitted Infections

TAC Technical Advisory Committee

TACAIDS Tanzania Commission for Aids

TFS Tanzania Forest service

ToR Terms of Reference

TTCL Tanzania Telecommunications Company Ltd

TUWASA Tabora Water supply and Sanitation Authority

VCT Voluntary Counseling Treatment

VOC's Vehicle Operating Costs

WSSA Water Supply and Sanitation Authority

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INTRODUCTION

The Government of the United Republic of Tanzania through the President's Office – Regional Administration and Local Development intends to deliver improved basic infrastructure and services in participating urban local government authorities and set aside funds to undertake the Environmental and Social Impact Assessment (ESIA) including the development of the Environmental and Social Management Plan (ESMP as well as to undertake the Resettlement Action Plan (RAP) for the Tabora Municipal the proposed sub-projects infrastructures which include; Construction of Bus terminal at Inala and Redevelopment of 50 years old market Improvement of basic infrastructures is part of the Government's strategy to promote the socio-economic development of Tanzanian's cities and towns and to enhance urban development that is productive, inclusive, and resilient.

Tabora Municipal Council and the World Bank initiated discussions to consider the Construction of Bus terminal at Inala and Redevelopment of 50 years old market.

The implementation of this TACTIC sub-projects is intended to facilitate the economic growth which includes; stimulation of the Town growth through the Construction of Bus terminal at Inala and Redevelopment of 50 years old market shall provide an improved business environment which will, in turn, add revenue to the Municipality.

The Environmental Impact Assessment (EIA), in this context referring to the Environmental and Social Impact Assessment (ESIA) study, was conducted as per the Environmental Impact Assessment and Audit regulations (2005) and its amendment of 2018 that implement the Environmental Management Act No. 20 of 2004. Per these Regulations, the National Environment Management Council (NEMC) is mandated to oversee the EIA process, which culminates with an award of the EIA Certificate by the Ministry responsible for Environment. The EIA Certificate is among the prerequisite approvals required before the project takes off. Without exception, this project will need the EIA certificate before the construction commences. The study also made a review of the World Bank Environmental and Social Standards (ESS) of 2018 and incorporated their requirements accordingly. The study was conducted from December 2021 to January 2022.

POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

Tanzania is committed to attaining sustainable development goals. This urge is envisaged in the National Environmental Policy and other sectoral policies including;

- National Environmental Policy (NEP) of 1997
- National Transport Policy (2003)
- National Mineral Policy (1998)
- Construction Industry Policy (2002)
- National Land Policy (1995)
- Energy Policy (2003)
- National Human Settlements Development Policy (2000)
- National Gender Policy (1999)
- The National Water Policy (2002)

- National Forestry Policy (1998)
- National Investment Policy (1997)
- Agricultural and Livestock Policy (1997)
- National Strategy for Growth and Reduction of Poverty
- National Policy on HIV/AIDS (2001)
- National Park Policy (1994)
- National Health Policy (2017)

Important laws and regulations that have relevance to road development in respect of environmental management include;

- Environmental Management Act No. 20 of (2004), Cap. 191
- Environmental Impact and Auditing Regulations (2005)
- The Village Land Act (1999), R.E 2019
- and item 3.4.10 Land Act, 1999 R.E 2019The Water Utilization (Control and Regulation) Act (1974) as amended in 1981 (Act No.10)
- The Road Act, 2007
- Protected Places and Areas Act (1969)
- Antiquities Act of 1964 (as amended in 1979) and the Antiquities Rules of 1991
- The Urban Planning Act (2007)
- Land Use Planning Act (2007)
- Occupation Health Safety (2003)
- Local Government Acts No.7 & 8 of 1982
- National Land Use Planning Commission Act 3/84
- Land (Assessment of the Value of Land for Compensation) Regulations, 2001]
- Forest Act, 1957 (Revised in 2002)
- Forest Act, 1957 (Revised in 2002)
- Explosives Act, 538
- Regional and District Act No 9, 1997
- Environmental Assessment and Management Guidelines for the Road Sector
- Mining Act (1998)
- The Land Acquisition Act 1967

PROJECT DESCRIPTION

The Construction of Construction of Bus terminal at Inala and Redevelopment of 50 years old market are located in Tabora Municipal Council, Tabora region.

Tabora market is located in the CBD. It is bordered by two access roads which are Lumumba roads, madaraka roads, tabora-Kigoma road and Intoner road and Tabora-Kigoma road. Tabora market covers an area of approximately 10,000sqm. The existing Tabora market was established about 50 years ago. On the other hand, the existing Tabora Market harbors more than 2,700 traders including 8 formal food vendors (Food vendors) and a lot of Matching guys (Machinga) and 909 cubes (Vizimba). The solid waste produced at the market is collected at the skippers located in the Kachoma area and then, transported to Kariakoo dumpsite at Kitete ward around Tabora Boys High School. Therefore, the traders at Tabora market conducting business in a poor working environment, some traders were previously transferred to other small-established markets due to poor market facilities available in this central market.

Bus terminal is located South-East of the CBD. The topography of the area is gently sloping grounds which consist of different ecological biodiversity characteristics. The Bus terminal is approximately 10 km from the CBD and adjacent to the highway of Tabora-Itigi road in the Inala neighborhood. The surrounded area is planned and surveyed with two land parcels for construction of bus terminal one with 35 acres and the second with 15 acres.
The location of the bus terminal is strategic as the proposed Tabora ring is located adjacent, the Tabora Municipal Hospital which is under construction is approximate 3.5km from the proposed bus terminal.
Additionally, the design of the proposed Bus terminal building to be constructed at Inala will have 2 floors (ground floor and 1 upper floor) with parking lots, waiting areas, Mobile money areas, sanitary facilities in both floor, restaurants, bank areas, workshops, police post and several offices and on each floor.
The major construction activities for the sub-projects include;

- Extraction and transportation of materials (gravel, sand, hard stones, aggregates and water)
- Site clearance at inala bus terminal area.

- Rehabilitation Partially Construction or full construction of culvert and other drainage structures.
- Formation of the road embankment, establishment of sub-base and base, road surfacing
- Pedestrian Crossings and Speed Humps shall be provided in all roads within the bus terminal.
- The final finishing and cleaning up of the road and road reserve after construction, treating of old roads, and temporary diversion using during construction phase

PROJECT ENVIRONMENT

Tabora Municipal

Tabora Municipality is a Headquarters of the Tabora region and covers 1092 square Kilometres. The Municipality is located between 4° 52' and 5° 9' latitude South and 33° 00' East. Most of its part lies between 1000m above sea level. It is surrounded by Uyui District in the Western, Northern, and Eastern parties and Sikonge District in the South.

In the Municipality, rainfall decreases from west to east, in the west, the rainfall is over 1,000 millimeters while in the east it drops to 700 millimeters or less. The peak is in December followed by a slight dry spell in January.

The average temperature during the day is 22^0 C - 26^0 C. Highest temperature of 33.1^0 C occurs in October just before the start of the rainy season, falls gradually in December, and remains relatively constant until May. Between May and August, the Municipality experiences cold season with an average minimum temperature of 15.7^0 C is relatively lower compared to October.

Water sources

There are no credible water sources on the sub-projects site. However, there are two major rivers namely Walla and Igombe Rivers which are temporary rivers traversing through the municipality. Therefore, the construction of earth dams and reservoirs may be initiated during rain seasons to store water that may be used for construction purposes.

Flora

There are two main forest reserves found within Tabora Municipality owned by the central government; these include: Igombe Forest Reserve found in the North-West part of the municipality at Misha and Ikomwa wards and Urumwa Forest Reserve found in the South-West of the municipality at Itetemia and Ntalikwa wards. The nature of these forest reserves is naturally dominated by miombo woodlands.

The vegetation cover of Tabora Municipality can be classified into upland and low land or wetland vegetation. In the uplands, there are woodland, bushland, and thicket grassland. Miombo woodland (*brachystegia boehmii*) is the dominant species within the municipality, with mninga trees found in scattered patches. Miombo forests with the famous mninga hardwood are good sources of quality timber, firewood, charcoal, and for keeping beehives.

The vegetation in the Bus Terminal subproject area at Inala varies from grasses, small trees, and shrubs patches with groups of scattered trees mainly *Commiphora Africana* characteristics to cultivated areas. There are large *Termitaria* in the shrub patches within the project area varies from one location to another. The dominated exotic species is Mangifera *Indica* which is observed in a larger part of the area. Other species dominant is *Terminalia sericea*, *Julbernardia Globiflora, Borassus Aethiopum,* and *Phyllansus Engreli* species. Adjacent to the project area vicinity, natural vegetation has been replaced by anthropogenic activities such as livestock grazing and crop production.

However, the present flora at the site is not reported to be critical species on the IUCN Red.

Fauna

The Fauna in the municipality includes livestock of different kinds such as; cattle, goats, sheep, and poultry. However, some of the species like birds and bees, etc, have their habitats in forest areas The livestock are mostly indigenous breeds, a few exotic and crossbreeds are found mainly in the urban area.

PROJECT STAKEHOLDERS AND INVOLVEMENT

A simple methodology was adopted to identify key stakeholders and main environmental and social concerns. This involved physical observations and consultations (direct consultations). Other information on the project was obtained through a desk study.

Stakeholder consultations were conducted during the scoping stage. Different stakeholder levels including local government officials as well as community members in villages located near and within the project area were identified and consulted.

Stakeholders included government agencies, beneficiaries, commercial companies, and all other formal or informal groups associated with a project. Interviews were used in the process of stakeholder identification. From one stakeholder, the team was connected to another and another stakeholder, in a chain-like or network process. The following is a shortlist of both institutional and individual stakeholders.

The major stakeholders include:

- Ministry of Works and Transport;
- Ministry of Lands, Housing and Human Settlement Development;
- Ministry of Agriculture;
- Ministry of Livestock and fisheries;
- Ministry of Natural Resources;
- Ministry of Water;
- RAS-Office – Tabora
- TFS-Tabora
- Tabora Municipal Council
- Fire and Rescue force-Tabora
- WEO & VEO at the sub-project site
- Utility Companies, TANESCO, TTCL, and Water Supply Authorities (TUWASA)
- Community nearby sub-project area
- Market Admiration and traders
- Bus Transportation Companies

RESULTS OF PUBLIC CONSULTATIONS

Both scoping and initial fieldwork revealed the following key issues that have been expounded in this EIA study. The main issues include;

Economic Benefits: Improvement of infrastructure such as market and bus terminal will bring various economic benefits to communities. The construction of the bus terminal and the market will increase the revenue of the municipal and the income of the people through employment opportunities.

Redevelopment of the Market: The design of the redevelopment of the existing Market should consider provision for Fire hydrants, Firefighting water tanks, rainwater harvesting infrastructures, sanitary facilities, and sewerage and drainage system. Moreover, the design should consider shielding against weather conditions, alternative power supply and access pathways.

Proposed Tabora Bus Terminal: The design of the bus terminal should consider the availability of the following; sanitary facilities, sewerage and drainage system, Fencing, Ground Slab for Skips, access to the Solid Waste Skips, Speakers announcement system, Cold rooms for perishable goods, Specific locations for each business merchandise, Conference hall and restaurant at upper floors and parking at upper floors.

Public Facilities: Relocation of the electrical lines should be done prior to the utilities directives in order to avoid setbacks during project implementations.

Location of Campsites: Local people should be involved in the selection of the camp site/s. The contractor's camping site/s should be constructed with permanent building materials. The idea is to use these structures for public services e.g. schools or street offices at the end of the project construction phase.

Spread of HIV/AIDS and Other Sexually Transmitted Infections: Impaired community safety and risk of disease intensifications, especially HIV/AIDS. Tabora Municipal together with the contractor to officially make a formal contract with the institution that will be carrying out the HIV/AIDS preventive campaign through the dissemination of relevant and appropriate HIV/AIDS preventive awareness creation seminars, campaigns should be to both workers in particular and the communities, effective collaboration with CMACs and

other stakeholders is paramount for result based HIV/AIDS awareness creation campaigns during construction.

Early marriage and Pregnancies: It has been insisted by stakeholders that most construction projects have been a major cause of early pregnancies for school female children and girls out of school which are under 18 years old. The stakeholders proposed some measures to address the situation i.e. parents should install a culture of educating their children on sex and reproductive health education, abiding by moral and ethical values, and also parents should behave responsibly as role models with whom the children can emulate them.

Stimulate the growth of town: The construction of the Bus terminal shall increase number of buses that will be passing through Tabora Municipality to the neighbouring regions, which will increase the revenue of the municipal. On the other hand, the market shall increase revenue of the municipal through increased goods in the market area.

Employment opportunities to the local people: Each street/ward that the project is under construction should be given priority in the provision of unskilled and semi-skilled laborers in the project. The contractor should therefore adhere to the local content policy in executing the project during recruitment of laborers and commodities and services supply chain.

Insurance of Workforce: Experience gained from other foreign contractors is that they do not provide workplace insurance for casual laborers. Following existing labor laws, Tabora Municipal council authorities should enforce the contractors to abide with existing laws of the land in safeguarding the safety of the entire workforce at the construction site to make them well covered by appropriate insurance policies.

Improved Accessibility: The proposed market sub-project will guarantee easy accessibility of goods, commodities, therefore, enabling more physical development and improve the peoples livelhood.

Pollution and Vibration during Construction: Dust production, noise from moving construction equipment/machines, and blasting of rocks are inherent to all buildings construction works. The contractor must have the means to suppress the dust, reduce the level of noise and provide early notification to the communities about the proper time of blasting rocks.

Protecting constructed Infrastructures: It was urged by stakeholders that there is a need of cultivating a culture of safeguarding and protecting the project infrastructures from vandalism among community members especially after the completion of sub-project construction.

Environmental Safeguard and Sustainability: Stormwater channels should not be directed to farms since such practice has damaged crops and farming land due to accelerated erosion. It should be directed to the proper water channels that are not polluting the environment. Also, leakage of diesel, oil, and other lubricants from construction equipment, and in water sources should be avoided.

Environmental Beautification: Since the Tabora Municipal has had a campaign of planting environmental friendly trees including ornamental trees, therefore, the contractor should make sure that the trees are planted around the Bus terminal and market reserve areas and ensure that they grow before handling the project to the client.

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

POTENTIAL SIGNIFICANT ENVIRONMENTAL AND SOCIAL IMPACTS

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 Construction of Bus Terminal at Inala and redevelopment of existing Tabora Market 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 the pre-construction phase;

- Job creation and increased income

The following impacts were identified to be likely to occur during the construction phase;

- Job creation and increased income
- Destruction of public utilities
- Soil erosion and instability of slopes
- Risk Water and Land Pollution
- Increased noise, vibration, and air pollution
- Occupational Safety and health risks
- Increase road accidents
- Increased Waste
- Increased Water Abstraction
- Loss of Definite Materials and Land Degradation
- Loss of biodiversity
- Increased HIV/AIDS
- Population Influx
- Visual Intrusion during Construction
- Increase Gender Based Violence

The following impacts were identified to be likely to occur during the operational phase;

- Easy transport and transportation of goods
- Economic growth and trade
- Creation of job opportunities
- Easy access to and expansion of the markets
- Increase of prices for goods
- Reduced traveling time and Vehicle operation cost
- Reduced operation and maintenance costs
- Reduction of accidents
- Interference to local hydrology
- Increased Rates of Natural Resources Exploitation
- The danger of un-reinstated borrow pits

MITIGATION MEASURES AND ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

The options to minimize or prevent the identified adverse social and environmental impacts as well as a monitoring plan have been suggested in this report and are contained in the ESMP. Many of them are based on good engineering practices and the timely responsiveness of the responsible institution. The ESMP describes the implementation schedule of the proposed mitigation measures as well as planning for long-term monitoring activities. It defines the roles and responsibilities of different actors of the plan. The Approach environmental and social costs amount to TSH 385,000,000 (Excluding the costs that will appear in then (BOQ) and resettlement exercise. The estimated annual costs for carrying out the proposed environmental and social motoring program amounts to TSH 146,000,000.

RESOURCES EVALUATION

Resources evaluation for the Bus terminal and Market sub-projects based on Needs-Based Approach. This facility will offer a practical solution to the current situation in Tabora Market and Bus terminal. By making conservative assumptions on the demand, the investment strategy will be able to address the present requirements and provide flexibility for future expansion.

DECOMMISSIONING

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

A detailed decommissioning plan that considers environmental issues shall be prepared by the developer before the decommissioning works. Should it be done, decommissioning may entail a change of use (functional changes) or demolition triggered by the change of land use. Therefore what is presented here is just a Preliminary Decommissioning Plan which gives light to what shall be done if the need for decommissioning arises.

CONCLUSION

It is, therefore, concluded that implementation of the proposed construction of Bus Terminal at Inala and redevelopment of existing Market 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. Tabora Municipal Council is committed to implementing all the recommendations given in the EIS and further carrying out the environmental auditing and monitoring schedules.

CHAPTER ONE

1.0 Introduction

1.1 Background

The Government of the United Republic of Tanzania and Tabora Municipal Council through the President's Office – Regional Administration and Local Development (PO-RALG) intends 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 the 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).

The Tabora Municipal Council through President's Office – Regional Administration and Local Development (PO-RALG) have retained Crown-TECH Consult Ltd, an engineering consulting firm with headquarters in Dar es Salaam, to undertake consultancy services for feasibility studies, urban design, detailed engineering designs, environmental and social instruments, and bidding documents for a pipeline of investments in 4 municipality/City councils, Arusha, Dodoma, Tabora, and Kigoma. Crown-TECH Consult Ltd in turn has involved WESH Consulting Limited, a registered firm of Environmental experts to undertake Environmental and Social Impact Assessments for the respective sub-projects.

For Tabora Municipal the proposed sub-projects infrastructures include; Construction of Bus terminal at Inala and Redevelopment of 50 years old market.

The proposed construction of the Bus terminal at Inala is expected to stimulate Town growth because as per the Tabora Municipal Master plan (2015-2035) the ring road will traverse close to the bus terminal. In broader terms, it means all the trunk roads entering Tabora town will be linked with the Bus terminal facility.

On the other hand, the existing Tabora Market which harbors more than 2,700 traders including 8 formal food vendors (MamaNtilie) and a lot of Matching guys (Machinga), is 909

cubes (*Vizimba)* conducting business in a poor working environment will afterward have the improved business environment. This improvement will in turn add revenue to the Municipality.

It is also anticipated that the proposed construction of the sub-project infrastructures is expected to generate employment opportunities many of them to the locals along with the close to the respective sub-project.

Impact Assessment (ESIA) study, was conducted as per the Environmental Impact Assessment and Audit regulations (2005) and its amendment of 2018 that implement the Environmental Management Act No. 20 of 2004. Per these Regulations, the National Environment Management Council (NEMC) is mandated to oversee the EIA process, which culminates with an award of the EIA Certificate by the Ministry responsible for Environment. The EIA Certificate is among the prerequisite approvals required before the project takes off. Without exception, this project will need the EIA certificate before the construction commences. The study also made a review of the World Bank Environmental and Social Standards (ESS) of 2018 and incorporated their requirements accordingly. The study was conducted from December 2021 to January 2022.

The proposed TACTIC sub-project is likely to cause environmental impacts of both positive and negative nature. Howeve, Tabora Municipal Council intends to implement the project with minimum adverse environmental and social impacts. The environmental and social issues addressed in this report will be taken into account in the design (both preliminary and detailed designs stages) of the proposed sub-project as well as plans for construction and operation phases of the project through the implementation of the Environmental and Social Management Plan (ESMP).

1.2 Project Proponent and Overview

The Tabora Municipal Council manage the district and regional health services, including the regional and district councils. The proponent oversees regional development management and administration by coordinating rural and urban development management policy and strategies as well as the activity of Regional Secretariats. Tabora Municipal Council projects heavily feature decentralization to improve the delivery of services; their efforts involve

transferring responsibilities and resources from the central government to local authorities to strengthen local institutions.

1.3 Project Objective

The objective of the proposed TACTIC sub-projects is to strengthen urban management performance and deliver improved basic infrastructure and services in participating urban local government authorities.

Once completed, the investments and technical assistance under the project are intended to promote urban development that is productive, inclusive, and resilient.

1.4 Scope of Service

The Consultant is required to conduct environmental and social impact assessments for the proposed TACTIC sub-project. The Consultant shall review all available and relevant documents, maps, previous studies if any, and conduct the environmental and social impact assessment study, field visit and investigations, public consultations, and other related works herein described to attain the stated objectives. The assignment has to develop a comprehensive ESIA study that includes ESMP to be implemented by the contractor during the project implementation.

The Consultancy Services has been carried out following these ToRs that are following the requirements of the applicable national legislation as well as World Bank Policy requirements.

1.5 Requirements for an ESIA

The nature and scale of the project are essential dimensions for the decision on the level of the environmental and social impact assessment required. As per the First Schedule of the Environmental Impact Assessment and Audit (Amendment) Regulations (2018), construction of Bus terminal and Market sub-projects falls under Type 'B_1' Projects, which is a "Mandatory Category". These types of projects are associated with adverse environmental impacts and need an in-depth study to determine the scale, extent, and significance of the impacts and to identify appropriate mitigation measures. It is therefore concluded that the proposed Construction Bus terminal and Market sub-projects in Tabora Municipal Council falls under Category B_1 and thus requires a full ESIA study.

By the virtue source of funding, the proposed sub-projects are also subjected to World Bank requirements for Environmental Impact Assessment that all environmental and social risks and impacts of the project be addressed as part of the environmental and social assessment conducted following World Bank Environmental and Social Safeguards Policy, which set out the obligations of the Borrower in identifying and addressing environmental and social risks and impacts that may require particular attention. However, of the 10ESSs prescribed under the World Bank policy, only ESS9 is irrevant to the proposed projects.

1.6 ESIA Study Objectives

The main objective of the consultancy services was to undertake the Environmental and Social Impact Assessment (ESIA) which include the development of the Environmental and Social Management Plan (ESMP) for the proposed Construction of Bus Terminal at Inala and redevelopment of existing Market at Tabora Municipal. The ESIA will address environmental and social impacts which may arise from planning, mobilization, construction, operation, and decommissioning activities and provide mitigation measures to prevent or minimize adverse impacts. Ultimately, ESMP will be developed as tools of which its recommendations will be used by the design consultant in the finalization of the designs and be included in the Tender Documents.

1.7 Approach and Methodology

The ESIA methodology was subject to the EIA procedures of Tanzania as per Environmental Impacts Assessment and Audit Regulations, 2005 and Regulation 17 of its amendments of 2018:

1.8 Study Team

For the Consultant to properly address the environmental issues, a team of experts was involved in undertaking the ESIA Study. The experts included Environmental Experts, sociologists, Topographical surveyors, and Valuer.

1.9 Social Impact Assessment Survey

A comprehensive SIA process was carried out by deploying different methods to meet the requirements as specified in the ToR. The Team reviewed all relevant documents, specifically those mentioned in the ToR to understand and implement the assignment as required. Secondary data focusing on the socio-economic situation of the potentially affected

population were reviewed at all levels. The methodology used for carrying out the SIA study includes the following;

1.9.1 Public and Officials Consultations

Public and Officials consultations were conducted through meetings with major stakeholders of the proposed project. During the fieldwork, consultative meetings were held with Regional Management Officials, Tabora District Council, ward and *Mtaa* councils were market and bus terminals are located, TFS, LATRA, Management of existing Tabora bus terminal, Traders, Transportation Companies and Fire and Rescue force-Tabora. Furthermore, consultation was then made to Utility Companies such as; TUWASA, TTCL, and TANESCO. Ministries and several Governmental Institutions within the project area (Figure 1.1).

Discussions with wards and *Mtaa* leaders focused on the existing socio-economic situation in the area and the need to identify clusters of people likely to be adversely affected by the project. The discussions provided an opportunity to introduce the project to the community leaders and identify key informers. The meetings were also intended to encourage a community consultative approach, thus fostering a community participatory approach right from the initial stages of the proposed project. The consulting team had earlier met the leaders of the market and that of Ifucha where the Bus terminal is to be constructed before organizing the meetings. They were informed about the project and initial contacts were established, including telephone numbers.

Figure 1.1: Public consultation with Tabora market traders and ward and consultation with Tabora Bus terminal management

(Source: Fieldwork, December 2021)

Moreover, the participatory approach was used to identify additional key issues about the sub-projects including perceptions, knowledge, and attitudes of these communities. The public meeting was attended by different groups of people and whoever was present was allowed to participate. The outcomes were analysed, summarized, and incorporated into the report findings.

1.9.2 Observation

To obtain the existing condition at Market site area for redevelopment and proposed area for construction of a new Bus terminal at Inala including vegetation, settlement patterns, land use activities and accessibility to social services in the site location was noted. Physical observations were done to identify physical features, investigation, direct measurements, sample collection, and socio-economic conditions along and within the vicinity of the proposed sub-projects.

1.9.3 Documents Review

Various relevant documents were reviewed to obtain an overview of the project and to extract useful information required to complement the ESIA study. These included Tanzanian and World Bank policies and legislations and guidelines, project districts and Tabora municipal socio-economic profiles, and other documents relevant to the study. Important information was collected on the project background, objectives, and design of the proposed action. The collected information was helpful to the consulting team in improving their tools for data collection.

1.10 Environmental Impact Assessment

Superimposing the project's proposed structural elements and activities onto the existing social and environmental natural conditions has identified the potential environmental impacts of the proposed sub-projects development. The Focused Impact Mapping approach has also been used, this involved identification of all activities, structures, utilities, and natural environment that are likely to be affected by the project and the vicinity where the market and Bus terminal are to be constructed. Further, the environmental impact correlation matrix method has been adopted to predict impacts of major concern.

The environmental assessment has been undertaken in close interaction with the design consultant's team. Environmental impacts have been evaluated for various alternatives. Several project alternatives were considered including that of "No Go Alternative".

Environmental protection strategies and environmental considerations influencing engineering design were incorporated. However, consideration of feasible technology and economic capability was taken into account. Inter alia, the assessment entailed the following:

1.10.1 Collection of Baseline Information

The collection of baseline information was conducted after defining the scope of the EIA. These data allow the study team to determine whether more detailed information on environmental conditions along with the proposed sub-project areas and their surroundings are needed and where such information can be obtained and how.

Both primary and secondary data were collected. Primary data were collected by direct measurement, observations, and using semi-structured interviews with respective and targeted parties. Secondary data were obtained from various relevant sources of information such as Ministries' reports, Tabora Municipal council profile, and many other published/non-published official and non-official documents.

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

This allowed the study team to widen their understanding of the World Bank's Environmental and Social Framework as a whole, national policies, legislation, and institutional arrangements for environmental management in Tanzania, and relevant international procedures to ascertain the optimal management of impacts.

1.10.3 Impact Identification and Evaluation

The proposed Market and Bus terminal sub-projects causes a wide range of impacts on many environmental and social receptors. The ESIA identifies these impacts to mitigate the adverse ones or enhance the benefits. Impact identification is a process designed to ensure that all potentially significant impacts are identified and taken into account in the EIA process. Several 'tools' are available to assist in impact identification, in this EIA; Focused Impacts Mapping Approach and matrix were used.

Focused Impacts Mapping Approach points out where specific locations are, often concerning impacts receptors, it links the proposed design with existing activities, environment. The methodology assists in concentrating on relevant information concerning the project.

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.

1.10.4 Impact Significance Evaluation

Taking a step further, the ranking in all phases (mobilization, construction, and demobilization/decommissioning) signified the magnitude of each and combined phase. As a result, the more the score illustrated the severity the impact the proposed sub-project abstains.

1. **General**

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

2. **Ecological**

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

- Impairment of ecological functions

3. **Spatial Scale**-The spatial dimension encompasses the geographical spread of the impacts regardless of whether they are short-term or long-term. Table 1.1 describes the ratings used in the Simple Matrix as far as spatial scale is concerned.

Table 1.1: Spatial Rating

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

4. **Temporal Scale-**Temporal boundaries refer to the lifespan of impacts. Table 1.2 describes the ratings used in the Simple Matrix.

Table 1.2: Temporal Rating

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

5. **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
6. **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 1.3 show types of cumulative impacts;

Table 1.3: Types and Characteristics of Cumulative Impacts

Type	Characteristic	Example
Time crowding	Frequent and repetitive effects	Forest harvesting exceeds the rate of re-growth

Type	Characteristic	Example
Time lags	Delayed effects	Bioaccumulation of mercury
Space crowding	High spatial density of effects	Numerous small mining enterprises on the 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 multiple sources or pathways	Synergistic effect of Persistent Organic Pollutants in humans and rivers
Indirect effects	Secondary effects	Forest areas opened up as a result of new highway
Triggers and thresholds	Fundamental changes in the system functioning	Climate change

7. **Residual Impacts**- These are long-term impacts that 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 immitigable.
8. **Timing-** During which phase of the construction is the impact likely to occur. The phases included Mobilization, Construction, Demobilization, and Operation.

1.10.5 Identifying Mitigation and Management Options

The options for dealing with identified and predicted impacts were considered after a comprehensive evaluation. This enabled the study team to analyze proposed mitigation measures. A wide range of measures has been proposed to prevent, reduce, remedy, or

compensate for each of the adverse impacts evaluated as being significant. Analysis of the implications of adopting different alternatives was done to assist in clear decision-making

1.11 Report Structure

This report is divided into Eleven (12) chapters:

- **Chapter One:** contains the introduction on the background information of the proposed project, its development objectives, rationale, and the proposed project implementation arrangements.

- **Chapter Two:** contains the project description, in which there is a description of the location and relevant components of the project and their activities.

- **Chapter Three:** illustrates policy, legal and administrative framework, which are the relevant Tanzanian environmental policies and legislation applicable to construction projects.

- **Chapter Four:** has the baseline information relevant to environmental characteristics, which gives details concerning the Bio-physical environment and socio-economic environment at the project area.

- **Chapter Five:** express the consultation exercise at the project area detailing the list of stakeholders consulted and the issues raised.

- **Chapter Six:** describes the positive and negative environmental impacts of the project that are likely to be generated from the different phases (the planning and designing, construction, operation and maintenance, and the demobilization phases).

- **Chapter Seven:** gives the mitigation measure for the potential negative impact of the project.

- **Chapter Eight:** presents the Environmental and Social Management Plan (ESMP).

- **Chapter Nine:** presents the Environmental Monitoring Plan that contains the proposed institutions to carry out the monitoring activities, the monitoring indicators, time frame, and the proposed budget for monitoring.

- **Chapter Ten:** gives the cost-benefit analysis of the project.

- **Chapter Eleven:** provides the decommissioning plan for the proposed project however the decommissioning is not anticipated in the foreseeable future.

- **Chapter Twelve:** gives the summary and conclusions of the study

The report structure conforms to that specified in the World Bank's Guidelines for Conducting ESIA. Appendices containing some key primary information collected during the study are attached at the end of this report.

CHAPTER TWO

2.0 PROJECT DESCRIPTION

2.1 Project Location

The Construction of Bus Terminal at Inala and redevelopment of existing Market are located in Tabora Municipal Council, Tabora region (Figure 2.1). The proposed bus terminal to be constructed is located at Ifucha ward at the Inala area and the redeveloped market being located at chemchem ward at Tabora district council.

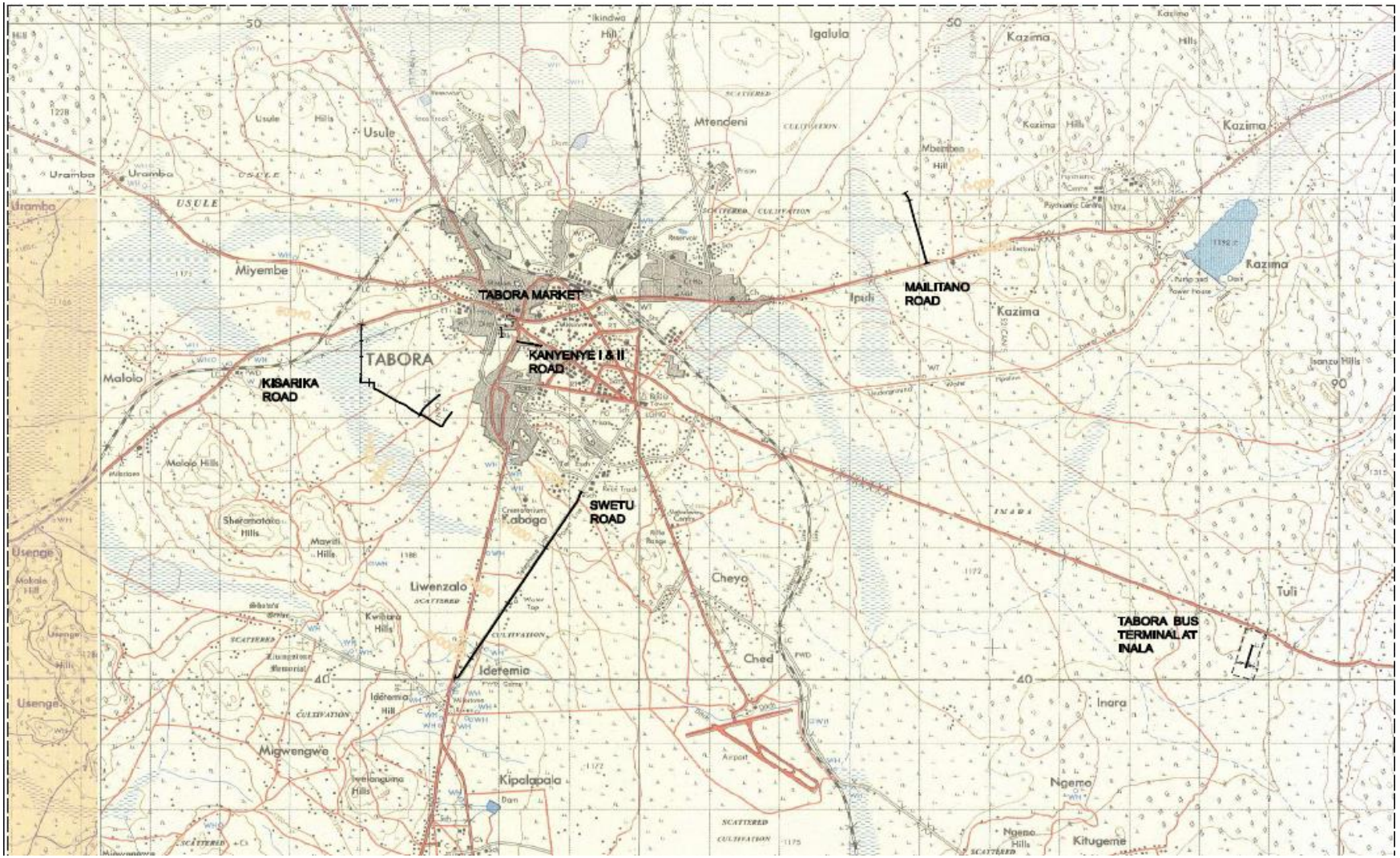

Figure 2.1: The Map of Tabora showing Project location

(Source: Consultant, 2022)

Tabora Municipality is a Headquarters of the Tabora region and covers 1092 square Kilometres. The Municipality is located between 4o 52’ and 5o 9’ latitude South and 33o 00’ East. Most of its part lies between 1000m above sea level. It is surrounded by Uyui District in the Western, Northern, and Eastern parties and Sikonge District in the South (Figure 2.1).

2.2 Proposed Sub-project

2.2.1 Tabora Market

Tabora market is located in the CBD. It is bordered by two access roads and Tabora-Kigoma road. Tabora market covers an area of approximately 10,000sqm. The existing Tabora market was established about 50years ago. On the other hand, the existing Tabora Market harbors more than 2,700 traders including 8 formal food vendors (Mama Ntilie) and a lot of Matching guys (Machinga), and 909 cubes (Vizimba).

The price for cubes (vizimba) differs from one trader to another depending on the business type and the potentiality of the location of the Shop or Cubes. According to the Municipal data obtained from Business Officer, the price is estimated to be between TZS 30000-200000/=.

Moreover, the market consists of sanitary facilities (Improved pit latrine) owned by the municipal and the price is TZS 300/= per service. The market consists of a total number of 12 toilets, whereby 7 toilets for men and the remaining 6 toilets for the women but none of them located for the disabled.

On the other hand, the solid waste produced at the market is collected at the skippers located at Kachoma area and then, transported to the disposal site at Kariakoo dumpsite around Tabora Boys High School.

Therefore, the traders at Tabora market conducting business in a poor working environment, some traders were previously transferred to other small-established markets due to poor market facilities available in this central market. This improvement will in turn add revenue to the Municipality and improve the working environment for the trader and their living standard (Figure 2.2).

Google Earth extract for the Redevelopment area of Tabora Market

The Existing Tabora Market

Business area (Vizimba) for a trader for foodstuffs

Figure 2.2: The Existing Tabora Market

(Source: Fieldwork December 2021)

2.2.2 Proposed Tabora Bus Terminal

The proposed bus terminal is located South-East of the CBD. The topography of the area is gently sloping grounds which consist of different ecological biodiversity characteristics. The Bus terminal is approximately 10km from the CBD and adjacent to the highway of Tabora-Itigi road in the Inala neighborhood. The surrounded area is planned and surveyed with two land parcels for construction of a bus terminal one with 35 acres and the second with 15 acres

The location of the bus terminal is strategic as the proposed Tabora ring is located adjacent, the Tabora Municipal Hospital which is under construction is approximate 3.5km from the proposed bus terminal (Figure 2.3).

Google Earth extract for the proposed Tabora bus terminal at Inala

A view of the area near the Tabora-Itigi road

The existing biodiversity at the project area

Figure 2.3: Location ad biodiversity at the proposed Bus terminal at Inala

(Source: Fieldwork December 2021)

2.3 Project Design

2.3.1 Tabora Market Sub-project

The proposed market building to be constructed is located at chemchem ward and shall be constructed on the same location of the existing old market. The market shall consists of a basement and a first floor, the market has several structures which include parking areas, wholesales areas, loading and unloading areas, Vizimba and frames as well as sanitary facilities for both men and women. Also, the design considered special groups of people with disabilities by providing lamps and special sanitary services areas. Moreover, the design also provides a green/landscaped area on the external part of the building. The market building design has a lot of open spaces, which will provide natural lighting and ventilation and covers an approximately are of about **10,236.48m^2**

TABORA CBD MARKET SCHEDULE OF SPACES ACCOMMODATED

Sn	Space Name	Quantity	Total Area
1.	Whole seller	16	566m^2
2.	Kizimba	612	4,630m^2
3.	Outdoor Frame	250	2,409.3m^2
4.	Baby sitter room	1	32.5m^2
5.	Baby feeding room	1	32.5m^2
6.	lory parking	6	216m^2
7.	Parking	111	1,954.84m^2
8.	Toilet	38	359.14m^2
9.	Garbage chute	2	36.2m^2
			10,236.48m^2

(Source: Tabora Urban Report,2022)

2.3.2 Tabora Bus Terminal Sub-project

The proposed Bus terminal building to be constructed shall be located at ifucha ward in inala area, the bus terminal will have two floors (ground floor and 1 upper floor). The ground floor consists of Visimba and number of frames, and sanitary facilities for both men and women. On the other hand, the first floor consists of sanitary facilities, Hall which can accommodate more than 240 people at a time, a kitchen and stores as well as bank areas, restaurants, workshops, a police station, and several Bus offices. The land where the terminal is to be constructed is

virgin and it is owned by the municipal council, meaning that does not involve compensation'. The design also provides a green/landscaped area have on the external part of the building. The Bus terminal building design has a lot of open spaces, which will provide natural lighting and ventilation and cover the area **161,231m^2**.

The schedule of areas provided are detailed in the appended drawings. The main areas include;

- Usable area-5,742 SQM
- Percentage of circulation area -24.5%
- Soft landscaping coverage area-87,549 SQM
- Hard landscape coverage area-34,641 SQM

BUS TERMINAL SCHEDULE OF SPACES ACCOMMODATED

Sn	Space Name	Quantity	Total Area
1.	Loading and unloading Passengers (Bus)	51	6,696m^2
2.	Mobile shop and retail (Frame)	15	75m^2
3.	Market vizimba	160	240m^2
4.	Parking	243	7,475m^2
5.	Waiting area	1000	5,696m^2
6.	Market Frame	30	270m^2
7.	Bank area	2	440m^2
8.	Offices	11	110m^2
9.	Baby sitter room	20	62m^2
10.	Baby feeding room	22	30m^2
11.	Store	2	8m^2
12.	Restaurant (soft drink)	50	158m^2
13.	Hall	240	544m^2
14.	Ticket booth(office)	21	510m^2
15.	Public space	200	8,529m^2
16.	Food vender	96	376m^2
17.	Policy station	1	262m^2
18.	Toilet (wc)	46	624m^2
19.	Checkpoint (office)	8	72m^2
20.	Power house	1	12m^2
21.	Workshop	5	346m^2
22.	Station (Bus)	77	2,079m^2
23.	Solid garbage collection point	2	110m^2

Sn	Space Name	Quantity	Total Area
24.	Hardscape	1	36,998m^2
25.	Softscape	1	87,869m^2
			160,676m^2

(Source: Tabora Urban Report,2022)

2.4 Project Schedule and Life

Site preparation Construction of Bus terminal at Inala and redevelopment of 50 years old market is expected to start soon after approval of all related studies, engineering designs, and environmental clearance and construction tender award in early 2022. The sub-project life for the proposed sub-projects is more than 30 years.

2.5 Estimated Project Cost

The project's cost of the Market and Bus terminal sub-project are estimated to be 2.5 USD Millions and 4.5 USD Millions respectively. The cost will include the cost for construction, purchasing materials, labor cost, and all miscellaneous expenses subject to the implementation of the project. The project is wholly funded by the Tanzanian government through a loan from World Bank and other Development Partners.

2.6 Project Cycle

2.6.1 Project Planning Phase

Feasibility study, ESIA and preliminary engineering planning, final engineering planning, and construction planning form the planning phase of the project.

During the planning process, the sub-projects are given their form and details which become more and more detailed in phases, adjusted to correspond to land use planning.

Preliminary engineering planning determines the approximate location of the areas to be covered by the market and Tabora bus terminal, basic principles underlying the prevention of negative impacts to the environment. Planning is performed at a level of detail that ensures that the plan is technically, financially, and environmentally feasible. Since Tanzanian legislation requires an environmental and social impact assessment (ESIA), the proposed sub-project's environmental impact is assessed according to the Environmental Management Act, 2004 and its EIA and Audit Regulations, 2005 and amendments of 2018 during the preliminary

2004 and its EIA and Audit Regulations, 2005 and amendments of 2018 during the preliminary engineering planning phase. The approval decision is made on the preliminary engineering plan.

During the preliminary engineering planning phase, the project design co-parties include Tabora municipality, environmental authorities, other planning organizations, landowners, residents/communities along with the sub-projects areas, market traders, bus terminal users (bus companies), and various community organizations. Extensive interaction is important during preliminary engineering planning in particular since the most important basic project solutions are decided in this phase.

Final engineering planning determines the precise location of Sub-projects, areas required for the market and Bus terminal and detailed solutions such as measures necessary to the prevention of negative impacts and congestion in the market and Bus terminal. Because the final engineering plan settles all issues directly affecting landowners and other parties concerned, interaction is focused on issues to be agreed with them. The approval decision is made on the final engineering plan, allowing the Tabora Municipal the right to take possession of the area required for the proposed sub-projects.

Compensation is paid for any damage caused to external property during final engineering or construction planning and construction. Environmental certification by the National Environment Management Council (NEMC) is also done/finalized at this stage.
During the project planning phase only, paper works are involved as summarized below:

- Evaluation of project concepts and alternatives selection,
- Design of all project components,
- Topographic survey
- Geotechnical Investigations;
- Soils and Materials Investigations;
- Carrying out ESIA of the project,
- Compensations and Land Tenure
- Tendering for construction works,
- Approval of Engineering designs and Environmental Certification

2.6.2 Project Activities

The proposed sub-projects will involve four phases which include: mobilization or pre-construction phase, construction phase, operation phase, and decommissioning phase.

2.6.2.1 Mobilization or pre-construction phase

Activities

This phase entails mobilization of the labor force, equipment, and construction of offices/camps as well as acquisition of various permits as required by the law. Other activities during this phase include Topographical Survey, Geotechnical Investigation, Soil and Materials Investigation, Land acquisition, material storage, and material preparation, Identification of borrow pits, quarry sites, and source of water. Moreover, not more than 100 people shall be employed during this phase.

Moreover, this phase shall involve demolition of some of the building structures ie. Vizimba and shops at the Tabora market. The contractor shall prepare a demolition plan of the old structure so as to avoid irregularities during construction phase

Duration

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

Types, Amounts, and Sources of Project requirements

Types, amounts, and sources of project requirements during the pre-construction phase are shown in Table 2.1:

Table 2.1: Types, amounts, and sources of project requirements

Requirements	Type	Sources	Quantity required (shall be known after Detail design is completed)
Raw Materials	Aggregates	Tumbi	337,500m3
	Fill/Gravel	Tumbi and Tuli	337,500m3 and 160,000m3 respectively
	Sand	Inala Cheyo	120,000m3
	Water	TUWASA &Boreholes	
	Cement	Dar es salaam	
	Reinforcement	Dar es Salaam	

Requirements	Type	Sources	Quantity required (shall be known after Detail design is completed)
	bars		
	Timber	Tabora a Local vendors	
Energy	Electricity	TANESCO (National Grid)/ Generators	
	Fuel	Vending project area	
Manpower	Skilled	Contractor	
	Unskilled	Local People at the project area or near	
Equipment	Dump Truck	• Contractor	
	Graders	• Contractor	
	Dozer	• Contractor	
	Water Boozers	• Contractor	
	Vibrators	• Contractor	
	Excavator	• Contractor	

Transportation

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.

Storage

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

Types, Amounts and treatment/disposal of Wastes

Types, amounts, and treatment/disposal of wastes during the pre-construction phase are shown in Table 2.2:

Table 2.2: Types, amounts, and treatment/disposal of wastes

Waste	Types	Amount	Treatment/ Disposal
Solid Waste (Degradable)	Vegetation (Trees, Shrubs, and Grasses) and remnants of timber.	150m^3(Clearance for campsites) at proposed bus terminal area	Source of energy for cooking at the campsite or nearby wards/streets.
	Food remains, cardboards and papers	30kg/day (based on generation rate of 0.2g/day/ person and 150 workers)	Collected in a large skip bucket at the campsite then to be composted and used as manure for the gardens at the campsite
Solid Waste (Non-Degradable)	Topsoils	3000m^3 (Based on removal of 10cm topsoil from the 3x(100x100)m^2 area for Contractor's and Engineer's camps erection	Backfilling material in the borrow pits, fill the diversions at the sites.
	Scrap metals and plastics	3- 10kg per day	Sold to Recyclers
	Tins, glasses	3- 5 kg per day	Taken to the Authorized dumpsite
Liquid waste	Sewage	13m^3 (Based on 400 people, 40l/capita/day water consumption and 80% becomes wastewater)	Septic tank –Soakaway system at the campsites
	Oils and greases	Non	Car maintenance will be

Waste	Types	Amount	Treatment/ Disposal
			done at proper garages

2.6.2.2 Construction phase

Activities

The major construction activities include;

- Extraction and transportation of materials (gravel, sand, hard stones, aggregates, water, and bitumen)
- Clearing the construction areas for the bus terminal structure
- Demolition of building structures at the market site
- Rehabilitation and Partially Construction or full construction of culvert and other drainage structures.
- Pedestrian Crossings, Speed Humps, and Rumble Strips shall be provided in all approaching roads in the bus terminal
- The final finishing of building structures after construction and treating of old roads, and temporary diversion.
- Construction of storm water systems within the sub-projects campsite depending on the landscape and catchment areas as required. Collected storm water will be directed to the existing drainage patterns around the project area. The project shall involve about 400 people during the construction phase.

Duration

The duration of this phase will be twenty-four (24) months.

Types, Amounts, and Sources of Project requirements

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

Table 2.3: Types, amounts, and sources of project requirements

Requirements	**Type**	**Sources**	**Quantity required (shall be known after Detail design is completed)**
Raw Materials	Aggregates	Tumbi	337,500m3
	Fill/Gravel	Tuli and Tumbi	160,000m3 and 337,500m3 respectively
	Sand	Inala Cheyo	12000m3
	Water	TUWASA and Boreholes	
	Bitumen	South Africa/Saudi Arabia	
	Cement	Dar es Salaam	
	Reinforcement bars	Dar es Salaam	
	Timber	Tabora Local vendors	
Manpower	Skilled	Contractor	
	Unskilled	Local People at the project area	
Equipment	Dozer	Contractor	
	Grader	Contractor	
	Pay Loader	Contractor	
	Excavator	Contractor	
	Vibro Roller	Contractor	
	Tandem Roller	Contractor	
	Macadam Roller	Contractor	
	Tire Roller	Contractor	
	Dump Truck	Contractor	
	Mixer Truck	Contractor	
	Water Truck	Contractor	

Requirements	Type	Sources	Quantity required (shall be known after Detail design is completed)
	Tractor w/Trailer	Contractor	
	Tire crane	Contractor	
	Cargo Crane Truck	Contractor	
	Cargo Truck	Contractor	
	Crusher Plant	Contractor	
	Screen Unit	Contractor	
	Concrete Batch Plant	Contractor	
	Asphalt Plant	Contractor	
	Asphalt Finisher	Contractor	
	Asphalt Distributor	Contractor	
	Air Compressor	Contractor	
	Generator	Contractor	
	Fuel Truck	Contractor	
	Light Vehicle	Contractor	

Transportation

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 asphalt, cement, timber, and reinforcement bars, ceramic materials, iron sheets, UPVC pipes etc. will be transported by trucks to the construction site.

Storage

Materials from borrow pits will be used directly after delivery and as such no piling up is expected. Other materials like aggregates and sand will be stored at the crushing area (usually near the quarry site) site ready for use. Cement, PVC pipes, ceramic materials, iron sheets and reinforcement bars will be stored in special storage rooms (Bunds that do not allow moisture). Timber will directly be used in the required areas and consequently there will be no stockpiling of timber at the campsites. The asphalt will be stored in their respective containers which will be kept in the storage rooms.

Types, Amounts and treatment/disposal of Wastes

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

Table 2.4: Types, amounts, and treatment/disposal of wastes

Waste	Types	Amount	Treatment/ Disposal
Solid Waste (Degradable)	Vegetation (Trees, Grasses) and remnants of timber.	Approximately more than 100,000$m^3$of biomass will be generated from the subproject. Larger biomass from bus terminal site and fewer from market site	Source of energy for cooking in nearby wards/mtaa.
	Food remains, cardboards and papers	0.04Ton/day (based on generation rate of 0.2kg/day/ person for 2,00 people)	Collected in a large skip bucket at the campsite then to be composted and used as manure for the gardens at the campsite
Solid Waste (Non-Degradable)	Topsoil	• 20,230m^3 (Based on removal of 10cm topsoil from the area	Backfilling material in the borrow pits, fill the diversions.

Waste	Types	Amount	Treatment/ Disposal
		50 acre of the Bus terminal site	
	Scrap metals, drums, and plastics	15-30kg per day	Sold to Recyclers
	Tins, glasses	15-40 kg per day	Taken to the Authorized dumpsite
Liquid waste	Sewage	6.4m^3/day (Based on 200 people, 40l/capita/day water consumption and 80% becomes wastewater)	Septic tank –Soakaway system at the campsite
	Oils and greases	None	Car maintenance will be done at proper garages

2.6.2.3 Demobilization phase

Activities

- Demobilization of temporary structures will be done for proper restoration of the site (e.g. removing/spreading top-soils piled along the approaching roads, restoration of borrow pits to required grades, removing all temporary structures, campsites may be left to the local governments depending on agreements that will be reached during the mobilization phase.
- Other activities include rehabilitation of the workshop and stockpile yard, rehabilitation of campsite at least to the original condition, clearance of all sorts of wastes including used oil, sewage, sewage, solid wastes (plastics, wood, metal, papers, etc.).
- Deposit all wastes to the authorized dumpsite.
- Restoration of water ponds (if any) and temporary quarry sites to a natural and useable condition, termination of temporary employment.

Duration

The demobilization stage will last for two (2) months.

Types, Amounts, and Sources of Project requirements

Types, amounts, and sources of project requirements during the demobilization phase are shown in Table 2.5:

Table 2.5: Types, amounts, and sources of project requirements

Requirements	**Type**	**Sources shall be known during the detail design (material investigation is understudy)**	**Quantity required (shall be known after Detail design is completed)**
Manpower	Skilled	Contractor	
	Unskilled	Local People at the site	
Equipment	Bull dozer	Contractor	
	Motor grader	Contractor	
	Roller Compactor	Contractor	
	Plate compactor	Contractor	
	Tippers	Contractor	

Types, treatment/disposal of Wastes

The demobilization of the temporary structures will result mainly in solid wastes such as timber, iron sheets, and rubbles from demolitions. Timber and iron sheets will be sold to people in the nearby communities for reuse while the rubbles will be used in backfilling the borrow pits.

2.6.2.4 Operation phase

Activities

The actual usage of the structures, thus, bus terminal and market are expected to commence after the construction works. The sub-projects; bus terminal and redeveloped market will be

directly managed by Tabora Municipal Council. The design period is off the building structures are more than 30 years, after which re-surfacing will be needed. During this time, Tabora municipal council will carry out routine maintenance of the market and bus terminal structures as well as and monitoring.

Other activities include control of litter accumulation in the market and bus terminal areas and management of the structures to the communities, monitoring, and evaluation, management to reduce pollutant concentrations in runoff, disposal of wastes from maintenance activities, storage, and management of maintenance materials and equipment, awareness on the usage of the market and bus terminal facilities as well as management hygienic practice throughout the market and bus terminal areas.

Duration

The duration of this phase will be thirty (30) years for the bus terminal and Market sub-projects.

Types, Amounts, and Sources of Project requirements

Types, amounts, and sources of project requirements during the operational phase are shown in Table 2.6:

Table 2.6: Types, amounts, and sources of project requirements (Maintenance)

Requirements	**Type**	**Sources**	**Quantity required (shall be known after Detail design is completed)**
Raw Materials	Aggregates/Hardstone	Tumbi	
	Gravel	Tuli and Tumbi	
	Sand	Inala Cheyo	
	Water	TUWASA and Boreholes	
	Asphalt	Saudi Arabia	
	Cement	Dar es salaam	

Requirements	Type	Sources	Quantity required (shall be known after Detail design is completed)
Manpower	Skilled	Contractor	
	Unskilled	Local People near the project vicinity	
Equipment	Excavator	Contractor	
	Wheel loader	Contractor	
	Water Boozer	Contractor	
	Bulldozer	Contractor	
	Motor grader	Contractor	
	Roller Compactor	Contractor	
	Plate compactor	Contractor	
	Crasher	Contractor	
	Tippers	Contractor	

Transportation

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 asphalt, cement, timber, and reinforcement bars will be transported by lorries to the maintenance site.

Storage

Most Materials like Aggregates, Sand, and Water will be used directly after delivery, and as such no piling up is expected. Cement and reinforcement bars PVC pipes, ceramic and roofing materials will be stored in special storage rooms. The asphalt will be stored in their respective containers which will be kept in the storage rooms.

Types, Amounts and treatment/disposal of Wastes

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

Table 2.7: Types, amounts, and treatment/disposal of wastes

Waste	Types	Amount	Treatment/ Disposal
Solid Waste (Degradable)	Vegetation (Trees and Grasses)	2-10m^3/ month	Source of energy for cooking for villages nearby.
Solid Waste (Non-Degradable)	Scrap metals, drums	3-10kg per day	Sold to Recyclers
	Asphalt concrete, Tins, glasses, and plastics	3-10 kg per day	Taken to the Authorized Dumpsite
Liquid waste	Oils and greases	Non	Car maintenance will be done at proper garages

2.6.2.5 Decommission Phase

The phase will be involved when the redeveloped market and the bus terminal are deemed not to be viable or when the design period comes to an end. This will entail the undertaking of demolition of stormwater drains systems, and dismantling the fixtures, structures, and equipment. Removal of all materials, structures, and waste that will be generated as a result of the demolition and dismantling activities will be carried out. Finally, site restoration activities will be carried out to ensure that the area is rehabilitated and restored to almost its original status.

2.7 Construction materials

The main construction materials for the sub-projects include sand, gravel, hard stones (aggregates), reinforcement iron bars, water, and bitumen. Most of the materials shall be obtained locally (within Tanzania) except bitumen which shall be imported. Material investigations have been made to identify sources for suitable construction materials including borrow pits, sandpits, construction water sources, and quarry sites.

2.7.1 Borrow Areas

During soil and materials investigation, two borrow areas were identified not far enough from the sub-project location, and samples were taken for laboratory testing to check the quality of the available construction materials. New borrow areas identified during materials investigation including any extension of the borrow area may involve the compensation cost to owners of the areas during access to it.

Table 2.8 below gives a summary of the locations of the potential borrows areas and their estimated quantities,

Table 2.8: Borrow Areas and Estimated Quantities

S/N	Chainage (km)	Name	Coordinates	Offset distance	Estimated Quantities	Remarks / Existing
1	14+600	TUMBI	E:0471341 N:9441693	520m LHS from Tabora-Urambo	337,500	Existing
2	14+000	TULI	E:0488426 N:9440791	500m LHS from Tabora to Manyoni	160,000	Existing

2.7.2 Quarry Site

The proposed seven hard stone sources for aggregate were investigated Table 2.10. Available rock type at the named source is grey fine-grained fresh gneiss rock. Rocky outcrops and boulders are expected to be used in masonry works and pitching of drainage structures. A sample of this source was taken for laboratory tests to determine their properties for construction works. The summary of spatial locations of the quarry site is presented in figure 2.9

Table 2.9 Hard stone source and its Estimated Quantities

Chainage (Km)	Name of Hardstone	Coordinates (UTM)	Offset dist. (m)	Estimated Quantities (m^3)	Remarks
16+800	TUMBI	E:0468434 N:9439247	530m RHS from Tabora –Urambo Road	4,900,000	Existing

2.7.3 Construction Sand

A source of sandpits was found and samples were taken for laboratory testing. The first source namely Inala Cheyo sand deposit found at Km 8+000 offset 8km RHS. Table 2.10 gives a summary of the spatial locations of sandpits and their estimated quantities.

Table 2.10: Location of Sand deposit and their Estimated Quantities

Chainage (Ch: km)	Name	Offset distance (m)	Coordinates (UTM)	Estimated Quantities (m^3)	Remarks
8+000	Inala Cheyo sand deposit	8Km RHS Tabora - Manyoni Road	E:0483103 N:9440928	120,000	Existing

2.7.4 Water Sources

Water for construction and maintenance of the sub-project during operation shall be obtained from TUWASA. However, to guarantee a continuous supply of water for construction, the contractor shall use deep boreholes as an alternative suitable source. The Boreholes will be determined based on demand and location/distance from the sub-projects under construction and may be proposed to be drilled within the sub-project at a suitable location and later be used by the beneficiaries. It is expected that approximate about 100m3 of water shall be used per day during construction.

2.6.5 Sources of manufactured materials for sub-project construction

Construction materials to be used have been tested for compliance and those manufactured materials for sub-project construction and their sources have been described hereunder: -

Cement

Cement for construction is easily available in the mainland, parked in 50kg bags, and sourced from the factory in Dar-es-Salaam, Tanga, and Mbeya.

Reinforcement Steel

Reinforcement steel for structural works is also available in the mainland from various factories in Dar-es-Salaam, Tanga, and or Abroad. Strength and other properties of reinforcing steel to be confirmed by testing of samples in approved testing laboratories.

Building materials

The building materials which includes; roofing and ceramic materials, PVC pipes, timber and others will be obtained at Tabora and others imported from Dar-es-salaam, Dodoma and neighboring regions.

Bitumen

Bitumen for road works is generally available from TPDC or external supplies. Bitumen properties need to be checked by testing representative samples in approved

2.7.6 Power Supply for the Project

Power supply for the proposed project's construction activities will be provided by TANESCO and generators for performing hot works, lighting e.t.c. During the operation phase of the sub-project, the project ancillaries might use solar power or connected with TANESCO power lines where necessary.

2.7.7 Required Permits

Before the approval of the construction and eventual construction of the Bus terminal and Market sub-Projects, it is necessary to obtain several authorizations and permits from local and central government authorities of Tanzania, related to environmental issues, water abstraction, relocation of public utilities, resettlement. These permits and authorizations are

summarized in Table 2.11, including a description of the permit/authorization and the government authority responsible for issuance.

Table 2.11: Required Permits from Regulatory Authorities

Permit/Authorization	Issuing Authority	Description
EIA Certificate	NEMC/VPO	Approval of project implementation
Resettlement Valuation Report	Government Chief Valuer	To allow compensation and resettlement procedures
TTCL Infrastructure Relocation Approval	TTCL-Regional Office	To waive away construction of the proposed sub-projects
TANESCO Infrastructure Relocation Approval	TANESCO-Regional Office	To waive away construction of the proposed sub-projects
TUWASA Infrastructure Relocation Approval	TUWASA-Regional Office	To waive away construction of the proposed sub-projects
Water Use & Discharge Permit	Lake Tanganyika Water Basin/MoW	To waive away construction of the proposed sub-projects
Clearance of vegetation at the project site	Tabora Municipa Council	To waive away construction of the proposed sub-projects

CHAPTER THREE

3.0 POLICY, ADMINISTRATIVE AND LEGAL FRAMEWORK

3.1 Overview

This section is aimed at reviewing relevant environmental resources and planning legislation and regulations to ensure '' Construction of the Bus terminal and Redevelopment of Tabora market in Tabora Municipal Council'' meet policy and legislative criteria, and that relevant requirement is built into project design and implementation. The policy review also outlines specific procedures and measures to be carried out before, during, and after project development.

3.2 World Bank Environmental and Social Standards (ESS)

The Environmental and Social Standards (ESS) set out the requirements for Borrowers relating to the identification and assessment of environmental and social risks and impacts associated with projects supported by the Bank through Investment Project Financing. The Bank believes that the application of these standards, by focusing on the identification and management of environmental and social risks, will support Borrowers in their goal to reduce poverty and sustainably increase prosperity for the benefit of the environment and their citizens. The standards aim at the following: (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 Bank requires that the Borrower and the project apply the ESS through the project life cycle to manage environmental and social risks and impacts so that development opportunities are enhanced.

The Bank ESS are summarized in the box below:

The Bank Environmental and Social Standards (ESS) are outlined in the box below:

ESS 1: Assessment and Management of Environmental and Social Risks and Impacts.
ESS 2: Labour and Working Conditions.
ESS 3: Resource Efficiency and Pollution Prevention and Management.

ESS 4: Community Health and Safety.

ESS 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement.

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

ESS 7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities.

ESS 8: Cultural Heritage.

ESS 9: Financial Intermediaries.

ESS 10: Stakeholder Engagement and Information Disclosure.

The Bank Environmental and Social Standards (ESS), and each of their applicability to the proposed project and this ESIA, are outlined in Table 3.1.

Table 3.1: The World Bank Environmental and Social Standards (ESS)

Environmental and Social Standards (ESS)	Applicability to project
ESS 1: Assessment and Management of Environmental and Social Risks and Impacts - sets out the Borrower's responsibilities for assessing, managing, and monitoring environmental and social risks and impacts associated with each stage of a project supported by the Bank through Investment Project Financing, to achieve environmental and social outcomes consistent with the Environmental and Social Standards (ESSs).	• To identify, evaluate and manage the environmental and social risks and impacts of the project. • To adopt a mitigation hierarchy to anticipate and avoid, or where avoidance is not possible, minimize, and where residual impacts remain, compensate/offset for risks and impacts to workers, Affected Communities, and the environment. • To promote improved environmental and social performance of clients through the effective use of management systems. • To promote and provide means for adequate engagement with Affected Communities throughout the project cycle on issues that could potentially affect them and to ensure that relevant environmental and social information is disclosed and disseminated.
ESS 2: Labour and Working Conditions - recognizes the importance of employment creation and income generation in the pursuit of poverty reduction and inclusive economic growth.	• To promote safety and health at work. • To promote fair treatment, non-discrimination, and equal opportunity of project workers. • To protect project workers, including vulnerable workers such as women, persons with disabilities, children (of working age, following this ESS), and migrant workers, contracted workers, community

Environmental and Social Standards (ESS)	Applicability to project
	workers, and primary supply workers, as appropriate. • To prevent the use of all forms of forced labor and child labor. • To support the principles of freedom of association and collective bargaining of project workers in a manner consistent with national law. To promote safety and health at work.
ESS 3: Resource Efficiency and Pollution Prevention and Management - recognizes that economic activity and urbanization often generate pollution to air, water, and land, and consume finite resources that may threaten people, ecosystem services, and the environment at the local, regional, and global levels.	• To promote the sustainable use of resources, including energy, water, and raw materials. • To avoid or minimize adverse impacts on human health and the environment by avoiding or minimizing pollution from project activities. • To avoid or minimize project-related emissions of short and long-lived climate pollutants. • To avoid or minimize the generation of hazardous and non-hazardous waste. • To minimize and manage the risks and impacts associated with pesticide use.
ESS 4: Community Health and Safety - recognizes that project activities, equipment, and infrastructure can increase community exposure to risks and impacts. In addition, communities that are already subjected to	• To anticipate and avoid adverse impacts on the health and safety of project-affected communities during the project life cycle from both routine and non-routine circumstances.

Environmental and Social Standards (ESS)	Applicability to project
impacts from climate change may also experience acceleration or intensification of impacts due to project activities.	• To promote quality and safety, and considerations relating to climate change, in the design and construction of infrastructures. • To avoid or minimize community exposure to project-related traffic and building construction safety risks, diseases, and hazardous materials. • To have in place effective measures to address emergency events. • To ensure that the safeguarding of personnel and property is carried out in a manner that avoids or minimizes risks to the project-affected communities.
ESS 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement - recognizes that project-related land acquisition and restrictions on land use can have adverse impacts on communities and persons. Project-related land acquisition or restrictions on land use may cause physical displacement (relocation, loss of residential land, or loss of shelter), economic displacement (loss of land, assets, or access to assets, leading to loss of income sources or other means of livelihood), or both.	• To avoid involuntary resettlement or, when unavoidable, minimize involuntary resettlement by exploring project design alternatives. • To avoid forced eviction. • To mitigate unavoidable adverse social and economic impacts from the land acquisition or restrictions on land use by (a) providing timely compensation for loss of assets at replacement cost and (b) assisting displaced persons in their efforts to improve, or at least restore, their livelihoods and living standards, in real terms, to pre-displacement levels or to levels prevailing before the beginning of project implementation, whichever is higher. • To improve living conditions of poor or vulnerable persons who are

Environmental and Social Standards (ESS)	Applicability to project
	physically displaced, through the provision of adequate housing, access to services and facilities, and security of tenure. • To conceive and execute resettlement activities as sustainable development programs, providing sufficient investment resources to enable displaced persons to benefit directly from the project, as the nature of the project may warrant. • To ensure that resettlement activities are planned and implemented with appropriate disclosure of information, meaningful consultation, and the informed participation of those affected.
ESS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources - recognizes that protecting and conserving biodiversity and sustainably managing living natural resources are fundamental to sustainable development.	• To protect and conserve biodiversity and habitats. • To apply the mitigation hierarchy and the precautionary approach in the design and implementation of projects that could have an impact on biodiversity. • To promote the sustainable management of living natural resources. • To support livelihoods of local communities, including Indigenous Peoples, and inclusive economic development, through the adoption of practices that integrate conservation needs and development priorities.
ESS 7: Indigenous Peoples/Sub-Saharan African Historically	• In Tanzania, some groups of pastoralists and hunter-gatherers self-

Environmental and Social Standards (ESS)	Applicability to project
Underserved Traditional Local Communities - applies to a distinct social and cultural group identified following paragraphs 8 and 9 of this ESS. The terminology used for such groups varies from country to country, and often reflects national considerations. ESS7 uses the term "Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities,"1 recognizing that groups identified under paragraphs 8 and 9 may be referred to in different countries by different terms. Such terms include "Sub-Saharan African historically underserved traditional local communities," "indigenous ethnic minorities," "aboriginals," "hill tribes," "vulnerable and marginalized groups," "minority nationalities," "scheduled tribes," "first nations" or "tribal groups.	identify as indigenous peoples, in line with contemporary norms of international law as conceptualized and contextualized by the African Commission on Human and Peoples Rights (the African Commission). Specifically, there are five groups of Indigenous Peoples (IPs) that are recognized in Tanzania either by the International Work Group of Indigenous Affairs or the Coalition of Indigenous Pastoralist and Hunter-Gatherer Organizations (Tanzania). These include the Maasai, Barbaig, Akie, Taturu and Hadzabe. • However, in Tanzania, the use of the term 'indigenous peoples' and related recognition are controversial. The Ministry of Justice and Constitutional Affairs (MJCA) in 2011, made an official statement to the effect that "all Tanzanians of African descent, are indigenous to Tanzania," suggesting that the country's traditional communities cannot successfully use the term to describe their marginality concerning the government. The applicability of this ESS 7 was established during the environmental and social risks and impacts identification process. During the project life-cycle, TARURA and contractor will consider potential project impacts to "Indigenous People" and will apply relevant provisions to respect the identity,

Environmental and Social Standards (ESS)	Applicability to project
	culture, and natural resource-based livelihoods of these people and reduce exposure to impoverishment and disease.
ESS 8: Cultural Heritage - recognizes that cultural heritage provides continuity in tangible and intangible forms between the past, present, and future.	• To protect cultural heritage from the adverse impacts of project activities and support its preservation. • To address cultural heritage as an integral aspect of sustainable development. • To promote meaningful consultation with stakeholders regarding cultural heritage. • To promote the equitable sharing of benefits from the use of cultural heritage.
ESS 9: Financial Intermediaries (FI) - recognizes that strong domestic capital and financial markets and access to finance are important for economic development, growth, and poverty reduction.	• To set out how the FI will assess and manage environmental and social risks and impacts associated with the subprojects it finances. • To promote good environmental and social management practices in the subprojects the FI finances. • To promote good environmental and sound human resources management within the FI.

Environmental and Social Standards (ESS)	Applicability to project
ESS 10: Stakeholder Engagement and Information Disclosure - recognizes the importance of open and transparent engagement between the Borrower and project stakeholders as an essential element of good international practice. Effective stakeholder engagement can improve the environmental and social sustainability of projects, enhance project acceptance, and make a significant contribution to successful project design and implementation.	• To establish a systematic approach to stakeholder engagement that will help Borrowers identify stakeholders and build and maintain a constructive relationship with them, in particular project-affected parties. • To assess the level of stakeholder interest and support for the project and to enable stakeholders' views to be taken into account in project design and environmental and social performance. • To promote and provide means for effective and inclusive engagement with project-affected parties throughout the project life cycle on issues that could potentially affect them. • To ensure that appropriate project information on environmental and social risks and impacts is disclosed to stakeholders in a timely, understandable, accessible, and appropriate manner and format. • To provide project-affected parties with accessible and inclusive means to raise issues and grievances, and allow Borrowers to respond to and manage such grievances.

3.3 Environmental Management Regulation in Tanzania

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

3.4 National Policies

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

3.4.1 The National Environmental Policy (NEP, 2021)

The National Environmental Policy of 2021 has just been launched in February 2021. The new policy formulation is a revision of the National Environmental Policy of 1997. The Policy 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. Effective implementation of this policy requires mainstreaming of environmental issues at all levels, strengthening institutional governance, and public participation in environmental management regimes. The long-term vision of this policy is geared towards the realization of environmental integrity, assurance of food security, poverty alleviation, and increased contribution of the environmental resources to the

national economy. It also recommends strong institutional and governance measures to support the achievement of the desired objectives and goals.

The policy seeks to promote the economy and livelihoods of people while promoting sustainable utilization of natural resources in the country. The policy provides the framework for the formulation of plans, programmes, and guidelines for the achievement of sustainable development.

The policy overall objective is to provide a national framework for guiding harmonized and coordinated environmental management for the improvement of the welfare of present and future generations. The specific objectives are i) to strengthen coordination of environmental management in sectors at all levels; ii) to enhance environmentally sound management of land resources for socioeconomic 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 the safe and healthy environment; vii) to strengthen the national capacity for addressing climate change impacts; viii) to enhance conservation of aquatic system for the 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.

The revised environmental policy in Tanzania is relevant to the TACTIC project since it brings forth the foundation of environmental sustainability of development projects translated by having environmental impact assessment study a mandatory undertaking before their implementation.

3.4.2 The National Mineral Policy, 2019

The National Mineral Policy requires that mining activities are undertaken sustainably. Reclamation of land after mining activities is recommended. Section 3.3.12 states that "*To ensure Sustainability of mining there is a need to Integrate Environmental and Social concerns into Mineral development programs. Sustainable mining development requires balancing the protection of flora and fauna and Natural Environment with the need for social and economic*

development." As far as this project is concerned, mining activities refer to quarrying and gravel extraction activities.

3.4.3 National Construction Industry Policy (2003)

The sub-projects sector is among the key areas covered by this policy. Among the major objectives of the policy, which supports sustainable development in the sub-projects sector, including the promotion and application of cost-effective and innovative technologies and practices to support socio-economic development activities such as construction of infrastructures(Bus terminal and markets), water supply, sanitation, shelter delivery, and income-generating activities and to ensure application of practices, technologies, and products which are not harmful to either the environment or human health. The construction team shall adopt this policy by using modern technology during construction but with emphasis on value for money for a cost-effective project.

3.4.4 National Land Policy (1995)

The National Land Policy states that "*the overall aim of a National Land Policy is to promote and ensure a secure land tenure system, to encourage the optimal use of land resources, and to facilitate broad-based social and economic development without upsetting or endangering the ecological balance of the environment*". This EIA partly responds to this requirement.

3.4.5 National Human Settlements Development Policy (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. TACTIC sub-projects are reliable and efficient transport systems that are essential to increase productivity and the establishment of small manufacturing industries.

3.4.6 National Gender Policy (2002)

The key objective of this policy is to provide guidelines that will ensure that gender-sensitive plans and strategies are developed in all sectors and institutions. While the policy aims at establishing strategies to eradicate poverty, it emphasizes 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 ministry of work and PO-RALG have adopted the policy through the provision of equal opportunities to both men and women in rebuilding works and related activities. This project will also ensure that rural women, who are the main users of the rural infrastructure, will be adequately involved at all levels of project planning to implementation.

3.4.7 The National Water Policy (2002)

The overall objective of this policy is to develop a comprehensive framework for the sustainable management of national water resources. The policy seeks to ensure that water plays an important role in poverty alleviation. Section 2.15 notes that the size of Tanzania means that communication is time-consuming and expensive. Inadequate communication systems affect the effective implementation of water resources management activities in terms of the higher cost of monitoring, supervision, management, policing, and data transfer. TACTIC sub-projects will help to alleviate accessibility problems and thus facilitate the enhancement of water resources management within the project influence area.

3.4.8 National Agricultural Policy (2013)

Agricultural development depends heavily on good infrastructures, such as roads, communication, energy, marketing facilities, and efficient transport services. Good infrastructure and transport systems are essential elements for the movement of agricultural produce, goods, and services to and from rural areas that are vital stimulants to the development of the rural economy. Infrastructure developments particularly in rural areas are vital determinants of transaction costs in agriculture and hence the absence of good infrastructure, in turn, affects the sector's competitiveness. Passable roads, adequate energy, efficient communication, and marketing infrastructure are important in stimulating agricultural growth and development in rural areas. Nevertheless, inadequate market infrastructure affects the profitability of agriculture.

The objective of this policy regarding infrastructure states that "*Rural infrastructure and transport systems improved to reduce transaction costs that affect agricultural growth and competitiveness*." The Policy Statements includes

i. A conducive environment for Public-Private Partnerships in infrastructure development particularly in rural areas shall be created; and
ii. Availability and accessibility to rural electrification, water, communication, transport services, and market infrastructure shall be facilitated. Enhancing agriculture in the project area is one of the main objectives of this project.

3.4.9 National Policy on HIV/AIDS (2001)

The National Policy on HIV/AIDS (2001) was 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 the 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 are 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 implications on social services and welfare. Thus, the policy recognizes the linkage between poverty and HIV/AIDS, as the poor section of society is the most vulnerable. The main policy objective is reflected well in the establishment of TACAIDS. However, the policy has also set several 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 the 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 area including construction workers. This would result in an increase in the incidence of diseases including STI, and HIV/AIDS.

3.4.10 The National Employment Policy (1997)

The National Employment Policy identifies two categories of employment namely wage employment and self-employment. The policy revisits the state of employment in Government, Parastatals, Private sector, and Informal Sector. This policy is the vision leading to utilization of available labor force and tapping available natural resources. The policy also identifies strategies for exploiting existing wealth, especially in sectors dealing with Industry and trade, Agriculture and livestock, Fisheries, Service sector, and small-scale mining. On top of that, it identifies special groups which require special treatment while seeking employment and proposes responsibilities of different authorities to deal with different aspects of the policy. This project shall employ local people during construction and therefore it is in line with this policy.

3.4.11 National Investment Policy (1997)

The National Investment Promotion Policy among other things also seeks to promote the development of industrialization, roads, and other infrastructures as a means to attract potential investors. The policy recognizes the significant contribution of urban infrastructures

networks in stimuli the development of the country. One of the key policy objectives is the maximum promotion of export orientation on domestic production of goods and services to enhance the development of a dynamic and competitive export sector. The TACTIC sub-project shall result in increased investors in the municipality and therefore, adhere to the requirement of this policy.

3.4.12 National Health Policy, 2017

The overall objective of the National Health Policy is to improve the health and wellbeing of all Tanzania with focus on those most at risk. One of the main objective of this policy is to ensure that health services are available and accessible to all people wherever they're in the country, whether in urban and rural areas. The policy encourages safe basic hygienic practice in workplace, promote sound use of water, promote construction of latrines and their use, encourage maintenance of clean environment; working environment which are conductive to satisfactory work performance.

The policy puts more emphasis on worker's protection against all health hazards which occur in any workplace. It is the responsibility of the management to offer medical and preventive health services to their employees.

The proponent is committed to ensure that their project conform to prevail environmental regulation in order to promote good health of project occupants and the surrounding societies and ecosystem by conducting EIA. Furthermore, the project will provide health services including first aid kits, personal protection equipment, posting of safety signs in identified areas with a risk to workers during construction and the renters during operation.

3.5 Legal Framework

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

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

Among the major purposes of the EMA are to provide the legal and institutional framework for sustainable management of the environment in Tanzania; to outline principles for management, impact and risk assessment, the prevention and control of pollution, waste

management, environmental quality standards, public participation, compliance, and enforcement; to provide the basis for the implementation of international instruments on the environment; to provide for the implementation of the National Environmental Policy; to provide for the establishment of the National Environmental Fund and to provide for other related matters.

Part III, Section 15(a) states that "*in matters about the environment, the Director of Environment shall coordinate various environment management activities being undertaken by other agencies to promote the integration of environmental considerations into development policies, plans, programs, strategies projects and undertake strategic environmental assessments to ensure the proper management and rational utilization of environmental resources on a sustainable basis for the improvement of the quality of human life in Tanzania*".

Part VI of the EMA deals with Environmental Impact Assessments (EIA) and other Assessments and directs that an EIA is mandatory for all development projects. Section 81(2) states that "*An Environmental Impact Assessment study shall be carried out before 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 following 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 EIA is conducted for this project to abide by this law.

Part IX of the law provides for waste management sections. Section (a) provides for Solid waste management, Section (b) provides for management of litter, Section (c) provides for liquid waste management, Section (d) provides for gaseous wastes, and section (e) provides for hazardous waste management. This part stresses waste minimization at that end of pipe treatment. It gives a mandate to local governments to create bylaws for waste management in their areas. These sections shall be observed during all phases of the project.

Part X of the law deals with Environmental Quality Standards. Section 140 of this act states that "*The National Environmental Standards Committee of the Tanzania Bureau of Standards*

established under the Tanzania Bureau of Standards Act, 1975 shall develop, review and submit to the Minister proposal for environmental standards and criteria concerning; water quality; discharge of effluent into the water; air quality; control of noise and vibration pollution; sub-sonic vibrations; soil quality, control of noxious smells; light pollution; and any other environmental quality standard" Some of these standards have already been published in the government *gazette* while others are not in place. This project shall take into account all the standards specified by this act.

3.5.2 The Village Land Act (1999), R.E 2019 and item 3.4.10 Land Act, 1999 R.E 2019

These laws declare all land in Tanzania to be "Public land" to be held by the state for public purposes. The Acts empower the President of the United Republic of Tanzania, to revoke the "Right of Occupancy" of any landholder for the "public/national interest" should the need arise. The laws also declare the value attached to the land.

Land tenure system

The existing land ownership system has a history of more than forty years. At present, the Land Act (1999) and the Village Land Act (1999) guide land ownership in Tanzania. The laws vest all land in the President and grant occupancy rights to individuals, legal persons, and territorial communities. The President holds *land in trust* for all citizens and can acquire land for public use and benefit, for instance, to resettle people from densely populated areas to sparsely populated areas, settle refugees, and so forth. The President can also acquire land for other national projects, like that for Building works.

Compensation rules

Under the Government Standing Order on expropriation for public utility, the holder of a Right of Occupancy is guaranteed a free enjoyment of the land and is entitled to compensation if dispossessed by the Government for public use. In many cases whilst the holders agree to leave their land they are not happy with the amount and delay of the compensation. Often, for example, improvements that they have made to the land are omitted or underrated. The expropriation should match the price that improvements can fetch if sold in the open market. Replacement value (defined as the cost of putting up a structure equivalent to the evaluated one) makes allowance for age, state of repair, and economic obsolescence.

The compensation must therefore include: -

- The replacement value of the un-exhausted improvements
- Disturbance and transport allowance
- Loss of income
- Cost of acquiring or getting an equivalent land
- Actual value of the present property/utility available in the land and
- Any other immediate costs or capital expenditure incurred in the development of the land.

These sub-projects shall involve the resettlement of people and their properties, this law shall govern the whole process of valuation and compensation.

3.5.3The Water Resources Management Act No. 11 of 2009

This is new legislation that has repealed the Water Utilization (Control and Regulation) Act (1974). The Act provides for an institutional and legal framework for sustainable management and development of water resources; outlines principles for water resources management; for prevention and control of water pollution; and provides for the participation of stakeholders and the general public in the implementation of the National Water Policy. Its main objective is to ensure that the nation's water resources are protected, used, developed, conserved, managed, and controlled in ways that among others meet the basic human needs of present and future generations, prevent and control pollution of water resources, and protects biological diversity, especially the aquatic ecosystems.

Following this law, all water resources in mainland Tanzania shall continue to be public water and vested in the President as the trustee for and on behalf of the citizens. The power to confer a right to the use of water from any water resource is vested in the Minister responsible for water. This authority shall be consulted before starting working in the ponds and before the abstraction of water from the water bodies.

3.5.4 Public Health Act 2009

An Act provides for the promotion, preservation, and maintenance of public health with the view to ensuring the provision of comprehensive, functional, and sustainable public health

services to the general public and to provide for other related matters. Section 54 of this law states that "*A person shall not cause or suffer from nuisance, likely to be injurious or dangerous to health, existing on land, premises, air or water*". Therefore Tabora Municipal shall develop this market and bus terminal sub-projects so that nobody suffers from nuisance or cause danger to people's life.

3.5.5 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. TACTIC Sub-project must comply with the provisions of this act, any infringement on existing land use shall need a consultation with land use planning authorities.

3.5.6 Occupation Safety and Health Act (2003)

The law provides for safety, health, and welfare of persons at work in factories or other workplaces; to provide for the protection of persons other than persons at work against hazards to health and safety arising out of or connection with activities of persons at work, and to provide for connected matters.

Section 62 of the law states that "*wherein a workplace, workers are employed in any process involving exposure to any offensive substance or environment, effective protective equipment shall be provided and maintained by the employer for the use of the persons employed*". In these sub-projects, the contractor shall provide PPEs as per provision of this act including, overall dress, boots, helmets, earplugs, etc depending on the exposure.

Section 58 presents the issue of first aid box and it states that " *There shall be provided and maintained a first aid box or cupboard to the prescribed standard and the first aid box or cupboard shall be distinctively marked "FIRST AID" having only appliances or stocks of first aid equipment*". A well-stocked first-aid kit shall be provided at the campsite.

Section 24 (1) states that "a thorough pre-placement and periodic occupational medical examination for fitness for employment and employees shall be carried out by a qualified occupational health physician or where necessary a qualified medical practitioner as may be authorized by the chief inspector". The contractor shall conduct a medical examination for all those who require employment before employing them.

3.5.7 Local Government Laws (Miscellaneous Amendment) Act, 2006

The Local Government Act directs the registrar of villages to register an area as a village and issue a certificate of incorporation which enables the village council to become a corporate body with perpetual succession and official seal; in its corporate name a village is capable of suing and being sued, and a village is capable of holding and purchasing or requiring in any other way any movable or immovable property.

The Act gives authority to local governments to regulate local matters. A pertinent example of such authority to the sub-projects is that the local government may opt to regulate the extraction of minerals or building material, through their by-laws. Despite the authority of local governments, the by-laws should not derogate any principal legislation e.g. in the case of extraction of material, the Mining Act.

3.5.8 The Standards Act No. 2 of 2009

An Act to provide for the promotion of the standardization of specifications of commodities and services, to re-establish the Tanzania Bureau of Standards (TBS) and to provide better provisions for the functions, management, and control of the Bureau, to repeal the standards Act, Cap.130 and to provide for other related matters. This act is relevant to this project as the quality of the bitumen/asphalt, and other products to be imported by the contractor during construction will have to abide by the standards set by TBS.

3. 5.9 Explosives Act, 56/63

This Act gives the Commissioner for Mines responsibility for regulating explosives. First, section 3 stipulates that no import, manufacture, possession, acquisition, or disposition of explosives is allowed unless the substance is approved for use by the Commissioner. Sections 7-9 stipulate that a person must have a license from the Commissioner for Mines to legally

manufacture explosives. The penalty for failure to have a license is 5,000 and/or 2 years. Part V of the Act further requires a permit for the transport of explosives. Part VI requires a permit for the acquisition, possession, and disposal of explosives. Part VII requires a permit for the storage of explosives. Part VIII requires a permit for use of explosives. An explosives permit can give conditions. The following applications and sample permits are included in Appendix A:

- Application for Import Permit
- Import Permit
- Import Permit (General Authority to Import Explosives)
- Application for License to Purchase or Acquire Explosives
- License to Purchase or Acquire Explosives
- Magazine License
- Explosive Store License
- Application for Blasting Certificate
- Blasting Certificate
- Return of Explosives

In addition to these general permitting requirements, section 12 provides that "*the person in charge of the explosives is liable if an "unauthorized person" has access thereto or possession thereof. Section 51 establishes general penalties of Tsh. 4,000 and/or 1 year*". Also, under section 53, "*the Commissioner has authority to revoke a license or blasting certificate*". For this project, this applies to the use of material from any quarries where blasting is to be employed.

3.5.10 Regional and District Act No 9, 1997

The Act provides for Regional Commissioners to oversee Regional Secretariats, with District Commissioners directly supervising the District Councils. Local authorities oversee the local planning processes, including establishing local environmental policies.

The National Environmental Policy establishes a policy committee on Environment at the Regional level chaired by the Regional Commissioner, mirrored by environmental committee at all lower levels, i.e. at the District, Division, Ward and Village or Mtaa Councils.

Under the EMA 2004, the Regional Secretariat is responsible for the coordination for all advice on environmental management in their respective region and liaison with the Director of Environment. At the Local Government level, an Environmental Management Officer should be designated or appointed by each City, Municipal, District, or Town Council. In each City Municipality or District, Environmental Committees should be established to promote and enhance sustainable management of the Environment. The Village Development Committee is responsible for the proper management of the environment in their respective areas. The District Council designates each administrative area as township, ward, village, sub-street, and Environmental Management Officer to coordinate all functions and activities related to the protection of the environment in their area. The contractor shall observe all local environmental bylaws set by the Tabora Municipal Council and all the wards that will be affected by the project.

3.5.11 Mining Act of 2019 R.E 2010;

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

This act makes sure minerals are well controlled and Section 6(1) states that "*no person shall, on or in any land to which this act refers, prospect for minerals or carry on mining operations except under the authority of Mineral Right granted, or deemed to have been granted under this Act.*" In additional section 50.-(1) (v) of the act states that "*The Minister shall grant an application for a mining license for minerals which has been properly made under section 49 and a successful application for a mining license made under section 71 unless the applicant has not included the relevant environmental certificate issued under the Environment Management Act*".<u>For this project, the contractor shall apply for a mining permit before starting quarrying activities.</u>

3.5.12 Employment and Labour Relations Act (2004) as amended 2019;

The Act makes provisions for core labor rights; establishes basic employment standards, provides a framework for collective bargaining; and provides for the prevention and settlement of disputes. Contractors shall see to it that they adhere to employment standards as provided for by the law.

3.5.14 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 foreign engineer to register with ERB before practicing in the country. Foreign engineers working with this project shall abide by the law requirements.

3.5.13 The Contractors Registration Act (1997) as amended 2007;

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

3.5.14 The HIV and AIDS (Prevention and Control) Act of 2008

The law provides for public education and programs 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 provide 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 program on HIV and AIDS for employees under his control and such programs shall include the provision of gender-responsive HIV and AIDS education….".This project shall abide by HIV/AIDS Act in the fight against the disease during construction.

3.5.15 The Industrial and Consumer Chemical (Management and Control) Act, 2003

The Act provides for among other issues, importation, transportation, storage, use, and disposal of chemicals in Tanzania. Building works Contractor is required by law to have a certificate from the Chief Government Chemist for importation, storage, or disposal of any chemicals (Asphalt, Lime, etc). Furthermore, building works Contractor as any other

individual dealing with chemicals is required to comply with all provisions/regulations regarding packaging, handling, storage, use, and disposal of chemicals, as set by this Act. The minister appoints an inspector from time to time to ensure compliance. Compliance failure might lead to revocation of the certificate. This law shall guide the contractors and TARURA on the importation of construction materials such as asphalt.

3.5.16 Energy and Water Utilities Authority (EWURA) Act, of 2001 as amended 2019

This Act provides guidance in EWURA administrative system by specifying roles and responsibilities of every actor and related stakeholders, power and proceedings of authority, complains and dispute resolutions, enforcement and compliance.
The provision Part II section 6(f) dictates that it shall be the duty of authority (Energy and Water Utilities Regulatory Authority) that in carrying out its functions it shall strive to enhance the welfare of Tanzanians society by taking into account the need to protect and preserve the environment.

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

Part IX of the law provides for petroleum supply operations which include; importation, transportation, transformation storage, and distribution. Section 33 (1) states that "*No person shall import petroleum or petroleum products unless the importation is conducted efficient procurement*" All the petroleum products to be imported for this project shall use efficient procurement as described by this act.

Section 37 deals with transportation and it states that "*No vehicle, vehicles or facility shall transport petroleum or petroleum products unless such vehicle, vessel or facility complies with the specifications made by the Minister*". This section shall be observed during the transportation of petroleum products (especially asphalt) to the project site.

Section 43 (1) of the legislation states that "Every *person storing petroleum or petroleum products shall ensure that the petroleum products, as the case may be stored following the license issued by the authority*". A license shall be acquired for the storage of petroleum products for this project.

3.5.17 The Worker's Compensation Act (2008) R.E 2015;

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

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

The provision of Part IV section 19 (1) requires that where an employee has an accident resulting in the employee's disablement or death, the employee or the dependents of the employee shall subject to the provisions of this Act, be entitled to the compensation provided under this Act. Subject to section 20 that any accident during the conveyance of an employee to or from his place of employment for the purpose of his employment by any means of conveyance shall be compensated. Also subject to provisions of section 22 (1) Where an employee contracts a disease and the disease has arisen out of and in the course of the employee's employment, the employee shall be compensated

Subject to the provision of Part VI section 58 (I) the manner on which calculation for compensation shall be done will be through calculating the earnings of an employee in the monthly rate at which the employee was being remunerated by the employer at the time immediately before the accident.

Provisions of Part VIII section 71 (1) requires that an employer carrying on business in Tanzania within the prescribed period shall register to the Director General in the prescribed form and shall submit prescribed particulars as he may require, and section (4) that failure to do that will be conviction. Subject to the provision of this section 74 that employer will be assessed by Director General according to a tariff of assessment calculated on the basis of the percentage of annual earnings of the employer's employees as the Board may with due regard to the requirements of the Fund for the year of assessment deem necessary.

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

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

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

3.5.18 The Law of Marriage Act of 1971 R.E 2019 and item 3.4.22 Law of the Child Act, 2009 R.E 2019;

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

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

3.6 Relevant Regulations and Guidelines

3.6.1 The Tanzania 2025 Development Vision

The Tanzania Vision 2025 aims at achieving a high-quality livelihood for its people attaining good governance through the rule of law and developing 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, and 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.

Good roads are one of the most important agents to enable Tanzania to achieve its Development Vision objectives (both social and economic), such as eradicating poverty, attaining food security, sustaining biodiversity and sensitive ecosystems. TACTIC sub-projects contribute to the attainment of the 2025 Vision.

3.6.2 The Explosives Regulations of 1964, GN 56/64

The Explosives Regulations of 1964, GN 56/64, establish conditions for licensing stores, magazines, and general precautions for explosives. They also stipulate the nature of work that is permissible when blasting and the requirement that storage places for explosives be at a certain distance from other buildings. A condition on all of the licenses is that the explosives must be stored in a licensed magazine or store or approved storage boxes. The contactor for this project shall apply for a license before the use of explosives for blasting.

3.6.3 Land (Assessment of the Value of Land for Compensation) Regulations, 2001

These regulations provide criteria for the assessment of compensation on land, as per market value for real property; disturbance allowance is calculated as a percentage of the market value of the acquired assets over twelve months, and transport allowance calculated at the cost of 12 tons hauled over a distance not exceeding 20 km.

The other criteria include loss of profit on accommodation based on business audited accounts and accommodation allowance equivalent to the rent of the acquired property per month over 36 months. These regulations shall guide the compensation exercise in this project.

3.6.4 Mining (Environmental management and Protection) Regulations, 1999

These regulations apart from other things give the Minister responsible for mining the mandate to exempt or ask for environmental information during application for a mining license. Section (4) of this regulation states that "*Except in cases where an exemption has been to require EIA granted under section 64 (2) of the Act, an environmental impact statement and environmental management plan must accompany applications for Mineral Rights in all special mining license applications"*. These regulations require the contractor to apply for a mining license for new borrow pits/quarry sites. The application should be accompanied by EIA. For this sub-project, the existing borrow pits will be used.

3.6.5 Environmental Impact Assessment and Auditing Regulations (2005)

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

3.6.6 National Strategy for Growth and Reduction of Poverty (2005)

One of NSGRP's objectives is to improve the quality of life and social wellbeing. This can be achieved through improving passable (good/fair condition) rural roads from 50% in 2003 to at least 75% in 2010. The strategy will also ensure that the health facilities are improved and accessible and drugs are made available throughout the year (NSGRP, 2003). TACTIC projects shall contribute to poverty reduction within the project area.

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

The objectives of these regulations are to set baseline parameters on air quality and emissions and enforce minimum air quality standards. They are also meant to help developers including industrialists to keep abreast with environmentally friendly technologies and ensure that public health, as well as the environment, is protected from

various air pollution emissions sources. These Regulations stipulate the role and powers of the National Environmental Standards Committee. According to the regulations, the approval of a permit for emission of air pollutants shall be guided by ambient, receptor, emission, and specification standards approved by the Minister. Offenses and penalties for contraveners are also provided for in the regulations.

Emission limits of Sulphur and nitrogen dioxides, carbon monoxide, lead, ozone, black smoke, and suspended particulate matter together with their test methods are specified. Tolerance limits and test methods for dust, Sulphur dioxide, and nitrogen oxides from cement factories into the air as well as from motor vehicles are also given. TACTICS sub-project shall monitor the air quality from the project area with guidance from this law.

3.6.8 The Environmental Management (Water Quality Standards) Regulations, 2007

Among others, the object of the regulations is to enforce minimum water quality standards prescribed by the National Environmental Standards Committee, enable the National Environmental Standards Committee to determine water usages for purposes of establishing environmental quality standards and values for each user, and ensure all discharges of pollutants take into considerations the ability of the receiving water to accommodate contaminants for protection of human health and conservation of marine and aquatic environments. The Regulations elucidate the role of the National Environmental Standards Committee of the Tanzania Bureau of Standards in setting minimum quality standards for water, sewerage, etc. They also give prohibitions and prescribed minimum water quality standards. The applicant of a water right is obliged to indicate the likely impact on the environment and comply with prescribed effluent or receiving water standards, which are not below the standards specified in these regulations if the water right or permit is granted.

The regulations give NEMC the power to designate main water polluting activities for which a prior grant of the permit must be obtained from the Council. It can be observed from the regulations that, the NEMC plays a crucial role in water quality compliance and enforcement. Recording and reporting requirements, Offences, and penalties for non-compliance as well as how appeals against aggrieved decisions should be handled are stipulated. TACTIC sub-

project shall monitor the water quality from the water bodies at the project area with guidance from this law.

3.6.9 Solid waste Management Regulation, 2009 GN. NO. 263

The regulation has been made under sections 114, 115, 116, 117, 118, 119, 120, 121, 122, and 230 of the Environmental Management Act, 2004. These regulations apply to all matters of solid waste management. They aimed among other things at setting the standard for a permit to dispose of solid waste and license to own or operate solid waste disposal site. These regulations shall guide all the collection and disposal of solid waste from the project area.

3.6.10 The Environmental Management (Hazardous Waste Management) Regulations, 2021

These regulations have been made under sections 110(4) and (5), 128, 133 (4), 135, and 130 of the Environmental Management Act, 2004. These regulations apply to all categories of hazardous waste and to generate, storage, disposal, and their movement into and out of mainland Tanzania. These regulations require that any person dealing with hazardous waste in Tanzania be guided by the following principles of environmental and sustainable development:

- The precautionary principle
- Polluter pays principle, and
- The producer extended responsibility

TACTIC sub-project is not associated with the production of hazardous wastes. However, if hazardous wastes are produced, they shall take stock of this regulation in handling them.

3.6.11 The Environmental Management (Standards for the Control of Noise and Vibration Pollution) Regulations, 2014)

Under these regulations NEMC is mandated, in consultation with the TBS, to establish criteria and procedures for the measurement of noise and vibration pollution; minimum standards for the emission of noise and vibration pollution into the environment, and guidelines for the abatement of unreasonable noise and vibration pollution emitted into the environment from any source. The Regulations provide detailed noise standards according to this provision. The purpose of these Regulations is to ensure the maintenance of a healthy environment for all people in Tanzania, the tranquility of their surroundings and their psychological well-being by

regulating noise levels, and generally, to elevate the standard of living of the people by prescribing the maximum permissible noise levels from a facility or activity to which a person may be exposed; providing for the control of noise and for mitigating measures for the reduction of noise.

The permissible limits are provided for in the Schedule to the Regulations. Construction of the abattoir and production activities shall produce too much noise and vibrations owing to the use of heavy machinery.

3.7 Institutional Framework

3.7.1 Overall Management Responsibility

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

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

The legal institutions for environmental management in the country include;

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

3.7.2 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 sectors and civil society. The committee advises the Minister on any matter related to environmental management.

Relevance: TAC reviews and advises the minister regarding this EIA if it complies with the law.

3.7.3 Minister Responsible for Environment

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

Relevance: Shall issue a certificate for this EIA.

3.7.4 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.

Relevance: TAC reviews and advice the minister regarding this EIA if it complies with the law.

3.7.5 National Environment Management Council (NEMC)

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

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

3.8 The Overall Management of the Project

From an institutional point of view, Tabora Municipal council have the responsibility of maintaining and developing the projects.

CHAPTER FOUR

4.0 BASELINE ENVIRONMENTAL AND SOCIAL CONDITIONS

Overview

Baseline study was required to establish benchmark for environmental and socio-economic condition of the project are before project's implementation so as to determine change at the intervention during the project execution and being able to establish and identify social economic and environmental impacts that will result from the change of the sub-project development during and after construction phase. Project socio-economic and environmental impacts are anticipated to affect a greater geographical area. The baseline study area for the socio-cultural- economic study corresponds to the extent of the communities in which the proposed project will be located.

The proposed sub-project's environmental baseline study was conducted in December 2021. The baseline study was done in areas of direct and indirect zone of influence of the proposed project. Gathering of baseline data was done to meet the following objectives:

- To understand key biological, physical, ecological, social, cultural, economic, and political conditions in areas potentially affected by the proposed project;
- To understand the expectations and concerns of a range of stakeholders on the proposed development;
- To inform the development of mitigation measures;
- To benchmark future socio-economic changes/ impacts and assess the effectiveness of mitigation measures.

Sources & Methodologies for Data Collection

Primary Sources: Result of the field and laboratory data collected and analyzed directly

Secondary Sources: Data collected indirectly from published records or documents such as project documents, Regional profile, maps and photos etc.

Methods of data collection:

General Methods: Literature review, map interpretation, checklists (e.g. scaling and questionnaire checklists, matrices etc)

Resource -Based Methods: Scientific instruments and techniques

4.1 Identified zones of Impacts

This section covers the baseline environmental situation along the sub-projects area. Most of the information provided in this section was gathered through observation and measurements during the field survey. Some of the data were obtained through a literature search. The baseline information provided below belongs to three zones;

i. Direct Impact Zone (DIZ) - This includes the area immediately bordering the sub-project (local). In the case of this project local impacts will include the site of the construction, (borrow areas, quarries and the actual sub-projects)
ii. Immediate Impact Zone (IIZ): These are immediate surrounding areas about 500m on both sides of the proposed subprojects (mitaa at the sub-project areas)
iii. Area of Influence (AI) - This includes the wider geographical areas that are influenced by the sub-projects.

4.2 Synopsis of Tabora region

Physical Environment

4.2.1. History and Geographic setting

Tabora Municipal Council was established in August 1988. The history of Tabora Town can be traced back to the time before 1830 when the area was known as Unyamwezi by the first slave traders from the coast referring to the inhabitants as “The people of the moon”. These traders were mainly Arabs and they established their base at Kazell hill in 1840. When the Germans took control of East Africa they changed the name Unyamwezi to Tabora. It is said that it was a mispronunciation of the word MATOBOLWA which literally in Nyamwezi it means dried pieces of cooked sweet potatoes. The Chiefdom of Unyamwezi is known as Unyanyembe.

4.2.2 Location

Tabora Municipality is a Headquarters of the Tabora region and covers 1092 square Kilometres. The Municipality is located between 4^{o} 52’ and 5^{o} 9’ latitude South and 33^{o} 00’ East. Most of its part lies between 1000m above sea level. It is surrounded by Uyui District in the Western, Northern, and Eastern parties and Sikonge District in the South (Figure 4.1).

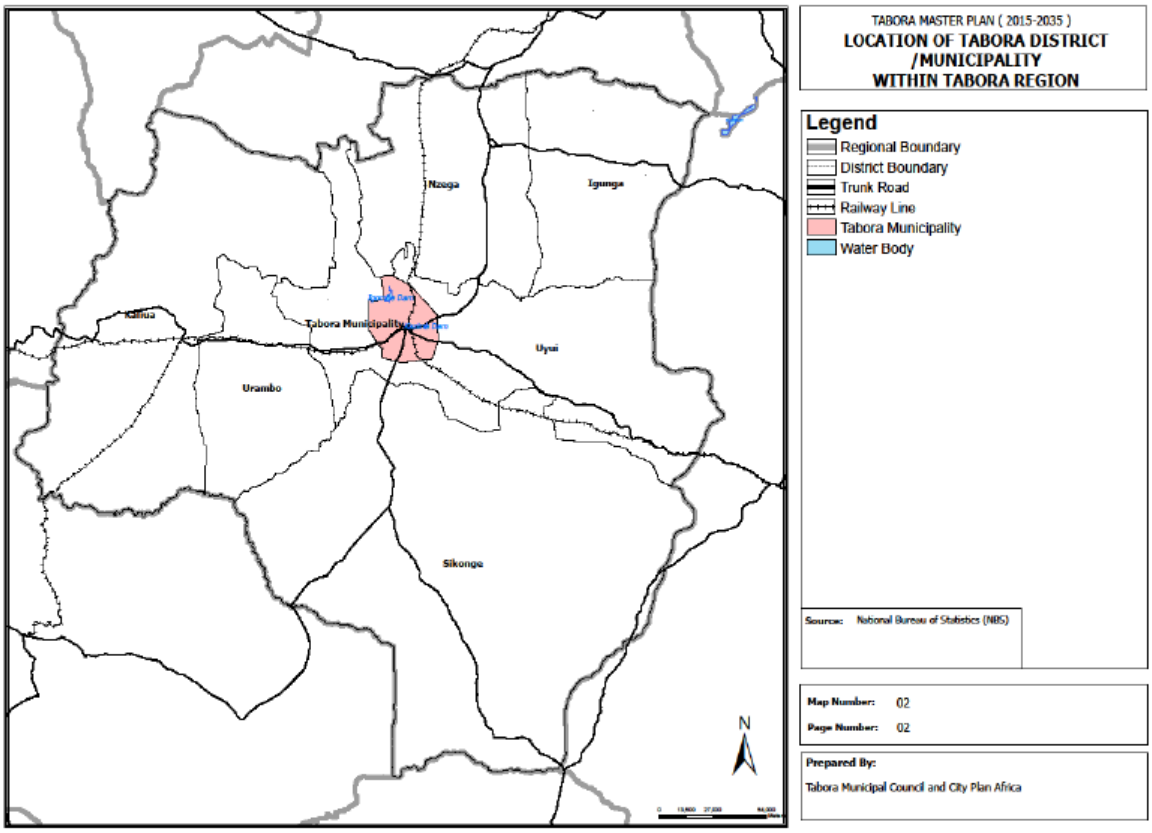

Figure 4.1: Map of Tabora region showing the Tabora Municipal Council
(Source: Tabora Master plan (2015-2035))

4.2.2.1 Area Size and Administration

Tabora Municipal Council covers an area of 1092.26 sq Km of which urban area covers about 84.49 square km of the region area. The Municipal Council has an area of 527 square kilometers. Administratively, Tabora Municipal Council is divided into 2 Divisions, 21 wards, 116 “Mitaa”, 41 Villages, and 119 hamlets. Also, the Council has one constituency which is Tabora Urban.

4.2.2.2 Population

According to the Annual Population and Housing Census, 2012 Tabora Municipal Council had a total population of about **226,999** (Men 111,361 and women 115,638) with an average of 4.7 people per household. The Master Plan report (2015-2035) the expected increase in the population of Municipal to 328,752 in the year 2025, with the Population growth is 2.9 percent per annum.

4.3 Topography and Drainage

Tabora Municipal Council is characterized by different forms of the vast central plateau of Tanzania, with areas of flat and gently undulating plains and hills. It lies between 1,115 meters to 1,395 meters above sea level and is drained by the Igombe and Wall rivers, which flows westwards into the Malagalasi basin. Neither of these rivers is perennial, they only exist during the rainy season.

4.4 Geology and Soils

Five soil groups in the Municipality occur in association with the various individual types of the terrain, variations characterized by slope positions. The main soil groups are Lugulu, Isenga, Kikungu, Ipwisi, and Mbuga soils.

The geology of the municipality is characterized by intrusive granite and granodiorite formed during the archaic era. These coarse to fine-textured crystalline rocks are mainly in rich feldspars and quartz's composition. The rocks are well jointed and often deeply weathered, but rock outcrops are commonly found within the area.

4.5 Climate

4.5.1 Rainfall

In Tabora Municipality, rainfall decreases from west to east, in the west, the rainfall is over 1,000 millimeters while in the east it drops to 700 millimeters or less. The peak is in December followed by a slight dry spell in January. According to the observed data of 2013 from TMA, the maximum mean rainfall in December 2013 was 321.2 millimeters and January 121.5 millimeters. A second lower peak occurs in April and the rains fade off in April/May.

The minimum mean rainfall recorded in April 2013 was 105.6 millimeters and no rainfall was recorded June- August and October 2013. The rainfall pattern in the region is extremely variable and unpredictable (Figure 4.2).

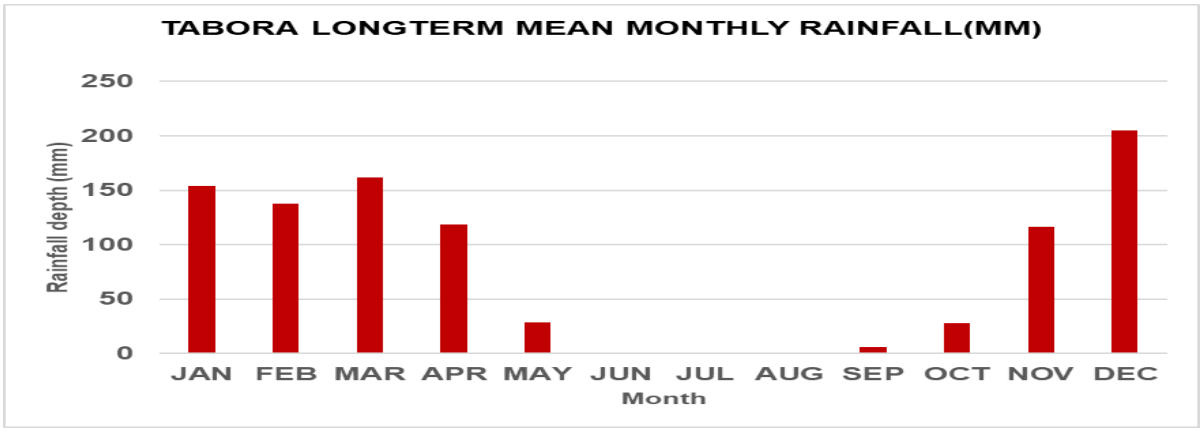

Figure 4.2: The Rainfall variability in the Municipality

(Source: Hydrology report, 2022)

4.5.2 Temperature

The average temperature during the day is 22^0 C - 26^0 C. Highest temperature of 33.1^0 C occurs in October just before the start of the rainy season, falls gradually in December, and remains relatively constant until May. Between May and August, the Municipality experiences cold season with an average minimum temperature of 15.7^0 C is relatively lower compared to October (Figure 4.3)

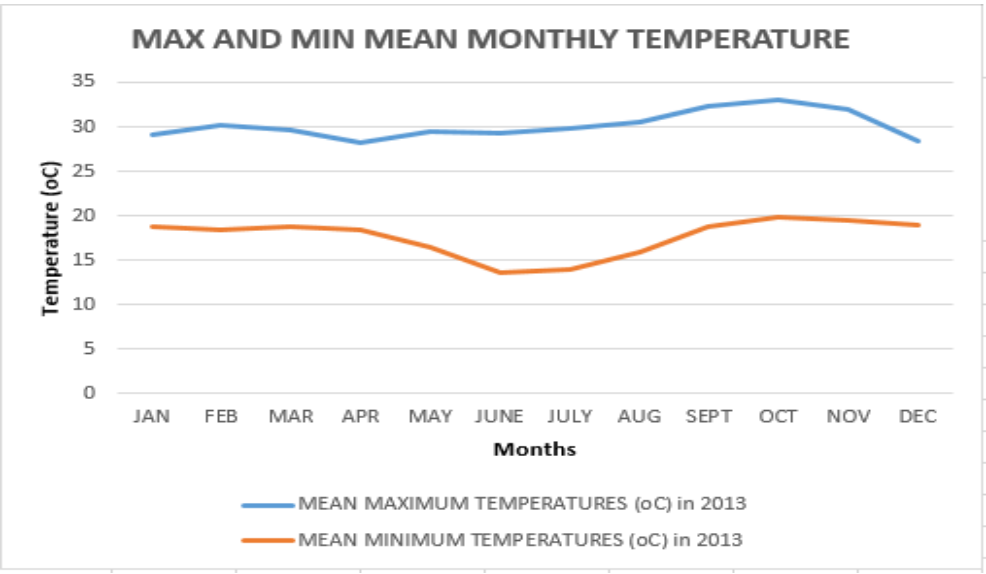

Figure 4.3: The Temperature variability in the Municipality

(Source: Tabora Municipal Master Plan 2015-2035)

4.5.3 Humidity

Tabora Municipal Council lying in the Central African Plateau experiences monsoon winds. The month of July is marked by the onset of dry winds which continue until October. The wind blows from the southeast direction except in January when the direction changes to the northeast.

4.5.4 Sunshine and Evaporation

Normally the sun rises in the morning at six hours and fifty-one minutes and falls during eighteen hours and forty-nine minutes in the evening, the number of hours of sunshine does not change throughout the year. Potential evaporation tends to decrease with altitude this being predominantly a reflection of the variation of clouds covered with height.

4.6 Water Bodies

In Tabora Municipality there are two major rivers namely Walla and Igombe Rivers. These are temporary rivers traversing through the municipality; Igombe river act as the boundary separating Tabora Municipal Council and Uyui District Council pouring its water into Kigozi River which is a tributary of Malagarasi River. Walla River pouring its water into Ugalla River where they are collected and finally poured into Malagarasi River. Other water bodies found within the municipality are seasonal streams distributed within the municipality.

4.7 Existing Air quality, and Noise and vibration

Typical environmental parameters identified during the field survey include PM10, PM2.5, TVOC, NO2, SO2, H2S, CO2, O2, CO, noise, and ground vibration measurements. The sampling(SP) location was selected based on the climatic status of the area and the different activities taking place within and across the area of dust and gases that might disperse to the surrounding environment. The measurement was performed and observed in seven different sampled locations within the sub-projects areas which includes three sample from the proposed Market sub-projects and a single sample from proposed Bus terminal area at Inala (Figure 4.4).

Figure 4.4: Air quality and Noise sampling activities

(Source: Fieldwork, December 2021)

4.7.1 Air Quality

The typical air pollutants from the sub-projects are Carbon Monoxide (CO), Nitrogen Dioxide (NO2), Sulphur Dioxide (SO2), volatile compounds; and particulate matter (dust). The average measured concentration for PM10 and PM2.5 ranges between 2 µg/m3 and12/m3 and 1 µg/m3 to 7 µg/m3 respectively. However, the pollution is expected to increase during the construction phase of the sub-projects (Figure 4.5&4.6).

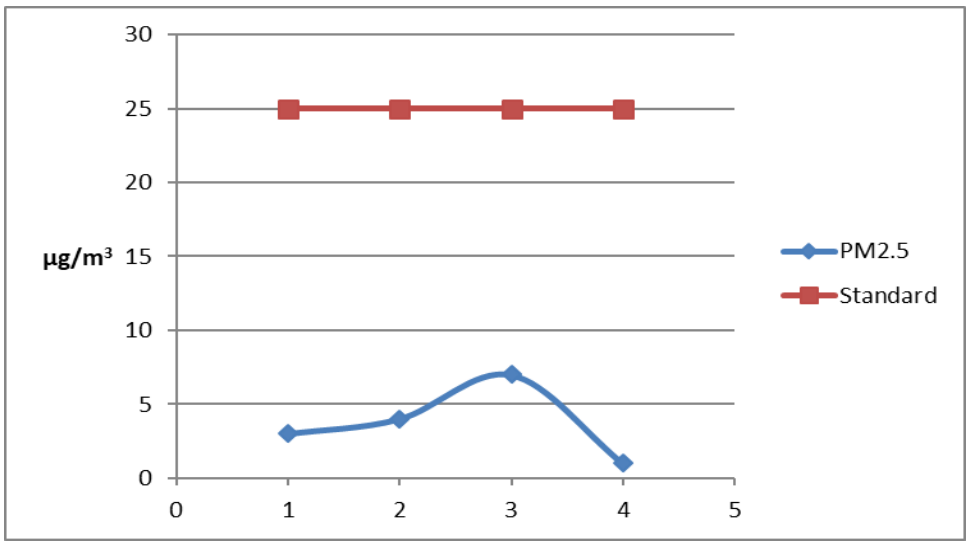

Figure 4.5: $PM_{2.5}$ Concentrations in different locations

(Source: Fieldwork, December 2021)

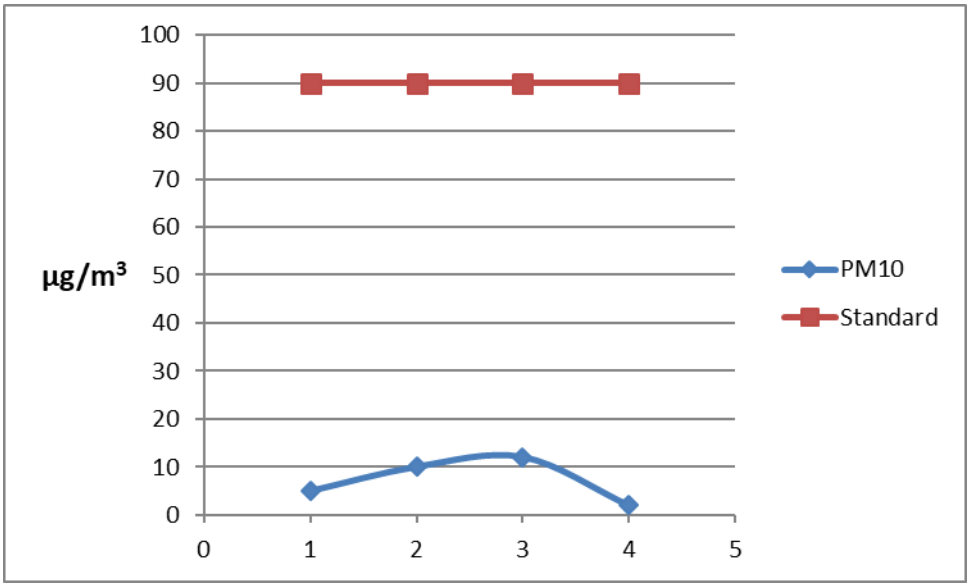

Figure 4.6: PM_{10} Concentrations in different locations

(Source: Fieldwork, December 2021)

4.7.2 Noise and Vibrations

Based on the sampling stations taken during the field works, the recorded levels were between 41.3 – 65.4 dBA, which is below the standards (75dBA). It was noted that the main sources of the measured noise are vehicles, noise from people, and motorcycles passing through the project site or near the proposed project area. However, the pollution is expected to increase during the construction phase of the sub-projects

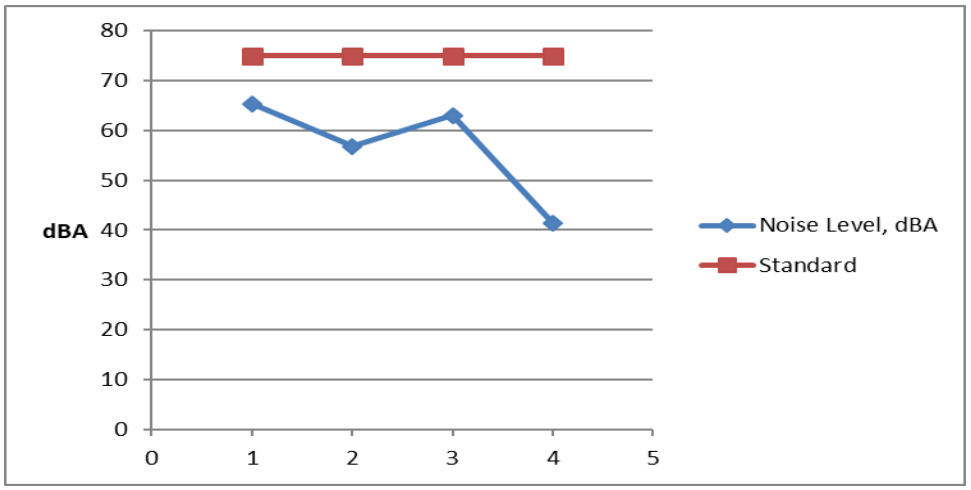

Figure 4.7: Existing Noise Levels at the Proposed Sites

(Source: Fieldwork, December 2021)

4.8 Biological Environment

4.8.1 Flora

There are two main forest reserves found within Tabora Municipality owned by the central government; these include: Igombe Forest Reserve found in the North-West part of the municipality at Misha and Ikomwa wards and Urumwa Forest Reserve found in the South-West of the municipality at Itetemia and Ntalikwa wards. The nature of these forest reserves is naturally dominated by miombo woodlands.

The vegetation cover of Tabora Municipality can be classified into upland and low land or wetland vegetation. In the uplands, there is woodland, bushland, and thicket grassland. Miombo woodland (*brachystegia boehmii*) is the dominant species within the municipality, with Mninga trees found in scattered patches. Miombo forests with the famous Mninga hardwood are good sources of quality timber, firewood, charcoal, and for keeping beehives.

The vegetation in the Bus Terminal sub-project area at Inala varies from grasses, small trees, and shrubs patches with groups of scattered trees mainly *Commiphora Africana* which is characterized to cultivated areas. There are large *Terminalia* in the shrub patches within the sub-project area which varies from one location to another. The dominated exotic species is *Mangifera Indica* which is observed in a larger part of the area. Other dominant species are *sericea*, *Julbernardia Globiflora, Borassus Aethiopum,* and *Phyllansus Engreli* species. Adjacent to the sub-project area, natural vegetation has been replaced by anthropogenic activities such as livestock grazing and crop production.

However, the present flora at the site is not reported to be critical species on the IUCN Red List of threatened species (Figure 4.8).

Figure 4.8: The vegetation within the proposed Inala Bus terminal

(Source: Field Survey, 2021)

4.7.2 Fauna

The Fauna in the municipality includes livestock of different kinds such as; cattle, goats, sheep, and poultry. However, some of the species like birds and bees, etc., have their habitats in forest areas The livestock are mostly indigenous breeds, a few exotic and crossbreeds are found mainly in the urban area (Figure 4.9).

Figure 4.9: The livestock in the Municipal

(Source: Fieldwork, December 2021)

4.8 SOCIO-ECONOMIC BASELINE CONDITIONS

4.8.1 Socio-Economic Survey

The socio-economic survey was conducted in all main seven (7) wards located along the sub-project. In each ward seven wards, ten (10) households were interviewed. Therefore, the information analyzed in this report is based on the above background. That means other wards located in the sub-project area but not located directly to the project are excluded in the sampled wards.

4.8.1.1 Composition of the households

The average family size in the sampled wards is six (6) members per household though there are some families with more than six or fewer members. The consultation showed that women are the head of the majority of families and are normally widows, divorced, or never-married women. Orphans and disabled persons were also found among the household interviewed.

The extended family is the predominant structure of the household; the male is the head of the household. Only in a few cases whereby females head the house mainly in widowed families. Only 5.2% of the household heads were elder children in the family. The majority 80.4% of household heads were males. The rest 14.4% of the household heads were females (Figure 4.10).

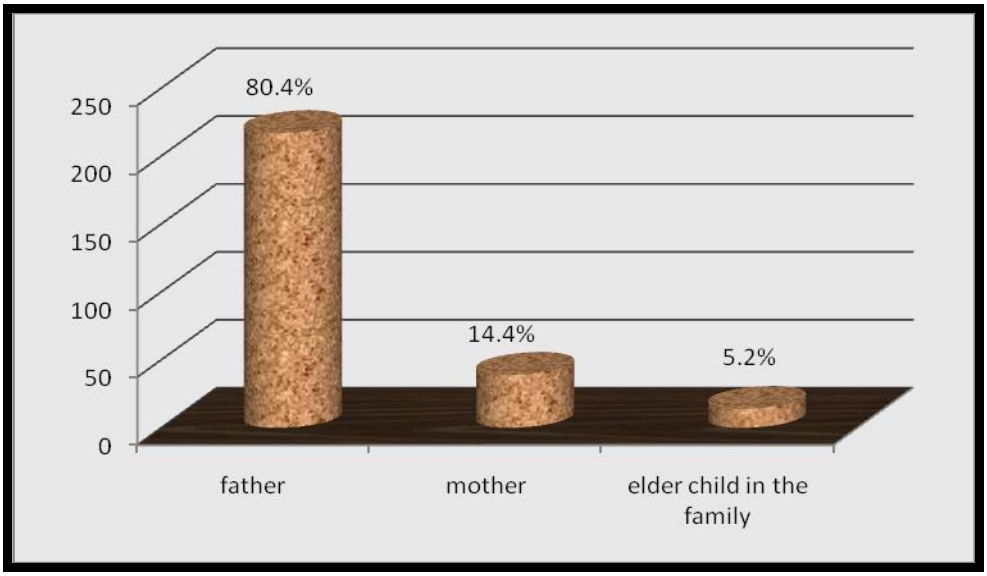

Figure 4.10: Head of Households interviewed
(Source: Socioeconomic survey; 2021)

4.8.1.2 Gender status in the Household

The interview with women revealed that women are socially excluded from their proportionate share of the health and wealth of their societies, weakly represented in decision-making, and disproportionately burdened with task loads. The relationship between men and women, able and disabled, children, youth and old aged is of Para amount for National harmony and stability and social-economic development. However, the ward governments in the project area try to involve all groups and empower them in decision-making to make an effective economic development. With all these effort women shy off to participate in decision making.

Economically, it was revealed that (75%) of economic development is made by women. Women are constrained with a lot of other responsibilities including reproduction and other household chores (Figure 4.11). The challenge that faces women is limited land ownership which limits their advancement.

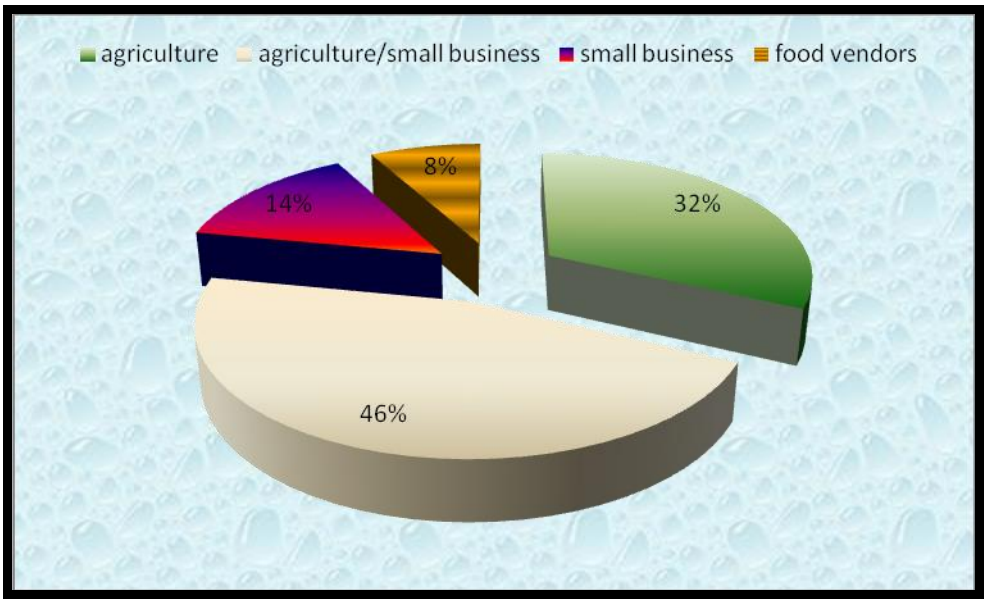

Figure 4.11: Economic activities performed by women
(Source: Socioeconomic survey; 2021)

4.8.1.3 Ethnicity and Religion

The main ethnic groups in the project area are Wanyamwezi who resided in all wards along with the sub-projects. Other small ethnic groups include the Waha, Wasukuma, Wachaga, Wanyakyusa. Most of the ethnic groups are predominantly agriculturalists and livestock-keeping.

Regarding religion, 48% of residents are Christians and 36% are Moslems and the rest never indicated their religion.

4.8.1.4 Language

In Tanzania, Swahili is the national language and also the language is spoken by a majority including the population in rural areas. However, in some instances, the elder population is more conversant in their mother tongues and this may be the case encountered in many rural areas. Hence, in this project area, Swahili is the main language spoken though you still find some using the local dialects. The ethnic languages spoken in the project area include Kinyamwezi, Kisukuma, and Kiha languages.

4.8.1.5 Dependency Ratio within households

Considering the competing household needs *vis a vis* the income levels, the majority of over 65% of the interviewed household are a dependant of 35 of the working age. The dependent group includes children at school or pre-school age as well as the elderly group above 65 years.

4.8.1.6 Settlement

The roads route corridor is densely populated. Settlement patterns include dispersedly (though by no means isolated) dwelling nucleated wards and small urban centers.

Buildings in the densely populated centers of large wards do face the sub-projects but are set back at least ten meters, though some wards like Chemchem and Ifucha some of the houses in these wards are located near the sub-projects. As one moves towards the peripherals of the wards houses is not oriented to the sub-projects. Rural parts of the ward have their morphology, with many internal paths and tracks.

4.8.2 Land tenure

4.8.2.1 Tenure and Land Use

There are different systems of land tenure found along with the project sub-projects. This includes; customary right-inherited from parents, ward government allocation, buying as well as self-allocation. The primary data from the socio-economic survey revealed that 11% of the interviewed households acquired land through buying while 47% inherited landform their

parents the rest 39% reported to have been given land by the ward government. Only 3% of the interviewed households have been allocated land themselves. During the selling of land, the ward government normally witnesses the transaction and keeps records for future reference in case of a problem between a seller and a buyer (Figure 4.12).

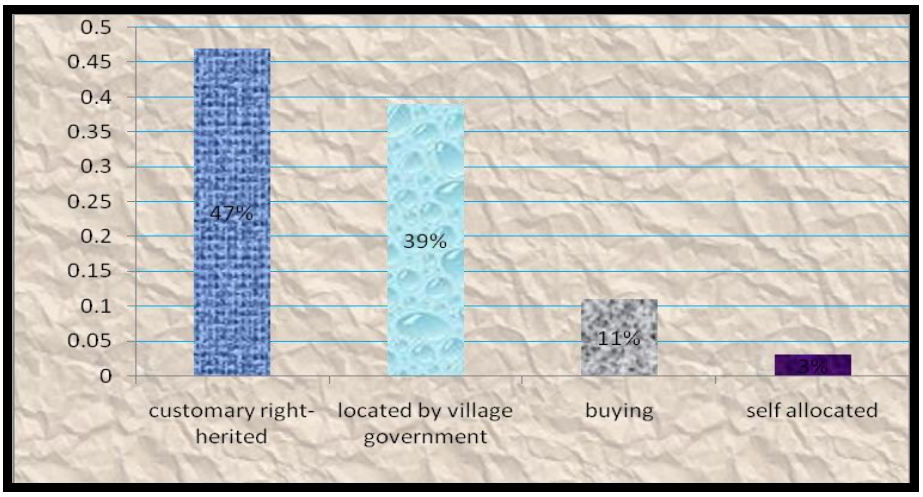

Figure 4.12: Land Tenure systems
(Source: Socioeconomic survey; 2021)

Regarding land ownership, the majority of households hold 12 and above acres of land (64.8%). The majority of the respondents are of the view that the government should support PAP's in the process of land acquisition. Concerning relocation, most of the affected people would prefer to remain in their present wards (86%). The rest would not mind relocating elsewhere.

The most widespread land use in the study area is small-scale, rain-fed agriculture. Use of the drier upland areas by local farmers is limited; most cultivation is concentrated on the more fertile, black clay soils of the river valleys, which in some cases can support year-round cropping.

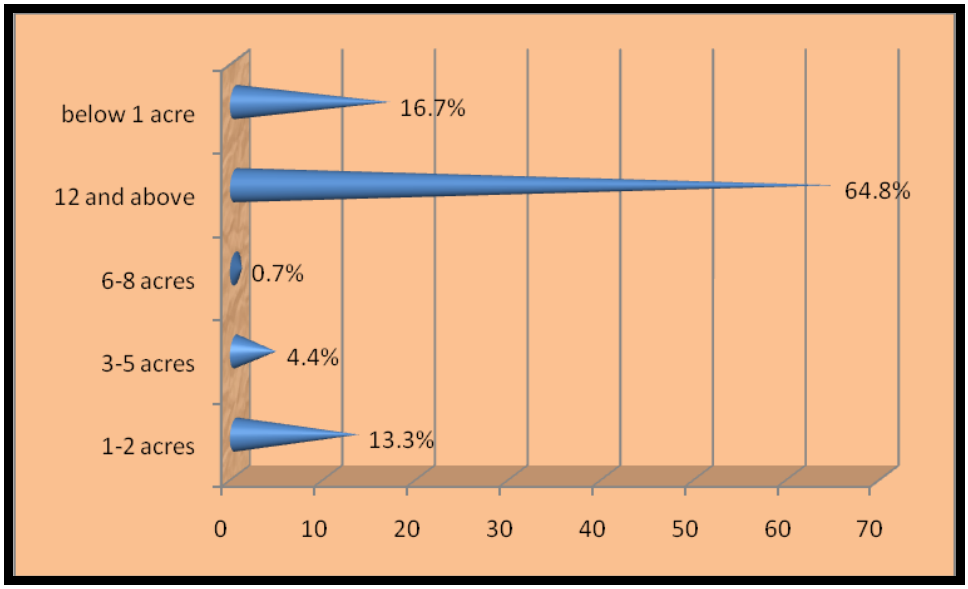

Figure 4.13: Land size owned by members of the household

(Source: Socioeconomic survey; 2021)

4.8.3 Economic activities

4.8.3.1 Employment / Household

The informal sector is the main employment of residents along with the project sub-projects. Other common activities include livestock keeping and petty business. Only 4.4% of the respondents are employed in the formal sector.

4.8.3.2 Agriculture

The majority of the people in the study area are predominantly subsistence farmers. Minorities are engaged in poultry and livestock keeping. The agricultural production system in the wards seems to be based on shifting cultivation using mainly traditional, and thus labor-intensive, methods and technology.

Few inputs are used, as only a minority of the wealthier farmers can afford to hire a tractor; similarly, pesticides and fertilizers are both expensive and difficult to obtain. However, the councils have been distributing fertilizers that support the agricultural system conducted within the Council. The cropping cycle follows the rainfall pattern for the area with December, January, and February being the main crop growing season and harvesting starts at the end of March to May. The principal food crops grown in the area are maize, sweet potatoes, rice, and maize.

4.8.3.3 Livestock keeping

Livestock keeping is one of the main components of the economy in the project area. This includes cattle, goats, pigs, sheep, and chickens. 94.8% of the respondents own livestock. Out of 94.9 of the respondents reported owning chicken/duck/turkeys. Only 1.9% own cattle and 0.4% own goats/sheet (Table 4.1).

Table 4.1: Type of livestock kept in the household

Item	Frequency	Percent
Cattle	251	92.6
goats/sheep	1	0.4
chicken/ducks/turkeys	5	1.9
not owning livestock	13	5.2
Total	270	100.0

(Source: Socioeconomic survey; 2021)

4.8.3.4 Households Source of income

The socio-economic survey reveals that 87.8% of the interviewed households solely depend on agriculture as their source of income. Other groups depend on agriculture but also are involved in other activities like small business, formal employment (teachers, ward government officials) as well as livestock keeping.

Table 4.2: Source of income for the interviewed households

Item	Frequency	Percent
Agriculture/Livestock	25	33
small business	17	22
formal employment/agriculture	10	14
agriculture/small business	17	22

Item	Frequency	Percent
agriculture/bodaboda	7	9
Total	75	100.0

(Source: Socio economic survey; 2021)

Eighty percent of the respondents reported earnings below 100,000 Tshs per month, followed by 9% who earn between (100,000 to 500,000 Tshs per month) and (500,001/- - 1,000,000/- per month). Lastly, 2% reported earnings above 1,000,000/- Tshs per month. Please refer to figure 4.14below:

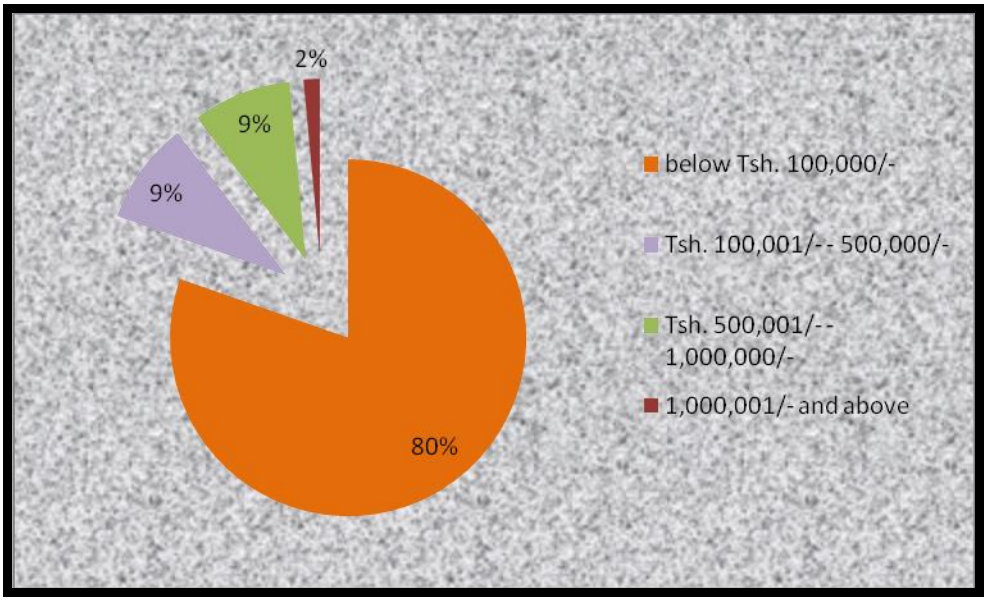

Figure 4.14: Total cash income for the last month

(Source: Socioeconomic survey; 2021)

On the other hand, 30.7% of the respondents reported earnings below 500,000 Tshs per annum, followed by 38.5% who earn between 500,000 to 1,000,000 Tshs per annum. The rest 23% their income is between 1,000,001/- - 5,000,000/- per annum (Figure 4.16).

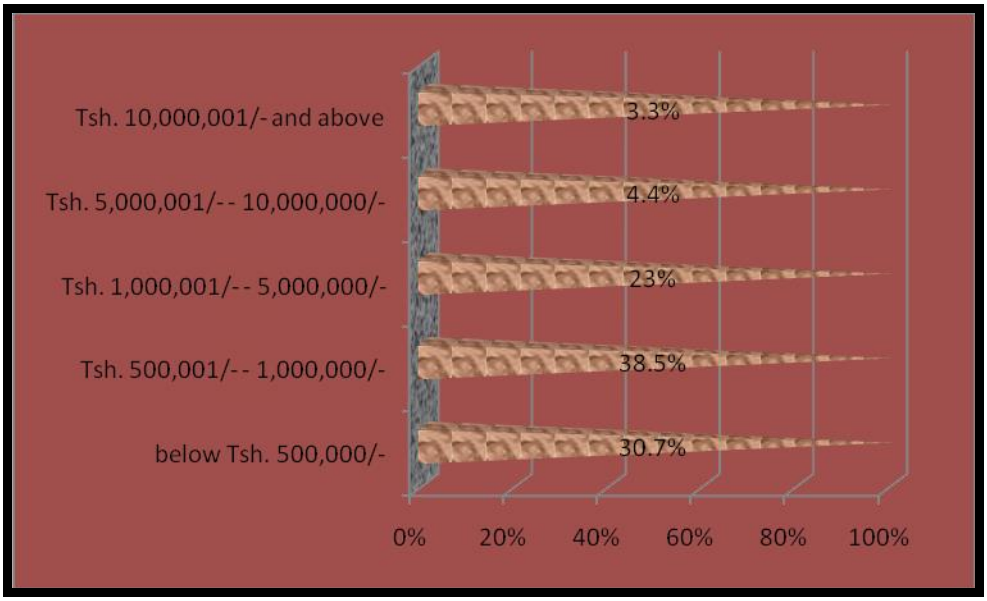

Figure 4.16: Total cash income for the last month

(Source: Socioeconomic survey; 2021)

4.8.4 Social services

4.8.1.1 Water Supply

There are different sources of water in the project area. This includes in-house connections and water wells. During the socio-economic survey, it was reported by water users that there is water problem especially inwards Mwinyi and Kilolo, because of this majority get water from water vendors but other wards have enough water

Generally, water used in all wards is are safe; as a result, water-related diseases attack water users. During the survey, wards reported experiencing water-related diseases such as diarrhea, intestinal worms, and typhoid

4.8.4.2 Sanitation (Solid and liquid waste)

Sanitation facilities indicate health status, as well as socio-economic development. Most of the households use pit latrines without permanent structures including walls and roofs. Good solid waste management was observed during the survey. The majority of the household dispose of the waste in pit holes (97.8%), although in some households they throw in farms (2.2%). Poor solid waste disposal results in air pollution.

Table 4.3: Solid and liquid waste disposal

	Item	Frequency	Percent
	Farm	14	18
	pit hole	61	82
	Total	75	100.0

(Source; socio-economic survey; 2021)

4.8.4.3 Energy

Some of the households are connected with electricity under the REA program while others are not. Only 62% of the interviewed households are connected with electricity while the rest 38% use kerosene as a source of light.

The main source of energy for cooking in the project area, both in the urban and rural areas is firewood (87.4%), followed by charcoal (5.9%), while 6.7% use both charcoal and firewood.

Table 4.4: source of cooking for the households

Item	Frequency	Percent
Firewood	66	87.4
Charcoal	4	5.9
charcoal/firewood	5	6.7
Total	75	100.0

(Source: socio-economic survey; 2021)

4.8.4.4 Telecommunications

The entire three networks are available along with the sub-projects, although the signals in some areas are weak particularly in valleys. These Cellular phones include Vodacom, Tigo, Zantel, Halotel and Airtel. As well as access TTCL. Post office, Internet, and fax services are available at Tabora Town.

4.8.4.5 Health services

The accessibility to health facilities in the project area is good since almost every ward consulted has a dispensary. Inhabitants do walk about 1 – 5 km to reach a dispensary. In the course of the survey, the Consultant learned that access to modern treatment was inaccessible to many households due to the high cost of treatment. The medical personnel are inadequate and under-qualified.

4.8.4.6 Education

Education services are well developed. Almost in each ward, there are both secondary and primary school. The problem that was observed is the distance of walking to reach those secondary schools. For instance, students from ifucha wards do walk more than two kilometers to reach a place where the secondary school is located.

On part of the level of education of the members of the household, the results are presented in figure 4.15;

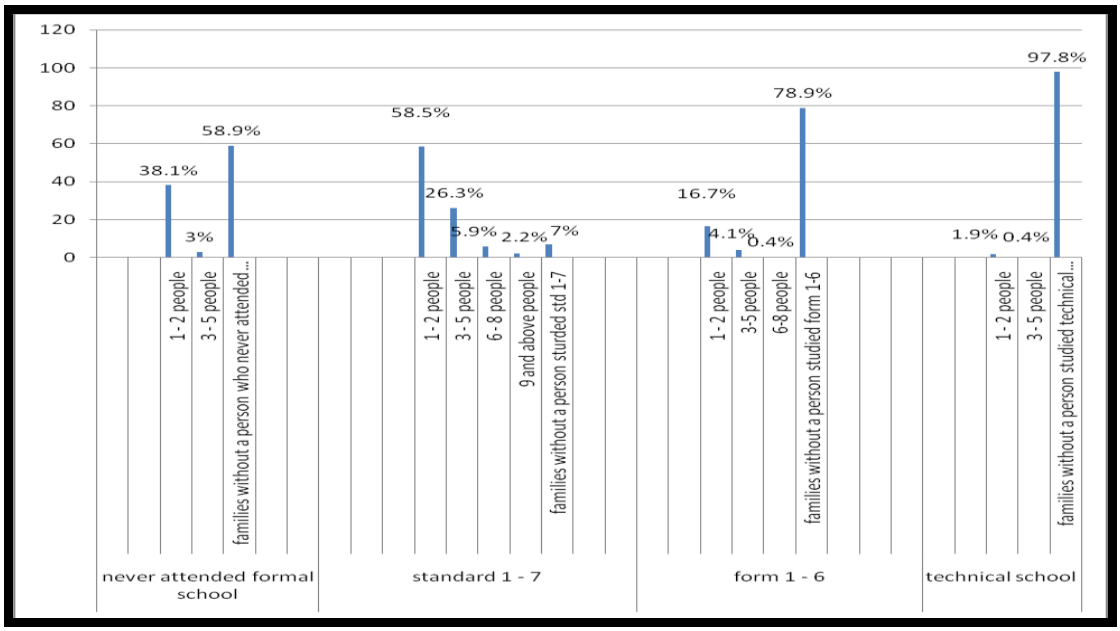

Figure 4.17: Level of Education of members of households

(Source; socio-economic survey; 2021)

It is anticipated that the sub-projects improvement will have an impact on the quality of education by making it easier to construct schools of durable materials and to attract teachers to work in otherwise remote locations. However, it is unlikely to have a positive

impact on school attendance, this is because most of the families do not have enough money to send their children to school.

4.8.4.7 Diseases / HIV/AIDS Prevalence Rates

The major diseases found in communities along the sub-projects corridor include malaria, diarrhea, respiratory infections including coughing, TB, pneumonia, and skin diseases. Malaria is a main killer disease in the project area. Almost all the household interviewed reported that for the last six months one of their members suffered from malaria. The second to malaria is diarrhea.

Concerning HIV/AIDS infection in Tabora District, the HIV/AIDS infection rate is low (5.1%). Based on the information gathered, the prevalence is 5.1%. Several measures have been undertaken which contributed to the success of reducing transmissions of HIV/AIDS. These include the establishment of voluntary counselling and testing centers and home-based services through mobile clinics and the distribution of condoms.

4.8.4.8 Houses

In urban communities, block bricks are the usual walling materials. Good numbers of houses are roofed with corrugated iron sheets. These houses are normally owned by wealthier members of the community. The proportion of houses built with durable materials is significantly found at all wards. All houses are either square or rectangular. All houses are single story and have two to three rooms. Houses are almost exclusively owner occupies, few houses are rented by employees working in these wards including ward executive officers, agricultural officers, teachers, and other extension officers

4.8.4.9 Use of structures within the Sub-project

The majority of the structures found in the project area as indicated in the figure below are used for sleeping purposes (85.9%), while another 3% is used for multifunctional purposes that residential and businesses.

Table 4.5: Main purpose of building

Item	Frequency	Percent
multifunctional residential	6	8.5

Item	Frequency	Percent
Sleeping	64	85.9
kitchen only	1	1.1
toilet/shower	3	.4
combined residential	2	3.0
business only	1	1.1
Total	75	100.0

(Source: Socio economic survey: 2021)

CHAPTER FIVE

5.0 STAKEHOLDER CONSULTATIONS AND PUBLIC INVOLVEMENT

Courtesy call to Regional and District Commissioner's Offices

The courtesy visits helped the team to introduce themselves to the regional and Municipal security chairman and establish the right contacts in the project area, which in turn facilitated the study at the community level. The visits provided an opportunity to learn and share salient information about the proposed project with the authorities at the district and regional levels. In addition, the team obtained important socio-economic secondary data about the project area.

5.1 Consultations and key stakeholder's identification

A simple methodology was adopted to identify key stakeholders and main environmental and social concerns. This involved physical observations and consultations (direct consultations). Other information on the sub-project was obtained through a desk study.

Stakeholder consultations were conducted during a scoping stage, Figure 5.1 and Figure 5.2. Different stakeholder levels including local government officials as well as community members in villages located at the sub-projects were identified and consulted (a list is appended).

Stakeholders included government agencies, beneficiaries, commercial companies, and all other formal or informal groups associated with a sub-project. Interviews were used in the process of stakeholder identification. From one stakeholder, the team was connected to another and another stakeholder, in a chain-like or network process. The following is a shortlist of both institutional and individual stakeholders.

The major stakeholders include:

- Ministry of Works and Transport;
- Ministry of Lands, Housing and Human Settlement Development;
- Ministry of Agriculture;
- Ministry of Livestock and fisheries;
- Ministry of Natural Resources;
- Ministry of Water;
- RAS-Office – Tabora

- TANROADS-Tabora
- TARURA – Tabora
- TFS-Tabora
- Tabora Municipal Council
- Fire and Rescue force-Tabora
- WEO & VEO at the sub-project site
- Utility Companies, TANESCO, TTCL, and Water Supply Authorities (TUWASA)
- Community nearby sub-project area
- Market Admiration and traders
- Bus Transportation Companies
- Tabora bus terminal management
- LATRA-TABORA

During consultative Meetings, consultations were done through direct interviews and focus group discussions. Typically, the Agenda for these consultations included:

- informing stakeholders
- gaining their views, concerns, and values
- taking account of public inputs in decision making
- influencing project design
- obtaining knowledge local communities
- increasing public confidence in the proposed project
- improving transparency and accountability in decision-making; and
- reducing conflict among the beneficiaries to the implementation of the project

Figure 5.1 Consultative meeting with Tabora Municipal Council officials
(Source: Fieldwork December 2021)

5.2 Phase I Engagement and Consultation (December 2021)

The phase I round consultations were conducted by the ESIA team in December 2021 within the sub-projects areas. The main stakeholders consulted and key issues of concerns that were rise are presented in table 5.1A for the response of Government Institutions and Table 5.1B for the concerns of the villagers concerning the proposed project.

5.2.1 Major Issues raised by stakeholders

Economic Benefits: The construction of bus terminals and markets will increase the revenue of the municipal and the income of the people through employment opportunities.

Redevelopment of the Market: The design of the redevelopment of the existing Market should consider provision for Fire hydrants, Firefighting water tanks, rainwater harvesting infrastructures, sanitary facilities and sewerage, and drainage systems. Moreover, the design should consider shielding against weather conditions.

Proposed Tabora Bus Terminal: The design of the bus terminal should consider the availability of the following; sanitary facilities, sewerage and drainage system, Fencing, Ground Slab for Skips, access to the Solid Waste Skips, Speakers announcement system, Cold rooms for perishable goods, Specific locations for each business merchandise, Conference hall and restaurant at upper floors and parking at upper floors.

Public Facilities: Some of the services that are being provided to the communities i.e. water supply, electricity, and telecommunication will be affected/ or disrupted by the market construction. Water supply from TUWASA is the main supply of water for residents of Tabora municipal; Therefore, the project phases should avoid pollution of the water.

Resettlement and compensation: If the expropriation of the project will affect people's properties, especially houses. This issue is key and extremely sensitive since it is very costly with prevailing financial circumstances for an individual to put up a house structure. They are assets that are highly valued by the communities.

Location of Campsites: Local people should be involved in the selection of the camp site/s. The contractor's camping site/s should be constructed with permanent building materials. The idea is to use these structures for public services e.g. schools or street offices at the end of the project construction phase.

Spread of HIV/AIDS and Other Sexually Transmitted Infections: Impaired community safety and risk of disease intensifications, especially HIV/AIDS. Tabora Municipal officially make a

formal contract with an institution that will be carrying out the HIV/AIDS preventive campaign through the dissemination of relevant and appropriate HIV/AIDS preventive awareness creation seminars, campaigns should be to both workers in particular and the communities, effective collaboration with CMACs and other stakeholders is paramount for result based HIV/AIDS awareness creation campaigns during construction.

Early marriage and Pregnancies: It has been insisted by stakeholders that most construction projects have been a major cause of early pregnancies for school female children and outside girls under 18 years old. The stakeholders proposed some measures to address the situation i.e. parents should instil a culture of educating their children on sex and reproductive health education, abiding by moral and ethical values, and also parents should behave responsibly as role models with whom the children can emulate them.

Stimulate the growth of town: The project will fuel the growth of towns and streets located along the proposed bus terminal sub-project. These towns should be assisted by the government in planning (e.g. land use and plot surveying) to curb unplanned growth of settlements which directly affect the accessibility of essential public services like supply of clean water and managing waste generated by residents of respective towns and streets near the sub-projects. Moreover, the area around the redeveloped market and bus terminal should be well-planned in terms of waste management to avoid the eruption of communicable diseases.

Employment opportunities to the local people: Each street/ward being transverse should be given priority in the provision of unskilled and semi-skilled laborers in the project. The contractor should therefore adhere to the local content policy in executing the project during recruitment of laborers and commodities and services supply chain.

Insurance of Workforce: Experience gained from other foreign contractors is that they do not provide workplace insurance for casual laborers. Following existing labor laws, Tabora Municipal council authorities should enforce the contractors to abide with existing laws of the land in safeguarding the safety of the entire workforce at the construction site to make them well covered by appropriate insurance policies.

Improved Accessibility: The proposed sub-project will guarantee easy accessibility of transportation of goods, commodities, and people hence, therefore, enabling more physical development.

Pollution and Vibration during Construction: Dust production, noise from moving construction equipment/machines, and blasting of rocks are inherent construction works. The contractor must have the means to suppress the dust, reduce the level of noise and provide early notification to the communities about the proper time of blasting rocks to obtain gravels.

Protecting constructed Infrastructures: It was urged by stakeholders that there is a need of cultivating a culture of safeguarding and protecting the project infrastructures among community members especially after the completion of sub-projects construction.

Environmental Safeguard and Sustainability: Stormwater channels should not be directed to farms since such practice has damaged crops and farming land due to accelerated erosion. It should be directed to the proper water channels that are not polluting the environment. Also, leakage of diesel, oil, and other lubricants from construction equipment and water sources should be avoided.

Environmental Beautification: Since the Tabora Municipal has had a campaign of planting trees, therefore, the contractor should make sure that the trees are planted on the Market and bus terminal reserved areas and ensure that they grow before handling the project to the client.

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

Table 5.1A: Issues Response Table for Government Institutions

STAKEHOLDERS VIEWS AND CONCERNS				
CONSTRUCTION OF BUS TERMINAL				
Institution	**Name**	**Position**	**Issues/ concerns**	**Responses**
RAS Office Tabora	Rukia S. Manduta	AAS PC	○ The regional authority has decided that the bus terminal should be located at Inala which is a strategic location for Township growth/expansion	○ The proposed bus terminal shall be located at Inala area
Tabora Municipal Council Office	▪ William D. Mpangala ▪ Dr. Baraka Msumi ▪ Tumaini Mgaya	▪ MEMO ▪ *DMO* ▪ MCDO	○ The Township is growing towards Inala where the Bus terminal is proposed to be located, therefore the Bus terminal will stimulate the Township growth ○ The Bus terminal to include the workshop for Buses/vehicles maintenance to prevent maintenances at the parking bays and oil spillages ○ The design of Bus terminal should consider the provision of walkways,	○ The design shall provide a special location for vehicle maintenance within the terminal ○ The design shall lumps for special groups and other special facilities

STAKEHOLDERS VIEWS AND CONCERNS				
			disabled people facilities, CCTV Cameras, Audible announcement speakers, parking with Shades and at least 1 floor for Administration Block for Beautification and parking spaces for Daladala, Bajaji, Bodaboda, Taxi and be able to accommodate 300 Buses at once. ○ The Design of Bus terminal to consider Public toilets at different locations, not at a single location ○ Around the Plot, there are Surveyed plots for other uses, an opportunity for investors	
TUWASA-Tabora Urban Water Supply and Sewerage Authority	▪ Eng. John Mazura ▪ Eng. Thomas Msenyele	▪ Environmental Engineer ▪ Network And Distribution	○ Their construction of bus terminal will result in an expansion of the water supply network and subsequent increase the number of customers and hence add more revenue to the Authority	○ The design shall consider provision for Fire hydrants, Firefighting water tanks, and Rain Water harvesting

STAKEHOLDERS VIEWS AND CONCERNS				
			○ The Bus Terminal design should consider provision for Fire hydrants, Firefighting water tanks, and Rain Water harvesting infrastructures	
Fire and Rescue Force	M.S.J Jihadi-Saif	RFO	○ The design of the Bus terminal should consider the provision for; Fire detection system, fire suppression system, Fire hydrants, Assembly point, Firefighting water tank, Room for fire service at the center, use fire-resistant construction materials ○ During the operation phase, the guards should be trained to suppress fire as first aid before the Fire and rescue force arrives ○ Proposed a small firefighting vehicle for easy maneuver	○ The design shall consider provision for Fire hydrants, Firefighting water tanks, Room for fire service at the center, use fire-resistant construction materials
TTCL Tabora Regional Office	Venance V Assey	ARMN	○ The construction of bus terminal will result in an expansion of the	○

STAKEHOLDERS VIEWS AND CONCERNS				
			communication network and subsequently, increase the number of customers and hence add more revenue to the Company ○ The design has to provide the necessary infrastructures for the server room	
TANESCO Tabora Regional Office	Frank A. Chacha	Ag. RM	○ The construction of bus terminal will result in an expansion of the Electric supply network and subsequent increase the number of customers and hence add more revenue to the Company ○ The design has to provide the necessary infrastructures for the power room and generator.	○ The design shall consider presence of infrastructures for power room and generator
TABORA BUS TERMINAL MANAGEMENT	Winfrida P. Ludovick	Manager	○ The design has to consider accessibilities for firefighting ○ There should be fire hydrants in the new terminal	○ There will be Room for fire service at the center, use fire-resistant construction materials

STAKEHOLDERS VIEWS AND CONCERNS				
	Fredrick Mbewe Hassan Mande Godfrey Msungu Zabron Mgoma Emmanuel Manase	Ag. Manager Fire Force Officer AN Classic NBS Classic Revenue officer	○ Consider installation of portable fire extinguishers in the new terminal ○ Building partition between buses offices and shops should be considered to avoid conflict and robbery. ○ The design should consider parking lot infrastructures for buses and other motor vehicles. ○ The design should consider the presence of offices for different management institutions like police offices, traffic, and fire forces. ○ Consideration for the presence of an affordable number of sanitation facilities for both liquid and solid wastes. ○ The new terminal will increase the revenue of the municipal,	○ The design shall consider the pres offices for different mana institutions like police offices, and fire forces.

STAKEHOLDERS VIEWS AND CONCERNS				
			therefore the design should be good enough to accommodate all buses and other vehicles	
LATRA -TABORA	Nekson MMari	Transportation Officer	○ Tabora has a high demand for Bus stand as the town grows faster than enough and the passengers are in a larger number ○ The design should consider separation for areas for min-bus and bus terminal ○ The design should provide shops outside of the bus terminal ○ The sanitation facilities like toilets should be inside the bus terminal	○ The design shall consider presence of shops in the bus terminal ○ There will be good sanitation systems
REDEVELOPMENT OF EXISTING TABORA CBD MARKET				
Institution	**Name**	**Position**	**Issues/ concerns**	
Tabora Municipal Council Office			○The design has to consider the availability of the following; Fencing, Ground Slab for Skips, access to the Solid Waste Skips, Speakers announcement system,	○The design has to consider the availability of the Fencing, Ground Slab for Skips, access to the Solid Waste Skips and Speakers announcement

STAKEHOLDERS VIEWS AND CONCERNS				
			Cold rooms for perishable goods, Specific locations for each business merchandise, Conference hall and restaurant at upper floors and parking at upper floors ○ The Old Tabora Market should be retained as to why it is the Historical Structure and carries a lot of History ○ The Public toilets and all other wastewater generated to be directed to the existing Sewerage System ○ The Redevelopment of the market will help to remove the people conducting business within the carriageway ○ About 80% of the existing market structures are wooden which have the risk of fire outbreak	system ○ The design will have good sanitation system and drainage system

STAKEHOLDERS VIEWS AND CONCERNS				
			○ At the existing Market, there are no drainage systems, such that during the rainy season the marketplace is filled with stormwater and mud ○ The Old market need to be rehabilitated because windy rains tend to affect the businesses	
TUWASA-Tabora Urban Water Supply and Sewerage Authority	▪ Eng. John Mazura ▪ Eng. Thomas Msenyele	▪ ENVIRONMENTAL ENGINEER ▪ NETWORK AND DISTRIBUTION	○ There are plans for the construction of a sewerage system to Malolo, the wastewater infrastructures for the market align with the plan. ○ Women should be given priorities in employment opportunities during the construction phase ○ Their redevelopment of the existing Market will result in an expansion of the water supply network and subsequent increase the number of customers and hence add more revenue to the Authority	○ Women shall be given priorities in employment opportunities during the construction phase ○ The Redevelopment of the existing Market design shall consider provision for Fire hydrants, Firefighting water tanks and rainwater harvesting infrastructures

STAKEHOLDERS VIEWS AND CONCERNS				
			○ The Redevelopment of the existing Market design should consider provision for Fire hydrants, Firefighting water tanks, rainwater harvesting infrastructures, and sewerage sump for sewer pumping to the existing sewerage system at a higher elevation compared to the market elevation.	
Fire and Rescue Force	M.S.J Jihadi-Saif	RFO	○ The design of the redevelopment of the existing market should consider the provision for; Fire detection system, fire suppression system, Fire hydrants, Assembly point, Firefighting water tank, Room for fire service at the center, use fire-resistant construction materials ○ During the operation phase, the guards should be trained to suppress fire as first aid before the	○

STAKEHOLDERS VIEWS AND CONCERNS				
			Fire and rescue force arrives	
TTCL Tabora Regional Office	Venance V Assey	ARMN	○ The redevelopment of the existing market will result in an expansion of the communication network and subsequently, increase the number of customers and hence add more revenue to the Company ○ Care should be taken for underground infrastructures, TTCL surveyors should be consulted at all project phases ○ The design has to provide the necessary infrastructures for the server room.	○
TANESCO Tabora Regional Office	Frank A. Chacha	Ag. RM	○ The redevelopment of the existing market will result in the relocation of some infrastructures, close communication with TANESCO is important to ensure a smooth relocation	○

STAKEHOLDERS VIEWS AND CONCERNS				
			○ The design has to provide the necessary infrastructures for the power room and Generator	
TFS-TABORA	Lucas S, Nyambala	Ass.Resources Management	○ The design should consider the presence of ornamental and shed trees for beautification. Ie. *Ashock trees, Terminalia trees, Makaranga and Ficus Benjamin*	○ The design shall consider the presence of ornamental and shed trees for beautification
TABORA MUNICIPAL	Deogratius Kamagi	Business Officer	○ The design should consider the presence of a fire hydrant ○ The shops should be built by block and not timber ○ The improved market will solve the Tax problem as the trader will be paying depending on the areas that he/she has been located willingly. ○ The design should consider the presence of shops and business spaces for high, medium, and low variate.	○ The design shall consider the presence of shops and business spaces for high, medium, and low variate. ○ The design shall consider the presence of parking lots in the market area

STAKEHOLDERS VIEWS AND CONCERNS				
			○ Sanitation facilities should be designed such that it accommodates all the liquid and solid waste produced ○ The design should also consider the presence of parking lots in the market area	

5.3 Separate Meetings with Mtaa and Ward Leaders

Brief meetings were held with local leaders including ward and *mtaa* officials. Leaders from 2 Wards (Chemchem and Ifucha.) were consulted. Discussions focused on the existing socio-economic situation in the area and the need to identify clusters of people likely to be adversely affected by the project. The discussions provided an opportunity to introduce the project to the community leaders and identify key informers. The meetings were also intended to encourage a community consultative approach, thus fostering a community participatory approach right from the initial stages of the proposed sub-projects. The social study team had earlier met the leaders of the area near the market during the scoping exercise. These leaders were informed about the project and initial contacts were established, including telephone numbers and other address exchanges. The questionnaire was provided to Mtaa and ward executive officers to fill in the relevant secondary data available in the Mtaa and ward.

5.4 Public Consultations

In the study area, the team conducted several consultation meetings with the general public. The public meetings were attended by all sub wards including women, youth, old people, and even children. Whoever was available in the sub ward was allowed to attend. Figure 5.2 below shows conducted meeting with the community members of Chemchem ward (Tabora market). The minutes of the meetings are attached as appendix IV.

Figure 5.2 Consultative meeting with Tabora Market traders and leaders.
(Source: socio-economic survey, 2021)

5.3.1 Informal discussions

Informal discussions were held with key members of the community such as elderly people; influential persons; women/youth group leaders; and community-based resource persons.

5.3.2 Household questionnaire

Recruited and trained enumerators administered a total of 75 household questionnaires from 7 wards including the Chemchem and Ifucha; (10 questionnaires for each ward) along the project area to capture relevant baseline data from the project impacted communities in the project areas using well-designed questionnaires. Both quantitative data and qualitative information were obtained through this tool which enriched the Impact Assessment report. The analysis of the questionnaire survey is presented in chapter 4.

5.3.3 Major Issues raised by the stakeholders

Through conducting a series of public meetings in the sub-project area, stakeholders provided several views concerning the development of the sub-projects in the Municipal and within their areas. Therefore, the following issues were raised by the public;

Demolition Market kiosk: The design should consider the proper way to avoid demolition of kiosk and other building structure within the sub-projects area.

Temporary Markets sites: Local people should be involved in the selection of the temporary site or allocation for temporary use for business and should be documented legally to avoid conflict between different parties.

Spread of HIV/AIDS and other sexually transmitted infections: Impaired community safety and risk of disease intensifications, especially HIV/AIDS. The contractor is required to conduct relevant preventive awareness creation seminars and campaigns on HIV/AIDS to both workers in particular and the communities at large.

Accidents: It has been always observed and witnessed the increase in several construction accidents that are fatal and leave affected with disabilities during construction. This prompts fear that the proposed construction of the bus terminal and Market might cause accident when safety measure are not taken into consideration.

Dust during construction: Dust production is inherent to all construction works. The contractor must have means to avoid pollution by the dust particles otherwise conditions may be intolerable.

Recruitment of Labourers during the construction phase: Each Mitaa being transverse should be given priority in the provision of unskilled and semi-skilled labourers in the sub-projects. The contractor should therefore address the issue of local content policy in executing the sub-projects.

Environmental Safeguard and Sustainability: Stormwater channels should not be directed to farms as such practice has damaged crops and farming land due to accelerated erosion. It should be directed to the proper water channels that are not polluting the environment.

5.3.4 People's Attitudes towards the Sub-projects

The communities near the proposed sub-projects are looking forward to seeing that the Bus terminal and Market sub-projects are under construction. However, all the communities near the sub-projects are quite worried about the compensation issues of the affected properties. Communities would like the government to compensate all the properties that will be affected by the sub-projects construction, although most of the properties are out of reserve.

Table 5.1B: Issue response Table for Community

S/No	Sub-Proje	Ward	Design and Implementation Issues and Opinions	Responses
1.	main Tabora Market	Chemchem	Modern market with all structures and space for *mama Ntilie*, Slaughterhouse, hall for meeting place, Parking trucks and passenger cars During construction young people of Chemchem should be taken to work as casual laborers. The paving floor is necessary, banking services, adequate roads in and out the market, dispensary service, and police station Modern toilets should focus on the disabled, and indigenous people should be given priority Build rainwater harvesting gutters The construction of a new market should take into consideration all traders with all items.	○ The design shall provide areas for *mama Ntilie*, Slaughte hall for meeting place, Parking trucks and passenger cars ○ The sanitation of the redeveloped market shall consider the special groups
2.	Ifucha	Tabora Bus Terminal	The Bus terminal will bring development into Ifucha ward and also it will help suburban to grow and increase of population and more business	

CHAPTER SIX

6.0 ASSESSMENT OF IMPACTS AND IDENTIFICATION OF ALTERNATIVES

This chapter outlines the potential negative and positive impacts that will be associated with the project. The impacts are related to activities to be carried out during the pre-construction, construction, and operation phases of the sub-projects. In addition, the closure and decommissioning phase impacts of the project have been highlighted.

The impacts of the have been categorized into each of its life cycle stages; construction, operation and decommissioning.

6.1 Impact Zones

This section covers the baseline environmental situation on where the Sub-projects are located (The methodology for Impact Identification and evaluation has been provided in section 1.10.3). Most of the information provided in this section was gathered through observation and measurements during the field survey. Some of the data were obtained through a desk review.

The baseline information on the sub-project provided below belongs to three zones;

- **Primary Corridor of Impact** – This is the core Impact zone where the sub-projects works will concentrate, it covers the total area where the construction of the building will be taken.
- **Secondary Impact area**- These are off-site locations linked to the sub-projects construction works including i.e. borrow areas, quarries, and other sources of materials such as sand, gravel, aggregates, fill materials, water, etc. Involving civil works/extraction activities done by/or on behalf of the project. Other sites will be waste disposal sites, campsites (if so requires), or other locations were chosen for the accommodation of crew and equipment and material storage. These areas will be located across/within wards and *mitaa* where sub-projects are located or traversed.
- **The general project area of Influence** - This includes the wider geographical areas that are influenced by subprojects (e.g. Chemchem and Ifucha).

6.2 Impact Identification

6.2.1 Methodologies for Identification of Impacts

Matrix

For identification of environmental impacts, the Consultants team used the matrix method (screening matrix), which is based on identifying and qualifying actions of the Project comparing them to natural and social environmental conditions. This gave a list of anthropomorphic actions with impacts to the environment including health and safety to project's communities. The latter was carried out through the use of a cause-effect relationship matrix.

Focused Approach – Impacts Mapping

The approach was used to identify and locate all possible impacts' receiving environments from roads sub project. Odometer was used to measure distance and cameras were used to capture real time pictures.

Experts Knowledge

Expert or knowledge-based system were used to assist diagnosis, problem solving and decision-making.

The impacts are categorized into Pre-Construction phase impacts, Construction phase impacts, and Operational phase impacts. The main receptors of impacts associated with the Sub-projects (Improvement of Tabora market, and construction of Tabora bus terminal) 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 sections identify the impacts based on the sub-project which includes Bus terminal and Market sub-project.

6.2.1 Market Sub-project

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

- Job creation and increased income

The following impacts were identified to be likely to occur during the construction phase;

- Job creation and increased income
- Land degradation and increased erosion
- Pollution of soil and water sources
- Noise, Vibration and Air Pollution

- Increased Waste
- Improved infrastructure and public services
- Increased HIV/AIDS and other sexual related diseases
- Safety and health risks
- Reduction of business income due to reallocation of business premises
- Increased Gender Based Violence's

The following impacts were identified to be likely to occur during the operational phase;

- Improved livelihood, economic growth, and community services
- Increase in Revenue collection for Tabora Municipal:
- Economic growth and trade
- Noise, Vibration and Air Pollution
- Shield against Weather conditions
- Increased socio-cultural interactions and acquiring skills and new challenges
- Creation of job opportunities during the construction phase
- Easy access to and expansion of the markets
- The danger of un-reinstated borrow pits

The following impacts were identified to be likely to occur during the decommissioning phase;

- Creation of job opportunities
- Noise, Vibration and Air Pollution
- Increase Waste

6.2.2 Bus Terminal Sub-project

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

- Job creation and increased income

The following impacts were identified to be likely to occur during the construction phase;

- Job creation and increased income
- Loss of habitat and biodiversity
- Land degradation and increased erosion
- Pollution of soil and water sources
- Noise, Vibration and Air Pollution

- Increased Waste
- Increased socio-cultural interactions and acquiring skills and new challenges
- Improved infrastructure and public services
- Increased HIV/AIDS and other sexual related diseases
- Interference on Traditional Norms and Values
- Safety and health risks
- Increased crime rate

The following impacts were identified to be likely to occur during the operational phase;

- Creation of job opportunities during the construction phase
- Improved transportation and connectivity within the region
- Improved livelihood, economic growth, and community services
- Increase in Revenue collection for Tabora Municipal:
- Economic growth and trade
- Interference to local hydrology
- Increased Rates of Natural Resources Exploitation
- The danger of un-reinstated borrow pits
- Shield against Weather conditions
- Noise, Vibration and Air Pollution

The following impacts were identified to be likely to occur during the decommissioning phase;

- Creation of job opportunities
- Noise, Vibration and Air Pollution
- Increase Waste

The interaction between the intended project activities and the different environmental receptors is summarized in a simplified matrix presented in Table 6.1-6.6.

6.3 Impact Significance Evaluation

Taking into account the criteria stated in methodology section 1.10.3, A simple matrix with the following ratings was used to determine the significance of the identified impacts stated in section 6.2 above:

+3 Very high positive impacts

+2 High positive impacts

+1 Minor positive impact

0 No impacts

-1 Minor negative impact

-2 High negative impacts

-3 Very high negative impacts

Table 6.1: Environmental and Social Impacts Matrix for the Improvement of Tabora 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.	Job creation and increased income	N	MT				+2	+3	+1	+2
2.	Destruction of public utilities	L	ST	R			-3	-2	0	0
3.	Shield against Weather conditions	L	LT	R			-1	-2	0	0
4.	Increased Soil erosion	L	ST	R	✓		0	-2	-1	0
5.	Risk Water and Land Pollution	L	ST	R			-1	-2	-1	-1
6.	Increased noise, vibration, and air pollution	L	MT	R	✓		-1	-2	-1	-2
7.	Increased spread of HIV/AIDS	L	LT	IR	✓	✓	-1	-3	-1	-1
8.	Safety and health risks	L	ST	R			-1	-2	0	+1
10.	Increased water abstraction	R	ST	R			-1	-2	0	-1
11.	Increased Waste	L	ST	R			-1	-2	-1	0
13.	Loss of definite materials and land degradation	R	LT	IR		✓	-1	-3	-1	-1
17.	Enhanced socio-cultural interaction	L	LT			✓	+1	+2	0	+2
20.	Increase in Revenue collection for Tabora Municipal	N	MT				0	+1	+1	+3

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

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

Reversibility: Reversible (R), Irreversible (IR)

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

Table 6.2: Environmental and Social Impacts Matrix for the Construction of the Bus terminal

		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.	Job creation and increased income	N	MT				+2	+3	+1	+2
3.	Shield against Weather conditions	L	LT	R			-1	-2	0	0
4.	Increased Soil erosion	L	ST	R	✓		0	-2	-1	0
5.	Risk Water and Land Pollution	L	ST	R			-1	-2	-1	-1
6.	Increased noise, vibration, and air pollution	L	MT	R	✓		-1	-2	-1	-2
7.	Increased spread of HIV/AIDS	L	LT	IR	✓	✓	-1	-3	-1	-1
8.	Safety and health risks	L	ST	R			-1	-2	0	+1
10.	Increased water abstraction	R	ST	R			-1	-2	0	-1
11.	Increased Waste	L	ST	R			-1	-2	-1	0
13.	Loss of definite materials and land degradation	R	LT	IR		✓	-1	-3	-1	-1

		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
14.	Loss of Biodiversity and habitats	R	LT	R	✓	✓	-1	-3	0	0
16.	Increased in migration	L	ST	R			-1	-2	0	-1
17.	Enhanced socio-cultural interaction	L	LT			✓	+1	+2	0	+2
18.	Improved transportation within the regions	R	MT				0	+1	+1	+3
19.	Improved community life and services	L	MT				0	+1	+1	+3
20.	Increase in Revenue collection for Tabora Municipal	N	MT				0	+1	+1	+3

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

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

Reversibility: Reversible (R), Irreversible (IR)

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

6.4 Market Sub-project

6.4.1 Pre- Construction Phase

Positive impacts

Job Creation and Increased Income to Local Communities

During this phase, people shall be employed by the contractor to do mobilization works such as the construction of campsites, quarrying and material extraction, transportation activities, etc. The local people from the sub-project area shall be given priorities in recruitment processes to increase their income. The people from Tabora municipality will be given priority in the recruitment processes. The market sub-project is anticipated to provide more employment opportunities. This shall increase the income to all those who have the opportunity to be employed by the contractor.

6.4.2 Construction Phase Impacts

Positive impacts

Job Creation and Increased Income to Local Communities

Demand and supply of goods and services for the workforce create temporary direct and indirect employment to the local business. Residents, especially the youth will benefit from expanded opportunities for seasonal employment during the construction period of the Market sub-project. A local business will also benefit from the supply of construction material to the contactors. A larger number of people will be directly employed in different capacities which will result in the improved livelihood of the local communities.

Negative Impacts

Destruction of Public Utilities

The present utilities within the sub-project areas are expected to be affected by the project since the infrastructure is located close to the project area. Power lines were observed within the Market area to be redeveloped. Figure 6.1. Any relocation of service lines will result in the serious disruption of service provision.

Figure 6.1: Powerlines within the Market sub-project
(Source: Fieldwork December 2021)

Increased Soil Erosion

Soil erosion impact in the construction site results from surface runoff due to increasing the erosive power of the storm. These impacts are expected to be short-term and of significance during the construction phase. The risk of soil erosion during this phase is likely to be high compared to other project phases since the phase involves the removal of facilities and other structures at the site which results in changes like the surface area; site clearance and moving of equipment.

Construction works would accelerate erosion problems in most cut sections taking into consideration that the soil within the sub-project area is very loose. However, all cuts in the sloping grounds should be refurbished firmly and provided with vegetation cover to reduce the effect of soil erosion. Major soil erosion is expected at the quarry sites and borrows pits.

Population Influx

The project will attract labour into the project area. Like any other project with significant recruitment, the influx of labour heightens the risks associated with sexual exploitation and abuse of community members by project workers, gender-based violence at the community level and sexual harassment between project workers. In addition, labour influx into this project area could be source of conflict between workers and the local population. The impact of conflicts because of influx of labour, though localized, temporary, reversible and noncumulative, can be severe in magnitude.

Increased water and soil pollution

During the construction phase, potential water contamination could arise from disturbance of soil, spillage of fuel, lubricant, and other toxic materials at the construction site, discharge of silt-laden run-off from sites, and disposal of waste and wastewater from sanitary convenient provided to construction workers.

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

Noise, Vibration, and Air Pollution during Construction Phase

The ambient noise quality of the sub-project site is characteristic of an urban setting. During the construction phase, noise sources will include ground clearance, pilling, concreating, and equipment installation.

Dust and fumes will have major direct but short-term impacts during the project construction phase. Thus, ventilation and vegetation are anticipated to lessen the air pollution problem. Moreover, a sprinkling of the site areas together with access roads with water during construction work will further lessen the generation of dust and consequently, alleviate the air pollution problem. However, the emission of gases is expected to increase especially during the operation phase of the sub-project.

Noise and vibration will be produced by construction vehicles, plants, and machinery during the delivery of materials, processing of materials, and actual construction work. The pollution is expected to increase during the construction phase in all sub-projects areas and will tend to impact the communities. Vibration may even cause physical damage to properties near the construction site. The vegetation and loose soil along the market site has the potential for damping noise and vibration. As such, noise and vibration impacts will have a short range – near the construction site and will significantly increase during the operation phase of the Market.

Increased traffic congestion

When the bus terminal is completed, it shall allow traffic not destined moving to and fro. It is expected that vehicles entering the bus terminals will be in a higher number which will be passing from different areas near Tabora region.

Increased spread of HIV/AIDS

HIV remains a public health concern in many sub-Saharan African countries including Tanzania. In the year 2013, it was estimated that there were a total of 1.4 million people living with HIV in Tanzania.

Concerning HIV/AIDS infection in Tabora District, the HIV/AIDS infection rate is low (5.1%). Based on the information gathered, the prevalence rate is 5.1%. Moreover, efforts to address the epidemic are made in response to negative consequences as evidenced by impoverishing families and generating widows, orphans, and vulnerable children due to the loss of breadwinners in their families.

However, to some extent during the construction phase, the influx of people is expected to increase interactions with indigenous people, therefore it is likely to trigger HIV transmissions.

The sub-projects are also expected to facilitate the easy reaching of the majority of people living in the nearby area and within the region for HIV/AIDS education and prevention methods as it will increase the interaction of people.

To some extent, the improved Market and Bus terminal are expected to stimulate the creation of self-employment activities for unemployed women which will make

them economically powerful to get away from commercial sex work. This will reduce the HIV/AIDS infections in the sub-project areas, especially in sexually active women.

Safety and Health Risks

The construction of the sub-project exposes the laborers and the general public to bronchial and other respiratory tract diseases. Also, poor use (or not using at all) of the safety gears during the construction phase will result in loss of lives or injuries during construction. The incidence rate of water-borne diseases such as cholera and diarrhea will increase if there will be no proper sanitation practices at the camps.

Technically, the improvement of the sub-project surfaces reduces the roughness which results in faster driving and consequently into avoidable accidents. The condition can result in many people being knocked down by vehicles in the beginning. It is expected that during the construction phase vehicles speed will be reduced

Increased water abstraction

Improving the sub-project will entail significant water consumption from TUWASA. This impact can be easily minimized if the contractor decides to abstract water from boreholes and the construction of dams. However, this will be controlled by the Lake Tanganyika Basin Water Board which is responsible for regulating water use in that basin. The contractor will have to apply for a permit before any abstraction.

Increased Wastes

Construction activities are associated with the production of waste. These wastes can either be a solid waste or liquid waste. The waste streams are Construction activities and Domestic activities of the workers at the camp and site. The waste will consist of demolition and excavated material, metal drums, surplus spoil materials, empty paint and solvent container, paper bags, and water oils. Moreover, there will be foodstuff waste especially during the operation phase which includes; fruit peeling and stocks, paper products, and normal food waste. The quantities of

materials will be known during the detailed design phase. These wastes if not well handled can change the aesthetic nature of the project area and can even lead to water pollution in case of improper disposal of oils.

Loss of Definite Materials and Land Degradation

Construction of the Market sub-project will have direct impacts related to excavation, quarrying, and deposition of spoil material.

Quarrying involves clearing the vegetation at the sites, excavating, and transporting the material. Thus, borrowing and quarrying activities will cause habitat change, land degradation (due to the removal of fertile topsoil), landscape impairment (visual intrusion), and soil erosion-which lead to siltation of waterways. Quarrying, excavation, and the disposal of spoil material can destroy the economic and aesthetic value of public and/or private property including land. Some species may be affected during construction, but not to the level of extinction. However, the establishment of detour routes during construction may damage some species. Moreover, excavation work as well as the presence of construction vehicles, plants, and equipment will also add to scenic quality deterioration.

6.4.3 Operational Phase Impacts

Positive Impacts

Job Creation and Increased Income to Local Communities

During the operation phase of the sub-project, most people in the municipal will acquire jobs through, getting places for conducting their business in the redeveloped market, selling goods and foodstuff to the passengers in the constructed Tabora Market. The expected direct employment opportunities are like food vendors (*mama Ntilie) and* matching guys (*Machinga)*. Such employment would contribute to poverty reduction, especially for women and improve accessibility of goods and services.

Shield against Weather conditions

The improvement of the Tabora Market will ensure passengers and traders carry out their business without the worry of extreme weather such as vulnerability to rainfall

and heat from the sun since the market will have a roof and wall around it. Moreover, there will be a larger place for parking lots of the customer's vehicles.

Increase in Revenue collection for Tabora Municipal

It is anticipated that the Market sub-project will result in increased revenue to the Municipal of Tabora, through revenue that will be collected from the market, the municipal economy will rise at a significant level. Moreover, the municipal will have an increased budget for maintenance of the structures and perform other municipal economic development activities.

Increased socio-cultural interactions and acquiring skills and new challenges

The operation of the sub-projects will lead to increased socio-cultural interaction within the region. The constructed Tabora Market will stimulate people from neighboring regions to settle in Tabora and make lives, thus bringing about social change and increasing new positive insight and ideas and knowledge of the communities in the Municipal.

Negative Impacts

Increased Noise, Vibration, and Air Pollution

During the operation phase, the primary noise sources at the site will include vehicles delivering the supplies to the market, customers' vehicles, and market activities. The emissions are likely to be washed away by rainfall and contaminate the soil. However, the magnitude of the pollution is considered to be very low.

The discomfort caused by noise includes auditory fatigue and temporary lessening of hearing ability. However, perceived noise is related to background noise level, so the improved market in quiet areas or noisy trucks at night are often perceived as worse than higher levels of noise in a busy area during the workday.

6.4.4 Decommissioning Phase

Positive Impacts

Job Creation and Increased Income to Local Communities

During the decommissioning phase, the communities will have opportunities for employment as the contractor recruits people to participate in the demolition of

structures which will include stalls, storm drains, and sanitary facilities. The phase is anticipated to impart knowledge to the communities which will help to improve the livelihood of the people.

Negative Impacts

Increased Noise, Vibration, and Air Pollution

During decommission phase, sources of noise will include; demolition works and vehicles carting away material. The primary noise sources at the site will include contractors' heavy duties vehicles, machinery, and other equipment and air pollution will entail dust emission from the demolition of structures at the site. The emissions are likely to be washed away by rainfall and contaminate the soil. However, the magnitude of the pollution is considered to be very low.

Increased waste

Removal of all construction materials, structures and that will be generated as a result of the demolition and dismantling activities will be carried out. Finally, site restoration activities will be carried out to ensure that the area is rehabilitated and restored to almost its original status.

6.5 Tabora Bus Terminal Sub-project

6.5.1 Pre- Construction Phase

Positive impacts

Job Creation and Increased Income to Local Communities

During this phase, people shall be employed by the contractor to do mobilization works such as the construction of campsites, quarrying and material extraction, transportation activities, etc. The local people from the Bus terminal sub-project area shall be given priorities in recruitment processes to increase their income. The people from Tabora municipality will be given priority in the recruitment processes. The new bus terminal sub-project is anticipated to provide more employment opportunities. This shall increase the income to all those who have the opportunity to be employed by the contractor.

6.5.2 Construction Phase Impacts

Positive impacts

Job Creation and Increased Income to Local Communities

Demand and supply of goods and services for the workforce create temporary direct and indirect employment to the local business. Residents, especially the youth will benefit from expanded opportunities for seasonal employment during the construction period of the Bus terminal sub-project. A local business will also benefit from the supply of construction material to the contactors. A larger number of people will be directly employed in different capacities which will result in the improved livelihood of the local communities.

Negative Impacts

Increased Soil Erosion

Soil erosion impact in the construction site results from surface runoff due to increasing the erosive power of the storm. These impacts are expected to be short-term and of significance during the construction phase. The risk of soil erosion during this phase is likely to be high compared to other project phases since the phase involves the removal of facilities and other structures at the site which results in changes like the surface area; site clearance and moving of equipment.

Construction works would accelerate erosion problems in most cut sections taking into consideration that the soil within the bus terminal sub-project area is very loose. However, all cuts in the sloping grounds should be refurbished firmly and provided with vegetation cover to reduce the effect of soil erosion. Major soil erosion is expected at the quarry sites and borrows pits.

Increased water and soil pollution

During the construction phase, potential water contamination could arise from disturbance of soil, spillage of fuel, lubricant, and other toxic materials at the construction site, discharge of silt-laden run-off from sites, and disposal of waste and wastewater from sanitary convenient provided to construction workers.

Noise, Vibration, and Air Pollution during Construction Phase

The ambient noise quality of the sub-project site is characteristic of an urban setting. During the construction phase, noise sources will include ground clearance, pilling, concreating, and equipment installation.

Dust and fumes will have major direct but short-term impacts during the project construction phase. Thus, ventilation and vegetation are anticipated to lessen the air pollution problem. Moreover, a sprinkling of the site areas together with access roads with water during construction work will further lessen the generation of dust and consequently, alleviate the air pollution problem. However, the emission of gases is expected to increase especially during the operation phase of the sub-project.

Noise and vibration will be produced by construction vehicles, plants, and machinery during the delivery of materials, processing of materials, and actual construction work. The pollution is expected to increase during the construction phase in all sub-projects areas and will tend to impact the communities. Vibration may even cause physical damage to properties near the construction site. The vegetation and loose soil along the bus terminal site has the potential for damping noise and vibration. As such, noise and vibration impacts will have a short range – near the construction site and will significantly increase during the operation phase of the Bus terminal.

Increased spread of HIV/AIDS

HIV remains a public health concern in many sub-Saharan African countries including Tanzania. In the year 2013, it was estimated that there were a total of 1.4 million people living with HIV in Tanzania.

Concerning HIV/AIDS infection in Tabora District, the HIV/AIDS infection rate is low (5.1%). Based on the information gathered, the prevalence rate is 5.1%. Moreover, efforts to address the epidemic are made in response to negative consequences as evidenced by impoverishing families and generating widows, orphans, and vulnerable children due to the loss of breadwinners in their families.

However, to some extent during the construction phase, the influx of people is expected to increase interactions with indigenous people, therefore it is likely to trigger HIV transmissions.

The Bus terminal sub-project is also expected to facilitate the easy reaching of the majority of people living in the nearby area and within the region for HIV/AIDS education and prevention methods as it will increase the interaction of people.

To some extent, the improved market and Bus terminal are expected to stimulate the creation of self-employment activities for unemployed women which will make them economically powerful to get away from commercial sex work. This will reduce the HIV/AIDS infections in the project areas, especially in sexually active women.

Safety and Health Risks

The construction of the sub-project exposes the laborers and the general public to bronchial and other respiratory tract diseases. Also, poor use (or not using at all) of the safety gears during the construction phase will result in loss of lives or injuries during construction. The incidence rate of water-borne diseases such as cholera and diarrhea will increase if there will be no proper sanitation practices at the camps.

Technically, the improvement of the sub-project surfaces reduces the roughness which results in faster driving and consequently into avoidable accidents. The condition can result in many people being knocked down by vehicles in the beginning. It is expected that during the construction phase vehicles speed will be reduced

Increased water abstraction

Construction of the new bus terminal sub-project will entail significant water consumption from TUWASA. This impact can be easily minimized if the contractor decides to abstract water from boreholes and the construction of dams. However, this will be controlled by the Lake Tanganyika Basin Water Board which is

responsible for regulating water use in that basin. The contractor will have to apply for a permit before any abstraction.

Loss of habitat and biodiversity

The construction of the proposed bus terminal expects to impact both flora and fauna and their habitats. The flora to be affected includes; shrubs and bushes, grasses, and a few trees which include; *Terminalia sericea*, *Julbernardia Globiflora, Borassus Aethiopum,* and *Phyllansus Engreli* species which are the dominant species in the sub-project area. On the other hand, the fauna includes; butterflies, birds of different species, and crawling animals such as lizards. However, both flora and fauna present at the site are not reported to be critical species on the IUCN Red List of threatened species (Figure 6.21).

Figure 6.2: Vegetation within the proposed site at Inala
(Source: Fieldwork December 2021)

Increased Wastes

Construction activities are associated with the production of waste. These wastes can either be a solid waste or liquid waste. The waste streams are Construction activities and Domestic activities of the workers at the camp and site. The waste will consist of demolition and excavated material, metal drums, surplus spoil materials, empty paint and solvent container, paper bags, and water oils. Moreover, there will be foodstuff waste especially during the operation phase which includes; fruit peeling and stocks, paper products, and normal food waste. The quantities of

materials will be known during the detailed design phase. These wastes if not well handled can change the aesthetic nature of the project area and can even lead to water pollution in case of improper disposal of oils.

Loss of Definite Materials and Land Degradation

Construction of the new bus terminal sub-project will have direct impacts related to excavation, quarrying, and deposition of spoil material.

Quarrying involves clearing the vegetation at the sites, excavating, and transporting the material. Thus, borrowing and quarrying activities will cause habitat change, land degradation (due to the removal of fertile topsoil), landscape impairment (visual intrusion), and soil erosion-which lead to siltation of waterways. Quarrying, excavation, and the disposal of spoil material can destroy the economic and aesthetic value of public and/or private property including land. Some species may be affected during construction, but not to the level of extinction. However, the establishment of detour routes during construction may damage some species. Moreover, excavation work as well as the presence of construction vehicles, plants, and equipment will also add to scenic quality deterioration.

6.5.3 Operational Phase Impacts

Positive Impacts

Job Creation and Increased Income to Local Communities

During the operation phase of the sub-project, most people in the municipal will acquire jobs through, getting places for conducting their business in, selling goods and foodstuff to the passengers in the constructed bus terminal. The expected direct employment opportunities are like food vendors (*mama nitilie) and* matching guys (*Machinga)*. Such employment would contribute to poverty reduction, especially for women.

Shield against Weather conditions

The construction of the new bus terminal will ensure passengers and traders carry out their business without the worry of extreme weather such as vulnerability to

rainfall and heat from the sun since the Bus terminal will have a roof and wall around it. Moreover, there will be a larger place for parking lots of the buses.

Enhanced Socio-Cultural Interaction

The implementation of the sub-project will bring many people from different cultural backgrounds. Such interactions may bring about social changes in the communities as people will be moving from different regions to Tabora de to the construction of a new Bus terminal. Different bus routes will be established and an increase in the number of passengers is expected and thus, interaction will be significantly observed. Interaction with technocrats will stimulate the adoption of new insight and technologies which will improve the individual livelihood of the people.

Increase in Revenue collection for Tabora Municipal

It is anticipated that the new bus terminal sub-project will result in increased revenue to the Municipal of Tabora, through revenue that will be collected from the bus terminal, the municipal economy will rise at a significant level. Moreover, the municipal will have an increased budget for maintenance of the structures and perform other municipal economic development activities.

Increased socio-cultural interactions and acquiring skills and new challenges

The operation of the sub-projects will lead to increased socio-cultural interaction within the region. The constructed bus terminal will stimulate people from neighboring regions to settle in Tabora and make lives, thus bringing about social change and increasing new positive insight, ideas, and knowledge of the communities in the Municipal.

Negative Impacts

Increased Noise, Vibration, and Air Pollution

During the operation phase, the primary noise sources at the site will include passenger buses, customers' vehicles, and vehicles from different regions to the bus terminal including playing loud music or using a sound amplifier to call passengers and customers. The emissions are likely to be washed away by rainfall and

contaminate the soil. However, the magnitude of the pollution is considered to be very low.

The discomfort caused by noise includes auditory fatigue and temporary lessening of hearing ability. However, perceived noise is related to background noise level, so the constructed bus terminal in quiet areas or noisy trucks at night are often perceived as worse than higher levels of noise in a busy area during the workday.

6.5.4 Decommissioning Phase

Positive Impacts

Job Creation and Increased Income to Local Communities

During the decommissioning phase, the communities will have opportunities for employment as the contractor recruits people to participate in the demolition of structures which will include stalls, storm drains, and sanitary facilities. The phase is anticipated to impart knowledge to the communities which will help to improve the livelihood of the people.

Negative Impacts

Increased Noise, Vibration, and Air Pollution

During decommission phase, sources of noise will include; demolition works and vehicles carting away material. The primary noise sources at the site will include contractors' heavy duties vehicles, machinery, and other equipment and air pollution will entail dust emission from the demolition of structures at the site. The emissions are likely to be washed away by rainfall and contaminate the soil. However, the magnitude of the pollution is considered to be very low.

Increased waste

Removal of all construction materials which includes; concrete materials, timber, reinforcement bars, ceramic materials, plumbing materials, etc, structures that will be generated as results of the demolition and dismantling activities will be carried out. Finally, site restoration activities will be carried out.

6.6 Cumulative Impact Assessment

The cumulative impact assessment (CIA) of the sub-Projects (Construction of Bus terminal at Inala, Redevelopment of 50 years old market) comprises the potential cumulative impacts of the sub-projects concerning other identified significant projects being developed within or near the sphere of influence of the sub-Project ("Sub-Project Area"). The cumulative impacts specify the risks and impacts from (i) other existing projects or conditions, and (ii) other future developments (including future stages of the project itself) that are realistically defined at the time the ESIA is undertaken and for within the sphere of influence of the various projects or developments may overlap. Cumulative impacts are thus defined for this ESIA as impacts that result from incremental changes caused by the Project together with other presently ongoing, or reasonably foreseeable future planned actions/projects within the sub-project Area. Depending on the type/characteristics of other identified projects and their specific impacts, the main issues of concern concerning the CIA can thus include any type of impact that is considered in the ESIA.

The CIA focuses on environmental and social components rated as "critical" by the affected communities and the scientific community (Valued Environmental and Social Components [VECs]), which are cumulatively impacted by the project, other projects, and sources of external pressure. The development of a CIA requires the identification of VECs based on the area of influence (AoI) of the Project; other existing, planned, and future projects; sources of external social and environmental pressure; and the results of consultation with stakeholders (see the table 6.3 below).

Table 6.3: Valued Environmental Components and Associated Potential Cumulative Impacts

S/No.	Description of VEC	Potential Impacts
1.	Humans –land and property owners at the sub-project area to expropriation	▪ Reduced access to potential drainage issues physical relocations of residents, businesses ▪ Noise and Air pollution during the construction and operation phase ▪ Increased safety risk during construction

S/No.	Description of VEC	Potential Impacts
		and operation: Accidents, injuries ▪ Increased health problems: HIV/ AIDS and other STDs.
2	Humans – Property users and Residents living near the sub-project sites alignment and construction areas/access roads (outside of the boundaries of resettlement area)	▪ Noise, emissions during construction ▪ Increased safety risk during construction and operation: Accidents, injuries ▪ Noise/emissions from operations ▪ Disturbed access to local infrastructure and properties ▪ Risk for accidents during operation – pedestrian crossings
3	Fauna and Avifauna terrestrial and aquatic	Fragmentation of habitat: ▪ Destruction of natural habitat
4	Flora at the Bus terminal area terrestrial and aquatic	▪ Physical destruction, deterioration ▪ Loss of biodiversity
5	Soils	▪ Erosion, compaction ▪ Pollution from construction equipments
6	Air Quality	▪ Local pollution through dust, smoke, and other emissions
7	Socio-economic	▪ Benefits due to jobs and growth of regional business base and trade ▪ The temporary influx of workers ▪ In-migration/influx of people from other areas ▪ Increased spread of diseases (worker's camps) ▪ Increased crime/ violence (worker's camps) ▪ Increased accidents when crossing the road ▪ Future traffic congestion in towns Centers

S/No.	Description of VEC	Potential Impacts
8	Historical Sites e.g Mnara wa Uhuru, Heroes Cemetery and *Kijiwe cha maamuzi ya busara*	▪ Improved access to the grave ▪ Historical knowledge cementing

6.7 Analysis of Alternatives

In the EIA process, it is important to consider different alternatives, or options, which will achieve the project's objectives. It is also important to include a consideration of what would happen without the project – that is the no-project alternative. Environmental assessment for each alternative is also carried out, since each alternative is likely to have a different set, or degree, of impacts. In this EIA consultations with stakeholders and site visits provided the basis for identifying alternatives. The following types of alternatives are presented for consideration:

6.7.1 Market and Bus terminal sub-projects

6.7.1.1 Relocation Option

Relocation of the selected market and bus terminal sites to a different site is not an option available for the implementation as the proposed market and bus terminal. This is because the selected sites are considered the most suitable compared to the current for the bus terminal. On the other hand, the redevelopment of the Tabora market shall be done on the same site, as is near other facilities that support the market activities.

6.7.2 Energy Alternative

The use of other alternative energy sources apart from power from the National grid and solar power for street lights were also 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. Since solar power is one of the assurance of

availability then its use is recommended during operational of street light and traffic light. However, the traffic light shall have both power from TANESCO and Solar power, hey can be used interchangeably.

6.7.3 Technology and Building Materials Alternatives

Construction technology involves the choice of building materials and the technique and means used to construct roads, culverts and storm water drainages. As with the roads 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 considering. The following criteria were used to select the most suitable technology options for this project;

- 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).

6.7.4 Water Alternative

The use of other alternative water source apart from abstraction from nearby River was considered. Due to huge demand of water, and the fact that the project area is surrounded with many AUWSA water sources and individual owned wells, hence the contractor(s) will have many alternatives for obtaining water for construction activities.

6.7.5 Alternative Site

The option of using another sites apart from that of the proposed one was also considered. However, the proposed sites were observed to have the following advantages over others;

- The proposed roads follow existing alignment
- No issue of compensation will be required hence the cost will be lower
- The existing road geographically suitable for the current purpose.

6.8.3 No Project Alternative

The no-project alternative entails retaining the current status quo without construction of Tabora market and bus terminal infrastructures. Adopting this option would mean avoiding most of the negative impacts associated with the project and missing all the positive benefits such as increased economic growth in Tabora Regions. Therefore, adopting a no-project alternative would mean failure to implement the transport policy and National investment policy.

CHAPTER SEVEN

7.0 IMPACTS MITIGATION MEASURES

7.1 General Considerations

This chapter is devoted to describing measures or actions that shall be implemented to minimize any of the potential impacts identified in the preceding chapter. Many of the mitigation measures put forward are nothing more than good engineering practices that shall be adhered to during the design and construction phases of the sub-project. The developer is committed to the implementation of mitigation measures contained in this report.

7.2 Mitigation Measures for Market Sub-Project

The mitigation measure for the Market sub-projects entails that of pre-construction, construction, and operation phase throughout the project periods. The following mitigation measure entails the sub-project negative impacts (*refer to section 6.4 of the report*). Therefore, the following sections provide the mitigation measure for the Market sub-project.

7.2.1 Mitigation Measures for Pre-Construction Phase Impacts

7.2.1.1 Loss of Employment and Incomes

- Skilled and unskilled job opportunities arising from project activities should be given to affected people as a priority. This will also reduce the influx of job seekers and speculators from outside the project area.
- Women food vendors shall be promoted in place to uplift their income flow. Hygiene of the service providers should be emphasized
- Improve trader's reallocation premises to enhance environmental friendly business

7.2.2 Mitigation Measures for Construction Phase Impacts

7.2.2.1 Destruction of Public Utilities

- TANESCO, TTCL communication trunk, and the Water supply authority (TUWASA) shall be involved from the early stages of this project to have integrated planning. The contractor shall develop a utility management plan.
- Early notice shall be given to the community before any service interruption
- The funds for the relocation of these infrastructures shall be part and parcel of the project if need be.
- The contractor shall be emphasized to minimize the damage of public utilities

7.2.2.2 Soil Erosion and Instability of Slopes

- Unnecessary ground clearance shall be avoided in the sub-projects site.
- Lined drainage channels at sensitive terrains shall be provided to control the speed and volumes of stormwater. The discharge points must be carefully chosen to avoid erosion of arable land and the creation of gullies.
- The contractor should plant grass or any other vegetation cover to minimize exposed soil surface
- Proper grading to promote sheet flow and minimize flow concentration on unconsolidated soil.
- Directing flow to properly designated channels.
- Measures shall be taken to ensure that the topsoil and subsoil excavated from the construction site are properly managed.
- Denuded areas shall be surfaced as soon as possible to minimize soil erosion

7.2.2.3 Increased water and soil pollution

- Refueling of plants or transfer of materials should not be carried out near water supply systems and areas with groundwater resources and any local spillage to soil should immediately be remedied.
- Good housekeeping shall be practiced within material storage compounds or vehicle maintenance yards where the possibility of spillage is great. This can

easily be done by provision of Spill tanks and Secondary containment at vehicle maintenance yards.

- The contractor should Plant *the ornamental trees* to minimize exposed soil surface area where necessary
- The use of silt fences and hay bales to remove suspended solids from surface water runoff

7.2.2.4 Noise, Vibration, and Air Pollution

- 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 sub-project segments.
- The impacts of noise and dust emissions will further be minimized by proper choice of plant and machinery (i.e. fitted with noise and dust silencers or reducers) and locating quarry areas away from human habitations (at least 500 m away).
- Dust at workplaces within or close to human habitation should be critically minimized by periodic water sprinkling on working sections. The contractor shall advise or notify local households on dust, noise, vibration, and other dangers. Also, the trucks carrying construction materials shall be covered.
- Watering should be practiced regularly at all active work sections of the sub-project; at the area of influence of the market site. and all quarries and borrow sites for the protection of workers.
- The contractors shall provide working gear to the workers to avoid pollution contamination.
- The contractor shall ensure all areas to be demolished are covered to avoid pollution to the nearby residents.

7.2.2.5 Increased Spread of HIV/AIDS

- Since construction camps will attract many job seekers and trade mongers, the contractor shall enforce a code of conduct in the camp to encourage respect for the local community and to maintain the cleanliness of the camp at all times.
- The contractor shall deploy locally available labor to reduce the risk of spreading communicable diseases (especially STDs).
- A safety, health, and environment induction course shall be conducted for all workers, putting more emphasis on HIV/AIDS, which has become a national disaster.
- To prevent more HIV/AIDS infections, during the implementation phase, the sub-project should include an information education and communication component (IEC) in its budget. This will help to raise more awareness on HIV/AIDS and means to suppress its incidence.

7.2.2.6 Safety and Health Risks

- Appropriate working gear (such as nose, ear mask, and clothing) and good camp management shall be provided.
- During construction, the contractor shall ensure that the campsite is fenced and hygienically kept with adequate provision of facilities including waste disposal receptacles, sewage, firefighting, and clean and safe water supply. The contractor may be required to drill a borehole for obtaining water for construction.
- A well-stocked First Aid kit (administered by medical personnel) shall be maintained at each camp, quarry site, and each active work section of the site.
- The medical personnel shall also be responsible for primary treatment of ailments and other minor medical cases as well as providing some health education to the workforce.

7.2.2.8 Increased water abstraction

- The contractor shall obtain a water right from Lake Tanganyika Basin Offices before any abstraction of water in the sub-project area.
- The amount of water given to the contractor shall consider the local community around the market areas and downstream of the watercourse.
- Watering should be done to those places with significant dust levels and near the villages to minimize water wastage.

7.2.2.9 Increased Waste

- Disposal of wastes shall be done following the regulation stipulated under the EMA of 2004. An adequate number of waste bins shall be provided at the campsite.
- Only inert materials or readily decomposable materials shall be disposed of by burial.
- No burning of waste materials that produces black smoke shall be approved. Plastics shall not be burned.
- No open burning of oils shall be done
- The campsites shall have adequate toilets with a septic tank-soak away treatment system

7.2.2.11 Loss of Definite Materials and Land Degradation

- Where construction materials such as gravel and stones are to be obtained from village/mtaa lands, the material shall be purchased and this will be officially negotiated with the government to avoid conflicts. The contractor may be compelled to pay a small fee from the government.
- All borrow pits and quarries shall be rehabilitated and proper landscaping is done after completion of the construction processes of the Market sub-project. Pits shall not be left with steep or vertical sides.

- The topsoil shall be stockpiled for later use in reinstating the pit. Shallow slopes will encourage rapid re-vegetation thus preventing erosion as well as providing safety to animals.
- Obtaining sand from valleys and riversides must be well investigated to avoid accelerated land degradation and pollution of water sources and/or interfere with agricultural activities in farmland.
- The contractor should plant grass or any other vegetation types to minimize exposed soil surfaces, especially at embankments slopes.

7.2.3 Mitigation Measures for Operational Phase Impacts

7.3.3.1 Increased Noise, Vibration, and Air Pollution during the Operation Phase

- Steep grades at critical locations shall be avoided to reduce noise from acceleration, braking, and gear changes.
- Cut sections shall be used (where appropriate) to decrease noise in nearby residences.
- Speed limit and exhaust controls shall be enforced, especially in towns.

7.2.3.2 Increased wastes material

- Provision shall be made to provide separate bins for biodegradable and non-biodegradable waste at the Marketplace.
- Traders at the Marketplace will also be provided with bins near their merchandising points to ensure waste generated is collected healthily and safely.

7.2.4 Mitigation Measures for Decommission Phase Impacts

7.2.4.1 Increased Noise, Vibration, and Air Pollution

- Watering shall be practiced by the contractor regularly at all active work sections within the market site.

- The contractors shall provide working gear to the workers to avoid pollution contamination.
- The contractor shall ensure all areas to be demolished are covered to avoid pollution to the nearby communities.

7.2.4.2 Increased waste Material

- Wastes arising will be used wherever possible in the reinstatement of the site such as concrete, gravel, and sand. Any excess stored material will be disposed on off-site in full accordance with Environment Agency 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.

7.3 Mitigation Measures for Tabora Bus Terminal Sub-project

The mitigation measure for the construction of a new Tabora Bus terminal sub-projects entails that of pre-construction, construction, and operation phase throughout the project periods. The following mitigation measure entails the sub-project negative impacts (*refer to section 6.5 of the report*). Therefore, the following sections provide the mitigation measure for the Bus terminal sub-project.

7.3.1 Mitigation Measures for Pre-Construction Phase Impacts

7.4.1.1 Loss of Employment and Incomes

- Skilled and unskilled job opportunities arising from project activities should be given to affected people as a priority. This will also reduce the influx of job seekers and speculators from outside the project area.
- Women food vendors shall be promoted in place to uplift their income flow. Hygiene of the service providers should be emphasized

7.3.2 Mitigation Measures for Construction Phase Impacts

7.3.2.1 Soil Erosion and Instability of Slopes

- Unnecessary ground clearance shall be avoided in the Inala area where the bus terminal sub-project shall be located.
- Lined drainage channels at sensitive terrains shall be provided to control the speed and volumes of stormwater. The discharge points must be carefully chosen to avoid erosion of arable land and the creation of gullies.
- The contractor should plant grass or any other vegetation cover to minimize exposed soil surface
- Proper grading to promote sheet flow and minimize flow concentration on unconsolidated soil.
- Directing flow to properly designated channels.
- Measures shall be taken to ensure that the topsoil and subsoil excavated from the construction site are properly managed.
- Denuded areas shall be surfaced as soon as possible to minimize soil erosion

7.3.2.2 Increased water and soil pollution

- Refueling of plants or transfer of materials should not be carried out near water bodies, and any local spillage to soil should immediately be remedied.
- Good housekeeping shall be practiced within material storage compounds or vehicle maintenance yards where the possibility of spillage is great. This can easily be done by provision of Spill tanks and Secondary containment at vehicle maintenance yards.
- The contractor should Plant *vetiver* grasses to minimize exposed soil surface area where necessary
- The use of silt fences and hay bales to remove suspended solids from surface water runoff

7.3.2.3 Noise, Vibration, and Air Pollution

- 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 sub-project segments.
- The impacts of noise and dust emissions will further be minimized by proper choice of plant and machinery (i.e. fitted with noise and dust silencers or reducers) and locating quarry areas away from human habitations (at least 500 m away).
- Dust at workplaces within or close to human habitation should be critically minimized by periodic water sprinkling on working sections. The contractor shall advise or notify local households on dust, noise, vibration, and other dangers. Also, the trucks carrying construction materials shall be covered.
- Watering should be practiced regularly at all active work sections of the sub-project; at the area of influence of the Bus terminal site. and all quarries and borrow sites for the protection of workers.
- The contractors shall provide working gear to the workers to avoid pollution contamination.
- The contractor shall ensure all areas to be demolished are covered to avoid pollution to the nearby residents.

7.3.2.4 Increased Spread of HIV/AIDS

- Since construction camps will attract many job seekers and trade mongers, the contractor shall enforce a code of conduct in the camp to encourage respect for the local community and to maintain the cleanliness of the camp at all times.
- The contractor shall deploy locally available labor to reduce the risk of spreading communicable diseases (especially STDs).
- A safety, health, and environment induction course shall be conducted for all workers, putting more emphasis on HIV/AIDS, which has become a national disaster.

- To prevent more HIV/AIDS infections, during the implementation phase, the project should include an information education and communication component (IEC) in its budget. This will help to raise more awareness on HIV/AIDS and means to suppress its incidence.

7.3.2.5 Safety and Health Risks

- Appropriate working gear (such as nose, ear mask, and clothing) and good camp management shall be provided.
- During construction, the contractor shall ensure that the campsite is fenced and hygienically kept with adequate provision of facilities including waste disposal receptacles, sewage, firefighting, and clean and safe water supply. The contractor may be required to drill a borehole for obtaining water for construction.
- A well-stocked First Aid kit (administered by medical personnel) shall be maintained at each camp, quarry site, and each active work section.
- 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.

7.3.2.7 Increased water abstraction

- The contractor shall obtain water right from Lake Tanganyika Basin Offices before any abstraction of water in the project area.
- The amount of water given to the contractor shall consider the local community around the bus terminal sub-project and downstream of the watercourse.
- Watering should be done to those places with significant dust levels and near the villages to minimize water wastage.

7.3.2.8 Increased Waste

- Disposal of wastes shall be done following the regulation provided by EMA 2004. An adequate number of waste bins shall be provided at the campsite
- Only inert materials or readily decomposable materials shall be disposed of by burial.
- No burning of waste materials that produces black smoke shall be approved. Plastics shall not be burned.
- No open burning of oils shall be done
- The campsites shall have adequate toilets with a septic tank-soak away treatment system

7.3.2.9 Loss of Definite Materials and Land Degradation

- Where construction materials such as gravel and stones are to be obtained from village lands, the material shall be purchased and this will be officially negotiated with the government to avoid conflicts. The contractor may be compelled to pay a small fee from the government.
- All borrow pits and quarries shall be rehabilitated and proper landscaping is done after completion of the construction processes of the sub-project. Pits shall not be left with steep or vertical sides.
- The topsoil shall be stockpiled for later use in reinstating the pit. Shallow slopes will encourage rapid re-vegetation thus preventing erosion as well as providing safety to animals.
- The contractor should plant grass or any other vegetation types to minimize exposed soil surfaces, especially at embankments slopes and the area that shall be seen to remain bare after construction works.

7.3.2.10 Loss of vegetation

- Close supervision of earthworks shall be observed to confine land clearance within the proposed new Tabora bus terminal and access roads reserve boundaries.
- Topsoil shall be stockpiled and used for reinstating flora at the bus terminal, market areas sites
- The contractor shall be instructed to give the uprooted trees in the bus terminal to the street provided he does not contravene the Forest Acts 2002.
- Consultation with the Municipal Council Forest Officers shall be made before clearing trees/ thickets. The contractor shall plant the proposed Tree species for sub-project Beautification; Finger Palm, *Ficus Benjamin*, Ashok trees, *trichilia emetic* (*midodoma*), and *Thuja* tree.

7.3.3 Mitigation Measures for Operational Phase Impacts

7.3.3.1 Increased Noise, Vibration, and Air Pollution during the Operation Phase

- Steep grades at critical locations shall be avoided to reduce noise from acceleration, braking, and gear changes.
- Cut sections shall be used (where appropriate) to decrease noise in nearby residences.
- Speed limit and exhaust controls shall be enforced, especially in towns.

7.3.3.2 Increased wastes material

- Provision shall be made to provide separate bins for biodegradable and non-biodegradable waste at the bus terminal.
- Traders at the Bus terminal will also be provided with bins near their merchandising points to ensure waste generated is collected healthily and safely.

CHAPTER EIGHT

8.0 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

8.1 Environmental and Social Management Plan

The Environmental and Social Management Plan (ESMP) presents the implementation schedule of the proposed mitigation measures to both environmental and social impacts as well as planning for long-term monitoring activities. For the proposed market, and Bus terminal construction works, the ESMP is given in Table 8.1. The ESMP also includes the associated environmental costs needed to implement the recommended mitigation measures. The engineering designs have already included some of the mitigation measures recommended in this report. Additional recommendations are provided in the ESMP to enable the Bus terminal and Market building structures to be more environmentally friendly. The implementation steps will involve the contractor, the Resident Engineer, Municipal Councils, Road agencies (TARURA), users, and the local communities at large.

8.2 Environmental Monitoring

The national EIA guidelines require the developer to prepare and undertake a monitoring plan and regular auditing. Monitoring is needed to check if and to what extent the impacts are mitigated, benefits enhanced and new problems addressed. Recommendations for monitoring have been included in the ESMP (Table 9.2). The ESMP also assigns responsibilities for monitoring activities. However, the divisional/ward/village environmental committees and district environmental committee will participate in the long-term daily monitoring of the Sub-projects.

8.3 Environmental Audit

It is recommended that environmental audits determine the long-term effects of adopted mitigation measures. It is recommended that environmental audits be carried out on the sub-project as part of the ongoing maintenance program. The audits will unveil the actual performance of mitigation measures and will allow effective measures

to be included in future projects based on the audit results. As per operative ESIA documents in Tanzania, environmental audits would be the responsibility of the developer which is Tabora Municipal Council.

8.4 Implementation of the ESMP

The Project Coordination Unit (PCU) in the Prime Minister's Office-Regional Administration and Local Government (PCU-PMO RALG) will be responsible for the overall monitoring and quality assurance of the Project. While TMC through Project Implementation Unit (PIU) shall be responsible for EMP implementation, the Project (PCU-PMO RALG) will have a quality assurance and monitoring role including all safeguards aspects. TMC-PIU will submit all safeguards progress and monitoring reports to the (PCU-PMO RALG).

The environmental measures incorporated in the detailed engineering design will be attached to the Bills of Quantities and Contract Documents. Moreover, there will be an Environmental, Social, Health, and Safety (ESHS) Code of Conduct to be signed by the Contractor(s) to show their commitment in the implementation of the Environmental, Social, Health, and Safety. The implementation of the Code will be supervised by the Consultant (Resident Engineer) and monitored by Tabora Municipal Council.

The ESHS Code is a set of Guidelines attached to the Bidding Document and Contract to be adopted by the Contractor during project implementation. It contains the commitment and obligations of the Contractor and its subsidiaries (i.e. Sub-Contractors and staff) to undertake construction activities following all applicable Laws, Rules, and Regulations. The Contractor and its subsidiaries shall comply with the Code of Conduct with high ethical standards. Failure to observe the Code will subject the firm to disciplinary action, including Contract termination. Violation of the Code is a violation of law that may result in civil and/or criminal penalties to Contractors, Supervisors, or Firm.

According to the Code, the Contractor is obliged to prepare various safeguard documents before actual construction works. Based on the project Design and ESIA Reports, the document shall include:

- Site-specific **ESMP, HSMP**, Traffic Management Plan **(TMP),** Borrow Pit & Quarry Operation Plan **(BQP):**
- HIV/AIDS Awareness Program,
- Road Safety Awareness Program,
- Occupational Health and Safety Awareness Program.
- Sexual Harassment Prevention Policy
- Child Labour Prevention Policy

The Code requires the Contractor to deploy the Experts of Environmental, Social, and Road Safety, as well as the Sub –Contractor for HIV/AIDS to implement the Plans and Programs

The environmental and social mitigation and enhancement measures incorporated in the detailed engineering design will be attached to the Contract Documents. The Contractor shall take stock of the contents of the Environmental and Social Impact Assessment Statement of the Project. The contractor will have an Environmental Expert with at least 5 years of experience in projects of similar nature. The expert will be familiar with the scientific measurement of environmental and social impacts and remedies and enhancement.

As for all other large construction projects, the contractor will be supervised by a selected consulting firm (Engineer). One of the team members of the supervision team will be an Environmental Specialist who is an expert in Environmental Management issues especially of a construction project (with at least 10 years of experience in projects of similar nature). One of his tasks will be to oversee the contractor implement the mitigation measures proposed by the ESMP during the construction phase. His other duties will be to assist the contractor in the implementation of the Environmental

Monitoring Plan during the construction period. Figure 8.1 provides the organization chart of the ESMP implementation.

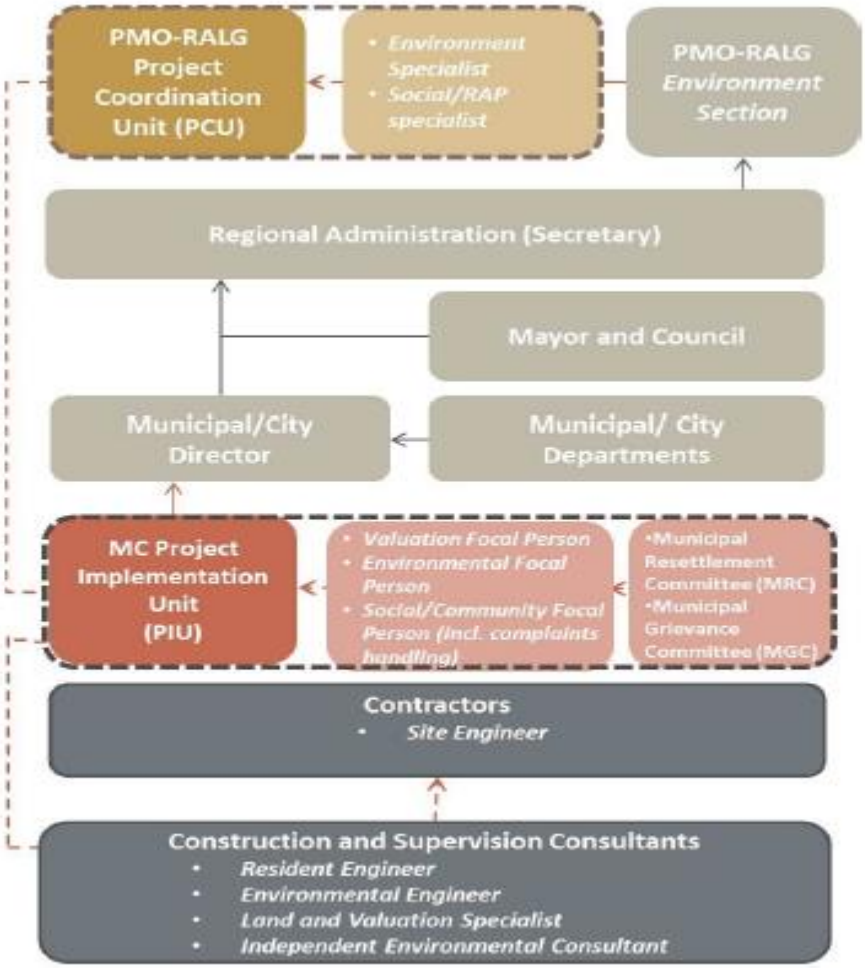

Figure 8.1: Environmental and Social Management Organization Chart

8.5 Personnel and Responsibilities

Table 8.1 provide the personnel to be involved in ESMP and implementation and their respective responsibilities

Table 8.1: Personnel and their responsibilities

Personnel	Responsibilities
Resident Engineer	• Has ultimate responsibility for compliance with the specification and resource consent conditions; • Reports to Consultant's senior management, Tabora Municipal Council on environmental compliance
Engineer's Environmental Specialist	• Develops, implements, and reviews environmental management systems and plans • Provides leadership to ensure all staff comply with environmental management systems; • Co-ordinates environmental management interfaces with external agencies and stakeholders; • Notifies the consent authorities of any non-compliance; • Responsible for reporting major defects and non-compliances and arranging appropriate corrective actions; • Primary contact for environmental complaints and inquiries.
Employer's Representative	• Undertakes compliance inspections as necessary • Attends initial early meeting to contribute to the development of ESMP • Attends environmental review meetings
Contractors Project Manager	• Ensures staff are adequately inducted and trained in site environmental procedures including emergency procedures. The same applies to sub-contractors.

Personnel	Responsibilities
	• The overall overseer on the contractor's side for the implementation of ESMP
Contractors Environmental Manager	• Develops, implements, and reviews environmental management systems and plans • Provides leadership to ensure all contractor's staff comply with environmental management systems; • Works with Site Engineer to develop appropriate Site-Specific Environmental Plans which comply with Standard Specifications 1700; • Notifies the Engineers' Environmental Specialist of any non-compliance; • Responsible for reporting major defects and non-compliances and arranging for appropriate corrective actions; • Initiates and coordinates monitoring and auditing; • Monitors the effectiveness of Environmental Management Plan; and • Trains contractor's staff in environmental objectives and procedures.;

Personnel	Responsibilities
Contractor's site engineer (Environmental)	• Designs site-specific Environmental Plans in collaboration with Contractor's Environmental Manager, Site Engineer, and other subcontractors; • Conducts and coordinates monitoring and auditing and maintains relevant records; • Conducts daily / weekly site inspections of Measuring devices • Monitors the effectiveness of Environmental Management System • Monitors and carries out routine maintenance of measuring facilities and the various management measures required to ensure their ongoing effectiveness; • Ensures staff onsite are aware of lay down of environmental requirements at all times. • Conducts daily/weekly site inspections of Measuring devices and co-ordinates maintenance where necessary; • Monitors effectiveness of Environmental Management System
Engineer's advisors Contractor's site supervisor	• Provide input to Engineer's Environmental Specialist regarding aspects of the ESM • Participate in monitoring and audits of the contractor's compliance with the ESMP • Provide ongoing advice to address environmental issues raised during construction. • Ensures Environmental works are implemented and maintained; • Leads the emergency response crew with advice from the Environmental Manager ; • Reviews the need to use a water cart to control dust.

Personnel	Responsibilities
Contractor's staff	• Responsible for reporting incidents, defects, and other problem areas to senior site staff as they arise on site. Special forms will be used for all incident reporting; • Carry out routine maintenance and emergency work when directed; • Care for all environmental works; • Ensure the site is kept tidy and litter is placed in bins; • Act in an environmentally responsible manner at all times to reflect the contractor's commitment to environmentally responsible environmental practices.

8.6 Training and Induction

It is essential to the success of environmental management that personnel receive appropriate training to effectively undertake their duties and to raise their awareness of environmental issues on the project. Training and awareness tools methods will include:

- Inductions
- Formal skill training
- On the job training and experience
- Tailgate meetings and discussions
- Training and Awareness literature e.g. posters and leaflets.

An environmental induction shall be provided to all Main-Contractor staff and subcontractors before starting work on site. The induction will include information on environment commitment and obligations as well as the requirements of all aspects of the ESMP and Standard Specifications for Building works in Tanzania. Where needed, key staff members shall attend target training courses outside the Construction Site.

Table 8.2 below provides examples of the basic training programs for safeguards during project implementation. The training programs will be developed and delivered by the Contractor and approved by Resident Engineer for the implementation of safeguards. The TARURA trained staff for the implementation of safeguards will provide the training to contractors and other entities concerned.

Other more specific and tailored training will be developed for the implementation of safeguards during project implementation based upon a reassessment of needs and the status of safeguards implementation.

- *Target groups for the training:* Tabora Municipal Staff, Contractors, and community representatives in the sub-project area.
- *Training schedule:* at least 1 month before the construction of the first contract. The training can be adjusted in line with the implementation schedule of the sub-project/contracts.
- *Training frequency*: The basic training programs proposed in the table below will take place every six months every year and its content updated and adapted to

implementation issues. Training frequency and the content will be reassessed during implementation depending on needs. It is foreseen that the training program for Tabora Municipal staff will continue until the year-end of the construction period. Three days of training for contractors are also planned to take place twice a year on an annual basis for at least one year.

Table 8.2: Training Programs for Capacity Building in Environmental Supervision and Management

Target Group	**Tabora Municipal Staff**
Course Title	Environmental supervision, monitoring, and reporting
Participants	Environmental staff and technical staff (10 Tabora Municipal Staff)
Training Frequency	Soon after project effectiveness but at least 1 month before the start of construction of the first contract. Follow-up training will be scheduled as needed.
Time	Four days of training, to be held twice a year, and then to be repeated every year until year three of implementation.
Content	• General environmental management relating to the project, • General aspects of environmental supervision; • Implementation and supervision of mitigation measures; • Community participation in environmental supervision monitoring. • Guidance and supervision of contractors, Subcontractors, and community representatives in the implementation of environmental supervision. • Use of forms for environmental supervision; • Risk response and control; • Receipt and submission of reporting forms • Other areas of training needs, as determined
Responsibilities	Tabora Municipal Staff for the implementation of safeguards.
Target Groups	**CONTRACTORS, SUBCONTRACTORS, WARDS AUTHORITIES, COMMUNITY REPRESENTATIVES**

Target Group	**Tabora Municipal Staff**
Course Title	Implementation of mitigation measures
Participators	On-site construction management staff; environmental staff of contractors; ward/group authorities.
Training frequency	After bidding, and determining based on needs
Time	3 days of training for contractors and 2 days of training for others, to be repeated twice a year on an annual basis depending on needs
Content	Overview of environmental monitoring; Requirements of environmental monitoring; Role and responsibilities of contractors Scope and methods of environmental monitoring; Response and risk control; Propagate monitoring forms and guide how to fill in the forms and risk report; Preparation and submission of reports Other areas to be determined.
Responsibilities	Tabora Municipal Staff for the implementation of safeguards
Target Groups	**COMMUNITIES AND WORKERS**
Course Title	Environmental sanitation and safety
Participators	Representatives of community and/or worker leaders (as appropriate)
Training frequency	As appropriate
Time	One-day presentation and one-day on-the-job training twice a year, to be repeated on an as-needed basis
Content	• Preliminary presentation on environmental protection and environmental overview • Key issues that require communities' and workers' attention to minimize safety risks (roads, waterways, equipment, machines, open excavations, etc.) as well as reduce pollution (dust, fumes, gases, oil/grease spills, waste management, etc.)

Target Group	Tabora Municipal Staff
	• Management of environmental safety and sanitation on work sites; • Mitigation measures at construction sites; • Safety measures on electricity, mechanical, transportation, air pollution; • Procedures to deal with emergencies; • Other areas to be determined.
Responsibilities	Contractor and Tabora Municipal

Training and induction routines e.tc described above are not an exhaustive list. It should be noted that these need to be developed jointly by the Contractor and the Engineer's Environmental specialists.

8.7 Gender Based Violence (GBV) Action Plan

8.7.1 Basis of GBV Action Plan

Gender-based violence is a health, social, human rights, and development issue that transcend class, culture, age, race and religion which affects every community in every corner of Antigua and Barbuda. Globally, it has been estimated that at least one in every three women around the world has been beaten, coerced in to sex, or otherwise abused in her lifetime. The public health implications of this violence are enormous: according to a World Development report, violence —is more serious a cause of death and incapacity among women of reproductive age as cancer, and greater cause of ill-health than traffic accidents and malaria combined. Gender-based violence also diminishes women's abilities to protect themselves against HIV. As such, violence against women is both an outcome and an expression of women 's subordinate status in relation to men in societies around the world.

The differences in the roles, responsibilities, opportunities, privileges, expectations, and limitations prescribed to males and to females in any culture are socially constructed, context based, and learned through socialization. They determine many aspects of the

relationships between males and females, as well as among females and among males. Although gendered roles and responsibilities can change over time within and across cultures, they are often deeply rooted in long-standing assumptions societies hold about women, men, boys, and girls. [Strategic Action Plan to End Gender-based Violence Antigua and Barbuda 2011-2015]

8.7.2 Implementation Approach

To reduce the risk of such behavior taking place, Tabora Municipal council will review the risks associated with GBV prior to project construction and, if deem necessary, will instruct the Contractor and all its project personnel, including foreign workers and international consultants, to sign codes of conduct.

Mechanisms for reporting offensive incidents and redressing related complaints must accompany these measures and to form part of project monitoring for the Tabora Municipal council and the Contractor. The Contractor must review the GNP and the guidelines for a GBV ESSs. Upon signing, the Contractor, its managers, and all workers will be committed to preventing, reporting and addressing GBV within the work site and in its immediate surrounding communities.

8.7.3 Implementation Responsibilities

- Prepare GBV action Plan and seek Bank approval prior to project mobilization. Refer to GNP – Tabora Municipal council
- Prepare and implement approved GBV action Plan. Refer to requirements for GBV in GNP for guidance - Tabora Municipal council
- Sign Codes of Conduct for Contractor, Managers and other personnel. Refer to GNP for draft Codes of Conduct – CONTRACTOR
- Establish GBV Compliance Team; Refer to GNP for guidance - Tabora Municipal council
- Respond to GBV events as a matter of priority: CONTRACTOR, Tabora Municipal council
- Abide to reporting requirements as per Codes of Conduct. - Tabora Municipal council

8.8 Redress and Grievance Mechanism

A grievance mechanism must be made available to parties who have grievances or are not satisfied with any part of the resettlement and compensation process. These grievances could relate to the valuation of assets, amount of compensation paid, level of consultation, non-fulfilment of contracts, and timing of compensation, amongst others. Complaints and grievances also concern issues related to construction safety and nuisances caused by construction. Grievances will be handled through negotiation aimed at achieving consensus.

8.8.1 Grievance Committee

In order to address grievances, a Grievance Committee will be formed for dealing with any grievances as they arise. This will include a representative of the RAP team, representative of the Tabora Municipal's Lands Departments, representative of the Ward and Mtaa Council, as well as a representative of the PAPs. It should also include an independent valuer. If the grievance is in relation to compensation amounts. The grievance procedure will be simple and will be administered as far as possible by the Grievance Committee at the Municipal and Ward and Mtaa levels.

8.8.2 Grievance Mechanism Procedures

At the beginning of the individual RAP processes, PAPs will be informed about how to register grievances or complaints, including specific concerns about relocation. The PAPs should also be informed about the dispute resolution process, specifically about how the disputes will be resolved in an impartial and timely manner.

All attempts shall be made to settle grievances amicably. The grievance redress mechanism 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 the National level government authorities or National level courts for resolution.

Compensation and resettlement plans (contracts) will be binding under statute. The Grievance Committee shall maintain records where grievances and complaints, including minutes of discussions, recommendations and resolutions made, will be recorded.

The procedure for handling grievances should be as follows:

• The affected part or person should file his grievance in writing, to the ward leader. The grievance note should be signed and dated by the aggrieved person. Where the affected person is unable to write, he should obtain assistance to write the note and emboss the letter with his/her thumbprint. Moreover, other methodology to handle grievances shall be used which includes email, suggestion boxes as well as Municipal website

• The ward leader should notify the Grievance Committee and respond within 14 days during which any meetings and discussions to be held with the aggrieved person should be conducted. If the grievance relates to valuation of assets, an independent valuer should be requested to revalue the assets, and this may necessitate a longer period. In this case, the aggrieved person must be notified by the Ward Leader that his/her complaint is being considered.

• If the aggrieved person does not receive a response or is not satisfied with the outcome within the agreed time, s/he may lodge his/her grievance to the Municipal grievance committee.

• The Grievance Committee will then attempt to resolve the problem (through dialogue and negotiation) within 14 days of the complaint being lodged. If no agreement is reached at this stage, then the complaint can be taken through the formal court process, i.e. to the Ward Tribunal where relevant, Municipal Tribunal and the High Court (Land Division) at the National level.

• The complainants will be exempted from all administrative and legal fees that might be incurred in the resolution of their grievances and complaints. The Grievance Committee will prepare a report-containing summary of all grievances and will make this available to TARURA and Tabora Municipal council on a quarterly basis.

8.9 ESMP Sub-Plans for the Project

The Contractor shall prepare specific Health and Safety Management Plan (HSMP), Specific Environmental and Social Management Plan (ESMP), HIV/AIDS awareness programme, Traffic Management Plan (TMP), Borrow pit and Quarry Operation Plan, Occupational Health and Safety Awareness Programme of the proposed sub- project

prior to the actual execution of the construction works based on the Design and Environmental and Social Impact Assessment Report.

8.9.1 Health and Safety Management Plan (HSMP)

The plan should detail the measures taken by the project Contractor to manage the hygiene conditions and medical care in each of the worker's camps. It should also address occupational health & safety in alignment with Labour law of Tanzania, ILO recommendations, Good Industry Practices. This plan should include (but not limited to) the following topics: (i) Health and safety policy and commitment from management, (ii) Description of organization; human resources, definition of roles and responsibilities, (iii) workers accommodation, hygiene facilities and food supply, (iv) Description of material resources including Personal Protective Equipment (PPE) to be used by workers, (v) Health and safety procedures, (vi) Risk assessment , (vii) Pollution prevention and protection, (viii) Health and safety training, (ix) Monitoring of health and safety performance, and (x) Medical checks.

8.9.2 Air Quality Management Plan

A detailed Air Emissions and Dust Control Management Plan should be prepared and implemented as part of the construction ESMP. The plan should detail all site-specific measures the sub-project Contractor will implement during the construction period to identify and manage and reduce all nuisances caused by air emissions and dust production resulting from the construction activities including from project's traffic along the access roads. The plan should also include specific measures for the reduction of the greenhouse gas emissions in compliance with the national standards and proportionate to the potential impacts referring to greenhouse gas emissions.

8.9.3 Noise & Vibration Management Plan

A detailed Noise & Vibration Control Plan should be prepared and implemented as part of the construction ESMP. The plan should describe how the project Contractor will minimize and manage noise and vibration impacts during construction.

8.9.4 Effluent Management Plan

Effluents consist of liquid discharges from Worksite, transporting a pollutant (dissolved, colloidal or particles). A detailed Effluent Management Plan should be prepared and implemented as part of the construction ESMP. The plan should detail all site-specific measures the project Contractor will implement during the construction period to identify, drain and treat all effluents generated on site from the construction activities.

8.9.5 Waste Management Plan

A detailed Waste Management Plan should be prepared and implemented as part of the construction ESMP. The plan should detail all site-specific measures the project Contractor will implement during the construction phase to identify, collect, transport and treat all waste produced on the Worksites by its personnel.

8.9.6 Hazardous Materials Management Plan

A detailed Hazardous Materials Handling and Storage Management Plan should be prepared and implemented as part of the construction ESMP. The plan should detail all site-specific measures the Contractor will implement during the construction phase to identify and manage hazardous materials planned for use on the Worksite and their disposal.

8.9.7 Soil Erosion & Vegetation Management Plan

A detailed Soil Erosion & Vegetation Management Plan should be prepared and implemented as part of the construction ESMP. The plan should detail all site-specific measures the project Contractor will implement during the construction phase to minimize vegetation clearing and prevent an increase in sediment loads being exported from the site.

8.9.8 Materials Management and Spoil Disposal Plan

The project Contractor should prepare and submit a Materials Management Plan that documents how excavated soils and materials are to be handled.

8.9.9 Quarry and Borrow Areas Management Plan

A detailed Quarry and Borrow Areas Management Plan should be prepared and implemented for areas planned to be exploited for rock fill material, aggregates and rip rap material as well as for the other borrow areas (sand, gravel) that details all the environmental and social measures to be implemented for the operation of these sites.

8.9.10 Traffic Management Plan

A detailed Traffic Management Plan should be prepared and implemented as part of the construction ESMP. The plan should (i) define the characteristics of the construction fleet of vehicles and site machinery, (ii) describe the expected Project's traffic (frequency of trips between Worksites, working hours, convoys) and (ii) detail all site-specific measures the project Contractor will implement during the construction period to minimize the nuisances to neighborhood generated by its fleet and reduce the risk of accident.

8.9.11 Site Rehabilitation Plan

A detailed Site Decommissioning and Rehabilitation Plan should be prepared and implemented as part of the construction ESMP. The plan should detail all site-specific measures the project Contractor will implement at the end of the construction period to rehabilitate all temporary areas disturbed by the works.

8.9.12 Community Safety Plan

The project contractor should prepare and implement Community Safety Plan, which includes regular community meetings on safety & construction hazards, announcement in advance of heavy construction activities, restriction of access to working sites, awareness campaigns on traffic related risks, including school children.

8.9.13 Recruitment and Local Labour Management Plan

A detailed Recruitment and Labour Management Plan should be prepared and implemented as part of the construction ESMP. The plan will detail the manpower needs for the entire construction period, the local recruitment process and the approach planned to maximize local employment and local content opportunities.

8.9.14 Environmental Permitting

The project Contractor should conduct the environmental and social investigations required to obtain the environmental permit and any other authorizations as required by the authorities for the Project components that might not be covered by the ESIA or the construction permit. It should include: - but does not limit to – (i) the electrical transmission lines (ii) TTCL lines (iii) TUWASA water supply pipes.

8.9.15 Emergency PrepaF Plan

A detailed Emergency Preparedness Plan will be prepared and implemented as part of the construction ESMP. The EPP for Common Hazards and Emergency Situations during construction should be structured as such but not limited to:

- Identification of potential emergencies based on hazard assessment
- Procedures to respond to the identified emergency situations;
- Procedures to shut down equipment;
- Procedures to contain and limit pollution;
- Procedures for decontamination;
- Procedures for rescue and evacuation, including a designated meeting place outside the construction camps;
- Location of alarms and schedule of maintenance;
- List and location of equipment and facilities for employees responsible for responding to the emergency (fire-fighting equipment, spill response equipment, personal protection equipment for the emergency response teams, first aid kits and stations);
- Protocols for the use of the emergency equipment and facilities;
- Schedule for periodic inspection, testing and maintenance of emergency equipment;
- Clear identification of evacuation routes and meeting points;
- Schedule of trainings (drills), including with local emergency response services (e.g. fire fighters);
- Procedures for emergency drills;
- Emergency contacts and communication protocols, including with affected communities when necessary, and procedures for interaction with the government authorities;
- Procedures for periodic review and update of emergency response plans.

8.10 Environmental and Social Cost

The principal environmental and social cost includes the cost for implementing the mitigation measures proposed and that for carrying out monitoring of specific environmental and social parameters. These costs are indicated in Table 8.3. It should be noted that most of the costs for mitigation measures are included in the bills of quantities of the overall works. The costs for the environmental and social supervisor shall be included in the overall supervision cost of the works. The supervisors shall be engaged for at least 15 man-days a month over the entire construction period.

8.11 Stakeholder Involvement Plan

Inherently ESIA needs and involves different stakeholders from project conception, feasibility, detailed engineering design stage, implementation, operation, and finally decommissioning. All the preceding stages have involved stakeholder considerations and even the remaining stages shall include stakeholders. The following are the levels of stakeholder involvement in this ESIA study;

- Scoping Stage – stakeholders were identified, consulted, and involved. They were allowed to raise concerns and issues that were included in the scoping report.
- Detailed ESIA study stage – This was conducted after knowing the preliminary building structures design and basic facilities that would be constructed. The identified stakeholders during the scoping stage and more others were consulted.
- Disclosure – After the ESIA Report has been approved by the National Environment Management Council (NEMC) the report shall be disclosed for all stakeholders to view. An advertisement shall be served in the media for the public to view and procedures for sending additional comments will also be stated.

The Environmental and Social Monitoring plan shall consist of different responsible institutions in the implementation of the mitigation measures. Since the environmental impacts for the sub-projects are similar, the matrix below provides the Mitigation measures for the TACTIC sub-projects (Improvement of the Tabora market and construction of a new Tabora bus terminal) and their responsible institutions that shall

be involved. Tabora Municipal council shall be in place in both two sub-project to oversee the implementation of the Plan (Table 8.3).

Table 8.3: Environmental and Social Management Plan (ESMP) for the proposed construction of the Bus Terminal at Inala and Redevelopment of existing Market at Tabora Municipal

Impact	**Mitigation measure**	**Responsible institution**	**Estimated One Time Cost (TSH)**	**Estimated Annual cost (TSH)**
Pre-construction phase				
Land expropriation, Loss of property	○ Compensation shall be done according to Tanzania laws governing resettlement before the commencement of the construction activities.	○ Tabora Municipal Council	Valuation in Progress	
Loss of Employment and Incomes	○ Skilled and unskilled job opportunities arising from project activities should be given to affected people as a priority. This will also reduce the influx of job seekers and speculators from outside the project area. ○ Women food vendors shall be promoted in place to uplift their income flow. Hygiene of the service providers should be emphasized	○ Tabora Municipal Council	Valuation in Progress	
Construction phase				
Destruction of Public Utilities	○ TANESCO, TTCL communication trunk, and the Water supply authority (TUWASA) shall be	○ Tabora Municipal Council	Valuation in Progress	

Impact	Mitigation measure	Responsible institution	Estimated One Time Cost (TSH)	Estimated Annual cost (TSH)
	involved from the early stages of this project to have integrated planning. ○ Early notice shall be given to the community before any service interruption ○ The funds for the relocation of these infrastructures shall be part and parcel of the project if need be.			
Soil Erosion and instability of Slopes	○ Unnecessary ground clearance and sensitive re-alignments shall be avoided. ○ Lined drainage channels at sensitive terrains shall be provided to control the speed and volumes of Stormwater. The discharge points must be carefully chosen to avoid erosion of arable land and the creation of gullies. ○ The contractor should Plant *vetiver* grasses to minimize exposed soil surface. ○ Proper grading to promote sheet flow and	○ Tabora Municipal Council		15,000,000

Impact	Mitigation measure	Responsible institution	Estimated One Time Cost (TSH)	Estimated Annual cost (TSH)
	minimize flow concentration on unconsolidated soil. ○ Directing flow to properly designated channels. ○ Measures shall be taken to ensure that the topsoil and subsoil excavated from the construction site are properly managed. ○ Denuded areas shall be surfaced as soon as possible to minimize soil erosion			
Increased water and soil pollution	○ Refueling of plants or transfer of materials should not be carried out near water bodies, and any local spillage to soil should immediately be remedied. ○ Good housekeeping shall be practiced within material storage compounds or vehicle maintenance yards where the possibility of spillage is great. This can easily be done by provision of Spill tanks and Secondary	Tabora Municipal Council		

Impact	Mitigation measure	Responsible institution	Estimated One Time Cost (TSH)	Estimated Annual cost (TSH)
	containment at vehicle maintenance yards. ○ The contractor should Plant *vetiver* grasses to minimize exposed soil surface area where necessary ○ The use of silt fences and hay bales to remove suspended solids from surface water runoff			
Noise pollution	○ Provide working gear to workers ○ Proper choice of equipment which offers environmental advantages	Tabora Municipal Council		10,000,000
Air pollution	○ Watering road section (near human habitation) ○ Proper choice of equipment which offers environmental advantages	Tabora Municipal Council		15,000,000
Vibration	○ Advance notice to local communities ○ Proper location of quarry sites	Tabora Municipal Council		10,000,000
Increased Spread of HIV/AIDS	○ Safety, Health, and Environment (SHE) induction course ○ Support HIV/AIDS campaigns	Tabora Municipal Council		80,000,000

Impact	Mitigation measure	Responsible institution	Estimated One Time Cost (TSH)	Estimated Annual cost (TSH)
	○ Provision of condoms			
Safety and health risks	○ Appropriate working gear (such as nose, ear mask, and clothing) and good camp management shall be provided. ○ A well-stocked First Aid kit (administered by medical personnel) shall be maintained at each camp, quarry site, and each active work section.	Tabora Municipal Council		30,000,000
Increased Accidents	○ The access road design shall take account of safety concerns. ○ The traffic management plan shall be incorporated in the designs to include for example details of signs, markings, intersection layouts, access restrictions, crossings, footpaths, etc. ○ The traffic management plans shall be presented both in English and Swahili.	○ Tabora Municipal Council		15,000,000

Impact	Mitigation measure	Responsible institution	Estimated One Time Cost (TSH)	Estimated Annual cost (TSH)
Increased water abstraction	○ The contractor shall obtain a water right from Lake Tanganyika Basin Offices before any abstraction of water in the sub-project area. ○ The amount of water given to the contractor shall consider the local community around the sub-project and downstream of the watercourse. ○ Watering should be done to those places with significant dust levels and near the residents to minimize water wastage.	○ Tabora Municipal Council		25,000,000
Increased Waste	○ An adequate number of waste bins shall be provided at the campsite and that of Bus terminal and Market construction sites ○ Only inert materials or readily decomposable materials shall be disposed of by burial. ○ No burning of waste materials that produces black smoke shall be approved. Plastics shall not be burned.	○ Tabora Municipal Council		20,000,000

Impact	Mitigation measure	Responsible institution	Estimated One Time Cost (TSH)	Estimated Annual cost (TSH)
	○ No open burning of oils shall be done ○ The campsites shall have adequate toilets with a septic tank-soak away treatment system			
Interference to local hydrology	○ Good design and engineering practice ○ Efficient drainage system ○ Control alien species	○ Tabora Municipal Council		15,000,000

Impact	Mitigation measure	Responsible institution	Estimated One Time Cost (TSH)	Estimated Annual cost (TSH)
Loss of definite materials and Land degradation	○ Where construction materials such as gravel and stones are to be obtained from village lands, the material shall be purchased and this will be officially negotiated with villagers and/or village government to avoid conflict. ○ All borrow pits and quarries shall be rehabilitated and proper landscaping is done after completion of the construction. ○ The topsoil shall be stockpiled for later use in reinstating the pit.	Tabora Municipal Council		20,000,000
Loss of Vegetation	○ Close supervision of earthworks shall be observed to confine land clearance within the proposed new Tabora bus terminal and trees	○ Tabora Municipal Council		9,000,000

Impact	Mitigation measure	Responsible institution	Estimated One Time Cost (TSH)	Estimated Annual cost (TSH)
	around the Market place. ○ Topsoil shall be stockpiled and used for reinstating flora at the bus terminal and market areas. ○ The contractor shall be instructed to give the uprooted trees in the bus terminal, market sites area to the street provided he does not contravene the Forest Acts 2002. ○ Consultation with the Municipal Council Forest Officers shall be made before clearing trees/ thickets. ○ Planting of the proposed Tree species for sub-project Beautification; *Finger Palm*, *Ficus* Benjamin, *Ashock* trees, *trichilia* emetic (midodoma), and *Thuja* at sub-project areas			
Operation phase				

Impact	Mitigation measure	Responsible institution	Estimated One Time Cost (TSH)	Estimated Annual cost (TSH)
Noise, vibration, and air pollution	○ Good design practice ○ Provide side-hedges ○ Enforce speed and exhaust limits	○ Tabora Municipal Council		9,000,000
Increased wastes material	○ Provision shall be made to provide separate bins for biodegradable and non-biodegradable waste at the bus terminal. ○ Traders at the Bus terminal will also be provided with bins near their merchandising points to ensure waste generated is collected healthily and safely.	○ Tabora Municipal Council		20,000,000
Decommissioning Phase				
Increased Noise, Vibration and Air Pollution	○ Watering shall be practiced by the contractor regularly at all active work sections within the site. ○ The contractors shall provide working gear to the workers to avoid pollution contamination.	○ Tabora Municipal Council		6,000,000

Impact	Mitigation measure	Responsible institution	Estimated One Time Cost (TSH)	Estimated Annual cost (TSH)
	○ The contractor shall ensure all areas to be demolished are covered to avoid pollution to the nearby residents.			
Increased waste material	○ All materials which can be reused shall be reused ○ Materials that cannot be reused shall be sent to an authorized dumpsite	○ Tabora Municipal Council		5,00,000
Total Cost				**385,000,000/=**

CHAPTER NINE

9.0 ENVIRONMENTAL AND SOCIAL MONITORING PLAN

9.1 Environmental and Social Monitoring

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

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

9.1.1 Objectives of Environmental Monitoring

The overall objectives of the monitoring activities are to:

- Ensure regulatory requirements are met;
- Check that impacts do not exceed national environmental standards
- Verify predictions made in the ESIA by obtaining real time measurements;
- Verify that mitigation measures are effective and implemented in the manner described in Chapter 7;
- Provide early warning of potential environmental impacts; and
- Inform future operations and contribute to continuous improvement in the management of environmental and social issues related to the project.

Monitoring will be carried out by the project contractor pursuant to her contractual obligations to undertake inspections, monitoring and reporting.

9.2 Environmental Monitoring and Audit

It is recommended that environmental audits determine the long-term effects of adopted mitigation measures. It is recommended that environmental audits be carried out on the project as part of the ongoing maintenance program. The audits will unveil the actual performance of mitigation measures and will allow effective measures to be included in future projects based on the legislation in force.

Continuing monitoring should be a continuous control, monitoring both process and method to detecting compliance risk issues associated with project's operations. The monitoring programs shall be include keeping current with changes in rules, regulations, and applicable laws; developing internal controls, policies, and procedures to comply with them; training staff on these rules; and taking steps in monitoring or verifying compliance with new guidelines. Monitoring programs should be designed to test for inconsistencies, duplication, errors, policy violations, missing approvals, incomplete data, or other possible breakdowns in internal controls. Monitoring techniques may include sampling protocols that permit program managers to identify and review variations from an established baseline.

Auditing entails reviewing the ongoing monitoring process and verifying it is effective in achieving the desired outcome. When it comes to high-risk compliance areas within an operation, audit objectives are to: (1) verify that contractor is meeting her obligations for ongoing monitoring; and (2) validate that the process is achieving desired outcomes. This includes confirming that controls are in place and functioning as intended or identifying weaknesses in the program that need to be addressed.

An audit must be an independent and objective review, which means it should be done by people external to the project area to be audited. External reviewers can be used, such as consultant experts or project auditors. In any case, the project implementor should ensure that both the monitoring and auditing is taking place and doing what it should be doing. As per operative ESIA documents in Tanzania, environmental audits would be the

responsibility of the developer Tabora Municipal Council and the National Environment Management Council (NEMC).

9.2.1 Project's Inspections and Monitoring

The following four types of inspections and monitoring must be employed.

Inspections planned and conducted on a regular basis to ensure that mitigation measures and commitments are properly maintained and implemented, and that specific management procedures are followed.

Receptor monitoring undertaken to verify predictions made in the ESIA and to confirm that the activities at the site are not resulting in an unacceptable deterioration i.e. Monitoring disturbance to affected residents through a grievance mechanism).

Compliance monitoring involving periodic sampling or continuous recording of specific environmental quality indicators or discharge levels to ensure compliance of discharges and emissions with project standards.

Auditing (internal and external) to assess compliance of the site activities with both regulatory and site management system requirements.

Monitoring results will be presented in regular reports and reviewed at monthly and quarterly site meetings. The results of the inspection and monitoring activities will be reported to Tabora Municipal Council

9.3 Monitoring Parameters

The selection of the parameters to be monitored is based on the high likelihood of occurrences of the selected parameters. Monitoring of these parameters will be done in various stages of the sub-projects 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 the normal use of the infrastructures.
- *Decommissioning* - Decommissioning is anticipated in the foreseeable future for the Bus terminal and improvement of the Market sub-project may entail a change of use (functional changes) or demolition triggered by the change of land use.

Table 9.1: Environmental and Social Monitoring Plan for the Proposed Construction of Bus Terminal at Inala and redevelopment of existing Market

Parameters		**Monitoring frequency**	**Sampling Area**	**Measurement Units**	**Method**	**Target level/ Standard**	**Responsibility for monitoring**	**Annual costs estimates (TSH)**
Pre-construction stage								
Air quality	Dust	Once before the construction starts	Near settlements (streets)	µg/m^3	*Micro Dust Pro*	<0.01	Tabora Municipal Council	6,000,000
Noise Baseline	Noise level	Once before the construction starts	Near settlements (Streets)	dBA	Noise Level Meter	<110	Tabora Municipal Council	5,000,000
Water Quality	Turbidity	Once before the	TUWASA and	NTU	Spectrophotometer	<50	Tabora Municip	5,000,000

Parameters		Monitoring frequency	Sampling Area	Measurement Units	Method	Target level/ Standard	Responsibility for monitoring	Annual costs estimates (TSH)
		construction starts (During the rainy season)	Boreholes				al Council	
Biodiversity	Baseline information on biodiversity	Once before the construction work starts	All Vegetated area	type and number of living organisms	Counting and Observation	Vegetation within and along with the project		4,000,000
Construction stage								

Parameters		Monitoring frequency	Sampling Area	Measurement Units	Method	Target level/ Standard	Responsibility for monitoring	Annual costs estimates (TSH)
Air pollution	Dust	Once Per week	Near settlements (villages)	µg/m^3	*Micro Dust Pro*	0.01	Tabora Municipal Council	15,000,000
Noise pollution	Noise level	Once Per week	Near settlements (villages)	dBA	Measurements	110	Tabora Municipal Council	10,000,000
Water Quality	Turbidity	Once Per week during the dry season	TUWASA and Boreholes	NTU	Spectrophotometer	<50	Tabora Municipal Council	9,000,000

Parameters		Monitoring frequency	Sampling Area	Measurement Units	Method	Target level/ Standard	Responsibility for monitoring	Annual costs estimates (TSH)
		Every day during the rainy season						
Soil erosion	Soil erosion at the site	Once in three Months	Bus terminal, market and construction area, Quarry sites.	Level of erosions	Site inspection	No erosion	Tabora Municipal Council	9,000,000

Parameters		Monitoring frequency	Sampling Area	Measurement Units	Method	Target level/ Standard	Responsibility for monitoring	Annual costs estimates (TSH)
Vegetation	Biomass	Once in three months for the construction period	Vegetated area	-	Inspection	Clearance confined in CoI	Tabora Municipal Council	4,000,000
Biodiversity	Biodiversity	Once year	Vegetated area	type and number of living and organisms	Inspection	Clearance confined in CoI	Tabora Municipal Council	5,000,000

Parameters		Monitoring frequency	Sampling Area	Measurement Units	Method	Target level/ Standard	Responsibility for monitoring	Annual costs estimates (TSH)
Vibration	Vibration levels	Once per Month	Bus terminal, market area, Quarry sites	No per time	Records	No Vibrations	Tabora Municipal Council	9,000,000
Frequency of illness of construction workers	Illness of construction workers	Once a month for the construction period	Project site	Number of cases	Health records	No Illness	Tabora Municipal Council	10,000,000
Employm	Percentage	Three times		Numb	Records,	More	Tabora	10,000,00

Parameters		Monitoring frequency	Sampling Area	Measurement Units	Method	Target level/ Standard	Responsibility for monitoring	Annual costs estimates (TSH)
ent opportunity	of local construction laborers	a year	Project site	er of local people employed in the project	inquiries, and observation	than 6000 people have contracts	Municipal Council	0
Safety and health risks	Number and type of safety equipment such as	Once in three month	Project site	Number of safety measures	Actual injuries and illness statistics	All employees have Protec	Tabora Municipal Council	10,000,000

Parameters		Monitoring frequency	Sampling Area	Measurement Units	Method	Target level/ Standard	Responsibility for monitoring	Annual costs estimates (TSH)
	mask, helmet gloves, and earplugs. Health and sanitation facilities in camps.			provided		tive gears		
Dust Suppression	Water sprinkling	Everyday	Project site	Frequency of water sprinkling	Inquiries and observation	Minimum dust emission	Tabora Municipal Council	9,000,000

Parameters		Monitoring frequency	Sampling Area	Measurement Units	Method	Target level/ Standard	Responsibility for monitoring	Annual costs estimates (TSH)
Operation stage								
Air pollution	Dust	Once in three Months	Near settlements (villages)	µg/m^3	*Micro Dust Pro*	0.01	Tabora Municipal Council	8,000,000
Noise pollution	Noise level	Once in three Months	Near settlements (villages)	dBA	Measurements	110	Tabora Municipal Council	10,000,000

Parameters		Monitoring frequency	Sampling Area	Measurement Units	Method	Target level/ Standard	Responsibility for monitoring	Annual costs estimates (TSH)
Safety of human beings in the sub-project area	Access Road accidents and roads signs	Three times a year for the project life span	Project site	Road signs and number of accidents	Records, inquiries, and illness statistics	Zero accidents and a sufficient no of road signs	Tabora Municipal Council	8,000,000
Total monitoring costs								**146,000,000**

9.4 Institutional Arrangements and Reporting Procedures

Tabora Municipal Council, assisted by environment specialists, will be responsible for reviewing civil works contracts following the ESIA report; coordinating the implementation of the ESMP among the contractors, local environmental authorities (e.g., Municipal Councils, monitoring the implementation of the ESMP and the civil works contracts in collaboration with NEMC and Ministry of Works and Transport; and, preparing annual environmental progress reports.

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

The monitoring of mitigation measures during design and construction will be carried out by an Environmental/Social Specialist. He/she will conduct mitigation monitoring as part of the regular works inspections. The responsibility for mitigation monitoring during the operation phase will lie with the Environmental Section in TARURA and Municipal.

Tabora Municipal Council will provide the Ministry of Works and Transport and NEMC with reports on environmental compliance during implementation as part of their annual progress reports and annual environmental monitoring reports. Depending on the implementation status of environmentally sensitive areas of the project, NEMC will perform annual environmental reviews in which environmental concerns raised by the sub-projects will be reviewed alongside project implementation.

The Contractor for sub-project will be required to report any environmental or social incidents to the (Tabora Municipal council safeguard focal officer) through the project Engineer. The Tabora Municipal Council Manager through the Project Engineer, will advise the contractor about appropriate mitigation measures and will direct the contractor to undertake these mitigation measures. If there are complaints from the public during the construction phase, the Tabora Municipal Council Manager is to be

notified immediately. The following information should be recorded by the Project Engineer/Consultant.

- Time, date and nature of the incident / report;
- Type of communication (e.g. telephone, personal meeting);
- Contact details with telephone number of person making the complaint. If this person wishes to remain anonymous then “not identified” is to be recorded;
- Details of response and investigation undertaken as a result of the incident / complaint;
- Name of person undertaking investigation of the incident / complaint;
- Corrective action taken as a result of the incident / complaint.

The Project Engineer/Consultant will prepare and submit weekly, monthly and quarterly monitoring reports to the Tabora Municipal Council Manager

CHAPTER TEN

10.0 RESOURCES EVALUATION

10.1 Market Demand Analysis

Overview

Public markets are important to any society. They provide a physical place for directly linking the production sector with the consuming sector. Markets act as convergence points for traders and buyers as they cater for the day to day needs of households and the general public. This section will seek to report on the current existing demand of Tabora CBD Market and the future demand which will result from the improvement.

Resources evaluation for the Bus terminal and Market sub-projects based on Needs-Based Approach. This facility will offer a practical solution to the current situation in Tabora Market and Bus terminal. By making conservative assumptions on the demand, the investment strategy will be able to address the present requirements and provide flexibility for future expansion.

10.1.1 Current Scenario

Over the recent past, Tabora Municipality Mayor's office has continued to express challenges with regards to managing petty traders commonly known as Machingas[1]. This has prompted the need by the Government to provide urgent solutions to reduce the disturbance caused by the petty traders in the urban area of Tabora Municipality The following indicators will be used to illustrate the current scenario experienced at Tabora CBD Market.

10.1.1.1 Population Growth

The population of Tabora Municipality (MC) in 2012 was approximately 226,999 and was projected to increase to 299,070 in 2021, 388,705 in 2030, 512,332 in 2040 and 675,278 in 2050. The projected increase in population signifies that the demand for goods and services will also be on an upward spiral. More and more people will in future demand for market products.

[1] https://www.dailynews.co.tz/news/2021-10-226172c77ba838b.aspx

10.1.1.2 Household Growth

Given that the population of Tabora MC will continue to grow in future, more and more households will need public markets for their daily supplies, and local farmers will need to sell their produce, either by themselves or by traders. The table below illustrates the growth of households likely to be witnessed in Tabora MC from 2012 to 2050. It is envisaged that the number of households in the MC will increase from 37,833 in 2012 to 64,784 in 2030, 85,389 in 2040 and 112,546 in 2050.

10.1.1.3 Existing Market Traders/Vendors

Shop Keepers

The Consultant used the data obtained from Tabora MC Office. The data enabled the Consultant determine the current exisiting information relating to Tabora Market in terms of business types, number of customers, annual returns, medical costs among others. The results obtained from Tabora MC is shown in the Table10.1.

Table 10.1: Tabora CBD Market Inforation on Shopkepers: 2021

Business Type	Number	Amount in USD					
		Annual Profits	Income: 2015-2021	Annual Returns	Average Cost of Poor Storage	Medical Cost on Sellers	Medical Costs on Customers
Wholesale Shops	15	56,204	224,816	778	4,496	4	4
Grocery Shops	16	17,294	69,174	778	1,383	4	4
Mini Wholesalers	18	30,264	121,055	778	2,421	4	4
Botiques	256	34,587	138,348	778	2,767	4	4
Phone Dealers	11	23,779	95,115	778	1,902	4	4
Forex Bureau	6	10,376	41,505	778	830	4	4
Tailor Shops	53	5,188	20,752	519	415	4	4
Stationery and Book	5	15,132	60,527	778	1,211	4	4

Business Type	Number	Amount in USD					
		Annual Profits	Income: 2015-2021	Annual Returns	Average Cost of Poor Storage	Medical Cost on Sellers	Medical Costs on Customers
Stores							
Beauty Shops	20	34,587	138,348	778	2,767	4	4
Furniture and Elecronics	21	28,102	112,408	778	2,248	4	4
Farm Equipment	9	60,527	242,110	778	4,842	4	4
Butchery	25	6,485	25,940	363	519	4	4
Bags and Shoes	51	4,756	19,023	519	380	4	4
Art and Design Shops	40	5,620	22,482	778	450	4	4
Total	**546**	**332,901**					

Source: Tabora MC 2022

Information collected from Tabora MC office also showed the following:

- The delivery car traffic per day was 45 vehicles
- The expected customers to visit the market woul be 35,000
- The expected traders to trade in the market would be 537 per day

Small Vendors/Vizimba

The Consultant collected data on small vendors from the Tabora MC Office. The data enabled the Consultant obtain information relating to the type of activities undertaken by the small vendors, number of customers served, annual return and medical costs among others. The results obtained from Tabora MC on the small vendors is shown in the Table below.

Table 10.2: Tabora CBD Market Inforation on Small Vendors/Vizimba: 2021

Business Type	Number	Amount in USD					
		Annual Profits	Income: 2015-2021	Annual Returns	Average Cost of Poor Storage	Medical Cost on Sellers	Medical Costs on Customers
Spice Dealers	38	1,729.4	6,917.4	51.9	345.9	4.3	4.3
Seafood Sellers	20	3,026.4	12,105.5	51.9	605.3	4.3	4.3
Empty Contianer Sellers	8	2,810.2	11,240.8	51.9	562.0	4.3	4.3
Banana Sellers	85	1,513.2	6,052.7	51.9	605.3	4.3	4.3
Onion Sellers	30	3,026.4	12,105.5	51.9	121.1	4.3	4.3
Chicken Sellers	32	1,945.5	7,782.1	51.9	389.1	4.3	4.3
Cassava Sellers	17	1,080.8	4,323.4	51.9	216.2	4.3	4.3
Total	**230**	**15,131.9**	**60,527.5**				

Source: Tabora MC 2022

10.2 Bus Stand and Terminal Demand Analysis

Overview

Tabora Municipality has put forward a proposal for the construction of Tabora Bus Terminal at the Central Business District. This project is envisaged to provide an organized public transport service in Tabora Municipality.

10.2.1 Approach and Methodology

The approach and methodology for development of the bus terminal/bus stand was as follows:

- Historical Bus surveys and occupancy survey for determination of existing peak hour demands for arriving and departing buses and passengers.
- Demand projection for determination of forecasted peak hour demands for arriving and departing buses and passengers till the year 2045.

- Estimation of bus bays and terminal area requirements till the year 2045.

10.2.1.1 Traffic Needs Analysis

Existing Traffic Situation

The Consultant collected information from Tabora Municipal Office detailing the following: Annual income; Income during the period 2015-2021; Annual returns; Medical cost on sellers; Medical cost on consumers; Time period for purchasing proucts; Business operating hours and Waiting time for transport. The information collecte detailed the following in realtion to public transport:

- The local buses serve up to six districts which include: Kaliua, Urambo, Skonge, Uyui, Nzega and Igunga.
- The regional buses serve the following provicnes: Dar, Mwanza, Shy, Kigoma, Arusha, Iringa, Mbeya, Dodoma, Morogoro, Singida, Katavi, Rukwa, Kagera and Geita.
- Both the regional and local buses spend approximately 30 minutes to 1 hour at the bus stand
- Passengers pay approximaley TZS 200 to access the bus stand and bues pay aproximatley TZS 5,000 to access the same
- It is estimated that the bus stand will likely serve more than 2,000 passengers per day.
- The main bus stand in Tabora has approximately 163 traders.

The Tabale 10.3 shows the summary data obtained from Tabora MC.

Table 10.3: Tabora Bus Stand Summary Information: 2021

Business Type	Number	Amount in USD					
		Annual Profits	Income: 2015-2021	Annual Returns	Average Cost of Poor Storage	Medical Cost on Sellers	Medical Costs on Customers
Bus Agency	35	6,225.68	24,902.72	778.21	498.05	4.32	4.32
Retail Stores	5	17,293.56	69,174.23	778.21	1,383.48	4.32	4.32
MAMA LISHE	11	30,263.73	121,054.91	778.21	2,421.10	4.32	4.32
Tailoring Shops	23	41,072.20	164,288.80	778.21	3,285.78	4.32	4.32
Phone Dealers	3	23,778.64	95,114.57	778.21	1,902.29	4.32	4.32
Forex Bureau	2	10,376.13	41,504.54	778.21	830.09	4.32	4.32
Cloth Wear stores	4	5,188.07	20,752.27	778.21	415.05	4.32	4.32
Yeboyebo Stores	6	15,131.86	60,527.45	778.21	1,210.55	4.32	4.32
Cosmetics Shops	42	51,880.67	207,522.70	778.21	4,150.45	4.32	4.32
Shoes and Bags	5	4,755.73	19,022.91	778.21	380.46	4.32	4.32
General Stores	11	15,564.20	62,256.81	778.21	1,245.14	4.32	4.32
Stores	25	4,755.73	19,022.91	778.21	380.46	4.32	4.32
Total	**172**	**226,286.21**	**905,144.83**				

Source: Consultant 2021

10.2.1.2 Estimation of Peak Hour Traffic

This section presents the approach and methodology used for estimating peak hour traffic for buses and passengers. The Consultant applied the approach used in the feasibility study for the construction of bus terminal cum commercial complex at Chuini in Ugunja. The Table below provides an illustration of the peak hour traffic scenarios based on data presented in the section above.

Table 10.4: Approach for Identification of Peak Hour

Scenario	Period	Time Period	Bus Schedules at 1 Hour Intervals	Time Period	Bus Schedules at 30 Minute Intervals
Low	**Morning Peak**	**8:00 to 9:00**	50	8:00 to 8:30	25
	Afternoon Peak	**16:00 to 17:00**	60	16:30 to 17:00	30
Medium	**Morning Peak**	**8:00 to 9:00**	70	8:00 to 8:30	35
	Afternoon Peak	**16:00 to 17:00**	80	16:30 to 17:00	40
High	**Morning Peak**	**8:00 to 9:00**	90	8:00 to 8:30	45
	Afternoon Peak	**16:00 to 17:00**	100	16:30 to 17:00	50

Source: Consultant 2021

From the above illustration, the low, medium and high scenario afternoon peak bus schedule at 30 minutes was 30, 40 and 50. The 30-minute period was used in order to estimate the peak hour trends of traffic volumes at the exiting site.

10.2.1.3 Traffic Allocation

This activity primarily focused on assessment of Tabora Municipality Population. The Consultant analyzed the population of Tabora MC taking into consideration the 2012 total regional population census results.

Table 10.5: Tabora MC and Tabora Region Population Distribution: 2012 Census Results

Item	Total Population	Percentage Population	No of Households	Household Size
Tabora MC	226,999	10%	37,833	6.0
Tabora Region	2,291,623		381,937	6.0

Source: NBS and Consultant

The results shown in the Table above was used to allocate traffic to the Central Bus Stand in Tabora.

- Tabora Bus Terminal which is located in Tabora MC will provide services to more than 250,000 residents which is about 10% of the population in Taboa Region. Therefore, based on this, the Consultant allocated the medium traffic scenario shown in Table 10.5.

10.2.1.4 Bus Terminal Forecast and Projection

Growth Rate

The study used the medium growth rate scenario to forecast the traffic estimates for Tabora Bus Terminal presented in Section below.

Peak Hour Projections

The Tables below presents the year-wise projections of peak hour arrival and departure volume of buses as well as passengers at the proposed Tabora Bus Terminal. The study assumed a directional split of 40%-60% for departure and arrival.

Table 10.6: Projection of Peak Hour Arrival and Departure Volumes of Buses and Passengers at the proposed Tabora Bus Terminal.

Period	Year	Peak Hour Volume of Buses		Peak Hour Passenger Volume	
		Arrival	Departure	Arrival	Departure
Design Year 1	2021	18	12	540	360
Design Year 2	2022	19	13	565	377
Project Planning	2023	20	13	592	395

Period	Year	Peak Hour Volume of Buses		Peak Hour Passenger Volume	
		Arrival	Departure	Arrival	Departure
Construction Year 1	2024	21	14	620	413
Construction Year 2	2025	22	15	654	436
Project Opening: Year 1	2026	23	15	691	461
	2027	24	16	730	487
	2028	26	17	771	514
	2029	27	18	814	543
	2030	29	19	859	573
	2031	30	20	908	605
	2032	32	21	958	639
	2033	34	22	1,012	675
	2034	36	24	1,069	712
10th Year after Opening	2035	38	25	1,129	752
	2036	40	26	1,192	795
	2037	42	28	1,259	839
	2038	44	30	1,329	886
	2039	47	31	1,403	936
	2040	49	33	1,482	988
	2041	52	35	1,565	1,043
	2042	55	37	1,653	1,102
	2043	58	39	1,745	1,163
	2044	61	41	1,843	1,229
20th Year after Opening	2045	65	43	1,946	1,297

Source: Consultant

10.2.2 Demand Estimation

The following section presents the approach and methodology used for estimation of peak hour demand / area requirement for buses and passengers at the proposed terminal. The consultants analyzed the planning standards / guidelines adopted by various nations in order

to arrive at an appropriate design for the terminal. The Table below presents an overview of the standards adopted by India, Singapore, and USA.

Table 10.7: Bus Terminal Planning and Design Standards adopted by India, Singapore, and USA

Country	**India**	**Singapore**	**USA**
Planning Standard / Guideline	Urban Development Plans Formulation and Implementation Guidelines (UDPFI)	Land Transport Authority, Singapore (Commuter Facilities Design Requirements) (LTA)	Transit Capacity and Quality of Service Manual (TCQSM)
Boarding Bay Turnover (Number of Boarding Schedules catered by 1 Bay in 1 Hour)	5	3	7.5
Alighting Bay Turnover (Number of Alighting Schedules catered by 1 Bay in 1 Hour)	10	6	12
Idle Bay Requirement	2 x (No. of Boarding Bays+No. of Alighting Bays)		-

Source: Consultant

From the above table, the Indian standards have been adopted for demand estimation of the proposed terminal due to similarities in bus typology and passenger movement patterns to the Indian context. Based on these, the peak hour requirement of boarding, alighting, and idle bays for buses for the project opening in Year 2026 and 20 year after operation in Year 2045 will be calculated.

The following formulae will be used to arrive at the number of boarding, alighting, and idle bays:

- No. of Boarding Bays = Peak Hour Arrival of Buses ÷ Boarding Bay Turnover
- No. of Alighting Bays = Peak Hour Departure of Buses ÷ Alighting Bay Turnover
- No. of Idle Bays = 2 x (No. of Boarding Bays + No. of Alighting Bays)

The Table below presents the figures on bay requirements and respective projections.

Table 10.8: Peak Hour Requirement of Boarding, Alighting, and Idle Bays for Buses at Proposed Tabora Bus Stand

Period	Year	No. of Boarding Bays	No. of Alighting Bays	No. of Idle Bays
Design Year 1	2021	4	1	10
Design Year 2	2022	4	1	10
Project Planning	2023	4	1	11
Construction Year 1	2024	4	1	11
Construction Year 2	2025	4	1	12
Project Opening: Year 1	2026	5	2	12
	2027	5	2	13
	2028	5	2	14
	2029	5	2	14
	2030	6	2	15
	2031	6	2	16
	2032	6	2	17
	2033	7	2	18
	2034	7	2	19
10th Year after Opening	2035	8	3	20
	2036	8	3	21
	2037	8	3	22
	2038	9	3	24
	2039	9	3	25
	2040	10	3	26
	2041	10	3	28

Period	Year	No. of Boarding Bays	No. of Alighting Bays	No. of Idle Bays
	2042	11	4	29
	2043	12	4	31
	2044	12	4	33
20th Year after Opening	2045	13	4	35

Source: Consultant

CHAPTER ELEVEN

11.0 DECOMMISSIONING

11.1 Decommissioning

As decommissioning is foreseen to take place in the remote future for the market and Bus terminal sub-project, the specific conditions for mitigation are generally inherently uncertain. Because of this, specific mitigation measures about the environmental impacts of decommissioning for the construction of the market and bus terminal can be proposed at the moment with a reasonable degree of certainty.

A detailed decommissioning plan that considers environmental issues shall be prepared by the developer before the decommissioning works. Should it be done, decommissioning may entail a change of use (functional changes) or demolition triggered by the change of land use. Therefore what is presented here is just a Preliminary Decommissioning Plan which gives light to what shall be done if the need for decommissioning arises.

11.2 Preliminary Decommissioning Plan

This section provides a brief outline of the works required to demolish the Proposed infrastructures on the site in case it happens. 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 neighboring 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 before the commencement of works on site.

11.2.1 Demolition Methods

It is anticipated that the Contractor will prepare a detailed Demolition Plan before 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 utilizing manual labor and small plant including – bobcats, 3-5t excavators, and dingo-type loaders.
- The materials will be removed from the site using small to medium-sized trucks.
- The structures will be demolished using larger plants and equipment including 15-40t hydraulic excavators. These machines will be equipped with rock breakers, pulverizers, and the like which would be used sequentially.
- During the demolition process erosion control measures will be established. These will include the treatment of dust and potential discharge into stormwater systems.

11.2.2 Materials Handling

Materials handling will be by a 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 center.

The contractor shall submit a Demolition Waste Management Plan to Tabora Municipal Council depending on the building structure and roads sections, such plan should outline the objectives of:

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

On-site storage of reusable materials will occur at the 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 following EMA 2004. A final clearance report will be provided by the hygienist which will include the provision of tip dockets from waste centers.

11.2.3 Proposed Sequence

The Contractor will be required to prepare the following documentation before 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 before 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 more than 4m. The scaffolding will be clad with chain wire and shade cloth to enclose debris and dust onto the site. During the demolition, dust control measures will be used to minimize the spread of dust from the site. The Contractor will have a senior representative on-site at all times to ensure compliance with the safety guidelines and agreed-on work methods.

11.2.5 Traffic Management

The management of construction traffic during the decommissioning 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 before 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 before 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 by the emission of a lot of specks of dust 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 the 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 on 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 blocks, concrete, reinforcements, pipes, fixtures, storm waste drains, 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 an authorized dumpsite

11.2.9 Costs for Undertaking the Mitigation Measures

The cost for undertaking Mitigation measures during decommissioning is estimated to be TShs 100,000,000/=

CHAPTER TWELVE

12.0 SUMMARY AND CONCLUSION

The Government of the United Republic of Tanzania and Tabora Municipal Council through the President's Office – Regional Administration and Local Development (PO-RALG) undertake consultancy services for feasibility studies, urban design, detailed engineering designs, environmental and social instruments, and bidding documents for a pipeline of investments in Tabora Municipal Council for the proposed sub-projects infrastructures include; Construction of Bus terminal at Inala and Redevelopment of 50 years old market. The Tabora Municipal Council through President's Office – Regional Administration and Local Development (PO-RALG) have retained Crown-TECH Consult Ltd and in turn, CrownTech Consult Limited has sub-consulted WESH Consulting Limited to carry out Environmental & Social Impact Assessment. Improvement of infrastructure is part of the Government's strategy to develop its infrastructures to support the Socio-Economic development of the country.

The sub-projects infrastructures involved include; Construction of Bus terminal at Inala and Redevelopment of 50 years old market

In case of the Market, he environmental condition for traders in the existing old Tabora market is not desirable which provides privation in making business. The trader tends to move outside of the market areas leaving behind some stalls where they should have their business due to poor infrastructures of the market. However, the improvement of the market shall solve both problems of infrastructures and other environmental issues like waste management and sanitary issues. The improved market will accommodate the future and present population and therefore, increase the revenue of the Municipality.

The proposed new Bus terminal shall stimulate the development of the Inala area and growth of the town, hereafter there will be an increase in routes from different neighboring regions which will increase investment opportunities in the municipal and hence, increase revenue in the Tabora Municipal as well.

This ESIA study runs parallel with the preliminary design work. In broad terms, Construction of Bus terminal at Inala and Redevelopment of 50 years old market will involve a, partial reconstruction, and/or total reconstruction of sections as necessary and market and bus terminal infrastructure. Moreover, the rehabilitation and/or replacement of existing drainage structures and the construction of new, additional drainage structures are also important features of the proposed works. The construction of bus terminal and market infrastructure will include; sanitation facilities, drainage structures, shops, etc.

The options to minimize or prevent the identified adverse social and environmental impacts as well as a monitoring plan have been suggested in this report and are contained in the ESMP. Many of them are based on good engineering practices. The ESMP describes the implementation schedule of the proposed mitigation measures as well as planning for long-term monitoring activities. It defines the roles and responsibilities of different actors of the plan. The Approach environmental and social costs amount to TSH 100,000,000 (Excluding the costs that will appear in then (BOQ) and resettlement exercise. The estimated annual costs for carrying out the proposed environmental and social motoring program amounts to TSH 146,000,000.

Decommissioning is anticipated in the foreseen future for the Bus terminal and Market sub-project. However, it may entail a change of use (functional changes) or demolition triggered by a change of land use.

It is, therefore, concluded that implementation of the Construction of Bus terminal at Inala and Redevelopment of 50 years old market 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. Tabora Municipal Council is committed to implementing all the recommendations given in the EIS and further carrying out the environmental auditing and monitoring schedules.

BIBLIOGRAPHY

1. Standard Specifications for Road works 2000 by MoW

2. Socio-economic Profile Tabora Municipal Council 2014

3. Tabora Municipal Master Plan 2015-2035

4. The United Republic of Tanzania, 1997.National Environmental Policy (1997), Dar es Salaam, Tanzania

5. The United Republic of Tanzania, 2003. Construction Industry Policy (2003), Dar es Salaam, Tanzania

6. The United Republic of Tanzania, 1995. Land Policy (1995), Dar es Salaam, Tanzania

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

8. The United Republic of Tanzania, 2002. National Gender Policy (2002), Dar es Salaam, Tanzania

9. The United Republic of Tanzania, 1992.Energy Policy (1992), Dar es Salaam, Tanzania

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

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

12. The United Republic of Tanzania, 2003.Occupational Health and Safety (2003), Dar es Salaam, Tanzania

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

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

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

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

17. The United Republic of Tanzania, 2009. Public Health Act (2009), Dar es Salaam, Tanzania

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

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

APPENDICES

Appendix I: ToR Approved Letter

THE UNITED REPUBLIC OF TANZANIA

VICE PRESIDENT'S OFFICE

UNION AND ENVIRONMENT

NATIONAL ENVIRONMENT MANAGEMENT COUNCIL

(NEMC)

In reply please quote:

Ref: **EC/EIA/2022/2943** Date: **05/08/2022**

Municipal Executive Director,
Tabora Municipal Council,
P.O. Box 174,
Tabora

RE: **ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR THE PROPOSED URBAN INFRASTRUCTURE INVESTMENT UNDER TABORA MARKET AND BUS TERMINAL TACTIC PROJECTS AT TABORA MUNICIPAL COUNCIL, TABORA REGION, TANZANIA**

Reference is made to the above heading.

2. The Council acknowledges receipt of your Scoping report amd Terms of Reference for the above mentioned project submitted on 31st March 2022. The project has been registered and assigned with **Application Reference No. EC/EIA/2022/2943.**

3. In regard to the above, the Terms of Reference were reviewed and found generally to be adequate and therefore can guide the Environmental Impact Assessment (EIA) study of the named project. Therefore, you are required to improve the ToR on the following areas:-

i. Description of the Proposed Project
Ensure the EIS clearly shows the source of the construction materials, quarry sites, borrow pits as well as the number, location and design of the campsites;

ii. Description of the Environment
Ensure to provide quantitative and qualitative baseline data for air, water, soil quality, particulate matters and noise level are provided as baseline data in the EIS;

Headquarters, 35 Regent Street, P.O Box63154, 11404 Dar es Salaam, Phone: +255 22 2774852; +255 22 2774889: 0713 608930/0735 608930Fax: +255 22 2774901 Email Address: dg@nemc.or.tz Website: www.nemc.or.tz

iii. Legislative, Policies, Administration Framework
State how the proponent is going to comply with each policy, legal, regulatory, administrative/institutional framework, international standards and international conventions; by stating relevant section / provision should be ensured;

4. You will be required to undertake the EIA study in accordance to the requirements of the Environmental Impact Assessment and Audit Regulations, 2005 specifically Regulations 18-21 read together with the Environmental Management (Environmental Impact Assessment and Audit) (Amendment) Regulations, 2018.

The following information should be taken into consideration while preparing the EIA report:-

i. All key stakeholders especially but not limited to Forest Reserve and Military area authorities are consulted and their views and concerns addressed. Records of meetings, communication and comments should be provided. Consultation forms should bear **date** and each consulted stakeholder should **sign** against his/her **name** as the law requires. Submission of documents which do not observe this requirement will be sent back to the proponent for corrections;

ii. All experts involved in the study should sign the EIA report with their original signatures (not scanned signatures or forged signatures) and indicated whether he/she is a registered or non-registered environmental expert. Failure to observe this requirement, will constitute to an offense as per Environmental Management Act, 2004;

iii. All copies of relevant documents/certificates including the land acquisition process documents showing properties to be impacted by the project are appended to the report;

iv. The EIS should clearly show the disposal locations of the overburden/ demolished materials, disposal site characteristics/conditions as well as nature of the disposed materials;

v. The EIS should clearly discus and provide the estimated quantification of the pollutants or waste to be generated during all project phases and its management;

vi. The EIS should clearly discuss and provide geotechnical, hydrological studies and topographical survey of the area where the Bus Terminal will be constructed;

vii. The EIS should clearly provide the preliminary engineering design of the Bus Terminal and its appurtenances, design period of the project, man power, machinery/equipment, technologies as well as utilities to be used during project phases;

viii. Flora and Fauna experts are engaged in the study in order to provide clear baseline information about flora and fauna along the project area;

ix. The study should involve specialists with background of Civil, Environmental, Municipal and Industrial Service Engineering; Sociology, Geometrics, and Public Health; and

x. All experts involved in the study should sign against their names and be indicated whether he/she is a registered or non-registered environmental expert, Failure to observe this requirement, it will constitute to an offense as per EMA, 2004 Cap 191.

5. Upon submission of the EIA report and payment of the review charges, the Council will arrange for a technical review of the document by the Technical Advisory Committee (TAC). Prior to this review, representatives of the TAC will visit the project site to inspect and verify the adequacy of the EIS with respect to the proposed project's operation and surrounding environment. You will be required to **incur transportation costs** for the site verification team to and from the project site.

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

E.T. Mgila
For: **Director General.**

Cc: WESH Consulting Limited
P. O. Box 35478,
Dar es Salaam

Headquarters, 35 Regent Street, P.O Box63154, 11404 Dar es Salaam, Phone: +255 22 2774852; +255 22 2774889: 0713 608930/0735 608930Fax: +255 22 2774901 Email Address: dg@nemc.or.tz Website: www.nemc.or.tz

Appendix II: List of Stakeholders Consulted

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR TANZANIA CITIES TRANSFORMING INFRASTRUCTURE AND COMPETITIVENESS PROJECT (TACTIC ZONE 1 PROJECT-ARUSHA, DODOMA, TABORA AND KIGOMA COUNCILS)

LIST OF CONSULTED STAKEHOLDERS-TABORA MUNICIPAL COUNCIL

SN	DATE/TAREHE	NAME/JINA	INSTITUTION/TAASISI	POSITION/CHEO	PHONE NO./SIMU	SIGNATURE/SAINI
01	07/12/2021	FRANK A. CHACHA	TANESCO	K/MENEJA	0628076393	
02	10/12/2021	RUKIA S. MAANDUTA	RS - TABORA	AAS PC	0786561357	

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR TANZANIA CITIES TRANSFORMING INFRASTRUCTURE AND COMPETITIVENESS PROJECT (TACTIC ZONE 1 PROJECT-ARUSHA, DODOMA, TABORA AND KIGOMA COUNCILS)

LIST OF CONSULTED STAKEHOLDERS-TABORA MUNICIPAL COUNCIL

SN	DATE/TAREHE	NAME/JINA	INSTITUTION/TAASISI	POSITION/CHEO	PHONE NO./SIMU	SIGNATURE/SAINI
	07/12/2021	VENANCE V. ASSEY	TTCL	ARMN	0738262253	
	07/12/2021	BENEDICT KAMAMBA	TTCL	TECH	0738262252	
	07/12/2021	Emanuel J. Kaale	TTCL	ARM Comm	0738262246	

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR TANZANIA CITIES TRANSFORMING INFRASTRUCTURE AND COMPETITIVENESS PROJECT (TACTIC ZONE 1 PROJECT-ARUSHA, DODOMA, TABORA AND KIGOMA COUNCILS)

LIST OF CONSULTED STAKEHOLDERS-TABORA MUNICIPAL COUNCIL

SN	DATE/TAREHE	NAME/JINA	INSTITUTION/TAASISI	POSITION/CHEO	PHONE NO./SIMU	SIGNATURE/SAINI
1.	6.12.2021	DR. PETER NANGA NYANJA	TABORA MC	M.D. MKURUGENZI	0620-224693	[signature]
2.	6/12/2021	SEIF Salum	TABORA MC	HEAD - BEEKEEPING UNIT	0754-043301	[signature]
3	6/12/2021	Onesha B. Malulu	Tabora MC	AFISA UTUMISHI wa manispaa	0784424937	[signature]
4	6/12/2021	Theodora J. Chuma	Tabora MC	Mwanasheria	0717517021	[signature]
5	6/12/2021	William D. Mpangala	Tabora MC	MEMO	0715050606	[signature]
6	6/12/2021	CHARLES BUNZALI	TABORA MC	MHASIBU	0754411089	[signature]

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR TANZANIA CITIES TRANSFORMING INFRASTRUCTURE AND COMPETITIVENESS PROJECT (TACTIC ZONE 1 PROJECT-ARUSHA, DODOMA, TABORA AND KIGOMA COUNCILS)

LIST OF CONSULTED STAKEHOLDERS-TABORA MUNICIPAL COUNCIL

SN	DATE/TAREHE	NAME/JINA	INSTITUTION/TAASISI	POSITION/CHEO	PHONE NO./SIMU	SIGNATURE/SAINI
1.	6/12/2021	HAPPY C. MTUWA	TMC	PSS NC	0755. 878715	
2	06/12/2021	Meeram G. Kapesa	TMC	MLHO	076299.3668	
3.	06/12/2021	FESTO NASHON	TMC	MTO	0759777269	
4	06/12/2021	KIANGU CORNEL	TMC	MKUU WA MASOKO	0685-195640	
5.	06.12.2021	DOTTO G. SIMON	TMC	Ag. A/UTAMADUAN	0756-038762	
6	06.12.2021	JOSEPHAT S. LEMA	TMC	CHIEF INTERNAL AUDITOR	0767 640479	

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR TANZANIA CITIES TRANSFORMING INFRASTRUCTURE AND COMPETITIVENESS PROJECT (TACTIC ZONE 1 PROJECT-ARUSHA, DODOMA, TABORA AND KIGOMA COUNCILS)

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1	06/12/2021	STEPHANIA IRANGA	TABORA MC	KAIMU MHANDISI	0748369686	
2.	06/12/2021	LEODEGADIUS KATABAZO	TABORA MC	KAIMU AFISA MAZINGIRA	0786932931	
3	6 DEC 2021	Pascal R. MATIAS	TABORA MC	MHO	0754383785	
4.	6 DEC 2021	DR BARAKA MGUMA	TABORA MC	MGANGA MKUU	0753019242	
5	6 Dec, 2021	MSEKWA P. MBUELWA	TABORA MC	KAIMU MKUU WA KITENGO CHA TEHAMA	0766313568	
6	6/DEC/2021	JOHN [illegible]	TABORA MC	AFISA RASILIMALI MAJINI	0784572509	

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR TANZANIA CITIES TRANSFORMING INFRASTRUCTURE AND COMPETITIVENESS PROJECT (TACTIC ZONE 1 PROJECT-ARUSHA, DODOMA, TABORA AND KIGOMA COUNCILS)

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7	06/12/2021	THUWAINI NGAYA	TABORA MC	AFISA MAENDELEO YA JAMII MANISPAA	0754065013	
8	06/12/2021	JONAS KILAVE	TABORA MC	AFISA UCHUMI 21	0757144887	
9.	06/12/2021	GAITAN MKENGE	TABORA MC	AFISA MKUU MAZINGIRA	0754202342	

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR TANZANIA CITIES TRANSFORMING INFRASTRUCTURE AND COMPETITIVENESS PROJECT (TACTIC ZONE 1 PROJECT-ARUSHA, DODOMA, TABORA AND KIGOMA COUNCILS)

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	06/12/2021	ROSEMARY PETER	SECONDARY EDC-TMC	AG. MEO	0784379403	[signature]
	06/12/2021	HAPPINESS NNKO	AGRICULTURE AND COOPERATIVES AG MAICO	AG MAICO	0766050760	[signature]
	06/12/2021	ALEX SIRIYAKO	TABORA MC	AFISA HABARI	0788886991	[signature]
	6/12/2021	JOHN HABALA	TABORA MC	CC	0768215975	[signature]
	06/12/2021	HUSSEIN M. LUZIGA	TABORA MC	CC	0783-898959	[signature]

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR TANZANIA CITIES TRANSFORMING INFRASTRUCTURE AND COMPETITIVENESS PROJECT (TACTIC ZONE 1 PROJECT-ARUSHA, DODOMA, TABORA AND KIGOMA COUNCILS)

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SN	DATE/TAREHE	NAME/JINA	INSTITUTION/TAASISI	POSITION/CHEO	PHONE NO./SIMU	SIGNATURE/SAINI
01	07/12/2021	M.S.JUMA-SAFI	FIRE & RESCUE FORCE	RFO-TBR	0718713621	
02	07/12/2021	M.P.MGOMBELA	-11-	OCS	0756037336	
03	07/12/2021	A/INSP. V. MACHECHU	-11-	HR	0754563389	
04	07/12/2021	SGT. T. KIPETA	-11-	MHASIBU	0754825460	
05	07/12/2021	FC J. MALIMILENE	-11-	AFISA HABARI	0679916032	

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR TANZANIA CITIES TRANSFORMING INFRASTRUCTURE AND COMPETITIVENESS PROJECT (TACTIC ZONE 1 PROJECT-ARUSHA, DODOMA, TABORA AND KIGOMA COUNCILS)

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01	07/12/2021	FRANK A. CHACHA	TAHESIO	K/MENEJA	0628076393	

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR TANZANIA CITIES TRANSFORMING INFRASTRUCTURE AND COMPETITIVENESS PROJECT (TACTIC ZONE 1 PROJECT-ARUSHA, DODOMA, TABORA AND KIGOMA COUNCILS)

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SN	DATE/TAREHE	NAME/JINA	INSTITUTION/TAASISI	POSITION/CHEO	PHONE NO./SIMU	SIGNATURE/SAINI
01	07/12/2021	FEDRICK G. MBANO	STENDI KUU	K/MPANGA	0765108154	[signature]
02	07/12/2021	HASSAN MANDE	STENDI KUU	SGT/ZIMAMOTO	0758-050139	[signature]
03	07/12/2021	Eng Juma Kasekwa	TUWASA-TBR	AGTM	0765793755	[signature]
04	07/12/2021	ENG THOMAS MSENYELE	-h-	NET & DISTRIBUTION	0752855326	[signature]
05	07/12/2021	Eng. John Mzava	TUWASA	ENVIRONMENTAL ENGINEER	0620738112	[signature]
06	07/12/2021	TECH ADAM SHAURI	TUWASA	NET & DISTRIBUTION	0658525759	[signature]

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR TANZANIA CITIES TRANSFORMING INFRASTRUCTURE AND COMPETITIVENESS PROJECT (TACTIC ZONE 1 PROJECT-ARUSHA, DODOMA, TABORA AND KIGOMA COUNCILS)

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SN	DATE/TAREHE	NAME/JINA	INSTITUTION/TAASISI	POSITION/CHEO	PHONE NO./SIMU	SIGNATURE/SAINI
1.	06/12/2021	MARIETHA K JOHN	TABORA MC	Ag MT	0767557445	[signature]
2	06/11/2021	PAUL. M. KUUMBE	TABORA MC	MUNICIPAL ENG	076766624	[signature]
3.	06/11/2021	DED D. Msh	TABORA MC	Ag. MnB	0761-739055	[signature]
4.	06/11/2021	NEHEMIAH CHACHA	TARURA - TMC	Engineer - TARURA	0715 768 308	[signature]
	6/11/2021	SHABANI MHINDA	MKITI MASOKO	MASOKO YETU	0754509947	[signature]
	6/12/2021	OMARY ABDALLAH	KATIBU BANDA(A)	SOKO KUU BANDA(A)	0759-372929	[signature]

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR TANZANIA CITIES TRANSFORMING INFRASTRUCTURE AND COMPETITIVENESS PROJECT (TACTIC ZONE 1 PROJECT-ARUSHA, DODOMA, TABORA AND KIGOMA COUNCILS)

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SN	DATE/TAREHE	NAME/JINA	INSTITUTION/TAASISI	POSITION/CHEO	PHONE NO./SIMU	SIGNATURE/SAINI
1	20/12/2021	WINIFRIDA P. LUDOVICK	STANDI KUU YA MABASI	MANAGER	0764593802	[signature]
02	20/12/2021	FEDRICK K. MBENA	—〃—	K/MENEJA	0765108154	[signature]
03	20/12/2021	HASSAN MANDE	JESHI LA ZIMAMOTO & UOKOAJI	SGT	0758050139	[signature]
04	20/12/2021	ZM.3997 FF – MALONDO-M. NDAMI	JESHI LA ZIMAMOTO NA UOKOAJI	FF	0692995846	[signature]
05	20/12/2021	COSTA MSIGWA	JESHI LA ZIMAMOTO NA UOKOAJI	FF	0653135776	[signature]
06	20/12/2021	EMMANUEL MANDE	STANDI KUU YA MABASI	MKUSANYA MAPATO	0757599064	[signature]

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR TANZANIA CITIES TRANSFORMING INFRASTRUCTURE AND COMPETITIVENESS PROJECT (TACTIC ZONE 1 PROJECT-ARUSHA, DODOMA, TABORA AND KIGOMA COUNCILS)

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SN	DATE/TAREHE	NAME/JINA	INSTITUTION/TAASISI	POSITION/CHEO	PHONE NO./SIMU	SIGNATURE/SAINI
01	21-12-2021	NASSIR ISSA NINDGE	HALMASHAURI YA MANISPAA YA TABORA	DIWANI MWINYI	0755963663	
02	21-12-2021	FRANCISCO V. MKUNGU	HALMACHAURI YA MANISPAA YA TABORA	MTENDAJI KATA YA MWINYI	0769801213	
03	21-12-2021	NEEMA J. MASHIMI	HALMASHAURI YA MANISPAA YA TABORA	MTENDAJI MTAA	0769-928026	
04	21/12/21	FATUMA CHATANDA	HALMASHAURI YA MANISPAA YA TABORA	M/KITI MTAA WA IKUNGI	0787384675	
05	21/12/2021	ROSE J. KIMARO	MANISPAA YA TABORA	M/KITI MTAA WA SIMBAMWENE	0762514655	
06	21/12/2021	EMMANUEL M. TENGWE	MANISPAA YA TABORA	M/KITI SERIKALI	0783-380791	

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR TANZANIA CITIES TRANSFORMING INFRASTRUCTURE AND COMPETITIVENESS PROJECT (TACTIC ZONE 1 PROJECT-ARUSHA, DODOMA, TABORA AND KIGOMA COUNCILS)

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6	21/12/2021	CRESENTIA RUKATI	M/JAMII KANYENYE	MAENDELEO YA JAMII	0757 554531	[signature]
7.	21/12/2021	STELLA J. ANTHONY	EDUCATION	AFISAELIMU KATA	0784375558	[signature]
8	21/12/2021	MARIANA S. KAPELEZI	UTAWALA	MTENDAJI-MTAA KAZEMBE	0752924742	[signature]
9.	21/12/2021	A.M. MAKWAYA	CCM	K/ KATA	0752[illegible]915	[signature]

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR TANZANIA CITIES TRANSFORMING INFRASTRUCTURE AND COMPETITIVENESS PROJECT (TACTIC ZONE 1 PROJECT-ARUSHA, DODOMA, TABORA AND KIGOMA COUNCILS)

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1.	21/12/2021	Zuberi R. Chadamaze.		Afisa Ardhi -	0785 617667	[signature]
2	21/12/2021	[illegible] R. Rwegasha		Mtendaji Mtaa	0785-854667	[signature]
3	21/12/2021	Geofrey D. [illegible]		Mtendaji - Kakama	0758 091629	[signature]
3	21/12/2021	Isabela R. [illegible]		Mtendaji - Mkuwazini	0719771557	Raphael
4		Robert, Kajuna K		Mtendaji - Kombo	0753 226124	[signature]
5		Maulidi Jikanda		Mtendaji - Katcola	0787673898	[signature]

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR TANZANIA CITIES TRANSFORMING INFRASTRUCTURE AND COMPETITIVENESS PROJECT (TACTIC ZONE 1 PROJECT-ARUSHA, DODOMA, TABORA AND KIGOMA COUNCILS)

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1.	21/12/2021	GODFREY F. M[illegible]	A.N CLASSIC	MSIMAMIZI	0786444490	[signature]
2.	—"—	ZABRON MAGOMA	NBS Classic co LTD	Supervisor	0762661944	[signature]
3	—"—	ANDREA DAUD	MTOTO GEMA	—"—	0753369437	[signature]
4.	21/12/2021	LUCAS S. NYAMBALA	TFS-WR-Tabora	Asst. Resource Management	0752006161	[signature]

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR TANZANIA CITIES TRANSFORMING INFRASTRUCTURE AND COMPETITIVENESS PROJECT (TACTIC ZONE 1 PROJECT-ARUSHA, DODOMA, TABORA AND KIGOMA COUNCILS)

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	21/12/2021	MUSSA J. KAHYOLA	TMC	DIWANI	0754360485	
2	21/12/2021	GODWIN N. KAYOKA	TMC	MJUMBE KAMATI	0752031499	
3	21/12/2021	ZENA ALLY	TMC	MJUMBE KAMATI	0683026427	

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR TANZANIA CITIES TRANSFORMING INFRASTRUCTURE AND COMPETITIVENESS PROJECT (TACTIC ZONE 1 PROJECT-ARUSHA, DODOMA, TABORA AND KIGOMA COUNCILS)

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1.	21-12-2022	SHABANI H. MIHINZO	M/KITI NASOKO	MW/KITI	0754329470	
		AHMAD R. CHUCHUA	M/KITI SOKO KUU	M/KITI	0787559907	
		OMARY A. MTHUMBA	KATIBU SOKO KUU	KATIBU	078-372929	

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR TANZANIA CITIES TRANSFORMING INFRASTRUCTURE AND COMPETITIVENESS PROJECT (TACTIC ZONE 1 PROJECT-ARUSHA, DODOMA, TABORA AND KIGOMA COUNCILS)

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01.	22/12/2021	FESTO NASHON	TMC	TRADE OFFICER	0759779267	[illegible]
02	22/12/2021	ENG RAPHAEL MLIMAJI	TANROADS	Ag RM	0755158328	[illegible]
03	22/12/2021	LEOPARD DAUDI MZUKILA	TMC	WEO IPULI	0769 553121	[illegible]
04	22/12/2021	REHEMA SHEGA	TMC	[illegible]	0692023717	[illegible]
05	22/12/2021	MALLO JUMA MALLO	TMC	DIWANI KATA	0754542025	[illegible]
06	22/12/2021	[illegible]	TMC	DED	[illegible]	[illegible]

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR TANZANIA CITIES TRANSFORMING INFRASTRUCTURE AND COMPETITIVENESS PROJECT (TACTIC ZONE 1 PROJECT-ARUSHA, DODOMA, TABORA AND KIGOMA COUNCILS)

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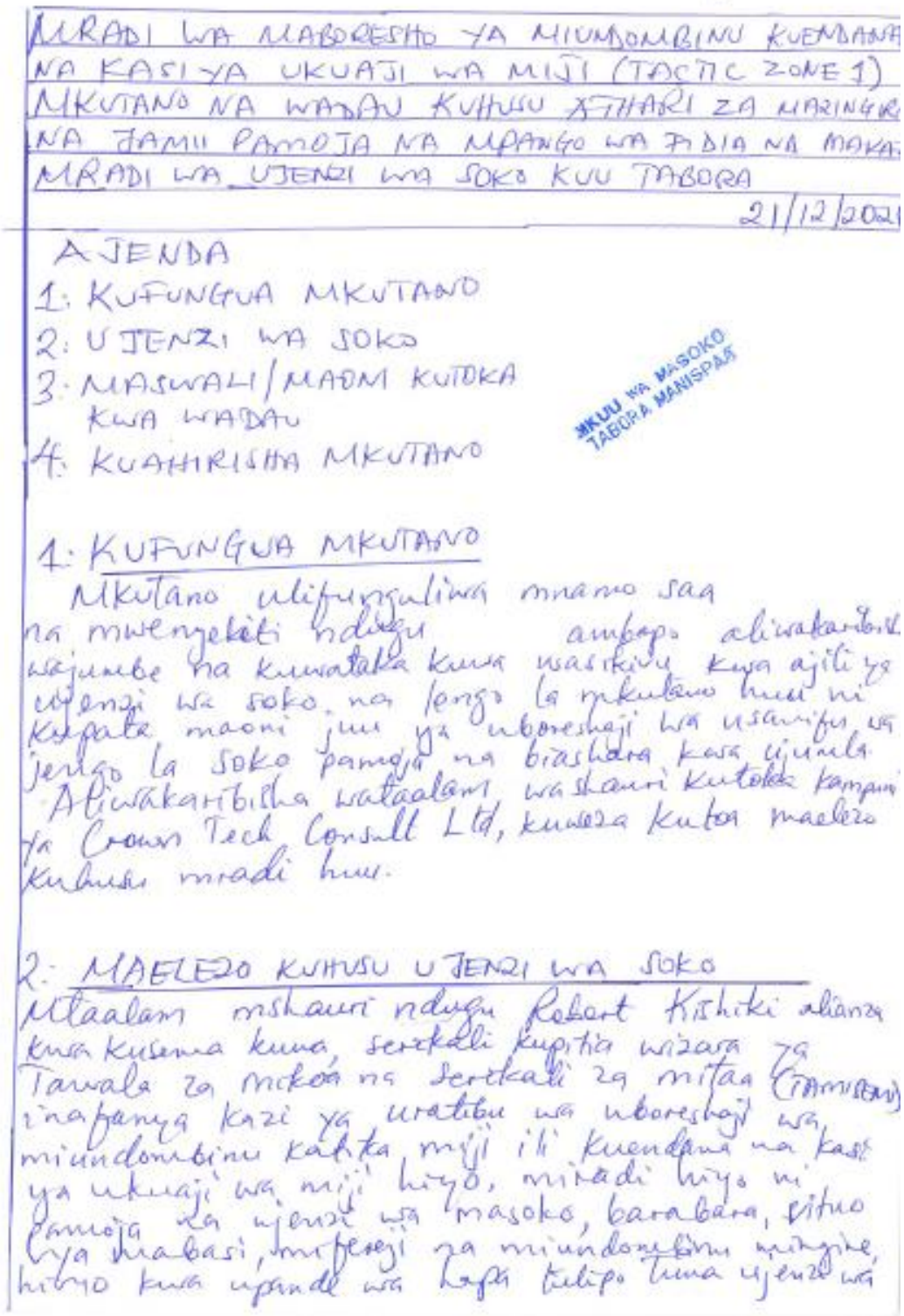
1	22/12/2024	DEOGRATIUS KALAGI	MANISPAA-TABORA	AFISA USAFI Ag	0756475732	
2.	22/12/2024	NELSON MWIARA	LATRA-TABORA	AFISA MFAWIDHI (M)	0739000042	

Appendix III: Minutes of the Meetings Conducted

Mtaa: Chemchem

Tabora Market



MRADI WA MABORESHO YA MIUNDOMBINU KUENDANA NA KASI YA UKUAJI WA MIJI (TACTIC ZONE 1) MKUTANO NA WADAU KUHUSU ATHARI ZA MAZINGIRA NA JAMII PAMOJA NA MPANGO WA FIDIA NA MAKA MRADI WA UJENZI WA SOKO KUU TABORA

21/12/2021

AJENDA

1: KUFUNGUA MKUTANO
2: UJENZI WA SOKO
3. MASWALI/MAONI KUTOKA KWA WADAU
4. KUAHIRISHA MKUTANO

MKUU WA MASOKO TABORA MANISPAA

1: KUFUNGUA MKUTANO

Mkutano ulifunguliwa mnamo saa na mwenyekiti ndugu ambapo alivakaribisha wajumbe na kuwataka kuwa wasikivu kwa ajili ya ujenzi wa soko, na lengo la mkutano huu ni kupata maoni juu ya uboreshaji wa usafiri wa jengo la soko pamoja na biashara kwa ujumla. Aliwakaribisha wataalam, washauri kutoka kampuni ya Crown Tech Consult Ltd, kuweza kutoa maelezo kuhusu mradi huu.

2: MAELEZO KUHUSU UJENZI WA SOKO

Mtaalam mshauri ndugu Robert Kishiki alianza kwa kusema kuwa, serikali kupitia wizara za Tawala za mikoa na Serikali za mitaa (TAMISEMI) inafanya kazi ya uratibu wa uboreshaji wa miundombinu katika miji ili kuendana na kasi ya ukuaji wa miji hiyo, miradi hiyo ni pamoja na ujenzi wa masoko, barabara, vituo vya kibabasi, mifereji ya miundombinu mingine, hivyo kwa upande wa hapa Tulipo tuna ujenzi wa

wa soko, ambapo ujenzi huu wa soko unatarajiwa kufanyika ili kukidhi mahitaji ya sasa na ya wakati ujao, hivyo wadau ambao ni wafanyabiashara pamoja na watendaji wa usimamizi wa mradi huu pamoja na wateja wanakaribishwa kutoa maoni au kama kuna maswali ili kusaidia mpango huu wa ujenzi wa soko ukamilike vizuri na wafanyabiashara waendelee na shughuli zao kama kawaida.

3: MASWALI/MAONI KUTOKA WADAU.

Ally Shabani alisema kuwa wanaupokea mradi wa soko na ujenzi na kujumuishwa wafanyabiashara wote, hivyo mtaalamu wa usanifu wa soko azingatie kuwa wafanyabiashara wote wafanyie biashara ndani ya soko.

Omary Athuman alishauri kuwa ujenzi wa soko jipya uwekwe pia ukumbi wa mikutano pamoja na maktaba lakini pia alishauri bei ziwe za kawaida/nafuu ili wafanyabiashara waweze kumudu kulipia pango.

Pili Kasegenya alishauri huduma za choo na maji viwe karibu kwani wanawake na wanaume pia wanateseka sana kwa huduma za choo kwani uliopo uliopo kwa sasa gharama yake ni kubwa sana.

Risasi Kasongo alizungumzia masuala ya maegesho ya baiskeli na vyombo vya moto kwani vitasaidia

KUAHIRISHA MKUU WA SOKO

Mkutano uliahirishwa mnamo saa 5.20 asubuhi ambapo mwenyekiti anaomba pia ni msimamizi wa soko aliyeshukuru wafanya biashara kwa kujitokeza na kutoa maoni yao.

Imethibitishwa na

JINA: KWANGU. N. CORNEL

CHEO: MKUU WA MASOKO

NAMBA YA SIMU: 0685195640

MKUU WA MASOKO
TABORA MANISPAA

MRADI WA MABORESHO YA MIUNDOMBINU KUENDANA NA KASI YA UKUAJI WA MIJI KANDA 1(MANISPAA YA TABORA)-MKUTANO NA WADAU KUHUSU ATHARI ZA MAZINGIRA NA JAMII PAMOJA NA MPANGO WA FIDIA NA MKAZI

MAHUDHURIO TAREHE 21/12/2021

WILAYA YA TABORA

KATA CHEMCHEM MTAA SOKO KUU TABORA

SN	JINA	CHEO	ATOKAKO	NAMBA YA SIMU	SAHIHI
1	OMARY A. ATHUMANI	Katibu Soko kuu	Uzunguni	0789-372924	[illegible]
2	Mwinjuma M. Bwanga	K/Msaidizi	Chemchem	0655384359	[illegible]
3	Mkoa . R . Mkoa			0686827175	[illegible]
4	SIMON DONALD			0782319465	[illegible]
5	HUSSEIN HUSSEIN		-	0768356350	
6	NASIBU SAIDI			0784-476974	[illegible]
7	Sande Mpuya			0763124214	[illegible]
8	Kmare [illegible]			07841[illegible]503	[illegible]
9	SHABANI KONGE			0785090006	[illegible]
10	Juma Suleiman	mfanyabiashara	Milligowo	0654[illegible]	[illegible]
11	Kahema Andrew	mfanyabiashara	[illegible]	- -	[illegible]
12	MENGI MUSSA			0784917018	
13	SAIDI MOHAMED	" -	" -	0693616609	
14	[illegible]			0785749067	[illegible]
14	MARIA MATHUMAN 0682226066				
15	SALAMAH. MAGAZI	Mjasiriamali	[illegible]	0787527730	[illegible]
16	ABDALLAH MOJA	BIASHARA	IPULI	0757728799	[illegible]
17	MARIAM KATABANYA	BIASHARA	IPULI	0786662689	[illegible]
18	HARUHI JUMA	BIASHARA	MWINYI	0676776270	[illegible]
19	MSONGE	MUSA	MWINYI	0786645988	M. Musa
20	JUMANNE	KATORO	KAPEMBE	0752866518	M. Katoro
21	Juma [illegible]	JUMANNE	RAMADHANI	0762067607	[illegible]
22	Mafuna	BIASHARA	MWINYI	0785656860	[illegible]
23	ABDALLAH SAIDI	BIASHARA	KUBEZA	0685790748	A.Saidi
24	FUAD KONGE	M. BIASHARA		0623909299	[illegible]
25	KOMBO FERUZI	BIASHARA	MBUGANI	0764431.94	[illegible]
26	KAKUKU JAFARI	BIASHARA	MWINYI	0756385779	[illegible]
27	MUSSA MTASHA	BIASHARA	LUMALIZA	0786968964	SHABAN
28	JUMANNE USEBIO	BIASHARA	Mazoezi	06797690	[illegible]
29	Yusufu VENAS	BIASHARA	Uzunguni	0747197549	[illegible]
30	maheli	William	Tabora	0692555939	[illegible]
31	ABUBAKARI ALLY	BIASHARA	CHEMCHEM	0787274171	[illegible]
32	Hasan Msonga	Biashara	Mwinyi	0684156[illegible]	[illegible]
33	HUSSEIN SHABANI	—//—	Chemchem	0764100798	HC
34	KWANGU CORNEL	MKUU WA MASOKO	TMC	0685145640	K. Cornel

MKUU WA MASOKO
TABORA MANISPAA

MRADI WA MABORESHO YA MIUNDOMBINU KUENDANA NA KASI YA UKUAJI WA MJI KANDA 1(MANISPAA YA TABORA)-MKUTANO NA WADAU KUHUSU ATHARI ZA MAZINGIRA NA JAMII PAMOJA NA MPANGO WA FIDIA NA MKAZI

MAHUDHURIO

TAREHE 21/12/2021

WILAYA YA TABORA

KATA CHEMCHEM

MTAA SOKO KUU LA TABORA

SN	JINA	CHEO	ATOKAKO	NAMBA YA SIMU	SAHIHI
1	LUCY J. KIGANGU	MFANYABIASHARA		0766889776	L. JOSEPH
2	PILLI H. RASSOGONTA	MFANYA	BIASHARA	0785606315	[illegible]
3	ASHURA ALLY	MFANYA	BIASHARA	0783813742	[illegible]
4	HALIMA NASSIU	MFANYA	BIASHARA		
5	TAUSI SELEMANI	MFANYA	BIASHARA		
6	AMINA MOHAMED	MFANYA	BIASHARA		
7	[illegible]	[illegible]	[illegible]		
8	HAMIDU MRISHO	MFANYA	BIASHARA		
	RASHIDI ALMASI				
	HAMADI ALLY				
	IBRAHIM BUSINDA	BIASHARA		0643073159	[illegible]
	JUMA ADAMU	KALIKOO	BIASHARA	0653487550	[illegible]
	[illegible] MPAMANI	MFANYABIASHARA	TABORA	[illegible]	[illegible]
	MUSA BUNDUKI	BIASHARA	MWINYI	0787185056	[illegible]
	Ramadhani	Mfanyabiashara	BIASHARA	0623525358	[illegible]
	MASOUD MUSSA	BIASHARA	TABORA	075557[illegible]	[illegible]
	MOHAMEDI ALY	BIASHARA	MWINYI	0687[illegible]	[illegible]
	KILENGALISAKA	P.S	MWINYI	0755[illegible]	[illegible]
	SOUDI MASOUDI	BIASHARA	KILELENI	0693361777	[illegible]
	DAIMA MAKONGA	BIASHA	IPULI	0623672570	[illegible]
	HALIMA HUSSENI	BIASHA	CHEMCHEM	07[illegible]	[illegible]
	CLEOPHACE WAMBURA	-//-	DAYFORAL	0715974106	[illegible]
	MARIAM HAMISI	BIASHARA	MWINYI	0753303752	[illegible]
	ZELDA ALY	BIASHARA	MWINYI	0652 062508	Z.A
	IDDI JUMA	BIASHARA	IPULI	0764668514	[illegible]
	MUSSA HAMISI	BIASHARA		07 866143	
	RIACI KASONGO	[illegible]		0685150359	R. KASONGO

MKUU WA MASOKO TABORA MANISPAA

Appendix IV: Consultation meetings Photos

Photo 1; *Consultation with CMT-Tabora Municipal council*

Photo 2; *Consultation with Fire and Rescue Force-Tabora Municipal council*

Photo 3: *Consultation meeting with Tabora Bus terminal Management*

Photo 4: *Consultation meeting with TFS-TABORA*

Photo 5: *Consultation at Tabora main Market for redevelopment*

Photo 6: *Consultation meeting with Ag.DED-TABORA Municipal Council Office*

Appendix V: Architectural Drawings

A. Tabora Market Sub-Project Drawings

NOTE

PLOT AREA	17,589.26 SQM
GROUND FLOOR AREA	5,087.56 SQM
BASEMENT FLOOR AREA	2,019 SQM
OUTDOOR FRAME	2,194.5 SQM
PLOT COVERAGE	41.4%
PLOT RATIO	0.529
SOFTSCAPE	1,231.48 SQM
HARDSCAPE	7,692.63 SQM

SCHEDULE OF ACCOMODATION

PARKING	107
VENDORS	576
FRAME	362
WHOLE SALE	16
BABY SITTER ROOM	1
BABY FEEDING ROOM	1
SPECIAL ROOM FOR WOMEN	2

SITE LAYOUT PLAN- 01

Client:
THE UNITED REPUBLIC OF TANZANIA
PRESIDENT'S OFFICE - REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT
TABORA MUNICIPAL

COUNCIL PROJECT COORDINATOR
DATE.....
CITY DIRECTOR
DATE.....

Consultant:
Crown TECH-Consult Ltd in JV with Pan Arab Consulting Engineers
P.O BOX 72877 Tel. 022 2700078, Fax. 2771293
DAR ES SALAAM, Tanzania.

CTC CROWN TECH
pace architecture engineering + planning

		DATE
DESIGNED	HEZRON, D	OCT. 2022
CHECKED	MOSHI, E.Z.	OCT. 2022
APPROVED	SHIRIMA, F.	OCT. 2022

REVISIONS			
No.	DESCRIPTION	MADE BY	DATE
01			
02			
03			

SCALES
1:450
(A1 FORMAT)

URBAN INFRASTRUCTURE INVESTMENTS FOR TABORA (TACTIC ZONE 1)
TABORA CBD MARKET:
SITE LAYOUT PLAN 01

DRAWING No.
TBR-MK/PR/D01
SHEET No. 01
OF 48

B. Tabora Bus Terminal Sub-Project Drawings

Client:

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

COUNCIL PROJECT COORDINATOR
DATE.....
CITY DIRECTOR
DATE.....

Consultant:
Crown TECH-Consult Ltd in JV with
Pan Arab Consulting Engineers
P.O BOX 72877 Tel. 022 2700078, Fax. 2771293
DAR ES SALAAM, Tanzania.

CTC CROWN TECH
pace architecture engineering planning

	DESIGNED	DATE
APPROVED	SHIRIMA, F.	OCT. 2022
CHECKED	MOSHI, E.Z	OCT. 2022
	HEZRON, D	OCT. 2022

REVISIONS

No.	DESCRIPTION	DATE	MADE BY
01			
02			
03			

SCALES
1:1400
(A2 FORMAT)

URBAN INFRASTRUCTURE INVESTMENTS FOR
TABORA (TACTIC ZONE 1)

INALA BUS TERMINAL TABORA:

SITE LAYOUT PLAN

DRAWING No.
TBR-TM/PR/D01

SHEET No.
01

OF

NOTE

PLOT AREA	141,372 SQM
PLINTH AREA	5,664 SQM
TOTAL FLOOR AREA	6,933 SQM
PLOT COVERAGE	4%
PLOT RATIO	0.049

SITE LAYOUT PLAN

Appendix VI: Emergency Preparedness and Response Plan

EMERGENCY PREPAREDNESS AND RESPONSE PLAN

11.0 INTRODUCTION

Emergency Response Plan is to establish an organizational structure and procedures for response to major emergencies. Proper planning, preparation, and timely response to emergencies are the most effective ways to minimize adverse impacts to public health, property, and the environment. This Environmental Emergency Response Plan (EERP) contains the requirements and procedures for environmental emergency planning, preparedness, response, and reporting for operations at the grinding plant. The EERP will be designed to ensure timely identification of emergencies, clearly designate responsibilities, and promote effective response actions, with minimal confusion and disruption of operations. The main elements of the plan include:

- Specific emergency situations.
- An emergency monitoring and response management hierarchy and chain of Command with defined responsibilities for operations personnel.
- Emergency response plans for each type of emergency.
- Notification and reporting requirements for emergencies.

The plan will be comprehensive and is designed as an active reference for operations personnel during the life of the lead operation.

11.1 OBJECTIVE

To plan for, coordinate, implement and manage a program to protect the environment and the welfare of the public in the event of an emergency at project Area.

11.2 POTENTIAL EMERGENCIES

This EERP will cover environmental emergencies that are considered most potentially likely to affect the excavated area. Environmental emergencies involve the release, or threatened release, of pollutants such as oil to the soil, water, or air. Releases can be accidental, deliberate, or caused by natural disasters. Environmental emergencies are categorized as technological emergencies, human error emergencies and physical infrastructure emergencies.

These emergencies could arise because of:

- Fire.
- Equipment/infrastructure failure.
- Lightning and flooding; and

The specific emergencies that are possible during the operation of the plant are described below.

11.2.1 Technological Emergencies

Technological emergencies result from failure of equipment or facilities or could result from a process or system failure. Possibilities include:

- Hazardous materials handling incident.
- Safety system failure.
- Breaking system failure on vehicles.
- Power failure; and

- Emergency notification system failure.

11.2.2 Human Error Emergencies

A wide variety of emergencies can be caused by employee error or negligence. Overall, human error is the single largest cause of workplace emergencies and can result from:

- Inadequate training.
- Poor maintenance.
- Poor attitude
- Carelessness.
- Misconduct.
- Substance abuse; and
- Fatigue.

11.2.3 Physical Emergencies

Physical emergencies relate to the design and construction of the project infrastructure, whereby some condition or factor not accounted for in the design or some element of inadequate construction results in an emergency. Physical features to be considered are:

- The physical construction of the facility.
- Layout of equipment.
- Lighting.
- Evacuation routes and exits; and
- Proximity of shelter areas.

11.2.4 The Excavated Area Emergencies

Based on an integrated review of the future plant operations and the possible emergencies, a defined set of emergency situations has been developed. These are the specific emergencies that are anticipated in the implementation and operation of the excavate area operations. The defined emergencies are described below.

11.2.5 Pollution Control Failure

Failure of the pollution control facilities can occur around the operational area if the silt traps and cut off drains fail because of eroded material filling up in the traps or drains. The above scenario can have a significant impact on receiving environment. Regular inspections will be carried out.

11.2.6 Fire

Failure to observe safety guidelines at plant site can increase the risk of fire when the volatility and flammability of fuels is taken into consideration. Additionally, fire damage to any project infrastructure can cause release of hazardous materials to the air or ground. Methods and equipment used in fighting fires in the project area needs to take account of the presence of hazardous liquids. Firefighting equipment such as fire extinguishers will be installed in clearly marked places and within easy reach. Adequate training in firefighting coupled with regular fire drills will be conducted to ensure that employees are fully adept with handling emergencies resulting from fire. Lines of command will be established for employees to be aware of who to contact in the event of fire.

11.2.7 Risk of Lightning

Unbalanced electric charge in the atmosphere can cause lightning which is a massive electrostatic discharge. Humans can be hit by lightning directly especially when outdoors. Lightning strikes can cause hearing damage or trauma or can be fatal.

11.3 EMERGENCY MANAGEMENT ELEMENTS

This section of the plan describes the necessary response approach to the primary emergencies identified for the operation. There are two crucial elements to effective emergency response: the early identification of the emergency and a rapid and comprehensive response to address the emergency and minimize negative impacts. The response plans are based on:

- Monitoring and emergency identification.
- Environmental protection.
- Direction and control.
- Communications.
- Safety.
- Property protection.
- Community outreach.
- Recovery and restoration; and
- Administration and logistics.

These elements are the foundation for the emergency procedures that Starlink-Gulf Limited will follow to protect personnel, the environment, and equipment, and resume safe operations as quickly as possible.

11.3.1 Emergency Response Chain of Command

A specified chain of command for immediate response to emergencies as well as formal notification will be required to ensure effective response as well as compliance with appropriate regulations. Although each emergency will have different personnel involved in identifying and responding to emergencies on the first level, the specified chain of command is common to any emergency. The camp chain of command shall be addressed in the later stages:

An alternate for each position on the chain of command will be assigned. Should any person bin the chain of command takes leave or not be able to carry out his/her responsibilities, then the alternate should be immediately taking over the said responsibilities.

11.3.2 Safety Buffer Zone

The proposed project will establish the buffer zone to reduced or avoid dust emission during processing of dolomite power. The buffer zone will design with the height of 6 meters built by cement block for security purpose and dust controlled to the surrounding community.

Appendix VII: Non-Technical Executive Summary

UFUPISHO

TATHMINI YA ATHARI KWA MAZINGIRA NA JAMII (ESIA) KWA MAPENDEKEZO YA UJENZI WA KITUO CHA MABASI CHA INALA KATIKA ENEO LA (Plot. No.1 Block ''E'') NA UENDESHAJI WA SOKO LILILOPO KATIKA ENEO LA CHEMCHEM (Plot. No.414 Block ''M'') MANISPAA TABORA; MKOA WA TABORA. –TANZANIA

Mtetezi: MANISPAA YA TABORA

Mawasiliano ya Mtetezi: MANISPAA YA TABORA,

S.L.P 174, Tabora, Tanzania

Simu: +255-27-2758190

0626-2604315/2666088

Faksi: 026-2604835

Barua Pepe: md@taboramc.go.tz

Mtaalamu wa EIA: WESH Consulting Limited

Block No 3, Plot No 105, Mtaa wa Makongo Juu ,

P. O BOX 35478, Dar es Salaam, Tanzania

Mob: +255 752 575 989/ +255 754 898 592

Barua pepe: weshconsultingltd@gmail.com

UTANGULIZI

Serikali ya Jamhuri ya Muungano wa Tanzania kupitia Ofisi ya Rais – Tawala za Mikoa na Maendeleo ya Mitaa inakusudia kufikisha miundombinu na huduma za msingi zilizoboreshwa katika kushirikisha mamlaka za serikali za mitaa za mijini na kutenga fedha kwa ajili ya kufanya Tathmini ya Athari kwa Mazingira na Kijamii (ESIA) ikiwa ni pamoja na maendeleo. Mpango wa Usimamizi wa Mazingira na Kijamii (ESMP) pamoja na kufanya Mpango Kazi wa Kuhamishia Makazi (RAP) kwa Manispaa ya Tabora miundombinu ya miradi midogo inayopendekezwa ambayo ni pamoja na; Ujenzi wa Kituo cha Mabasi cha Inala na Uboreshaji wa soko la miaka 50. miundombinu ni sehemu ya mkakati wa Serikali wa kukuza maendeleo

ya kijamii na kiuchumi ya miji na miji ya Tanzania na kuimarisha maendeleo ya miji yenye tija, ushirikishwaji na ustahimilivu.

PO-TAMISEMI na Benki ya Dunia walianzisha majadiliano ya kuzingatia Ujenzi wa Kituo cha Mabasi huko Inala na Uendelezaji Upya wa soko la miaka 50.
Utekelezaji wa miradi hii midogo ya TACTIC unakusudiwa kuwezesha ukuaji wa uchumi ambao ni pamoja na; uhamasishaji wa ukuaji wa Mji kupitia Ujenzi wa Kituo cha Mabasi huko Inala na Uendelezaji Upya wa soko la miaka 50 utatoa mazingira bora ya biashara ambayo yataongeza mapato kwa Manispaa.

Tathmini ya Athari kwa Mazingira (EIA), katika muktadha huu ikirejelea utafiti wa Tathmini ya Athari kwa Mazingira na Kijamii (ESIA), ilifanyika kwa mujibu wa kanuni za Tathmini na Ukaguzi wa Athari kwa Mazingira (2005) na marekebisho yake ya 2018 inayotekeleza Sheria ya Usimamizi wa Mazingira Na. Na. Cheti cha EIA ni miongoni mwa idhini za sharti zinazohitajika kabla ya mradi kuanza. Bila ubaguzi, mradi huu utahitaji cheti cha EIA kabla ya ujenzi kuanza. Utafiti huo pia ulifanya mapitio ya Viwango vya Benki ya Dunia vya Mazingira na Kijamii (ESS) vya 2018 na kujumuisha mahitaji yao ipasavyo. Utafiti huo ulifanywa kutoka Desemba 2021 hadi Januari 2022.

SERA, MFUMO WA SHERIA NA TAASISI

Tanzania imejitolea kufikia malengo ya maendeleo endelevu. Msukumo huu unazingatiwa katika Sera ya Taifa ya Mazingira na sera zingine za kisekta zikiwemo;

- Sera ya Taifa ya Mazingira (NEP) ya mwaka 1997
- Sera ya Taifa ya Usafiri (2003)
- Sera ya Taifa ya Madini (1998)
- Sera ya Sekta ya Ujenzi (2002)
- Sera ya Taifa ya Ardhi (1995)
- Sera ya Nishati (2003)
- Sera ya Taifa ya Maendeleo ya Makazi (2000)

- Sera ya Taifa ya Jinsia (1999)
- Sera ya Taifa ya Maji (2002)
- Sera ya Taifa ya Misitu (1998)
- Sera ya Taifa ya Uwekezaji (1997)
- Sera ya Kilimo na Mifugo (1997)
- Mkakati wa Kitaifa wa Kukuza Uchumi na Kupunguza Umaskini
- Sera ya Taifa ya VVU/UKIMWI (2001)
- Sera ya Hifadhi ya Taifa (1994)
- Sera ya Taifa ya Afya (2017)

Sheria na kanuni muhimu ambazo zina umuhimu kwa maendeleo ya barabara kuhusiana na usimamizi wa mazingira ni pamoja na;

- Sheria ya Usimamizi wa Mazingira Na. 20 ya (2004), Sura. 191
- Kanuni za Athari kwa Mazingira na Ukaguzi (2005)
- Sheria ya Ardhi ya Vijiji (1999), RE 2019
- Kipengele 3.4.10 Sheria ya Ardhi, 1999 RE 2019Sheria ya Matumizi ya Maji (Udhibiti na Udhibiti) (1974) kama ilivyorekebishwa mwaka 1981 (Sheria Na.10)
- Sheria ya Barabara, 2007
- Sheria ya Maeneo Yanayolindwa (1969)
- Sheria ya Mambo ya Kale ya 1964 (kama ilivyorekebishwa mwaka 1979) na Kanuni za Mambo ya Kale za 1991.
- Sheria ya Mipango Miji (2007)
- Sheria ya Mipango ya Matumizi ya Ardhi (2007)
- Usalama wa Afya Kazini (2003)

- Sheria za Serikali za Mitaa Na.7 & 8 za 1982
- Sheria ya Tume ya Kitaifa ya Mipango ya Matumizi ya Ardhi 3/84
- Kanuni za Ardhi (Tathmini ya Thamani ya Ardhi kwa ajili ya Fidia), 2001]
- Sheria ya Misitu, 1957 (Iliyorekebishwa mwaka 2002)
- Sheria ya Misitu, 1957 (Iliyorekebishwa mwaka 2002)
- Sheria ya Vilipuzi, 538
- Sheria ya Mkoa na Wilaya Na. 9, 1997
- Miongozo ya Tathmini na Usimamizi wa Mazingira kwa Sekta ya Barabara
- Sheria ya Madini (1998)
- Sheria ya Utwaaji Ardhi ya 1967

MAELEZO YA MRADI

Ujenzi wa Kituo cha Mabasi cha Inala na Uendelezaji upya wa soko la miaka 50 kilichopo katika Halmashauri ya Manispaa ya Tabora, mkoani Tabora .

Tabora liko katika CBD. Imepakana na barabara mbili za kuingia ambazo ni barabara ya Lumumba, barabara ya madaraka , barabara ya Tabora- Kigoma na Barabara ya Intoner na barabara ya Tabora-Kigoma . Soko la Tabora lina ukubwa wa takriban 10,000sqm. Soko la Tabora lililopo lilianzishwa takribani miaka 50 iliyopita. Kwa upande mwingine, Soko la Tabora lililopo lina wafanyabiashara zaidi ya 2,700 wakiwemo wauzaji rasmi 8 wa vyakula (Wachuuzi wa Chakula) na Matching guys wengi (Machinga) na cubes 909 (Vizimba). Taka ngumu zinazozalishwa sokoni hapo hukusanywa kwa nahodha zilizopo eneo la Kachoma na kisha kusafirishwa hadi kwenye dampo la Kariakoo kata ya Kitete karibu na Shule ya Sekondari ya Tabora Boys. Kwa hiyo, wafanyabiashara wa soko la Tabora wakifanya biashara katika mazingira duni ya kufanyia kazi, baadhi ya wafanyabiashara hapo awali walihamishiwa kwenye masoko mengine madogo kutokana na ubovu wa soko lililopo katika soko hili kuu.

Kituo cha basi kiko Kusini-Mashariki mwa CBD. Topografia ya eneo hilo ni miteremko ya upole ambayo inajumuisha sifa tofauti za kiikolojia. Kituo cha Mabasi kipo takriban kilomita

10 kutoka CBD na kipo karibu na barabara kuu ya barabara ya Tabora-Itigi katika kitongoji cha Inala. Eneo lililozungukwa limepangwa na kupimwa kwa sehemu mbili za ardhi kwa ajili ya ujenzi wa kituo cha mabasi kimoja chenye ekari 35 na cha pili kikiwa na ekari 15.

Eneo la kituo cha mabasi ni la kimkakati kwani eneo linalopendekezwa la Tabora lipo jirani, Hospitali ya Manispaa ya Tabora inayoendelea kujengwa ni takriban kilomita 3.5 kutoka kituo cha mabasi kinachopendekezwa.

Zaidi ya hayo, usanifu wa jengo linalopendekezwa la kituo cha Mabasi litakalojengwa huko Inala litakuwa na orofa 2 (ghorofa ya chini na ghorofa 1 ya juu) zenye sehemu za kuegesha magari, sehemu za kusubiri, sehemu za kutolea pesa kwa njia ya simu, vifaa vya usafi katika ghorofa zote mbili, migahawa, maeneo ya benki, karakana. , kituo cha polisi na ofisi kadhaa na kwenye kila ghorofa.

Shughuli kuu za ujenzi wa miradi midogo ni pamoja na;

- Uchimbaji na usafirishaji wa vifaa (changarawe, mchanga, mawe magumu, mkusanyiko na maji)
- Kibali cha tovuti katika eneo la kituo cha mabasi cha inala .
- Ukarabati Kiasi Ujenzi au ujenzi kamili wa kalvati na miundo mingine ya mifereji ya maji.
- Uundaji wa tuta la barabara, uanzishwaji wa msingi na msingi, uso wa barabara
- Vivuko vya watembea kwa miguu na Vinunda vya Kasi vitatolewa katika barabara zote ndani ya kituo cha mabasi .
- Ukamilishaji na usafishaji wa mwisho wa barabara na hifadhi ya barabara baada ya ujenzi, urekebishaji wa barabara za zamani, na ubadilishaji wa muda kwa kutumia wakati wa ujenzi.

MAZINGIRA YA MRADI

Manispaa ya Tabora

Tabora ni Makao Makuu ya mkoa wa Tabora yenye ukubwa wa Kilomita za mraba 1092. Manispaa iko kati ya 4 º 52' na 5 º 9' latitudo Kusini na 33 º 00' Mashariki. Sehemu kubwa ya sehemu yake iko kati ya 1000m juu ya usawa wa bahari. Imezungukwa na Wilaya ya Uyui

katika vyama vya Magharibi, Kaskazini, na Mashariki na Wilaya ya Sikonge kwa upande wa Kusini.

Katika Manispaa, mvua hupungua kutoka magharibi hadi mashariki, magharibi, mvua ni zaidi ya milimita 1,000 wakati upande wa mashariki hupungua hadi milimita 700 au chini ya hapo. Kilele ni Desemba ikifuatiwa na kiangazi kidogo mnamo Januari.

Joto la wastani wakati wa mchana ni 22 ^{0}C - 26 ^{0}C. Joto la juu zaidi la 33.1 ^{0}C hutokea Oktoba kabla tu ya msimu wa mvua kuanza, huanguka hatua kwa hatua mwezi wa Desemba, na hubakia kwa kiasi kikubwa hadi Mei. Kati ya Mei na Agosti, Manispaa hupitia msimu wa baridi na wastani wa kiwango cha chini cha joto cha 15.7 ^{0}C ni cha chini ikilinganishwa na Oktoba.

Vyanzo vya maji

Hakuna vyanzo vya maji vinavyoaminika kwenye tovuti ya mradi mdogo. Hata hivyo, kuna mito miwili mikubwa ambayo ni Walla na Igombe ambayo ni mito ya muda inayopitia manispaa hiyo. Kwa hivyo, ujenzi wa mabwawa ya udongo na hifadhi inaweza kuanzishwa wakati wa misimu ya mvua ili kuhifadhi maji ambayo yanaweza kutumika kwa madhumuni ya ujenzi.

Flora

Kuna hifadhi kuu mbili za misitu zinazopatikana ndani ya Manispaa ya Tabora zinazomilikiwa na serikali kuu; hizi ni pamoja na: Hifadhi ya Msitu wa Igombe inayopatikana Kaskazini-Magharibi mwa manispaa katika kata za Misha na Ikomwa na Hifadhi ya Msitu wa Urumwa inayopatikana Kusini-Magharibi mwa manispaa hiyo katika kata za Itetemia na Ntalikwa . Asili ya hifadhi hizi za misitu kiasili inatawaliwa na misitu ya miombo .

Uoto wa asili wa Manispaa ya Tabora unaweza kuainishwa katika ardhi ya juu na chini au uoto wa ardhioevu. Katika nyanda za juu, kuna misitu, vichaka, na nyasi zenye vichaka. Misitu ya Miombo (*brachystegia boehmii*) ndio spishi zinazotawala ndani ya manispaa hiyo, huku miti ya mninga ikipatikana katika sehemu zilizotawanyika. Misitu ya Miombo yenye miti migumu maarufu ya mninga ni vyanzo vizuri vya mbao bora, kuni, mkaa na kwa ajili ya kutunza mizinga ya nyuki.

Mimea katika eneo la mradi mdogo wa Kituo cha Mabasi huko Inala hutofautiana kutoka kwa nyasi, miti midogo, na vichaka vilivyo na vikundi vya miti iliyotawanyika hasa sifa za *Commiphora Africana* hadi maeneo yanayolimwa. Kuna *Termitaria kubwa* katika viraka

vichaka ndani ya eneo la mradi hutofautiana kutoka eneo moja hadi jingine. Inaongozwa aina ya kigeni ni Mangifera *Kiashiria* ambayo huzingatiwa katika sehemu kubwa ya eneo hilo. Spishi nyingine zinazotawala ni *Terminalia sericea*, *Julbernardia Globiflora , Borassus Aethiopum ,* na *Phyllansus Aina za engreli* . Karibu na eneo la eneo la mradi, uoto wa asili umebadilishwa na shughuli za anthropogenic kama vile malisho ya mifugo na uzalishaji wa mazao.

Hata hivyo, mimea iliyopo kwenye tovuti haijaripotiwa kuwa spishi muhimu kwenye IUCN Red .

Wanyama

Fauna katika manispaa hiyo inajumuisha mifugo ya aina tofauti kama; ng'ombe, mbuzi, kondoo na kuku. Hata hivyo, baadhi ya spishi kama vile ndege na nyuki, n.k , wana makazi yao katika maeneo ya misitu Mifugo wengi wao ni wa kiasili, wachache wa kigeni na chotara hupatikana hasa katika eneo la mijini.

WADAU WA MRADI NA USHIRIKISHI

Mbinu rahisi ilipitishwa ili kubainisha washikadau wakuu na maswala makuu ya kimazingira na kijamii. Hii ilihusisha uchunguzi wa kimwili na mashauriano (mashauriano ya moja kwa moja). Taarifa nyingine kuhusu mradi huo zilipatikana kupitia utafiti wa dawati.

Mashauriano ya wadau yalifanyika wakati wa hatua ya ugawaji. Ngazi mbalimbali za wadau wakiwemo viongozi wa serikali za mitaa pamoja na wanajamii katika vijiji vilivyo karibu na ndani ya eneo la mradi walitambuliwa na kushauriwa.

Wadau walijumuisha mashirika ya serikali, wanufaika, makampuni ya kibiashara, na makundi mengine yote rasmi au yasiyo rasmi yanayohusiana na mradi. Mahojiano yalitumika katika mchakato wa kuwatambua washikadau. Kutoka kwa mdau mmoja, timu iliunganishwa kwa mwingine na mdau mwingine, katika mchakato wa mnyororo au wa mtandao. Ifuatayo ni orodha fupi ya wadau wa taasisi na watu binafsi.

Wadau wakuu ni pamoja na:

- Wizara ya Ujenzi na Uchukuzi;
- Wizara ya Ardhi, Nyumba na Maendeleo ya Makazi;
- Wizara ya Kilimo;

- Wizara ya Mifugo na Uvuvi;
- Wizara ya Maliasili;
- Wizara ya Maji;
- RAS-Ofisi – Tabora
- TFS- Tabora
- Halmashauri ya Manispaa ya Tabora
- Jeshi la Zimamoto na Uokoaji- Tabora
- WEO & VEO kwenye tovuti ya mradi mdogo
- Makampuni ya Huduma, TANESCO, TTCL, na Mamlaka za Ugavi wa Maji (TUWASA)
- Jumuiya ya eneo la karibu la mradi mdogo
- Kuvutia soko na wafanyabiashara
- Makampuni ya Usafiri wa Mabasi

MATOKEO YA MASHAURIANO YA UMMA

Upeo na kazi ya awali ya uwandani ilifichua masuala muhimu yafuatayo ambayo yamefafanuliwa katika utafiti huu wa EIA. Masuala makuu ni pamoja na;

Manufaa ya Kiuchumi: Uboreshaji wa miundombinu kama vile soko na kituo cha mabasi utaleta manufaa mbalimbali ya kiuchumi kwa jamii. Ujenzi wa kituo cha mabasi na soko utaongeza mapato ya manispaa na mapato ya wananchi kupitia fursa za ajira.

Uendelezaji upya wa Soko: Muundo wa uendelezaji upya wa Soko lililopo unapaswa kuzingatia utoaji wa mabomba ya kuzima moto, matangi ya maji ya Kuzima moto, miundombinu ya kuvuna maji ya mvua, vifaa vya usafi, na mfumo wa majitaka na mifereji ya maji. Zaidi ya hayo, muundo unapaswa kuzingatia ulinzi dhidi ya hali ya hewa, usambazaji wa nishati mbadala na njia za kufikia.

Kinachopendekezwa cha Mabasi Tabora : Muundo wa kituo cha mabasi uzingatie uwepo wa mambo yafuatayo; vifaa vya usafi, mfumo wa maji taka na mifereji ya maji, Uzio, Bamba la Ground kwa Skip, ufikiaji wa Skip za Taka, Mfumo wa matangazo ya Spika, Vyumba vya baridi

vya bidhaa zinazoharibika, Maeneo mahususi kwa kila bidhaa ya biashara, Ukumbi wa mikutano na mkahawa kwenye sakafu ya juu na maegesho ya juu. sakafu.

Umma: Uhamishaji wa laini za umeme unapaswa kufanywa kabla ya maagizo ya huduma ili kuepusha vikwazo wakati wa utekelezaji wa mradi.

Mahali pa Maeneo ya Kambi: Watu wa eneo hilo wanapaswa kushirikishwa katika uteuzi wa maeneo ya kambi. Maeneo ya kambi ya mkandarasi yanapaswa kujengwa kwa vifaa vya kudumu vya ujenzi. Wazo ni kutumia miundo hii kwa huduma za umma kwa mfano shule au ofisi za mitaani mwishoni mwa awamu ya ujenzi wa mradi.

Kuenea kwa VVU/UKIMWI na Maambukizi Mengine ya Kujamiana: Kudhoofisha usalama wa jamii na hatari ya kuongezeka kwa magonjwa, hasa VVU/UKIMWI. Manispaa ya Tabora pamoja na mkandarasi kufanya rasmi mkataba rasmi na taasisi itakayokuwa inaendesha kampeni ya kujikinga na VVU/UKIMWI kwa njia ya uenezaji wa semina zinazofaa na zinazofaa za kujenga uelewa wa kujikinga na VVU/UKIMWI, kampeni ziwe kwa wafanyakazi wote na hasa. jamii, ushirikiano mzuri na CMACs na wadau wengine ni muhimu kwa kampeni za uhamasishaji wa VVU/UKIMWI zenye msingi wa matokeo wakati wa ujenzi.

Ndoa za utotoni na mimba: Imesisitizwa na wadau kuwa miradi mingi ya ujenzi imekuwa chanzo kikubwa cha mimba za utotoni kwa watoto wa kike wa shule na wasichana walio nje ya shule ambao wako chini ya miaka 18. Wadau hao walipendekeza baadhi ya hatua za kukabiliana na hali hiyo yaani wazazi waweke utamaduni wa kuwaelimisha watoto wao juu ya jinsia na elimu ya afya ya uzazi, kuzingatia maadili na maadili, na pia wazazi wawe na tabia ya kuwajibika kama vielelezo ambavyo watoto wanaweza kuiga kwao.

Kuchochea ukuaji wa mji: Ujenzi wa kituo cha Mabasi utaongeza idadi ya mabasi yatakayopitia Manispaa ya Tabora kwenda mikoa ya jirani, jambo ambalo litaongeza mapato ya Manispaa. Kwa upande mwingine, soko litaongeza mapato ya manispaa kupitia kuongezeka kwa bidhaa katika eneo la soko.

Fursa za ajira kwa wenyeji: Kila mtaa/kata ambayo mradi unajengwa inapaswa kupewa kipaumbele katika utoaji wa vibarua wasio na ujuzi na wenye ujuzi wa nusu katika mradi. Kwa hivyo mkandarasi anapaswa kuzingatia sera ya maudhui ya ndani katika kutekeleza mradi wakati wa kuajiri wafanyikazi na mnyororo wa usambazaji wa huduma.

Bima ya Wafanyakazi: Uzoefu unaopatikana kutoka kwa wakandarasi wengine wa kigeni ni kwamba hawatoi bima ya mahali pa kazi kwa vibarua wa kawaida. Kufuatia sheria za kazi zilizopo, mamlaka za halmashauri ya Manispaa ya Tabora zinapaswa kuwasimamia

wakandarasi hao kuzingatia sheria zilizopo za nchi katika kulinda usalama wa nguvu kazi nzima katika eneo la ujenzi ili kuwafanya wawe na sera stahili za bima.

Ufikiaji Ulioboreshwa: Mradi mdogo wa soko unaopendekezwa utahakikisha upatikanaji rahisi wa bidhaa, bidhaa, kwa hiyo, kuwezesha maendeleo zaidi ya kimwili na kuboresha maisha ya watu.

Uchafuzi na Mtetemo Wakati wa Ujenzi: Uzalishaji wa vumbi, kelele kutoka kwa vifaa vya ujenzi/mashine zinazosonga, na ulipuaji wa miamba ni asili ya kazi zote za ujenzi wa majengo. Mkandarasi lazima awe na njia ya kukandamiza vumbi, kupunguza kiwango cha kelele na kutoa taarifa ya mapema kwa jamii kuhusu muda mwafaka wa kulipua miamba.

Kulinda Miundombinu iliyojengwa: Ilisisitizwa na wadau kuwa kuna haja ya kujenga utamaduni wa kulinda na kulinda miundombinu ya mradi dhidi ya uharibifu miongoni mwa wanajamii hasa baada ya kukamilika kwa ujenzi wa mradi mdogo.

Ulinzi wa Mazingira na Uendelevu: Njia za maji ya dhoruba zisielekezwe mashambani kwa kuwa tabia kama hiyo imeharibu mazao na ardhi ya kilimo kutokana na mmomonyoko wa udongo. Inapaswa kuelekezwa kwenye njia sahihi za maji ambazo hazichafui mazingira. Pia, uvujaji wa dizeli, mafuta, na mafuta mengine kutoka kwa vifaa vya ujenzi, na katika vyanzo vya maji inapaswa kuepukwa.

Urembo wa Mazingira: Kwa kuwa Manispaa ya Tabora imekuwa na kampeni ya upandaji miti rafiki kwa mazingira ikiwemo miti ya mapambo, hivyo basi, mkandarasi ahakikishe miti hiyo inapandwa kuzunguka eneo la kituo cha Mabasi na maeneo ya hifadhi ya soko na kuhakikisha inakua kabla ya kushughulikia mradi huo. mteja.

Ukatili wa Kijinsia: Kutokana na uzoefu uliopatikana kutokana na kuongezeka kwa matukio ya UWAKI kutokana na miradi mingine ya ujenzi, wanajamii walieleza wasiwasi wao kuwa wakati wa mchakato wa ujenzi wa mradi huo, watu wengi zaidi watakuja kufanya kazi katika eneo la mradi na hivyo basi. inaweza kuchochea unyanyasaji wa kijinsia katika jamii zao kutokana na mwingiliano wa watu kutoka asili tofauti za kitamaduni. Wanatoa wito kwa mkandarasi kutilia mkazo wafanyakazi wa mradi kuheshimu utu kwa kufuata mila na desturi za jadi badala ya kuwa sababu ya kuchochea masuala ya UWAKI katika eneo la mradi.

ATHARI MUHIMU ZINAZOWEZEKANA KWA MAZINGIRA NA KIJAMII

Athari zimeainishwa katika athari za awamu ya Kabla ya Ujenzi, athari za awamu ya Ujenzi na athari za awamu ya Uendeshaji. Vipokezi vikuu vya athari zinazohusiana na Ujenzi

unaotarajiwa wa Kituo cha Mabasi huko Inala na uendelezaji upya wa Soko la Tabora lililopo ni pamoja na rasilimali halisi (haidrolojia, ubora wa maji juu ya ardhi, udongo, ubora wa hewa, na kelele); rasilimali za kiikolojia (mimea); mali, afya ya umma, na usalama, aesthetics, na mazingira.

Athari zifuatazo zilitambuliwa kuwa zinaweza kutokea wakati wa awamu ya kabla ya ujenzi;

- Uundaji wa kazi na kuongeza mapato

Athari zifuatazo zilitambuliwa kuwa zinaweza kutokea wakati wa awamu ya ujenzi;

- Uundaji wa kazi na kuongeza mapato
- Uharibifu wa huduma za umma
- Mmomonyoko wa udongo na kutokuwa na utulivu wa mteremko
- Hatari ya Maji na Uchafuzi wa Ardhi
- Kuongezeka kwa kelele, vibration, na uchafuzi wa hewa
- Usalama Kazini na hatari za kiafya
- Kuongeza ajali za barabarani
- Kuongezeka kwa Taka
- Kuongezeka kwa Uondoaji wa Maji
- Upotevu wa Nyenzo za Dhahiri na Uharibifu wa Ardhi
- Kupotea kwa viumbe hai
- Kuongezeka kwa VVU/UKIMWI
- Ongezeko la Watu
- Kuingilia kwa Visual wakati wa Ujenzi
- Kuongeza Ukatili wa Kijinsia

Athari zifuatazo zilitambuliwa kuwa zinaweza kutokea wakati wa awamu ya uendeshaji;

- Usafirishaji rahisi na usafirishaji wa bidhaa

- Ukuaji wa uchumi na biashara
- Uundaji wa nafasi za kazi
- Ufikiaji rahisi na upanuzi wa masoko
- Ongezeko la bei za bidhaa
- Kupunguza muda wa kusafiri na gharama ya uendeshaji wa Gari
- Kupunguza gharama za uendeshaji na matengenezo
- Kupunguza ajali
- Kuingilia kati kwa hidrolojia ya ndani
- Ongezeko la Viwango vya Unyonyaji wa Maliasili
- Hatari ya mashimo ya kukopa ambayo hayajarejeshwa

HATUA ZA KUPUNGUZA NA MPANGO WA USIMAMIZI WA MAZINGIRA NA KIJAMII (ESMP)

Chaguzi za kupunguza au kuzuia athari mbaya za kijamii na kimazingira zilizotambuliwa pamoja na mpango wa ufuatiliaji zimependekezwa katika ripoti hii na zimo katika ESMP. Wengi wao ni msingi wa mazoea mazuri ya uhandisi na mwitikio wa wakati wa taasisi inayowajibika. ESMP inaelezea ratiba ya utekelezaji wa mapendekezo ya hatua za kupunguza na pia kupanga shughuli za ufuatiliaji wa muda mrefu. Inafafanua majukumu na wajibu wa watendaji mbalimbali wa mpango. Gharama za Mbinu za kimazingira na kijamii ni TSH 385,000,000 (Bila gharama zitakazoonekana katika wakati huo (BOQ) na zoezi la makazi mapya.Makisio ya gharama za kila mwaka za kutekeleza pendekezo la mpango wa magari ya kimazingira na kijamii ni TSH 146,000,000.

TATHMINI YA RASILIMALI

Tathmini ya rasilimali kwa kituo cha Mabasi na Miradi ndogo ya Soko kulingana na Mbinu inayotegemea Mahitaji. Kituo hiki kitatoa suluhu ya vitendo kwa hali ilivyo sasa katika Soko la Tabora na kituo cha Mabasi. Kwa kufanya mawazo ya kihafidhina juu ya mahitaji, mkakati wa uwekezaji utaweza kushughulikia mahitaji ya sasa na kutoa kubadilika kwa upanuzi wa siku zijazo.

KUONDOA KAMISHENI

Uondoaji hautarajiwi katika siku zijazo zinazoonekana. Hata hivyo, kama hii itatokea, inaweza kuhusisha mabadiliko ya matumizi (mabadiliko ya kiutendaji) au uharibifu unaosababishwa na mabadiliko ya matumizi ya ardhi.

Mpango wa kina wa uondoaji unaozingatia maswala ya mazingira utatayarishwa na msanidi programu kabla ya uondoaji kazi. Iwapo itafanyika, uondoaji unaweza kuhusisha mabadiliko ya matumizi (mabadiliko ya kiutendaji) au ubomoaji unaochochewa na mabadiliko ya matumizi ya ardhi. Kwa hiyo kinachowasilishwa hapa ni Mpango wa Awali wa Uondoaji wa Tume ambao unatoa mwanga wa nini kifanyike iwapo kuna haja ya kufutwa kazi.

HITIMISHO

Kwa hivyo, inahitimishwa kuwa utekelezaji wa mapendekezo ya ujenzi wa Kituo cha Mabasi huko Inala na uundaji upya wa Soko lililopo hautahusisha madhara yoyote isipokuwa kwamba hatua zilizopendekezwa za kupunguza zimewekwa vya kutosha na kwa wakati. Athari mbaya zilizotambuliwa zitadhibitiwa kupitia hatua zilizopendekezwa za kupunguza na mfumo wa utekelezaji uliowekwa katika EIS hii. PO-TAMISEMI imejitolea kutekeleza mapendekezo yote yaliyotolewa katika EIS na kutekeleza zaidi ratiba za ukaguzi na ufuatiliaji wa mazingira.

Appendix VIII: Market Geotechnical Report

REPORT

CLIENT

THE UNITED REPUBLIC OF TANZANIA

President's Office Regional Administration and Local Government (PO-RALG)

Crown TECH - CONSULT Ltd

PROJECT:

FEASIBILITY STUDY, URBAN DESIGN, DETAILED ENGINEERING DESIGN, ENVIRONMENTAL AND SOCIAL DUE DILIGENCE, PREPARATION OF COST ESTIMATES AND BIDDING DOCUMENTS FOR URBAN INFRASTRUCTURE INVESTMENTS FOR ARUSHA, KIGOMA, DODOMA AND TABORA COUNCILS (TACTIC ZONE 1)

SUBCONTRACT:

GEOPRIMOSI ENGINEERING LIMITED
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DOCUMENT TITLE:

Geotechnical investigations Technical Report for Detail Design of Tabora Market in Tabora Region.

PREPARED	DATE	FORMAT	CHECKED	APPROVED	REVISION
DR. S.J. MBAWALA	16.11.2022	A4	ENG. N. KISEKO		01

DOCUMENT NUMBER :	G.E.L	G.I	CTC	2022	07	*Ground Investigation* – Tabora Market in Tabora Region.

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EXECUTIVE SUMMARY

The Government of Tanzania (GoT), through President's Office - Regional Administration and Local Government (PO–RALG), is implementing the World Bank-financed project - Cities Transforming Infrastructure and Competitiveness Project (TACTIC).

The Government of Tanzania (GoT) has engaged Crown TECH Consult Ltd (CTC) of Tanzania in a Joint venture with Pan Arab Consulting Engineers of Kuwait (PACE) to prepare feasibility studies, urban design, detailed engineering designs, environmental and social instruments, and bidding documents for the project. The assignment is intended to be an international good practice example of urban development that enhances economic productivity and job growth, inclusiveness, and builds resilience to hazards.

As a part of the design procedure, the Crown TECH Consult Ltd (CTC) of Tanzania engaged Geoprimosi Engineering Limited of Tanzania to conduct a ground investigation on the proposed construction of Tabora Market in the Tabora Region. The ground investigation aims to establish the engineering properties of soil and rock and provide recommendations for the foundation design and other geotechnical aspects of the proposed structures.

This report presents the ground investigation geotechnical technical report by Geoprimosi Engineering Limited.

The ground investigation revealed that the site is characterised by silty SAND.

Using field, laboratory test results and engineering judgements, the following is suggested;

- It is suggested to install a pad foundation. Suggested foundation depths are presented in Table E-1.

Table E-1: Proposed type of foundation, foundation depths and Allowable bearing capacity of soil as was suggested by Terzaghi equation.

S/No	Ground profile/Soil type/Rock types at foundation level	Type of foundation	Foundation depth (m)	Allowable bearing capacity of soil (kN/m^2)
1	Silty SAND	Pad Foundation	1.5	111.0
2	Silty SAND	Pad Foundation	2.0	140.0
3	Silty SAND	Pad Foundation	2.0	164.0

REPORT PREPARED BY:

Dr. Silipius J. Mbawala
Technical Director – Geoprimosi Engineering Limited

REPORT CERTIFIED/APPROVED BY:

Eng. Napegwa Kiseko
Registered Consulting Engineer, ERB

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CHAPTER 1

1 GROUND INVESTIGATION

The objective of this chapter is to describe the project, field tests and present the field ground profile.

1.1 Scope of Services

The scope of the work includes the following:

- Drilling 3 boreholes within the proposed site to the maximum depth of 5m.
- Perform SPT at interval of 1.5m and collect disturbed sample at appropriate intervals
- Collect disturbed and undisturbed samples at appropriate intervals
- Logging profiles on each borehole.
- Taking photographs of the profile on each borehole.
- Carrying out laboratory tests for the soil samples
- Perform a geotechnical engineering analysis regarding the proposed design and construction, using the information obtained from the field tests and laboratory testing.
- Prepare technical report of findings, conclusion and tentative recommendation for the geotechnical engineering aspects of the proposed structure

1.2 General geology of the area

The general geology of the area where the market will be constructed is mainly of Granite and granodiorite. According to the geological map of Tanzania the area was formed during Archaean in geological time scale. The geology of the area is shown in Figure 1 - 1.

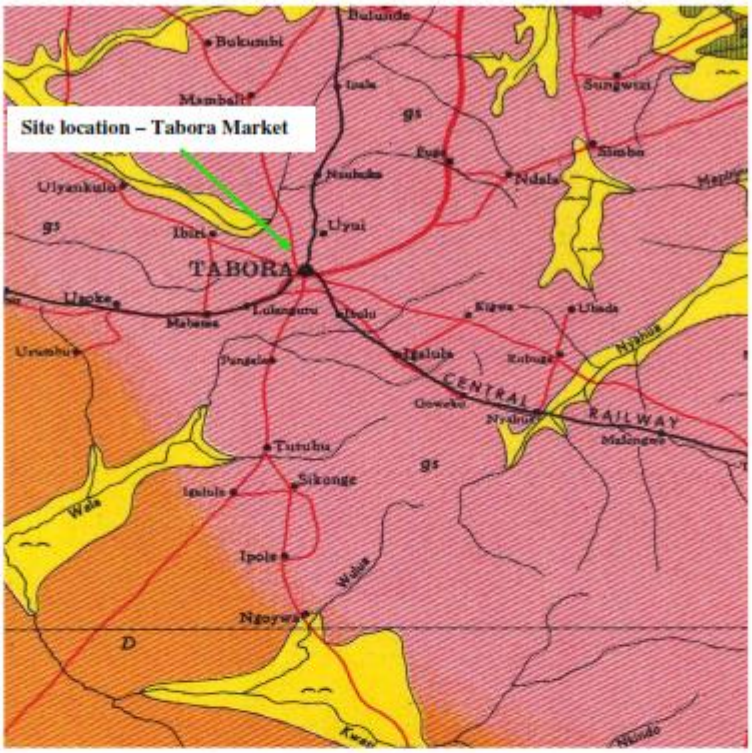


Figure 1-1: Geology of the area

1.3 Project Description

The proposed new Market is located in the same area where Old Tabora Market is located. The borehole locations are shown in Figure 1-2.

Figure 1-2: Site location

1.4 Field Ground Investigation Works

The field work started on August 7, 2022 and was completed on August 10, 2022. The drilling carried out using rotary drill and performing SPT test using standard SPT hammer. Field logs were prepared for each borehole and were presented using licensed winlog software. Each log profile contained information concerning the boring method, samples recovered and indicating the presence of various materials such as type of soil and their nature. Therefore, these logs included both factual and interpretive information. Boring logs are presented in Appendix B. The laboratory tests on soil were caried out by C-Laboratory.

1.4.1 Soil Drilling

All field works were carried out in accordance with BS5930 of 2015.

1.4.2 Borehole Log

The borehole logs were carried out for each borehole which include the following information:

- Borehole number

- Date of execution
- Registration of soil layers with description of the various layers
- Coordinates
- Water level/strike
- Sample collected at prescribed depth

1.4.3 Sampling

The task involves drilling through soil and rock using the rotary rig to a maximum depth of 5m. Samples were collected at specific intervals. SPT samples were collected at an interval of 1.5m. Photos of major soils were taken through the profile and are presented in Appendix F.

CHAPTER 2. FIELD WORK

2 Introduction

This chapter discusses the field drilling results. An overview of the profile of soil and rock recovered during the exercise is discussed. The description of the ground profile for each borehole is discussed followed by the description of exceptional ground features encountered during drilling. The detailed description for each borehole is presented in Appendix B.

2.1 Soil types

The following soil types were established using observations made during borings performed on the site:

- silty SAND

2.2 Standard Penetration (SPT)

The standard penetration tests N-Values are presented in Table 2 - 1 to Tables 2 - 3 and in Appendix C. The SPT N - Values were corrected for the effect of overburden pressure and an energy ratio. The corrected SPT N - Values are also presented in Tables 2 - 1 to 2 - 3.

Table 2-1: Standard Penetration Test and bearing capacity for BH 01

BH No:	Depths (m)		SPT N - Values	SPT Corrected N_1 - Values	SPT Corrected $(N_1)_{60}$ - Values	Estimated Allowable Bearing capacity kN/m^2
	From	To				
BH 01	1.00	1.45	8	14	18	225
	2.00	2.45	5	8	10	115
	3.00	3.22	REFUSAL	REFUSAL	REFUSAL	>700
	4.00	4.25	REFUSAL	REFUSAL	REFUSAL	>700
	5.00	5.28	REFUSAL	REFUSAL	REFUSAL	>700

Table 2-2: Standard penetration test and Allowable Bearing Capacity for BH 02

BH No:	Depths (m)		SPT N - Values	SPT Corrected N_1 - Values	SPT Corrected $(N_1)_{60}$ - Values	Estimated Allowable Bearing capacity kN/m^2
	From	To				
BH 02	1.00	1.45	2	4	4	35
	2.00	2.45	5	8	10	115
	3.00	3.45	7	9	11	130
	4.00	4.27	REFUSAL	REFUSAL	REFUSAL	>700
	5.00	5.12	REFUSAL	REFUSAL	REFUSAL	>700

Table 2-3: Standard penetration test and Allowable Bearing Capacity for BH 03

BH No:	Depths (m)		SPT N - Values	SPT Corrected N_1 - Values	SPT Corrected $(N_1)_{60}$ - Values	Estimated Allowable Bearing capacity kN/m^2
	From	To				
BH 03	1.00	1.45	4	7	9	100
	2.00	2.45	0	0	0	0
	3.00	3.45	5	7	8	90
	4.00	4.27	REFUSAL	REFUSAL	REFUSAL	>700
	5.00	5.28	REFUSAL	REFUSAL	REFUSAL	>700

CHAPTER 3: LABORATORY TEST RESULTS

3 Introduction

This chapter discusses the laboratory tests for soil and rock. The laboratory tests carried out are the liquid limit, plastic limit tests and sieve analysis.

3.1 Laboratory tests results - Classification tests

The classification test results are presented in Appendix D. From classification test results; the sites are characterized by silty SAND. The percentage of fines range between 9% and 15% with nonplastic.

CHAPTER 4:

4 FIELD AND LABORATORY TEST RESULTS DISCUSSION

This chapter presents the summary and discussion of field and laboratory tests results. From field and laboratory test results, the design parameters are established.

4.1 Allowable bearing capacity from SPT N.

The SPT N - Value $(N_1)_{60}$ at the design foundation depth range between 2.0m and 3.0m with the allowable bearing capacity of the soil as was suggested by K.Terzaghi and R.B. Peck (196) from the depth 1.5m to maximum depth of 2.5m is 100 kN/m^2. At BH03, the SPT at 2.45m depth is Zero. During construction, the Engineer should check if it is an isolated case (if it was pit latrine or backfilled excavated trench).

4.2 Estimation of internal friction angle from field Test results

The average estimated internal friction angle obtained from SPT is 28°. To be conservative, use an internal friction angle of 28° with a cohesive strength of 0 kN/m^2 for the foundation, which will be installed at a depth below 1.5m and the unit weight of the soil of 18.0 kN/m^3 with the bearing capacity factors of the soil tabulated in Table 4-1.

Table 4-1: Bearing capacity factors (after Brinch Hansen) $\emptyset = 28^o$

Bearing capacity symbol	Bearing capacity factors values
N_γ	10.9
N_q	14.7
N_c	25.8

Terzaghi equation estimates the allowable bearing capacity for pad foundation ranging between 111 kN/m^2 and 164kN/m^2 for the square footing with a width of 1.5m and a depth ranging between 1.5 m to 2.5 m from the ground level, as shown in Appendix F.

4.3 Estimation of settlement

The settlement for structures was estimated using SPT and from consolidation parameter's due to loading pressure of 100kN/m^2 and 140kN/m^2. The settlement calculations are shown in Appendix F. The calculate settlement is estimated to range between 7.9mm and 11.1 mm, which is within the acceptable range (Barnes 2004).

4.4 Design aspect

The design of any foundation base considers the allowable bearing pressure on the ground that corresponds to the expected stress to be subjected during the design life of the structures and its maximum value that can be supported without excessive deformation. Therefore, the type and shape of the loading determine the shape of the foundation. The typical loading caused by one floor of the building structure is 15kN/m^2. The Tabora Market expect to exert pressure of 15kN/m^2.

It is suggested to use an isolated pad foundation to be installed at a depth ranging between 1.5m and 2.5m.

Table 4-2: Proposed type of foundation, foundation depths and Allowable bearing capacity of soil as was suggested by Terzaghi equation.

S/No	Ground profile/Soil type/Rock types at foundation level	Type of foundation	Foundation depth (m)	Allowable bearing capacity of soil (kN/m^2)
1	Silty SAND	Pad Foundation	1.5	111.0
2	Silty SAND	Pad Foundation	2.0	140.0
3	Silty SAND	Pad Foundation	2.5	164.0

CHAPTER 5

5 CONCLUSIONS AND RECOMMENDATIONS

The recommendation is based on the field and laboratory test results of which the following is the recommendation for design;

- It is suggested to install pad foundation. Suggested foundation depths are presented in Table 5 - 1.

Table 5-1: Proposed type of foundation, foundation depths and Allowable bearing capacity of soil as was suggested by Terzaghi equation.

S/No	Ground profile/Soil type/Rock types at foundation level	Type of foundation	Foundation depth (m)	Allowable bearing capacity of soil (kN/m^2)
1	Silty SAND	Pad Foundation	1.5	111.0
2	Silty SAND	Pad Foundation	2.0	140.0
3	Silty SAND	Pad Foundation	2.5	164.0

References

Barnes G, E (2000). *Soil Mechanics: Principles and Practice*. 2nd Ed. Macmillian Press Ltd, London

BS 1377, 1990 Methods of Testing for Soils for Civil Engineering Purposes

Byrne. G, Everett J.P and Schwartz K. (1995). A *guide to practical geotechnical engineering in Southern Africa.* Third edition. Ove arup& Partners. South Africa.

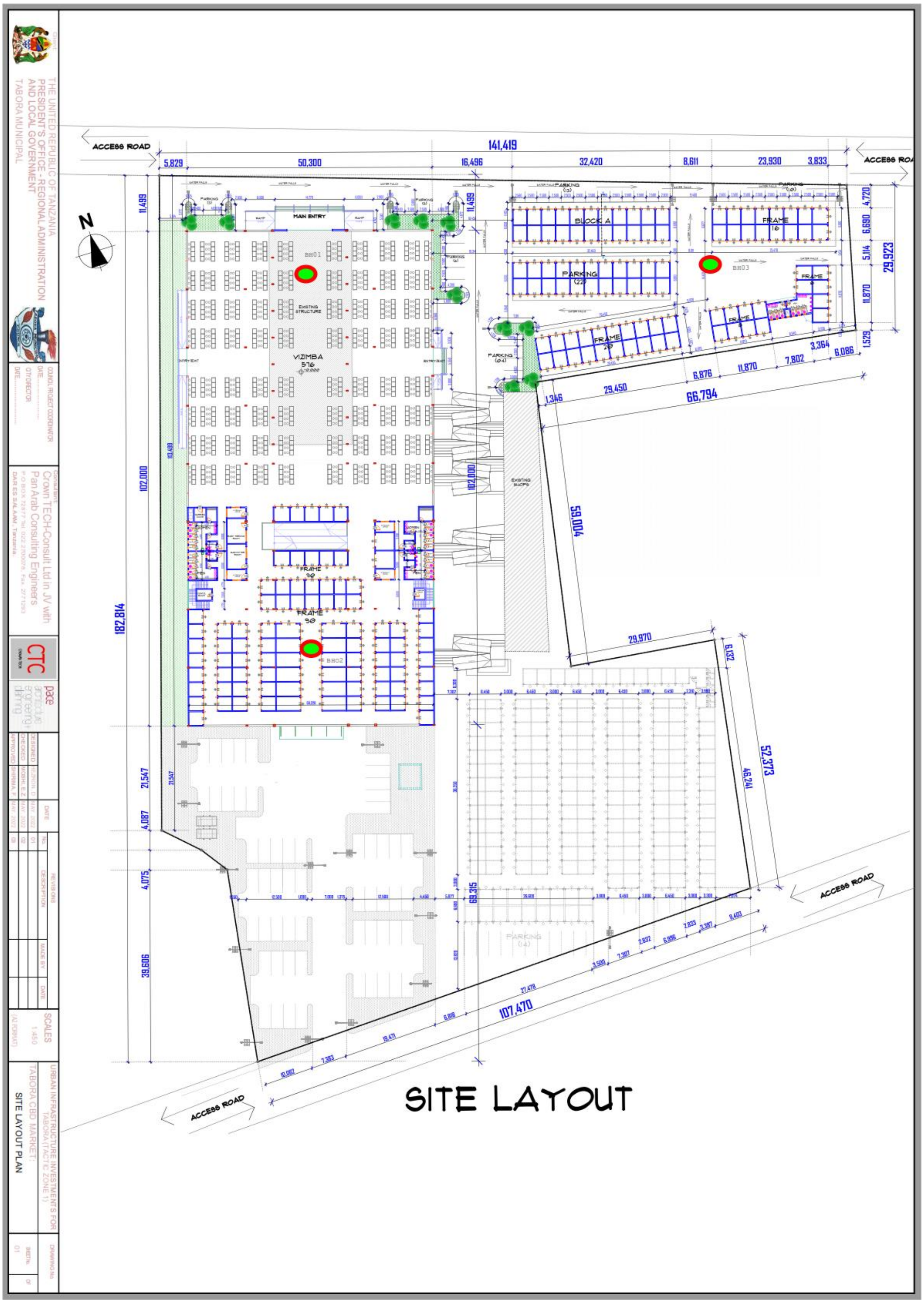
Clayton C.R.I. (1999). *The standard Penetration test (SPT); Method and Use*. CIRIA report no. Report/CP/7 Great Britain

BS5930 of 2015: Code of practice for site investigations

APPENDICES

APPENDIX A:

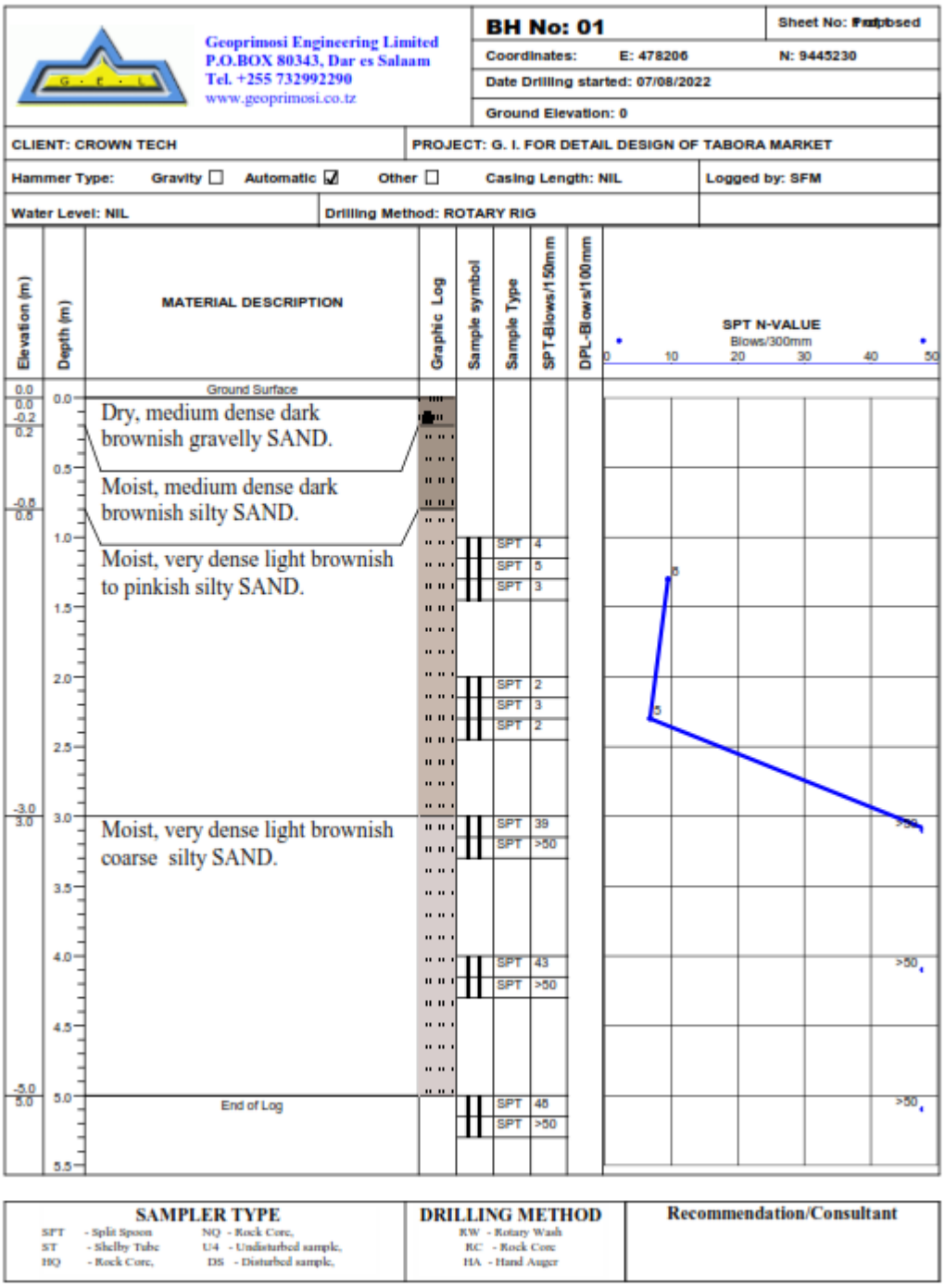
BORE HOLE LOCATION AND SITE DESCRIPTIONS

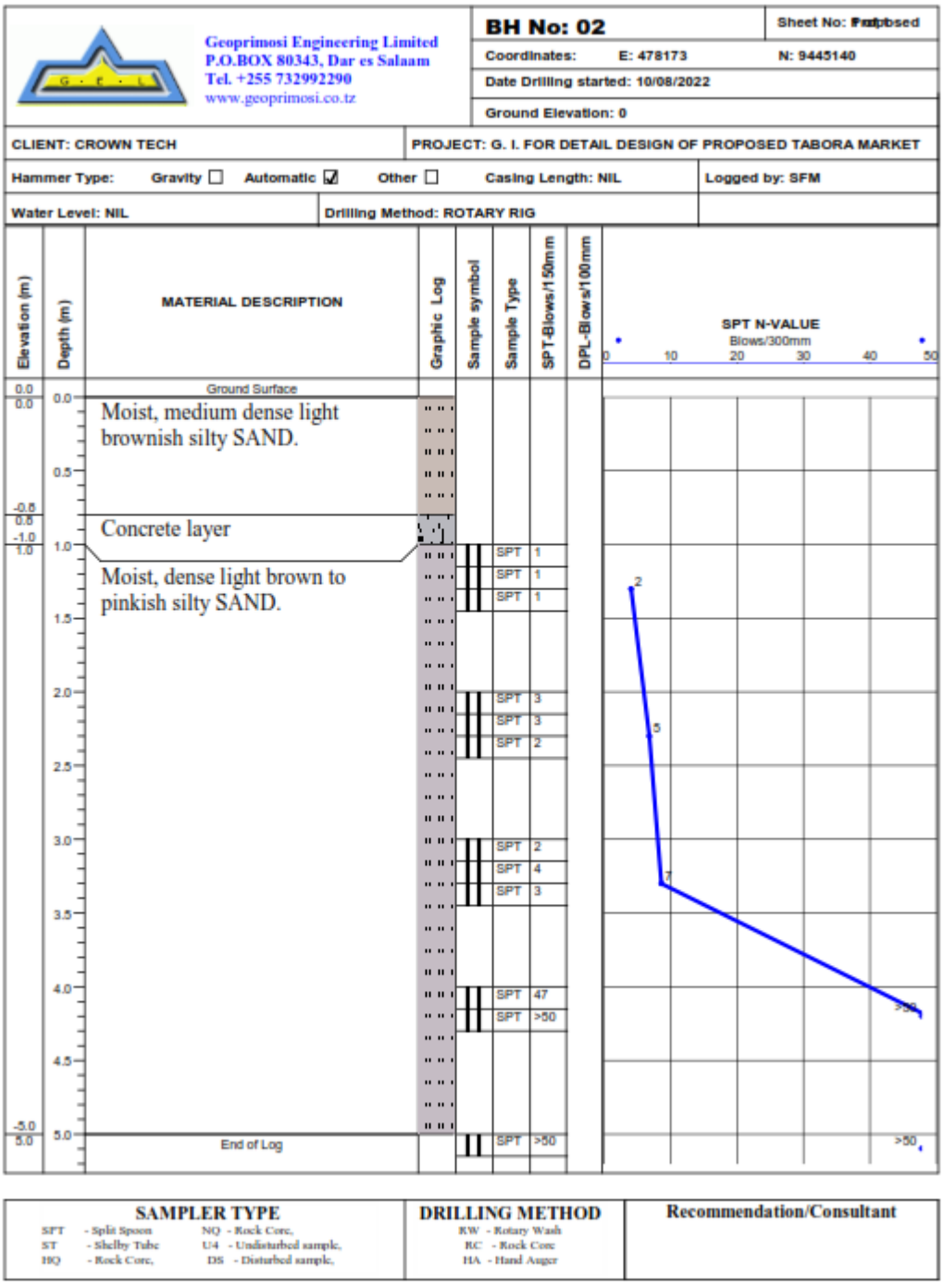

ACCESS ROAD
141,419
5,829
50,300
16,496
32,420
8,611
23,930
3,833
MAIN ENTRY
BLOCK A
FRAME 16
PARKING (27)
VIZIMBA 516
EXISTING STRUCTURE
BH01
BH02
BH03
FRAME 26
FRAME 36
EXISTING SHOPS
29,923
66,794
29,450
6,876
11,870
7,802
6,086
3,364
1,346
59,004
29,970
52,373
46,241
102,000
182,814
21,547
4,087
4,075
39,606
69,315
107,470
THE UNITED REPUBLIC OF TANZANIA
PRESIDENT'S OFFICE - REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT
TABORA MUNICIPAL
Crown TECH-Consult Ltd in JV with Pan Arab Consulting Engineers
CTC
URBAN INFRASTRUCTURE INVESTMENTS FOR TABORA CBD MARKET
SITE LAYOUT PLAN
SCALES 1:400

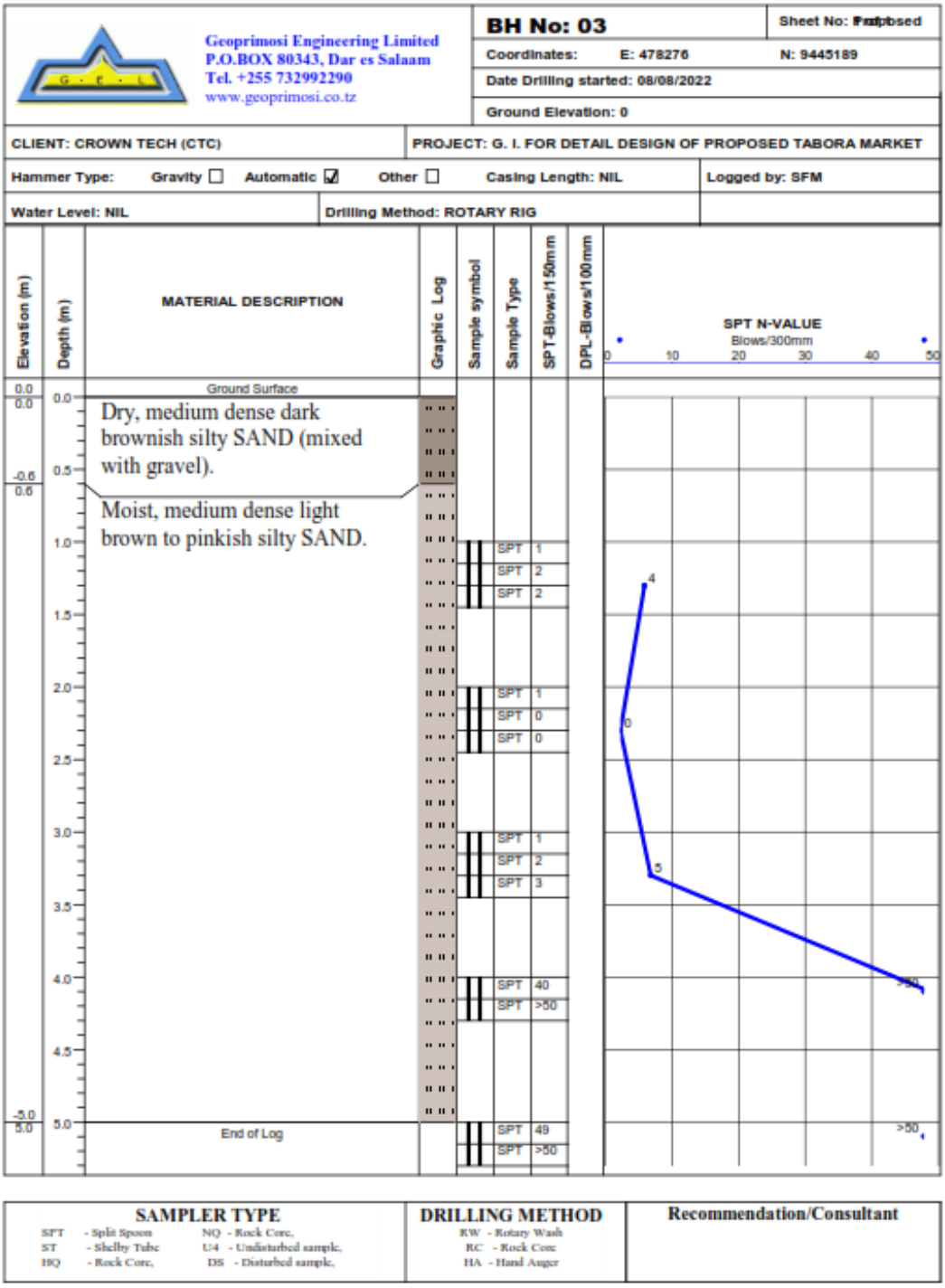
SITE LAYOUT

APPENDIX B:

SOIL DESCRIPTIONS – LOGS


Geoprimosi Engineering Limited
P.O.BOX 80343, Dar es Salaam
Tel. +255 732992290
www.geoprimosi.co.tz
BH No: 01
Sheet No: Proposed
Coordinates: E: 478206 N: 9445230
Date Drilling started: 07/08/2022
Ground Elevation: 0
CLIENT: CROWN TECH
PROJECT: G. I. FOR DETAIL DESIGN OF TABORA MARKET
Hammer Type: Gravity ☐ Automatic ☑ Other ☐
Casing Length: NIL
Logged by: SFM
Water Level: NIL
Drilling Method: ROTARY RIG
Elevation (m)
Depth (m)
MATERIAL DESCRIPTION
Graphic Log
Sample symbol
Sample Type
SPT-Blows/150mm
DPL-Blows/100mm
SPT N-VALUE
Blows/300mm
Ground Surface
Dry, medium dense dark brownish gravelly SAND.
Moist, medium dense dark brownish silty SAND.
Moist, very dense light brownish to pinkish silty SAND.
Moist, very dense light brownish coarse silty SAND.
End of Log
SPT 4
SPT 5
SPT 3
SPT 2
SPT 3
SPT 2
SPT 39
SPT >50
SPT 43
SPT >50
SPT 48
SPT >50
SAMPLER TYPE
SPT - Split Spoon
ST - Shelby Tube
HQ - Rock Core,
NQ - Rock Core,
U4 - Undisturbed sample,
DS - Disturbed sample,
DRILLING METHOD
RW - Rotary Wash
RC - Rock Core
HA - Hand Auger
Recommendation/Consultant


Geoprimosi Engineering Limited
P.O.BOX 80343, Dar es Salaam
Tel. +255 732992290
www.geoprimosi.co.tz
BH No: 02
Sheet No: Proposed
Coordinates: E: 478173 N: 9445140
Date Drilling started: 10/08/2022
Ground Elevation: 0
CLIENT: CROWN TECH
PROJECT: G. I. FOR DETAIL DESIGN OF PROPOSED TABORA MARKET
Hammer Type: Gravity ☐ Automatic ☑ Other ☐
Casing Length: NIL
Logged by: SFM
Water Level: NIL
Drilling Method: ROTARY RIG
Elevation (m)
Depth (m)
MATERIAL DESCRIPTION
Graphic Log
Sample symbol
Sample Type
SPT-Blows/150mm
DPL-Blows/100mm
SPT N-VALUE
Blows/300mm
Ground Surface
Moist, medium dense light brownish silty SAND.
Concrete layer
Moist, dense light brown to pinkish silty SAND.
End of Log
SPT 1
SPT 1
SPT 1
SPT 3
SPT 3
SPT 2
SPT 2
SPT 4
SPT 3
SPT 47
SPT >50
SPT >50
SAMPLER TYPE
SPT - Split Spoon
ST - Shelby Tube
HQ - Rock Core,
NQ - Rock Core,
U4 - Undisturbed sample,
DS - Disturbed sample,
DRILLING METHOD
RW - Rotary Wash
RC - Rock Core
HA - Hand Auger
Recommendation/Consultant


Geoprimosi Engineering Limited
P.O.BOX 80343, Dar es Salaam
Tel. +255 732992290
www.geoprimosi.co.tz
BH No: 03
Sheet No: Proposed
Coordinates: E: 478276 N: 9445189
Date Drilling started: 08/08/2022
Ground Elevation: 0
CLIENT: CROWN TECH (CTC)
PROJECT: G. I. FOR DETAIL DESIGN OF PROPOSED TABORA MARKET
Hammer Type: Gravity ☐ Automatic ☑ Other ☐
Casing Length: NIL
Logged by: SFM
Water Level: NIL
Drilling Method: ROTARY RIG
Elevation (m)
Depth (m)
MATERIAL DESCRIPTION
Graphic Log
Sample symbol
Sample Type
SPT-Blows/150mm
DPL-Blows/100mm
SPT N-VALUE
Blows/300mm
Ground Surface
Dry, medium dense dark brownish silty SAND (mixed with gravel).
Moist, medium dense light brown to pinkish silty SAND.
End of Log
SPT 1
SPT 2
SPT 2
SPT 1
SPT 0
SPT 0
SPT 1
SPT 2
SPT 3
SPT 40
SPT >50
SPT 49
SPT >50
SAMPLER TYPE
SPT - Split Spoon
ST - Shelby Tube
HQ - Rock Core,
NQ - Rock Core,
U4 - Undisturbed sample,
DS - Disturbed sample,
DRILLING METHOD
RW - Rotary Wash
RC - Rock Core
HA - Hand Auger
Recommendation/Consultant

APPENDIX C:

STANDARD PENETRATION TEST RESULTS AND PLOTS

Standard penetration test for BH – 01- TABORA MARKET.

BH No:	Depths (m)		SPT N - Values	SPT Corrected N_1 - Values	SPT Corrected $(N_1)_{60}$ - Values	Estimated Allowable Bearing capacity kN/m^2
	From	To				
BH 01	1.00	1.45	8	14	18	225
	2.00	2.45	5	8	10	115
	3.00	3.22	REFUSAL			>700
	4.00	4.25	REFUSAL			>700
	5.00	5.28	REFUSAL			>700

Standard penetration test for BH – 02- TABORA MARKET.

BH No:	Depths (m)		SPT N - Values	SPT Corrected N_1 - Values	SPT Corrected $(N_1)_{60}$ - Values	Estimated Allowable Bearing capacity kN/m^2
	From	To				
BH 02	1.00	1.45	2	4	4	35
	2.00	2.45	5	8	10	115
	3.00	3.45	7	9	11	130
	4.00	4.27	REFUSAL			>700
	5.00	5.12	REFUSAL			>700

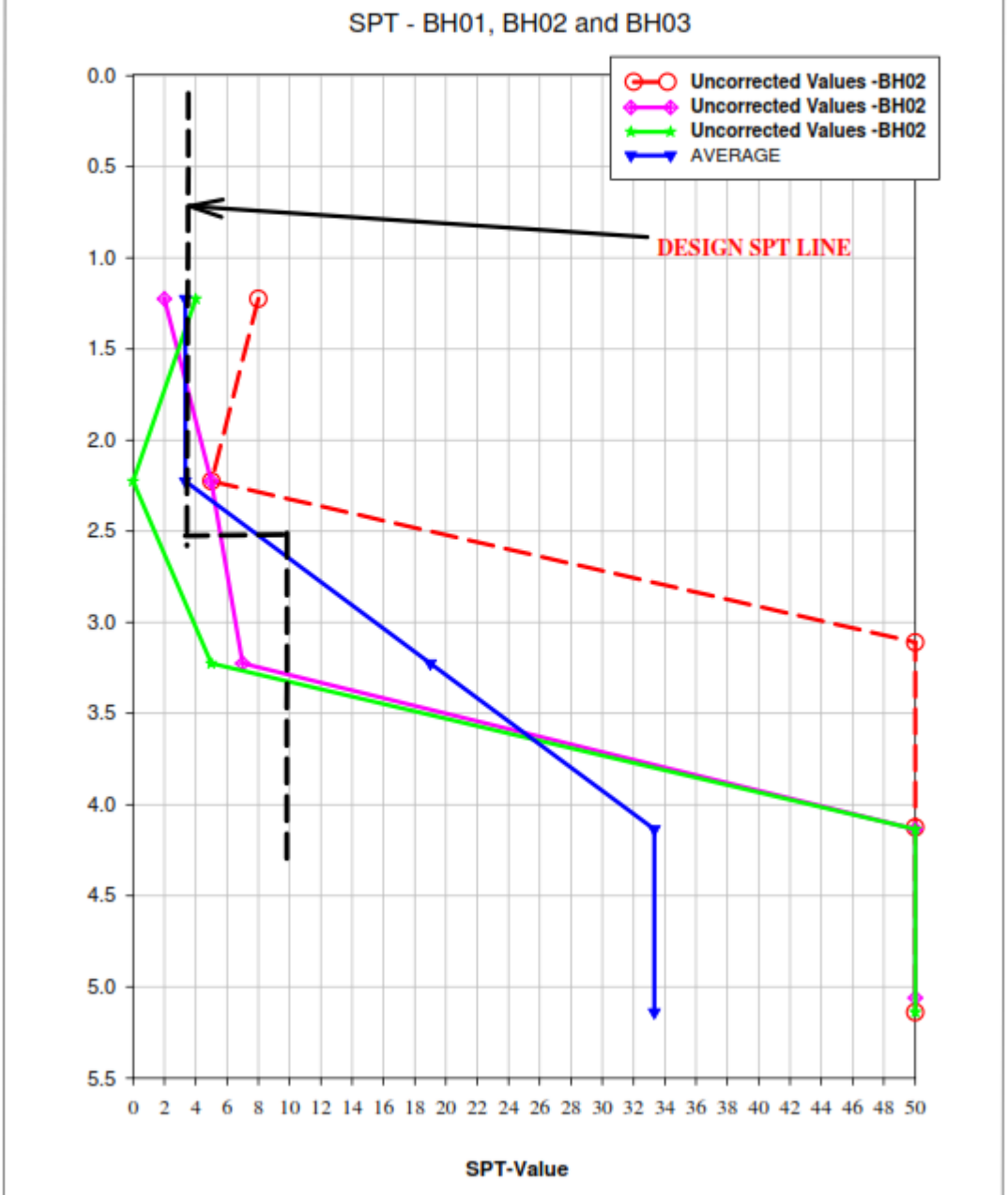
Standard penetration test for BH – 03- TABORA MARKET.

BH No:	Depths (m)		SPT N - Values	SPT Corrected N_1 - Values	SPT Corrected $(N_1)_{60}$ - Values	Estimated Allowable Bearing capacity kN/m^2
	From	To				
BH 03	1.00	1.45	4	7	9	100
	2.00	2.45	0	0	0	0
	3.00	3.45	5	7	8	90
	4.00	4.27	REFUSAL			>700
	5.00	5.28	REFUSAL			>700

Geoprimosi Engineering Limited
Geotechnical and Environmental Engineering Services

PROJECT: Geotechnical investigations of Tabora Market in Kigoma Region

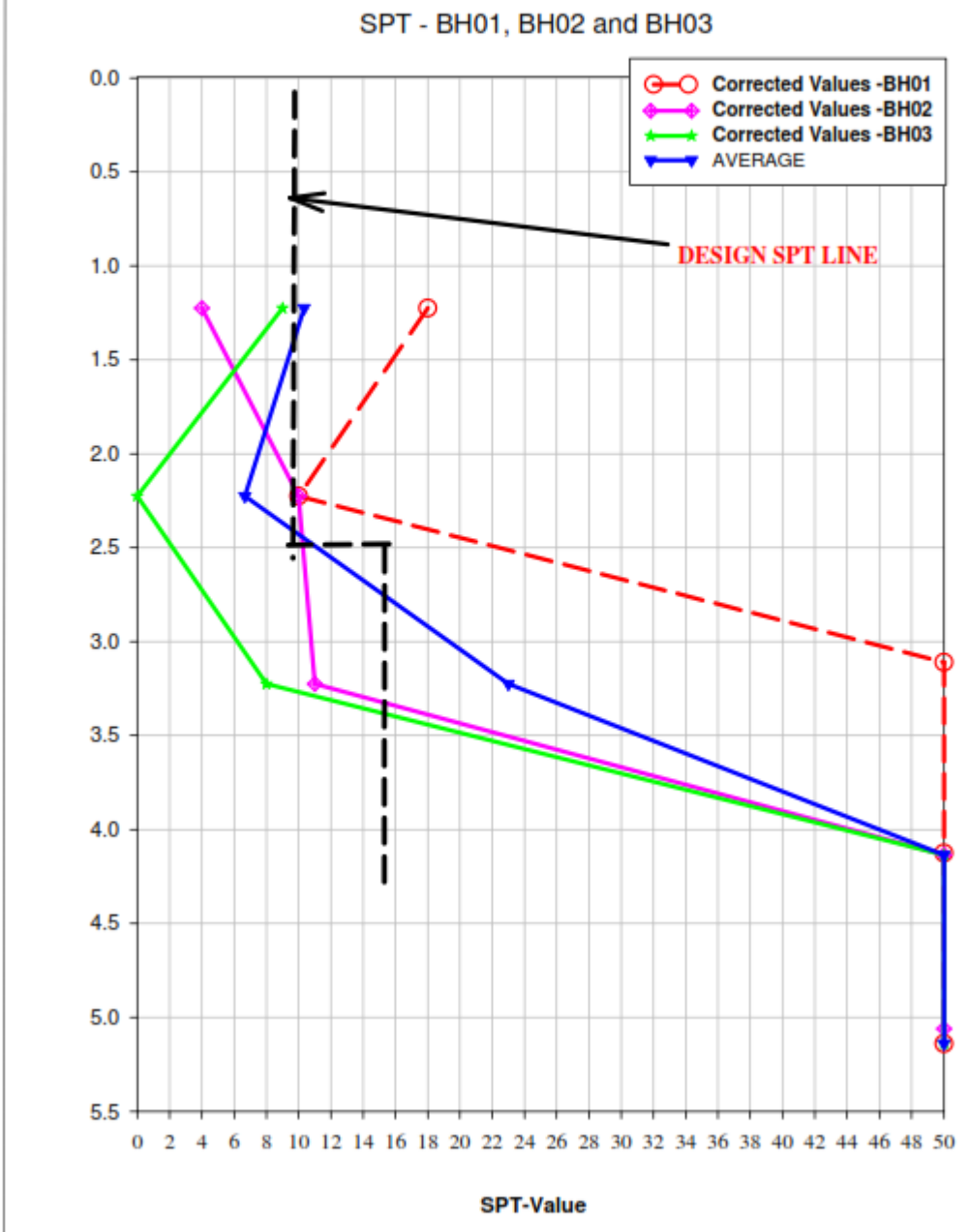
CLIENT: Crown TECH - CONSULT Ltd



Geoprimosi Engineering Limited
Geotechnical and Environmental Engineering Services

PROJECT: Geotechnical investigations of Tabora Market in Kigoma Region

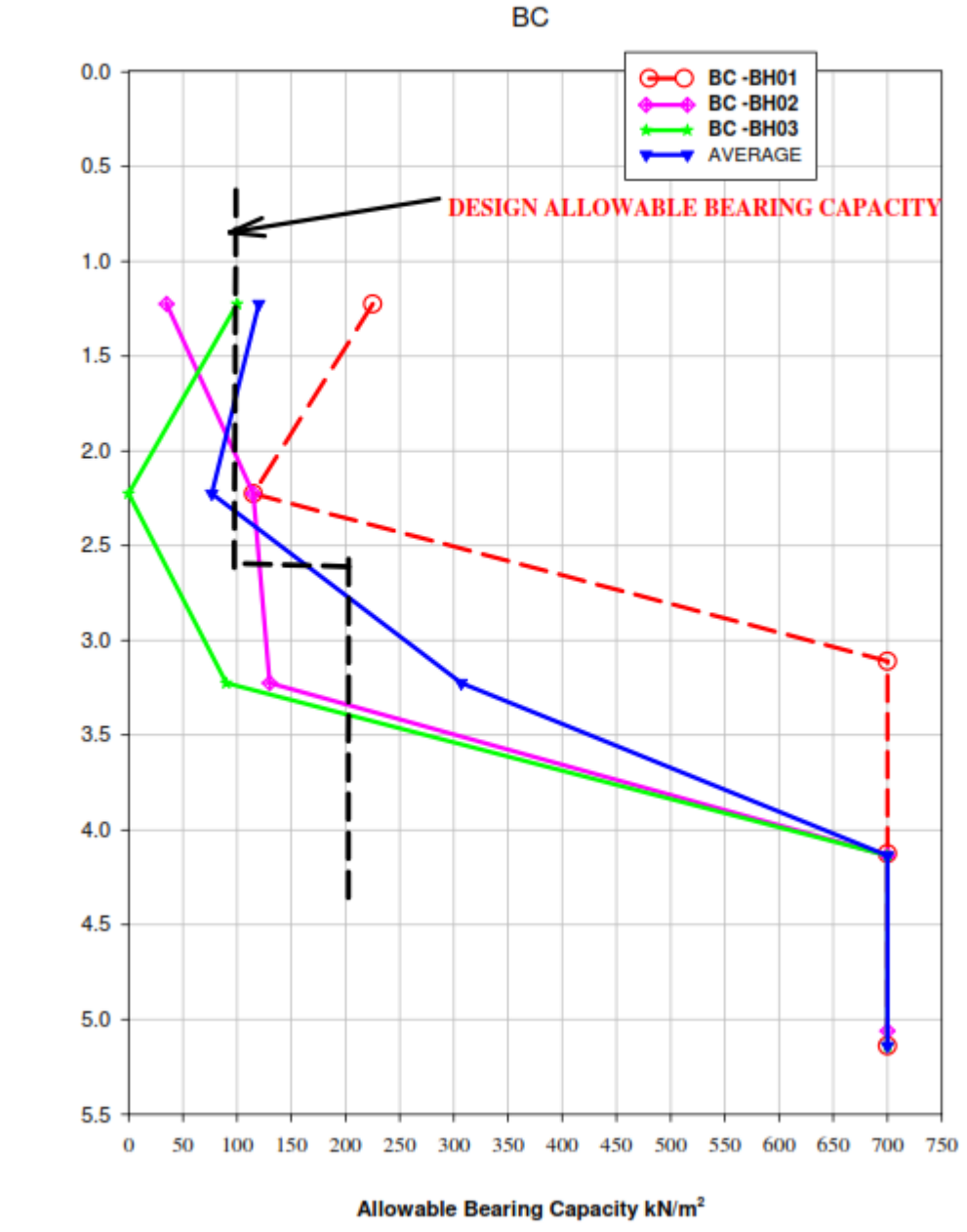
CLIENT: Crown TECH - CONSULT Ltd



Geoprimosi Engineering Limited
Geotechnical and Environmental Engineering Services

PROJECT: Geotechnical investigations of Tabora Market in Kigoma Region

CLIENT: Crown TECH - CONSULT Ltd



APPENDIX D:

SOIL CLASSIFICATION TEST RESULTS

C-Labs(Tz)	CIVIL ENGINEERING LABORATORY DAR ES SALAAM TANZANIA	C-Labs(Tz)
LABORATORY TEST RESULTS SUMMARY SHEET		
	GEOPRIMOSI ENGINEERING LIMITED	SEPTEMBER 2022
	GROUND INVESTIGATION AT TABORA MARKET	

Sample No.	SOURCE	Date Delivery	75.0	63.0	50.0	37.5	28.0	20.0	14.0	10.0	6.3	5.0	3.35	2.0	1.18	0.600	0.425	0.300	0.212	0.150	0.063	0M	GC	PL	LL	PI	LS	BD (g/cm3)	MCN	SOIL DESCRIPTION BSCS	BSCS
B04512	BH01 [1.00-2.00m] DS	Aug-22									100	98	97	97	96	94	87	64	51	40	32	23	11	1.4	47.5	-	26	NP	1	-	-	Silty SAND	S-M
B04513	BH01 [2.00-4.00m] DS	Aug-22									100	100	99	99	99	98	84	53	39	29	23	18	10	1.5	60.4	-	24	NP	1	-	-	Silty SAND	S-M
B04514	BH02 [1.00-2.00m] DS	Aug-22									100	100	100	99	99	94	76	63	51	40	30	15	1.2	36.7	-	23	NP	2	-	-	Silty SAND	S-M
B04515	BH02 [2.00-4.00m] DS	Aug-22									100	100	100	99	99	94	74	59	42	31	22	11	1.3	41.2	-	22	NP	2	-	-	Silty SAND	S-M
B04516	BH03 [2.00-4.00m] DS	Aug-22									100	100	100	100	99	91	63	48	35	27	19	9.4	1.4	51.6	-	22	NP	1	-	-	Silty SAND	S-M
B04517	BH03 [4.00-5.00m] DS	Aug-22									100	100	100	99	97	79	65	50	40	30	14	1.2	34.5	-	22	NP	0	-	-	Silty SAND	S-M

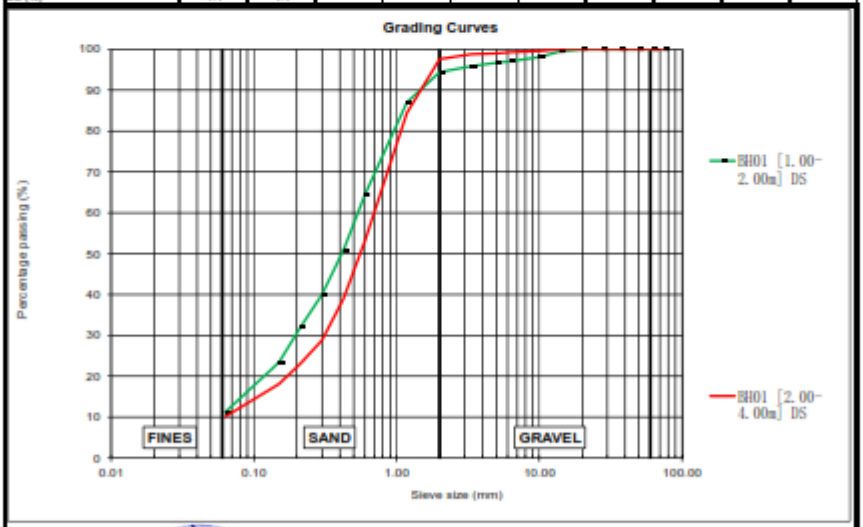
CLASSIFICATION SUMMARY

GROUND INVESTIGATION AT TABORA MARKET

CLIENT: GEOPRIMOSI ENGINEERING LIMITED Date:Sept, 2022

GRAIN SIZE DISTRIBUTION

Sample No	B04512	B04513								
	BH01 [1.00-2.00m] DS	BH01 [2.00-4.00m] DS								
Sieve Size (mm)	%Passing									
75.0	100	100								
63.0	100	100								
50.0	100	100								
37.5	100	100								
28.0	100	100								
20.0	100	100								
14.0	100	100								
10.0	98	100								
6.3	97	99								
5.0	97	99								
3.35	96	99								
2.00	94	98								
1.18	87	84								
0.600	64	53								
0.425	51	39								
0.300	40	29								
0.212	32	23								
0.150	23	16								
0.063	11	10								
BSCS CLASS	S-M	S-M								
% Gravels(100-Pass 2mm)	6	2								
% Sand (0.063 - 2.0mm)	83	88								
% Fines (< 0.063mm)	11	10								
LL (%)	26	24								
PI (%)	NP	NP								
LS (%)	1.4	1.4								



Checked by :.....

Approved by :.....

C-Labs(Tz)

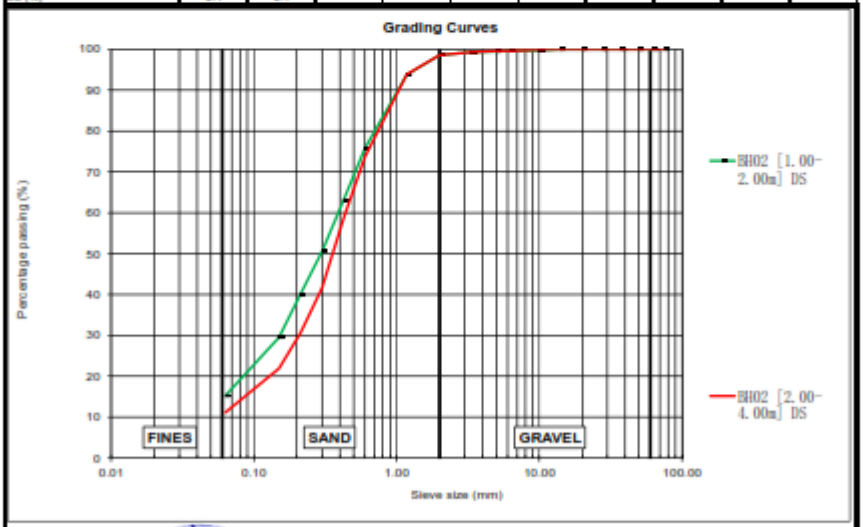
CLASSIFICATION SUMMARY

GROUND INVESTIGATION AT TABORA MARKET

CLIENT: GEOPRIMOSI ENGINEERING LIMITED Date:Sept, 2022

GRAIN SIZE DISTRIBUTION

Sample No	B04514	B04515								
	BH02 [1.00-2.00m] DS	BH02 [2.00-4.00m] DS								
Sieve Size (mm)	%Passing									
75.0	100	100								
63.0	100	100								
50.0	100	100								
37.5	100	100								
28.0	100	100								
20.0	100	100								
14.0										
10.0	100	100								
6.3	100	100								
5.0	100	100								
3.35	99	99								
2.00	99	99								
1.18	94	94								
0.600	78	74								
0.425	63	59								
0.300	51	42								
0.212	40	31								
0.150	30	22								
0.063	15	11								
BSCS CLASS	S-M	S-M								
% Gravels(100-Pass 2mm)	1	1								
% Sand (0.063 - 2.0mm)	83	88								
% Fines (< 0.063mm)	15	11								
LL (%)	23	22								
PI (%)	NP	NP								
LS (%)	2.1	2.1								



Checked by :.....

Approved by :.....

C-Labs(Tz)

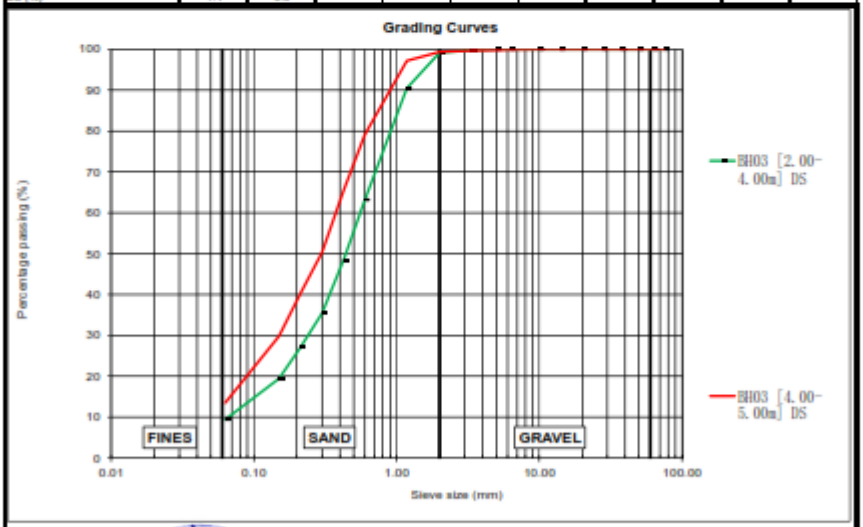
CLASSIFICATION SUMMARY

GROUND INVESTIGATION AT TABORA MARKET

CLIENT: GEOPRIMOSI ENGINEERING LIMITED Date:Sept, 2022

GRAIN SIZE DISTRIBUTION

Sample No	B04516	B04517								
	BH03 [2.00-4.00m] DS	BH03 [4.00-5.00m] DS								
Sieve Size (mm)	%Passing									
75.0	100	100								
63.0	100	100								
50.0	100	100								
37.5	100	100								
28.0	100	100								
20.0	100	100								
14.0	100	100								
10.0	100	100								
6.3	100	100								
5.0	100	100								
3.35	100	100								
2.00	99	99								
1.18	91	97								
0.600	63	79								
0.425	48	65								
0.300	35	50								
0.212	27	40								
0.150	19	30								
0.063	9	14								
BSCS CLASS	S-M	S-M								
% Gravels(100-Pass 2mm)	1	1								
% Sand (0.063 - 2.0mm)	90	86								
% Fines (< 0.063mm)	9	14								
LL (%)	22	22								
PI (%)	NP	NP								
LS (%)	1.4	0.0								



Checked by :.....

Approved by :.....

C-Labs(Tz) — a credible test result

CIVIL ENGINEERING LABORATORY
DAR ES SALAAM
TANZANIA

C-Labs(Tz) — a credible test result

ATTERBERG LIMITS

Liquid limit, Plastic limit, Linear Shrinkage & Shrinkage Product

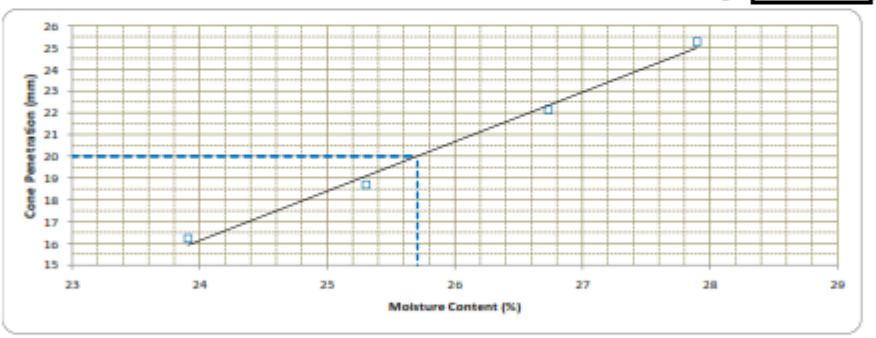
Form №	S04184 - 0B04512	BS 1377: Part 2: 1990

PROJECT	GROUND INVESTIGATION AT TABORA MARKET
CLIENT	GEOPRIMOSI ENGINEERING LIMITED
LOCATION	BH01 [1.00-2.00m] DS
TESTED BY	SAUMU/HANNAY
DATE SAMPLING	20-Aug-22 TESTING: 10-Sep-22

CHECKED BY:
DATE:

Cone Penetration:

		LIQUID LIMIT												PLASTIC LIMIT	
TEST No.		1			2			3			4			1	2
Initial gauge reading	mm	0	0	0	0	0	0	0	0	0	0	0	0		
Final gauge reading	mm	16.5	16.2	16.0	18.8	18.7	18.6	22	22.1	22.3	25.5	25.3	25.0		
Average penetration	mm	16.2			18.7			22.1			25.3				
Moisture Determination:															
Moisture Container No.		H2			UU			O60			H				
Weight of Wet soil + Container	g	62.21			64.00			64.52			66.30				
Weight of Dry soil + Container	g	56.35			57.59			57.58			58.65				
Weight of Container	g	31.84			32.26			31.62			31.23				
Weight of Moisture	g	5.86			6.41			6.94			7.65				
Weight of Dry soil	g	24.51			25.33			25.96			27.42				
Moisture Content	%	23.9			25.3			26.7			27.9				
												Average:		NP	



Linear Shrinkage and Shrinkage Product:

Specimen No.		1R	Liquid Limit(whole number)%:
Initial length,	Lo	140	26
Oven-dried length,	LD	138	
Linear Shrinkage ,	LS=100(1-LD/Lo)	1.4	Plastic Limit(whole number)%: NP
Shrinkage Product ,	SP=LS*%<425µm		Plasticity Index NP

Comments:

Signed by (Materials Engineer/Manager):

Received by:

C-Labs(Tz) a credible test result	CIVIL ENGINEERING LABORATORY DAR ES SALAAM TANZANIA	C-Labs(Tz) a credible test result

ATTERBERG LIMITS

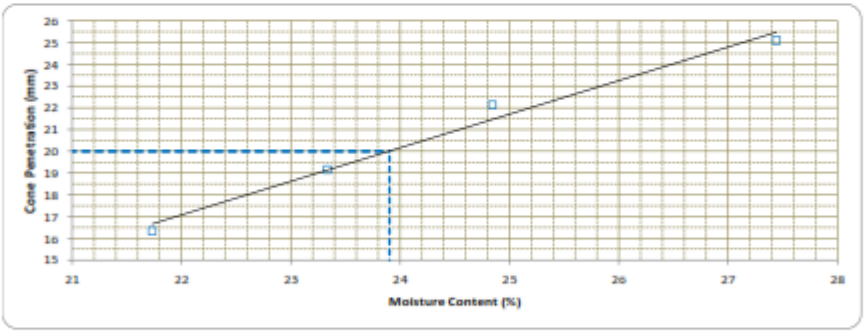
Liquid limit, Plastic limit, Linear Shrinkage & Shrinkage Product

Form №	S04184 - 0B04513	BS 1377: Part 2: 1990

PROJECT	GROUND INVESTIGATION AT TABORA MARKET	
CLIENT	GEOPRIMOSI ENGINEERING LIMITED	CHECKED BY:
LOCATION	BH01 [2.00-4.00m] DS	DATE:
TESTED BY	SAUMU/HANNAY	
DATE SAMPLING	20-Aug-22 TESTING: 10-Sep-22	

Cone Penetration:

		LIQUID LIMIT												PLASTIC LIMIT	
TEST No.		1			2			3			4			1	2
Initial gauge reading	mm	0	0	0	0	0	0	0	0	0	0	0	0		
Final gauge reading	mm	16.5	16.3	16.2	19	19.2	19.3	22	22.3	22.1	25.0	25.2	25.1		
Average penetration	mm	16.3			19.2			22.1			25.1				
Moisture Determination:															
Moisture Container No.		11			K1			33			12				
Weight of Wet soil + Container	g	59.05			61.06			65.10			66.30				
Weight of Dry soil + Container	g	54.18			55.42			58.31			58.80				
Weight of Container	g	31.77			31.25			30.98			31.47				
Weight of Moisture	g	4.87			5.64			6.79			7.50				
Weight of Dry soil	g	22.41			24.17			27.33			27.33				
Moisture Content	%	21.7			23.3			24.8			27.4				
											Average:			NP	



Linear Shrinkage and Shrinkage Product:

Specimen No.	91	Liquid Limit(whole number)%:	
Initial length, Lo	140		24
Oven-dried length, LD	138		
Linear Shrinkage , LS=100(1-LD/Lo)	1.4	Plastic Limit(whole number)%:	NP
Shrinkage Product , SP=LS*%<425µm		Plasticity Index	NP

Comments:

Signed by (Materials Engineer/Manager)	Received by:

C-Labs(Tz) — a credible test result

CIVIL ENGINEERING LABORATORY
DAR ES SALAAM
TANZANIA

C-Labs(Tz) — a credible test result

ATTERBERG LIMITS

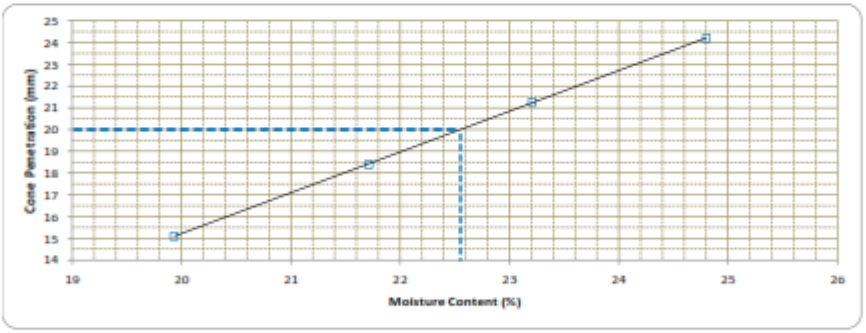
Liquid limit, Plastic limit, Linear Shrinkage & Shrinkage Product

Form №	S04184 - 0B04514	BS 1377: Part 2: 1990

PROJECT	GROUND INVESTIGATION AT TABORA MARKET	
CLIENT	GEOPRIMOSI ENGINEERING LIMITED	CHECKED BY:
LOCATION	BH02 [1.00-2.00m] DS	DATE:
TESTED BY	SAUMU/HANNAY	
DATE SAMPLING	20-Aug-22 TESTING: 10-Sep-22	

Cone Penetration:

		LIQUID LIMIT												PLASTIC LIMIT	
TEST No.		1			2			3			4			1	2
Initial gauge reading	mm	0	0	0	0	0	0	0	0	0	0	0	0		
Final gauge reading	mm	15.1	15.2	15.0	18.5	18.3	18.4	21.1	21.3	21.4	24.4	24.2	24.0		
Average penetration	mm	15.1			18.4			21.3			24.2				
Moisture Determination:															
Moisture Container No.		P1			EX			A1			FF				
Weight of Wet soil + Container	g	59.63			65.72			66.53			64.75				
Weight of Dry soil + Container	g	54.89			59.51			60.02			58.19				
Weight of Container	g	31.11			30.91			31.97			31.74				
Weight of Moisture	g	4.74			6.21			6.51			6.56				
Weight of Dry soil	g	23.78			28.60			28.05			26.45				
Moisture Content	%	19.9			21.7			23.2			24.8				
											Average:			NP	



Linear Shrinkage and Shrinkage Product:

Specimen No.		D	Liquid Limit(whole number)%:
Initial length,	Lo	140	23
Oven-dried length,	LD	137	
Linear Shrinkage ,	LS=100(1-LD/Lo)	2.1	Plastic Limit(whole number)%: NP
Shrinkage Product ,	SP=LS*%<425µm		Plasticity Index NP

Comments:

Signed by (Materials Engineer/Manager)	Received by:

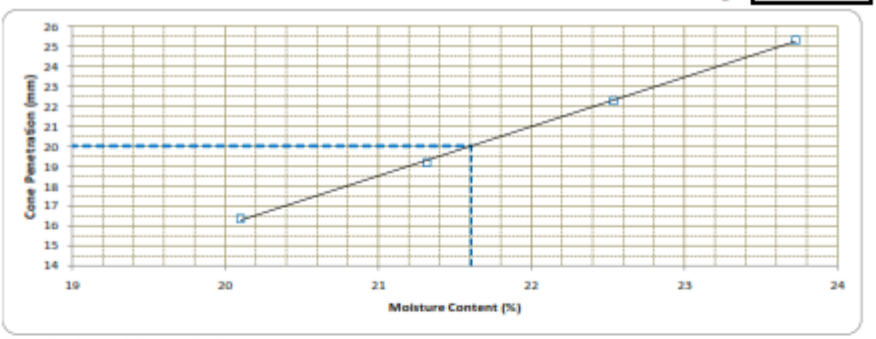
C-Labs(Tz) a credible test result	CIVIL ENGINEERING LABORATORY DAR ES SALAAM TANZANIA	C-Labs(Tz) a credible test result
ATTERBERG LIMITS Liquid limit, Plastic limit, Linear Shrinkage & Shrinkage Product		
Form №	S04184 - 0B04515	BS 1377: Part 2: 1990

PROJECT	GROUND INVESTIGATION AT TABORA MARKET
CLIENT	GEOPRIMOSI ENGINEERING LIMITED
LOCATION	BH02 [2.00-4.00m] DS
TESTED BY	SAUMU/HANNAY
DATE SAMPLING	20-Aug-22 TESTING: 10-Sep-22

CHECKED BY:
DATE:

Cone Penetration:

		LIQUID LIMIT												PLASTIC LIMIT	
TEST No.		1			2			3			4			1	2
Initial gauge reading	mm	0	0	0	0	0	0	0	0	0	0	0	0		
Final gauge reading	mm	16.2	16.5	16.4	19	19.2	19.3	22	22.3	22.5	25.5	25.0	25.4		
Average penetration	mm	16.4			19.2			22.3			25.3				
Moisture Determination:															
Moisture Container No.		FB			Y2			O13			AC				
Weight of Wet soil + Container	g	59.48			64.32			63.35			67.28				
Weight of Dry soil + Container	g	54.60			58.59			57.54			60.06				
Weight of Container	g	30.32			31.71			31.76			29.63				
Weight of Moisture	g	4.88			5.73			5.81			7.22				
Weight of Dry soil	g	24.28			26.88			25.78			30.43				
Moisture Content	%	20.1			21.3			22.5			23.7				
													Average:	NP	



Linear Shrinkage and Shrinkage Product:

Specimen No.		T28	Liquid Limit(whole number)%: 22
Initial length,	Lo	140	
Oven-dried length,	LD	137	
Linear Shrinkage ,	LS=100(1-LD/Lo)	2.1	Plastic Limit(whole number)%: NP
Shrinkage Product ,	SP=LS*%<425µm		Plasticity Index NP

Comments:

Signed by (Materials Engineer / Manager)	Received by:

C-Labs(Tz) a credible test result	CIVIL ENGINEERING LABORATORY DAR ES SALAAM TANZANIA	C-Labs(Tz) a credible test result

ATTERBERG LIMITS

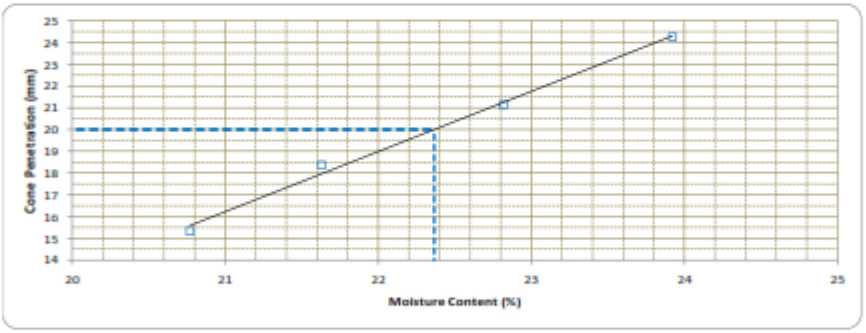
Liquid limit, Plastic limit, Linear Shrinkage & Shrinkage Product

Form №	S04184 - 0B04516	BS 1377: Part 2: 1990

PROJECT	GROUND INVESTIGATION AT TABORA MARKET	
CLIENT	GEOPRIMOSI ENGINEERING LIMITED	CHECKED BY:
LOCATION	BH03 [2.00-4.00m] DS	DATE:
TESTED BY	SAUMU/HANNAY	
DATE SAMPLING	20-Aug-22 TESTING: 10-Sep-22	

Cone Penetration:

		LIQUID LIMIT												PLASTIC LIMIT	
TEST No.		1			2			3			4			1	2
Initial gauge reading	mm	0	0	0	0	0	0	0	0	0	0	0	0		
Final gauge reading	mm	15.5	15.3	15.2	18.5	18.4	18.2	21	21.1	21.3	24.3	24.4	24.1		
Average penetration	mm	15.3			18.4			21.1			24.3				
Moisture Determination:															
Moisture Container No.		DE			O18			L4			PA				
Weight of Wet soil + Container	g	60.79			62.58			68.30			63.42				
Weight of Dry soil + Container	g	55.66			57.22			61.45			57.21				
Weight of Container	g	30.96			32.44			31.43			31.25				
Weight of Moisture	g	5.13			5.36			6.85			6.21				
Weight of Dry soil	g	24.70			24.78			30.02			25.96				
Moisture Content	%	20.8			21.6			22.8			23.9				
											Average:			NP	



Linear Shrinkage and Shrinkage Product:

Specimen No.	X	Liquid Limit(whole number)%:	
Initial length, Lo	140		22
Oven-dried length, LD	138		
Linear Shrinkage , LS=100(1-LD/Lo)	1.4	Plastic Limit(whole number)%:	NP
Shrinkage Product , SP=LS*%<425µm		Plasticity Index	NP

Comments:

Signed by (Materials Engineer/Manager)	Received by:

C-Labs(Tz) a credible test result	CIVIL ENGINEERING LABORATORY DAR ES SALAAM TANZANIA	C-Labs(Tz) a credible test result

ATTERBERG LIMITS

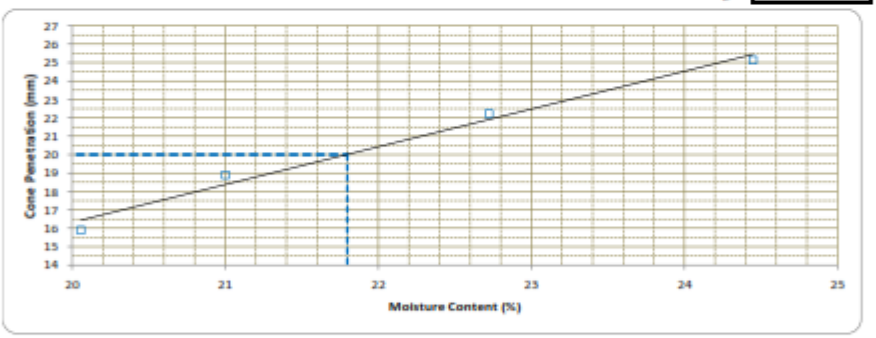
Liquid limit, Plastic limit, Linear Shrinkage & Shrinkage Product

Form №	S04184 - 0B04517	BS 1377: Part 2: 1990

PROJECT	GROUND INVESTIGATION AT TABORA MARKET	
CLIENT	GEOPRIMOSI ENGINEERING LIMITED	CHECKED BY:
LOCATION	BH03 [4.00-5.00m] DS	DATE:
TESTED BY	SAUMU/HANNAY	
DATE SAMPLING	20-Aug-22 TESTING: 10-Sep-22	

Cone Penetration:

		LIQUID LIMIT												PLASTIC LIMIT	
TEST No.		1			2			3			4			1	2
Initial gauge reading	mm	0	0	0	0	0	0	0	0	0	0	0	0		
Final gauge reading	mm	16.0	15.8	15.9	18.8	18.9	19.0	22	22.3	22.4	25.1	25.3	25.0		
Average penetration	mm	15.9			18.9			22.2			25.1				
Moisture Determination:															
Moisture Container No.		BH			I1			G1			111				
Weight of Wet soil + Container	g	63.22			67.34			65.44			60.70				
Weight of Dry soil + Container	g	57.59			61.09			59.30			54.94				
Weight of Container	g	29.52			31.33			32.28			31.38				
Weight of Moisture	g	5.63			6.25			6.14			5.76				
Weight of Dry soil	g	28.07			29.76			27.02			23.56				
Moisture Content	%	20.1			21.0			22.7			24.4				
													Average:	NP	



Linear Shrinkage and Shrinkage Product:

Specimen No.		O5	Liquid Limit(whole number)%:
Initial length,	Lo	140	22
Oven-dried length,	LD	140	
Linear Shrinkage ,	LS=100(1-LD/Lo)	0.0	Plastic Limit(whole number)%: NP
Shrinkage Product ,	SP=LS*%<425µm		Plasticity Index NP

Comments:

Signed by (Materials Engineer/Manager)	Received by:

APPENDIX E:

CALCULATION SHEET

Geotechnical and Geo-environmental Engineering Services

Project: Geotechnical investigations Technical Report for Detail Design of Tabora Market in Tabora Region

REF	CALCULATIONS	OUTPUT

BEARING CAPICITY - PAD FOUNDATION FOR DRAINED CONDITION

Assumptions

- Loading is under drained condition
- The foundation is a pad foundation
- Pad foundation minimum depth 1.5m and maximum depth of 2.0m
- Factor of safety is 3

Soil parameter

- To be conservative all calculation considered water table is at the surface

Energy ratio as suggested by Skempton (1986) stated by Barnes (2000).

$$C_E = \frac{\text{Energy delivery to rod}}{\text{Free fall energy}} = \frac{1}{60}$$

For automatic hammer

$$N_{60} = C_E = \frac{75}{60} = 1.25$$

The bearing capacity factors of rock taken from Vesic 1973, Peck, Hanson, and Thorburn (1970).

The bearing capacity of spread foundation was obtained using the following equation.

$$q_{ult} = cNcF_{cs}F_{cd}F_{ci} + qN_qF_{qs}F_{qd}F_{qi} + \frac{1}{2}\gamma BN_\gamma F_{\gamma s}F_{\gamma d}F_{\gamma i}$$

Where

F_{cs} – shape factor correction
F_{cd} – depth factor correction
F_{ci} – inclination factor correction

In both cases no correction factors were applied.

$$\text{Net } q_{ult} = q_{ult} - q_o$$

Sheet 1

REF	CALCULATIONS	OUTPUT

$$\text{Net } q_{all} = \frac{\text{Net } q_{ult.}}{F}$$

1. Estimation of bearing capacity

Soil parameter

- The maximum effective cohesive strength of $0 \frac{kN}{m^2}$
- The average in situ unit weight of rock $\gamma = 18.0 \frac{kN}{m^2}$
- N-Values were correct for effective energy ratio and overburden pressure

Estimation of allowable Bearing Capacity of soil, B = 1.5m and D = 1.5m – Drained condition

Parameter	Value
φ'(Degree)	28
γ_w (kN/m^3)	9.81
L (m)	1.5
B (m)	1.5
Load at Foundation level (kN)	200
Base Area (m^2)	2.25
Applied Pressure or Action (kN/m^2)	88.88888889
B/L	1
s_q*N_q-1	20.60123197
N_q-1	13.7
S_c=(s_q*N_q-1)/(N_q-1)	1.50373956
Sin(phai)	0.469471563
s_q=1+B/L*sin(phai)	1.469471563
s_γ =1-0.3*B/L	0.7
F.S (Unitless)	3
D (m)	1.5
γ (kN/m^3)	18
Nγ (Unitless)	10.9
Nq (Unit less)	14.7
Nc (Unitless)	25.8

REF	CALCULATIONS		OUTPUT
	c (kN/m^2)	0	
	c*Nc (kN/m^2)	0	
	sq*(γ-γ_w)*D*Nq (kN/m^2)	265.3711348	
	sγ*Nγ*B*γ (kN/m^2)	93.73455	
	γ` = γ-γ_w (kN/m^2)	8.19	
	q_{ult} (kN/m^2)	359.1056848	
	ρ_o (kN/m^2)	27	
	Net q_{ult} (kN/m^2)	332.1056848	
	q_a (kN/m^2)	110.7018949	

Estimation of allowable Bearing Capacity of soil, B = 1.5m and D = 2.0m – Drained condition

Parameter	Value
φ`(Degree)	30
γ_w (kN/m^3)	9.81
L (m)	1.5
B (m)	1.5
Load at Foundation level (kN)	200
Base Area (m^2)	2.25
Applied Pressure or Action (kN/m^2)	88.88888889
B/L	1
s_q*N_q-1	21.05
N_q-1	13.7
S_c=(s_q*N_q-1)/(N_q-1)	1.53649635
Sin(phai)	0.5
s_q=1+B/L*sin(phai)	1.5
s_γ =1-0.3*B/L	0.7
F.S (Unitless)	3
D (m)	2
γ (kN/m^3)	18
Nγ (Unitless)	10.9
Nq (Unit less)	14.7

REF	CALCULATIONS		OUTPUT
	Nc (Unitless)	25.8	
	c (kN/m²)	0	
	c*Nc (kN/m²)	0	
	sq*(γ-γw)*D*Nq (kN/m²)	361.179	
	sγ*Nγ*B*γ (kN/m²)	93.73455	
	γ` = γ-γw (kN/m²)	8.19	
	qult (kN/m²)	454.91355	
	ρo (kN/m²)	36	
	Net qult (kN/m²)	418.91355	
	qa (kN/m²)	139.63785	

Estimation of allowable Bearing Capacity of soil, B = 1.5m and D = 2.5m – Drained condition

Parameter	Value
φ`(Degree)	28
γw (kN/m³)	9.81
L (m)	1.5
B (m)	1.5
Load at Foundation level (kN)	
Base Area (m²)	2.25
Applied Pressure or Action (kN/m²)	0
B/L	1
sq*Nq-1	20.60123197
Nq-1	13.7
Sc=(sq*Nq-1)/(Nq-1)	1.50373956
Sin(phai)	0.469471563
sq=1+B/L*sin(phai)	1.469471563
sγ =1-0.3*B/L	0.7
F.S (Unitless)	3
D (m)	2.5
γ (kN/m³)	18
Nγ (Unitless)	10.9
Nq (Unit less)	14.7

REF	CALCULATIONS		OUTPUT
	Nc (Unitless)	25.8	
	c (kN/m²)	0	
	c*Nc (kN/m²)	0	
	$sq*(\gamma-\gamma_w)*D*Nq$ (kN/m²)	442.2852246	
	$s\gamma*N\gamma*B*\gamma$ (kN/m²)	93.73455	
	$\gamma' = \gamma-\gamma_w$ (kN/m²)	8.19	
	q_{ult} (kN/m²)	536.0197746	
	ρ_o (kN/m²)	45	
	Net q_{all} (kN/m²)	491.0197746	
	q_s (kN/m²)	163.6732582	

SETTLEMENT FROM SPT - N - VALUES DATA

Uses an average SPT - N - Value below foundation at a depth between 1.5B

$\rho_{max=q(0.07xB^{0.3}}$ ρ

$\rho_{max} = 100(0.071.50.3)$

Settlement = 7.9mm

Sheet 5

APPENDIX F:

SOIL AND ROCK PROFILE - PHOTOS

TABORA MARKET - BH 01

SOIL PROFILE PHOTO-PRESENTATION

BH: 01: 0.00m – 5.00m

TABORA MARKET - BH 02

SOIL PROFILE PHOTO-PRESENTATION

BH: 02: 0.00m – 5.00m

TABORA MARKET - BH 03

SOIL PROFILE PHOTO-PRESENTATION

BH: 03: 0.00m – 5.00m

Appendix IX: Tabora Bus Terminal Geotechnical Report

REPORT

CLIENT

THE UNITED REPUBLIC OF TANZANIA

President's Office Regional Administration and Local Government (PO-RALG)

CTC CROWN TECH

Crown TECH - CONSULT Ltd

PROJECT:

FEASIBILITY STUDY, URBAN DESIGN, DETAILED ENGINEERING DESIGN, ENVIRONMENTAL AND SOCIAL DUE DILIGENCE, PREPARATION OF COST ESTIMATES AND BIDDING DOCUMENTS FOR URBAN INFRASTRUCTURE INVESTMENTS FOR ARUSHA, KIGOMA, DODOMA AND TABORA COUNCILS (TACTIC ZONE 1)

SUBCONTRACT:

GEOPRIMOSI ENGINEERING LIMITED
P.O.BOX 80343, Dar es Salaam
geoprimosi@yahoo.co.uk
Website: www.geoprimosi.co.tz

DOCUMENT TITLE:

Geotechnical investigations Technical Report for Detail Design of Tabora Bus Stand in Tabora Region.

PREPARED	DATE	FORMAT	CHECKED	APPROVED	REVISION
DR. S.J. MBAWALA	16.11.2022	A4	ENG. N. KISEKO		01

DOCUMENT NUMBER :	G.E.L	G.I	CTC	2022	08	*Ground Investigation – Tabora Bus Stand in Tabora Region.*

EXECUTIVE SUMMARY

The Government of Tanzania (GoT), through President's Office - Regional Administration and Local Government (PO–RALG), is implementing the World Bank-financed project - Cities Transforming Infrastructure and Competitiveness Project (TACTIC).

The Government of Tanzania (GoT) has engaged Crown TECH Consult Ltd (CTC) of Tanzania in a Joint venture with Pan Arab Consulting Engineers of Kuwait (PACE) to prepare feasibility studies, urban design, detailed engineering designs, environmental and social instruments, and bidding documents for the project. The assignment is intended to be an international good practice example of urban development that enhances economic productivity and job growth, inclusiveness, and builds resilience to hazards.

As a part of the design procedure, the Crown TECH Consult Ltd (CTC) of Tanzania engaged Geoprimosi Engineering Limited of Tanzania to conduct a ground investigation on the proposed construction of Tabora Bus Stand in Tabora Region. The ground investigation aims to establish the engineering properties of soil and rock and provide recommendations for the foundation design and other geotechnical aspects of the proposed structures.

This report presents the ground investigation geotechnical technical report by Geoprimosi Engineering Limited.

The ground investigation revealed that the site is characterised by silt SAND, Sandy CLAY, SAND and weathered GRANITE rock.

Using field, laboratory test results and engineering judgements, the following is suggested;

- It is suggested to install a pad foundation. Suggested foundation depths are presented in Table E-1.

Table E-1: Proposed type of foundation, foundation depths and Allowable bearing capacity of soil as was suggested by Terzaghi equation.

S/No	Ground profile/Soil type/Rock types at foundation level	Type of foundation	Foundation depth (m)	Allowable bearing capacity of soil (kN/m²)
1	Silt SAND	Pad Foundation	1.5	651
2	Silty SAND	Pad Foundation	2.0	792

REPORT PREPARED BY:

Dr. Silipius J. Mbawala
Technical Director – Geoprimosi Engineering Limited

REPORT CERTIFIED/APPROVED BY:

Eng. Napegwa Kiseko
Registered Consulting Engineer, ERB

TABLE OF CONTENT

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CHAPTER 1

1 GROUND INVESTIGATION

The objective of this chapter is to describe the project, field tests and present the field ground profile.

1.1 Scope of Services

The scope of the work includes the following:

- Drilling 3 boreholes within the proposed site to the maximum depth of 5m.
- Perform SPT at interval of 1.5m and collect disturbed sample at appropriate intervals
- Collect disturbed and undisturbed samples at appropriate intervals
- Logging profiles on each borehole.
- Taking photographs of the profile on each borehole.
- Carrying out laboratory tests for the soil samples
- Perform a geotechnical engineering analysis regarding the proposed design and construction, using the information obtained from the field tests and laboratory testing.
- Prepare technical report of findings, conclusion and tentative recommendation for the geotechnical engineering aspects of the proposed structure

1.2 General geology of the area

The general geology of the area where the market will be constructed is mainly Mudstone, shale and phyllite. According to the geological map of Tanzania the area was formed during Palaeozoic in geological time scale. The geology of the area is shown in Figure 1 - 1.

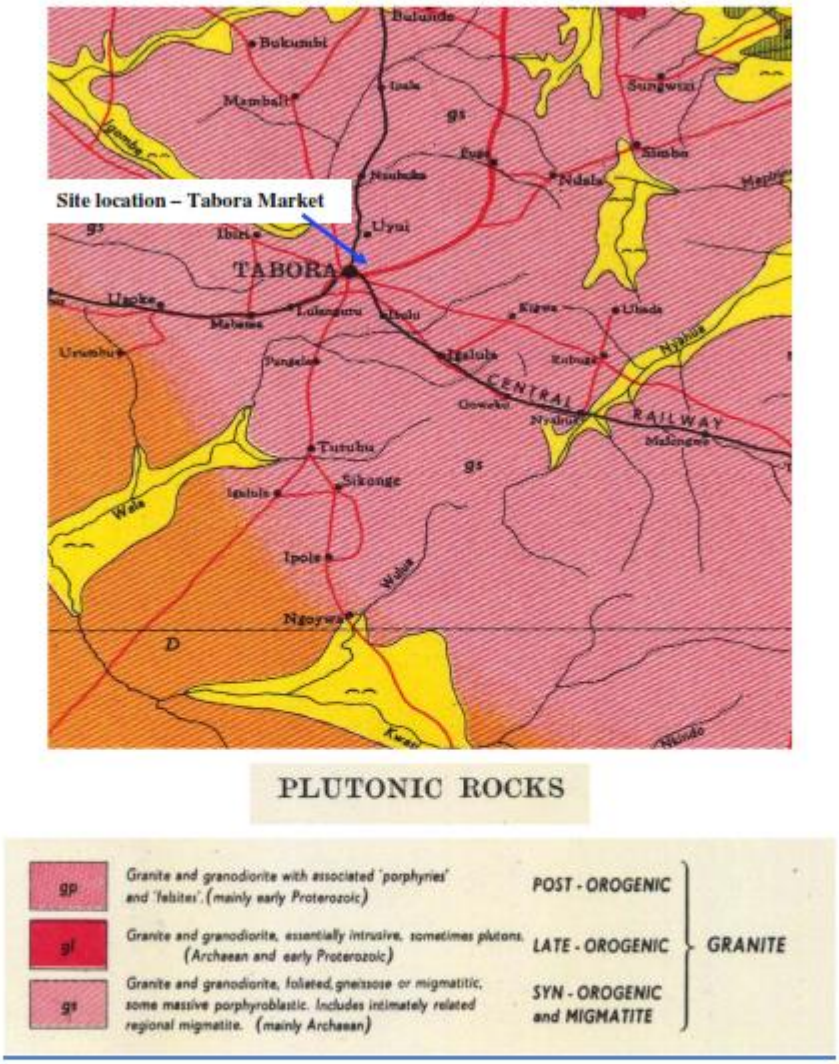


Figure 1-1: Geology of the area

1.3 Project Description

The proposed new Katonga Market is located in the same area where Old Katonga Market is located. The borehole locations are shown in Figure 1-2.

Figure 1-2: Site location

1.4 Field Ground Investigation Works

The field work started on August 12, 2022 and was completed on August 15, 2022. The drilling carried out using rotary drill and performing SPT test using standard SPT hammer. Field logs were prepared for each borehole and were presented using licensed winlog software. Each log profile contained information concerning the boring method, samples recovered and indicating the presence of various materials such as type of soil and their nature. Therefore, these logs included both factual and interpretive information. Boring logs are presented in Appendix B. The laboratory tests on soil were caried out by C-Laboratory and Dar es salaam Institute of Technology.

1.4.1 Soil Drilling

All field works were carried out in accordance with BS5930 of 2015.

1.4.2 Borehole Log

The borehole logs were carried out for each borehole which include the following information:

- Borehole number
- Date of execution
- Registration of soil layers with description of the various layers

- Coordinates
- Water level/strike
- Sample collected at prescribed depth

1.4.3 Sampling

The task involves drilling through soil and rock using the rotary rig to a maximum depth of 5m. Samples were collected at specific intervals. SPT samples were collected at an interval of 1.5m. Photos of major soils were taken through the profile and are presented in Appendix H.

CHAPTER 2. FIELD WORK

2 Introduction

This chapter discusses the field drilling results. An overview of the profile of soil and rock recovered during the exercise is discussed. The description of the ground profile for each borehole is discussed followed by the description of exceptional ground features encountered during drilling. The detailed description for each borehole is presented in Appendix B.

2.1 Soil types

The following soil types were established using observations made during borings performed on the site:

- Silty SAND
- SAND
- Sandy CLAY
- Weathered GRANITE

2.2 Standard Penetration (SPT)

The standard penetration tests N-Values are presented in Table 2 – 1 to Table 2 – 3 and in Appendix C. The SPT N - Values were corrected for the effect of overburden pressure and an energy ratio. The corrected SPT N - Values are also presented in Table 2 – 1 to Table 2 – 3.

Table 2-1: Standard Penetration Test and bearing capacity for BH 01

BH No:	Depths (m)		SPT N - Values	SPT Corrected N_1 - Values	SPT Corrected $(N_1)_{60}$ - Values	Estimated Allowable Bearing capacity kN/m^2
	From	To				
BH 01	1.00	1.45	36	63	79	>700
	2.00	2.25	REFUSAL	REFUSAL	REFUSAL	>700

Table 2-2: Standard Penetration Test and bearing capacity for BH 02

BH No:	Depths (m)		SPT N - Values	SPT Corrected N_1 - Values	SPT Corrected $(N_1)_{60}$ - Values	Estimated Allowable Bearing capacity kN/m^2
	From	To				
BH 02	1.00	1.10	REFUSAL	REFUSAL	REFUSAL	>700
	2.00	2.05	REFUSAL	REFUSAL	REFUSAL	>700
	3.00	3.07	REFUSAL	REFUSAL	REFUSAL	>700

Table 2-3: Standard Penetration Test and bearing capacity for BH 03

BH No:	Depths (m)		SPT N - Values	SPT Corrected N_1 - Values	SPT Corrected $(N_1)_{60}$ - Values	Estimated Allowable Bearing capacity kN/m^2
	From	To				
BH 03	1.00	1.40	REFUSAL	REFUSAL	REFUSAL	>700
	2.00	2.10	REFUSAL	REFUSAL	REFUSAL	>700
	3.00	3.45	34	44	55	>700
	4.00	4.45	38	44	55	>700
	5.00	5.38	REFUSAL	REFUSAL	REFUSAL	>700

CHAPTER 3: LABORATORY TEST RESULTS

3 Introduction

This chapter discusses the laboratory tests for soil and rock. The laboratory tests carried out are the liquid limit, plastic limit tests, sieve analysis and bulk density.

3.1 Laboratory tests results - Classification tests

The classification test results are presented in Appendix D. From classification test results; the sites are characterized by silty SAND, SAND, Sandy CLAY and SHALE rock. The percentage of fines range between 4% and 43%. The materials are of Nonplastic to intermediate plasticity.

3.2 Bulk density test

The bulk density of the rock at the sites at a depth of 3.2m to 5.0m range between 2,570 kg/m^3 and 2,590 kg/m^3 with an average bulk density of 2,580 kg/m^3 as shown in Appendix E. The average unit weight of the rock is 25.3kN/m^3.

3.3 Uniaxial compression (UCS) of the rock

The uniaxial compression test results are presented in Appendix F. The uniaxial compression test for BH01and BH02 and varies between and 7,980 kN/m^2 and 24,623 kN/m^2 with an average of 16,302 kN/m^2.

CHAPTER 4:

4 FIELD AND LABORATORY TEST RESULTS DISCUSSION

This chapter presents the summary and discussion of field and laboratory tests results. From field and laboratory test results, the design parameters are established.

4.1 Allowable bearing capacity from SPT N.

The SPT N - Value $(N_1)_{60}$ from ground level to 5m is greater than 50 allowable bearing capacity of the silty SAND is 700 kN/m^2 as was suggested by K.Terzaghi and R.B. Peck (1976).

4.2 Estimation of internal friction angle from SPT

The average estimated internal friction angle obtained from the SPT is 40°. To be conservative, use internal friction angle 40° with the cohesive strength of 0 kN/m^2 for foundation which will be installed at a depth below 1.5m and 2.0m the unit weight of the soil of 18.0 kN/m^3 with the bearing capacity factors of the soil tabulated in Table 4-1.

Table 4-1: Bearing capacity factors (after Brinch Hansen) $\emptyset = 40^o$

Bearing capacity symbol	Bearing capacity factors values
N_γ	79.5
N_q	64.2
N_c	75.3

Terzaghi equation estimates the allowable bearing capacity for pad foundation ranging between 651 kN/m^2 and 791kN/m^2 for the square footing with a width of 1.5m and depth ranging between 1.5 m to 2.0 m from the ground level, as shown in Appendix G.

4.3 Design aspect

The design of any foundation base considers the allowable bearing pressure on the ground that corresponds to the expected stress to be subjected during the design life of the structures and its maximum value that can be supported without excessive deformation. Therefore, the type and shape of the loading determine the shape of the foundation. The typical loading caused by one floor of the building structure is 15kN/m^2.

It is suggested to use an isolated pad foundation to be installed at a depth ranging between 1.5m and 2.0m.

Table 4-2: Proposed type of foundation, foundation depths and Allowable bearing capacity of soil as was suggested by Terzaghi equation.

S/No	Ground profile/Soil type/Rock types at foundation level	Type of foundation	Foundation depth (m)	Allowable bearing capacity of soil (kN/m^2)
1	Silt SAND	Pad Foundation	1.5	651
2	Silty SAND	Pad Foundation	2.0	792

CHAPTER 5

5 CONCLUSIONS AND RECOMMENDATIONS

The recommendation is based on the field and laboratory test results of which the following is the recommendation for design;

- It is suggested to install pad foundation. Suggested foundation depths are presented in Table 5 - 1.

Table 5-1: Proposed type of foundation, foundation depths and Allowable bearing capacity of soil as was suggested by Terzaghi equation.

S/No	Ground profile/Soil type/Rock types at foundation level	Type of foundation	Foundation depth (m)	Allowable bearing capacity of soil (kN/m^2)
1	Silt SAND	Pad Foundation	1.5	651
2	Silty SAND	Pad Foundation	2.0	792

References

Barnes G, E (2000). *Soil Mechanics: Principles and Practice*. 2nd Ed. Macmillian Press Ltd, London

BS 1377, 1990 Methods of Testing for Soils for Civil Engineering Purposes

Byrne. G, Everett J.P and Schwartz K. (1995). A *guide to practical geotechnical engineering in Southern Africa.* Third edition. Ove arup& Partners. South Africa.

Clayton C.R.I. (1999). *The standard Penetration test (SPT); Method and Use*. CIRIA report no. Report/CP/7 Great Britain

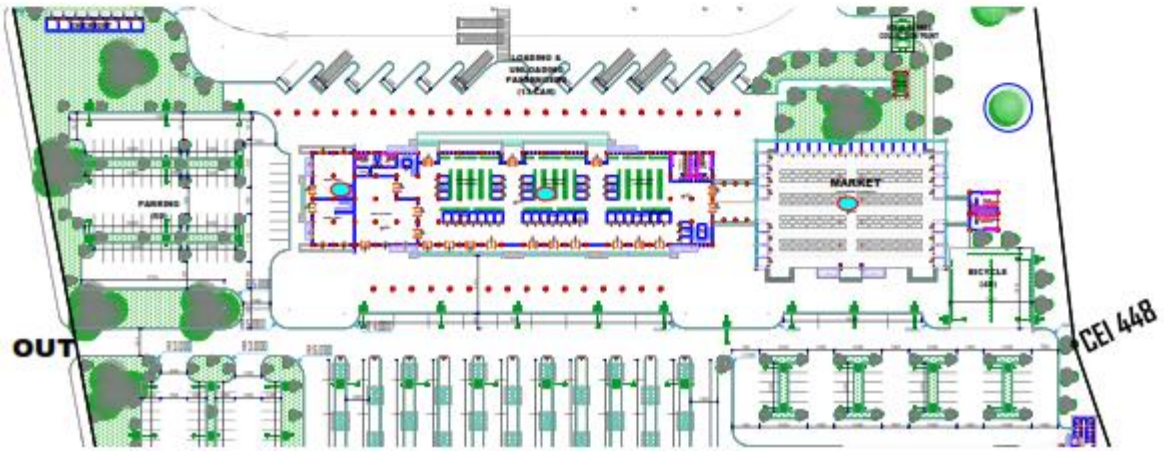
BS5930 of 2015: Code of practice for site investigations

APPENDICES

APPENDIX A:

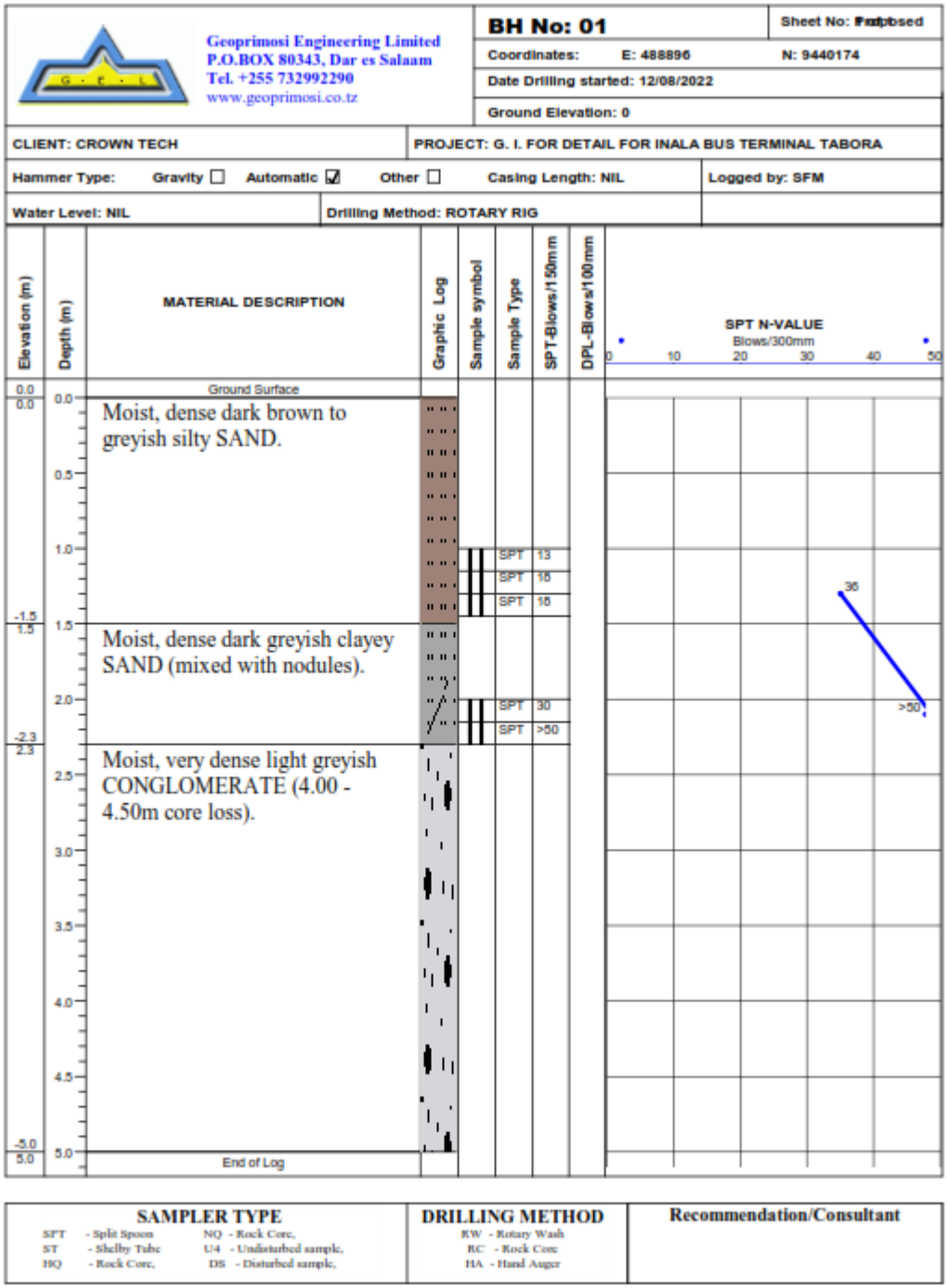
BORE HOLE LOCATION AND SITE DESCRIPTIONS

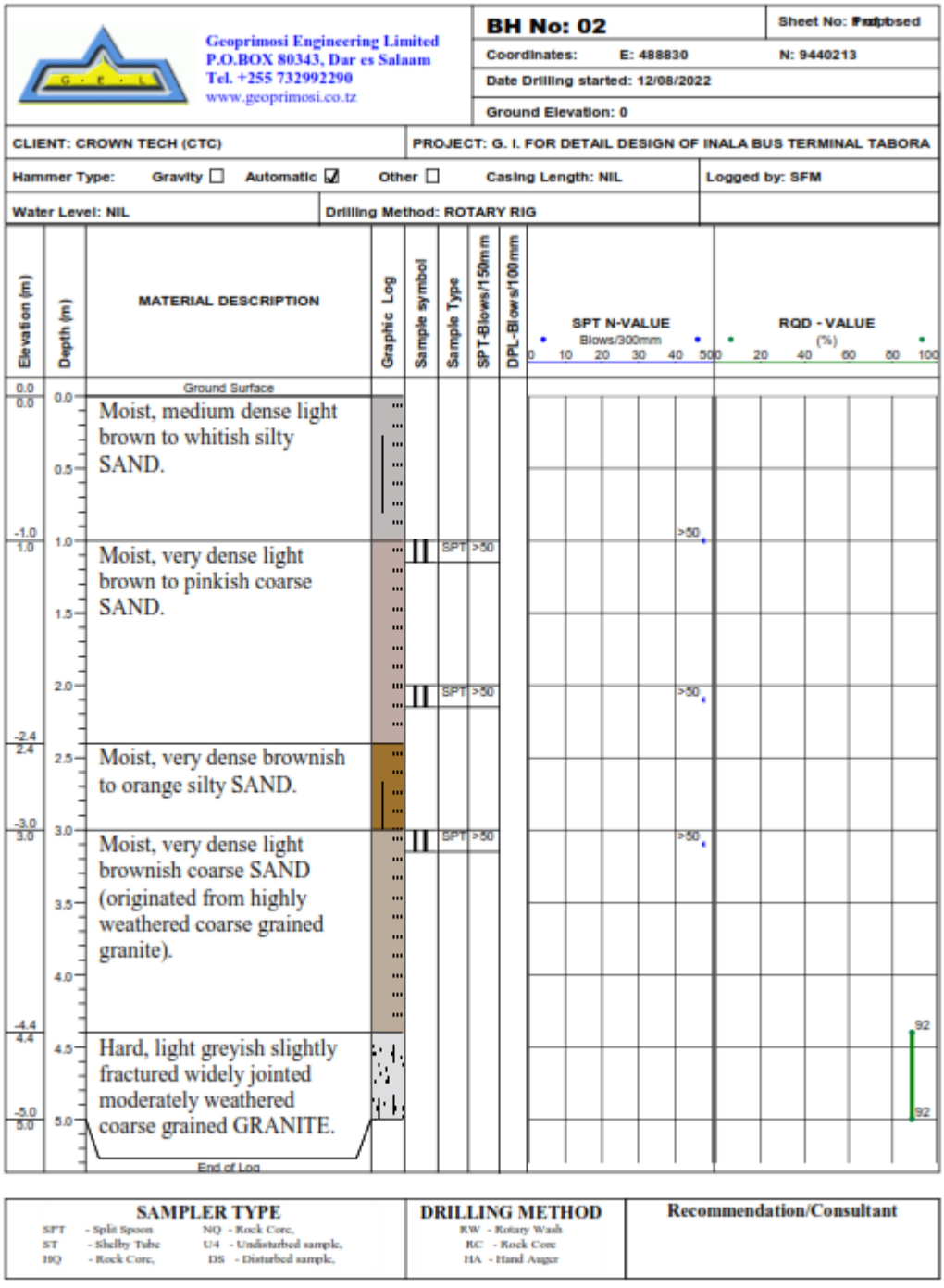

BH 03
BH 02
BH 01

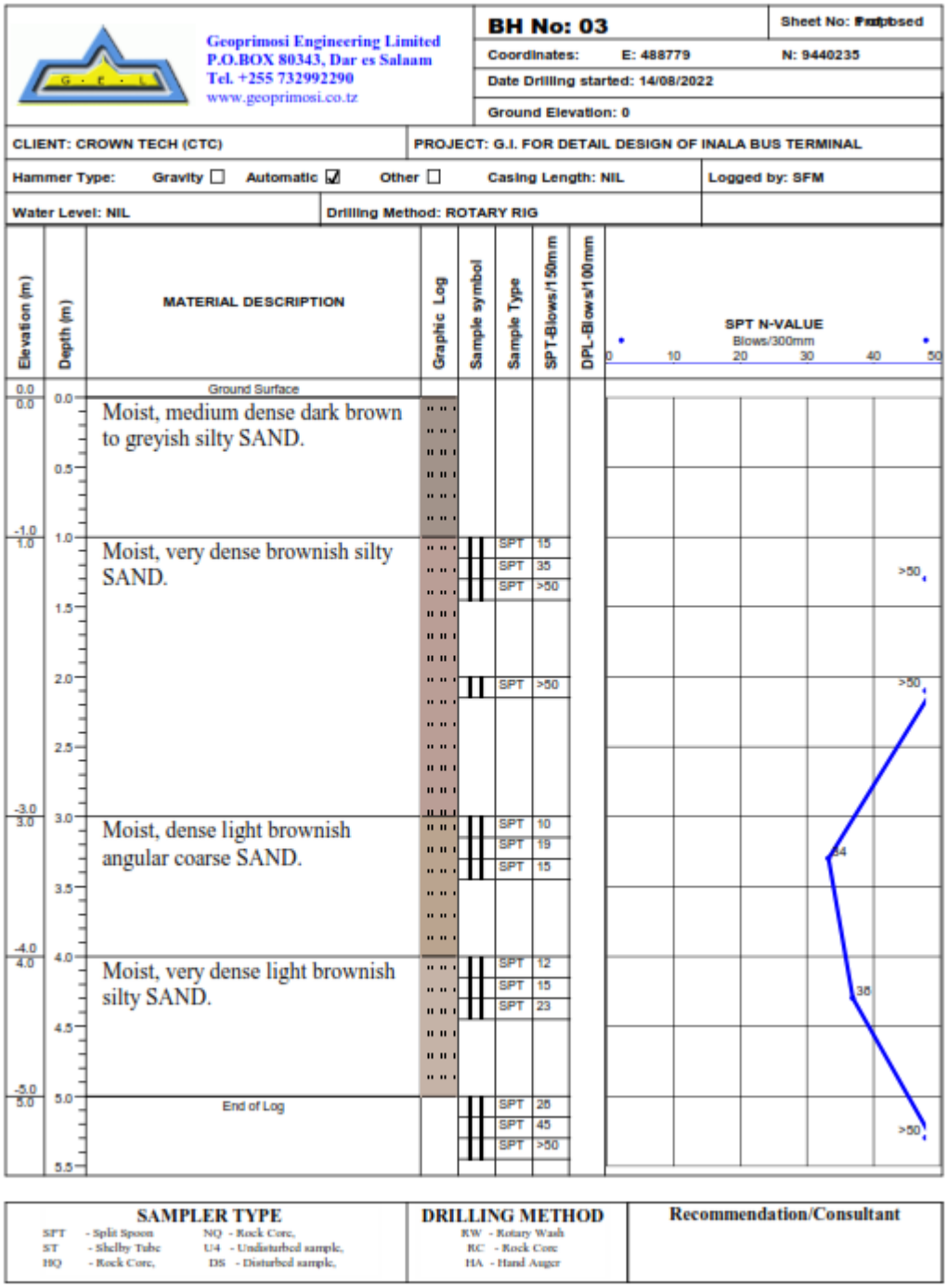

MARKET
OUT
CEI 448

APPENDIX B:

SOIL DESCRIPTIONS – LOGS


Geoprimosi Engineering Limited
P.O.BOX 80343, Dar es Salaam
Tel. +255 732992290
www.geoprimosi.co.tz
BH No: 01
Sheet No: Proposed
Coordinates: E: 488896 N: 9440174
Date Drilling started: 12/08/2022
Ground Elevation: 0
CLIENT: CROWN TECH
PROJECT: G. I. FOR DETAIL FOR INALA BUS TERMINAL TABORA
Hammer Type: Gravity ☐ Automatic ☑ Other ☐
Casing Length: NIL
Logged by: SFM
Water Level: NIL
Drilling Method: ROTARY RIG
Elevation (m)
Depth (m)
MATERIAL DESCRIPTION
Graphic Log
Sample symbol
Sample Type
SPT-Blows/150mm
DPL-Blows/100mm
SPT N-VALUE
Blows/300mm
Ground Surface
Moist, dense dark brown to greyish silty SAND.
Moist, dense dark greyish clayey SAND (mixed with nodules).
Moist, very dense light greyish CONGLOMERATE (4.00 - 4.50m core loss).
End of Log
SPT 13
SPT 15
SPT 15
SPT 30
SPT >50
35
>50
SAMPLER TYPE
SPT - Split Spoon
ST - Shelby Tube
HQ - Rock Core,
NQ - Rock Core,
U4 - Undisturbed sample,
DS - Disturbed sample,
DRILLING METHOD
RW - Rotary Wash
RC - Rock Core
HA - Hand Auger
Recommendation/Consultant


Geoprimosi Engineering Limited
P.O.BOX 80343, Dar es Salaam
Tel. +255 732992290
www.geoprimosi.co.tz
BH No: 02
Sheet No: Proposed
Coordinates: E: 488830 N: 9440213
Date Drilling started: 12/08/2022
Ground Elevation: 0
CLIENT: CROWN TECH (CTC)
PROJECT: G. I. FOR DETAIL DESIGN OF INALA BUS TERMINAL TABORA
Hammer Type: Gravity ☐ Automatic ☑ Other ☐
Casing Length: NIL
Logged by: SFM
Water Level: NIL
Drilling Method: ROTARY RIG
Elevation (m)
Depth (m)
MATERIAL DESCRIPTION
Graphic Log
Sample symbol
Sample Type
SPT-Blows/150mm
DPL-Blows/100mm
SPT N-VALUE
Blows/300mm
RQD - VALUE
(%)
Ground Surface
Moist, medium dense light brown to whitish silty SAND.
Moist, very dense light brown to pinkish coarse SAND.
Moist, very dense brownish to orange silty SAND.
Moist, very dense light brownish coarse SAND (originated from highly weathered coarse grained granite).
Hard, light greyish slightly fractured widely jointed moderately weathered coarse grained GRANITE.
End of Log
SPT >50
>50
92
SAMPLER TYPE
SPT - Split Spoon
ST - Shelby Tube
HQ - Rock Core,
NQ - Rock Core,
U4 - Undisturbed sample,
DS - Disturbed sample,
DRILLING METHOD
RW - Rotary Wash
RC - Rock Core
HA - Hand Auger
Recommendation/Consultant


Geoprimosi Engineering Limited
P.O.BOX 80343, Dar es Salaam
Tel. +255 732992290
www.geoprimosi.co.tz
BH No: 03
Sheet No: Proposed
Coordinates: E: 488779 N: 9440235
Date Drilling started: 14/08/2022
Ground Elevation: 0
CLIENT: CROWN TECH (CTC)
PROJECT: G.I. FOR DETAIL DESIGN OF INALA BUS TERMINAL
Hammer Type: Gravity ☐ Automatic ☑ Other ☐
Casing Length: NIL
Logged by: SFM
Water Level: NIL
Drilling Method: ROTARY RIG
Elevation (m)
Depth (m)
MATERIAL DESCRIPTION
Graphic Log
Sample symbol
Sample Type
SPT-Blows/150mm
DPL-Blows/100mm
SPT N-VALUE
Blows/300mm
Ground Surface
Moist, medium dense dark brown to greyish silty SAND.
Moist, very dense brownish silty SAND.
Moist, dense light brownish angular coarse SAND.
Moist, very dense light brownish silty SAND.
End of Log
SPT 15
SPT 35
SPT >50
SPT >50
SPT 10
SPT 19
SPT 15
SPT 12
SPT 15
SPT 23
SPT 26
SPT 45
SPT >50
>50
>50
34
36
>50
SAMPLER TYPE
SPT - Split Spoon
ST - Shelby Tube
HQ - Rock Core,
NQ - Rock Core,
U4 - Undisturbed sample,
DS - Disturbed sample,
DRILLING METHOD
RW - Rotary Wash
RC - Rock Core
HA - Hand Auger
Recommendation/Consultant

APPENDIX C:

STANDARD PENETRATION TEST RESULTS AND PLOTS

Standard penetration test for BH – 01- INALA BUS TERMINAL.

BH No:	Depths (m)		SPT N - Values	SPT Corrected N_1 - Values	SPT Corrected $(N_1)_{60}$ - Values	Estimated Allowable Bearing capacity kN/m^2
	From	To				
BH 01	1.00	1.45	36	63	79	>700
	2.00	2.25	REFUSAL			>700

Standard penetration test for BH – 02- INALA BUS TERMINAL.

BH No:	Depths (m)		SPT N - Values	SPT Corrected N_1 - Values	SPT Corrected $(N_1)_{60}$ - Values	Estimated Allowable Bearing capacity kN/m^2
	From	To				
BH 02	1.00	1.10	REFUSAL			>700
	2.00	2.05	REFUSAL			>700
	3.00	3.07	REFUSAL			>700

Standard penetration test for BH – 03- INALA BUS TERMINAL.

BH No:	Depths (m)		SPT N - Values	SPT Corrected N_1 - Values	SPT Corrected $(N_1)_{60}$ - Values	Estimated Allowable Bearing capacity kN/m^2
	From	To				
BH 03	1.00	1.40	REFUSAL			>700
	2.00	2.10	REFUSAL			>700
	3.00	3.45	34	44	55	>700
	4.00	4.45	38	44	55	>700
	5.00	5.38	REFUSAL			>700

APPENDIX D:

SOIL CLASSIFICATION TEST RESULTS

C-Labs(Tz) — CIVIL ENGINEERING LABORATORY DAR ES SALAAM TANZANIA — C-Labs(Tz)

LABORATORY TEST RESULTS SUMMARY SHEET

GEOPRIMOSI ENGINEERING LIMITED — SEPTEMBER 2022

GROUND IN[illegible]G[illegible]ON [illegible] IN[illegible] [illegible]U[illegible] [illegible]RM IN[illegible]OR[illegible]

[illegible]N[illegible]	[illegible]OUR[illegible]	D[illegible] D[illegible]r[illegible]		75.0	63.0	50.0	37.5	28.0	20.0	14.0	10.0	6.3	5.0	3.35	2.0	1.18	0.600	0.425	0.300	0.212	0.150	0.063	GM	G[illegible]	F[illegible]	[illegible]	P[illegible]	[illegible]	D[illegible]	M %	[illegible]O[illegible]D[illegible]RP[illegible]ON	[illegible]
04507	[illegible]01 1.00 2.00 [illegible]D[illegible]	[illegible]22		100	100	100	100	100	100	100	100	100	100	100	99	95	87	80	71	64	56	43	0.8	20.2	21	47	26	13	[illegible]	[illegible]	[illegible]d[illegible]r[illegible]d[illegible]	[illegible]
04508	[illegible]02 1.00 2.00 [illegible]D[illegible]	[illegible]22		100	100	100	100	100	99	92	87	86	85	84	73	51	30	23	17	16	12	6.2	2	65.8	[illegible]	19	NP	1	[illegible]	[illegible]	[illegible]ND	[illegible]M
04509	[illegible]02 2.00 4.00 [illegible]D[illegible]	[illegible]22		100	100	100	100	100	98	96	95	95	94	94	83	54	31	22	17	15	12	8.9	1.9	73.5	[illegible]	25	NP	1	[illegible]	[illegible]	[illegible]ND	[illegible]M
04510	[illegible]03 2.00 4.00 [illegible]D[illegible]	[illegible]22		100	100	100	100	100	100	100	100	100	100	100	99	78	50	35	21	13	8.9	3.7	1.6	65.1	[illegible]	25	NP	1	[illegible]	[illegible]	W[illegible]r[illegible]d[illegible]d [illegible]ND	[illegible]W
04511	[illegible]03 4.00 5.00 [illegible]D[illegible]	[illegible]22		100	100	100	100	100	99	97	96	94	93	92	91	79	57	48	41	33	30	19	1.4	46.7	[illegible]	22	NP	1	[illegible]	[illegible]	[illegible]r[illegible]ND [illegible]	[illegible]M[illegible]

C-LABS (TZ) LTD. P.O. BOX 34325 DAR ES SALAAM

C-Labs(Tz)

CLASSIFICATION SUMMARY

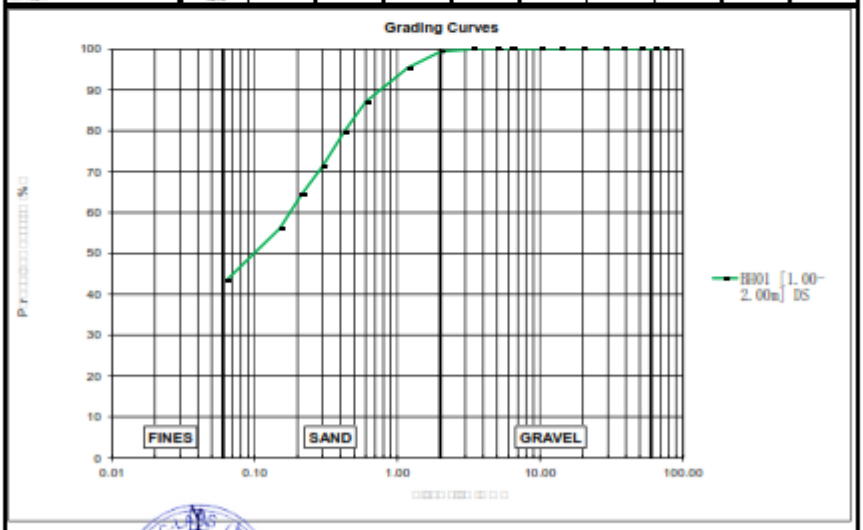
GROUND INVESTIGATION AT INALA BUS TERMINAL TABORA

CLIENT: G OPR MO NG N R NG M D D 2022

GR N D R U ON

Sample No	B04507
	BH01 [1.00-2.00m] DS
Sieve Size (mm)	%Passing
75.0	
63.0	
50.0	
37.5	
28.0	
20.0	
14.0	
10.0	
6.3	
5.0	
3.35	
2.00	99
1.18	95
0.600	87
0.425	80
0.300	71
0.212	64
0.150	56
0.063	43

BSCS CLASS	
% Gr 100 P 2	1
% d 0.063 2.0	56
% 0.063	43
%	47
P %	26
%	12.9



Checked by :.....

Approved by :.....

CLASSIFICATION SUMMARY

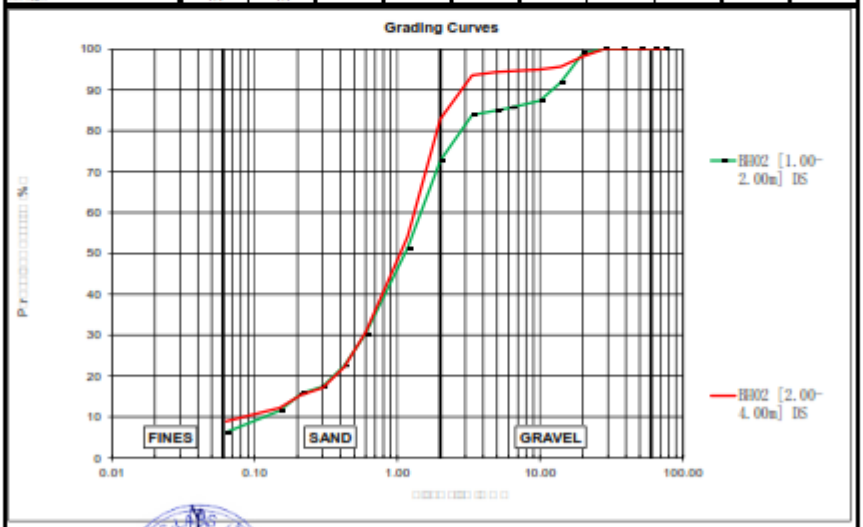
GROUND INVESTIGATION AT INALA BUS TERMINAL TABORA

CLIENT: G□OPR□MO□□□NG□N□□R□NG □M□□D D□□□□□2022

GR□N □□□□ D□□□R□U□ON

Sample No	B04508	B04509								
	BH02 [1.00-2.00m] DS	BH02 [2.00-4.00m] DS								
Sieve Size (mm)	%Passing									
75.0	100	100								
63.0	100	100								
50.0	100	100								
37.5	100	100								
28.0	100	100								
20.0	99	98								
14.0	92	96								
10.0	87	95								
6.3	86	95								
5.0	85	94								
3.35	84	94								
2.00	73	83								
1.18	51	54								
0.600	30	31								
0.425	23	22								
0.300	17	17								
0.212	16	15								
0.150	12	12								
0.063	6	9								

BSCS CLASS	□M	□M								
% Gr□□□100 P□□□2□□□	27	17								
%□□□d 0.063□2.0□□□	67	74								
%□□□□□0.063□□□	6	9								
□□%□	19	25								
P□%□	NP	NP								
□□%□	1.4	1.4								



Checked by :.....

Approved by :.....

C-Labs(Tz)

CLASSIFICATION SUMMARY

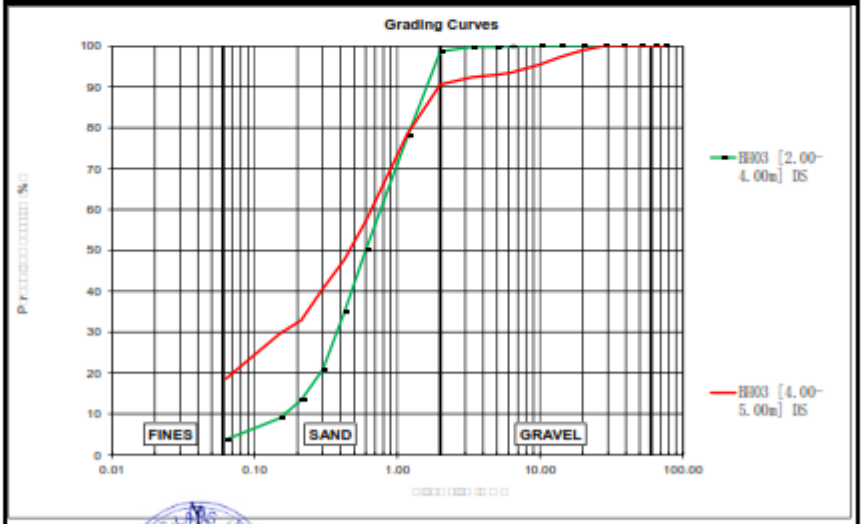
GROUND INVESTIGATION AT INALA BUS TERMINAL TABORA

CLIENT: G OPR MO NG N R NG M D D 2022

GR N D R U ON

Sample No	B04510	B04511								
	BH03 [2.00-4.00m] DS	BH03 [4.00-5.00m] DS								
Sieve Size (mm)	%Passing									
75.0										
63.0										
50.0										
37.5										
28.0										
20.0		99								
14.0		97								
10.0		96								
6.3	100	94								
5.0	100	93								
3.35	100	92								
2.00	99	91								
1.18	78	79								
0.600	50	57								
0.425	35	48								
0.300	21	41								
0.212	13	33								
0.150	9	30								
0.063	4	19								

BSCS CLASS	W	M								
% Gr 100 P 2	1	9								
% d 0.063 2.0	95	72								
% 0.063	4	19								
%	25	22								
P %	NP	NP								
%	1.4	1.4								



Checked by :.....

Approved by :.....

C-Labs(Tz) a credible test result	CIVIL ENGINEERING LABORATORY DAR ES SALAAM TANZANIA	C-Labs(Tz) a credible test result

ATTERBERG LIMITS

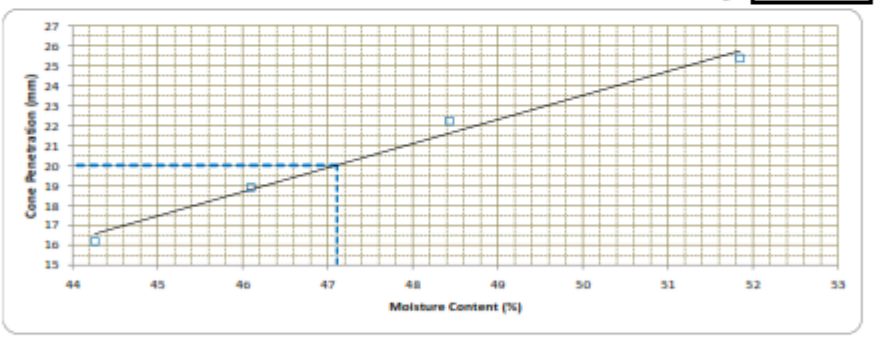
Liquid limit, Plastic limit, Linear Shrinkage & Shrinkage Product

Form №	S04184 - 0B04507	BS 1377: Part 2: 1990

PROJECT	GROUND INVESTIGATION AT INALA BUS TERMINAL TABORA	
CLIENT	GEOPRIMOSI ENGINEERING LIMITED	CHECKED BY:
LOCATION	BH01 [1.00-2.00m] DS	DATE:
TESTED BY	SAUMU/HANNAY	
DATE SAMPLING	20-Aug-22 TESTING: 12-Sep-22	

Cone Penetration:

		LIQUID LIMIT												PLASTIC LIMIT	
TEST No.		1			2			3			4			1	2
Initial gauge reading	mm	0	0	0	0	0	0	0	0	0	0	0	0		
Final gauge reading	mm	16.1	16.2	16.3	18.8	18.9	19.0	22.1	22.2	22.4	25.5	25.2	25.4		
Average penetration	mm	16.2			18.9			22.2			25.4				
Moisture Determination:															
Moisture Container No.		B			AB			J3			H4			O26	O14
Weight of Wet soil + Container	g	60.18			62.50			71.80			68.42			39.52	39.60
Weight of Dry soil + Container	g	51.00			51.93			59.00			55.93			38.09	38.17
Weight of Container	g	30.26			29.00			32.57			31.84			31.24	31.33
Weight of Moisture	g	9.18			10.57			12.80			12.49			1.43	1.43
Weight of Dry soil	g	20.74			22.93			26.43			24.09			6.85	6.84
Moisture Content	%	44.3			46.1			48.4			51.8			20.9	20.9
													Average:	20.9	



Linear Shrinkage and Shrinkage Product:

Specimen No.	30	Liquid Limit(whole number)%:	47
Initial length, Lo	140		
Oven-dried length, LD	122		
Linear Shrinkage , LS=100(1-LD/Lo)	12.9	Plastic Limit(whole number)%:	21
Shrinkage Product , SP=LS*%<425µm		Plasticity Index	26

Comments:

Signed by (Materials Engineer / Manager)	Received by:

C-Labs(Tz) a credible test result	CIVIL ENGINEERING LABORATORY DAR ES SALAAM TANZANIA	C-Labs(Tz) a credible test result

ATTERBERG LIMITS

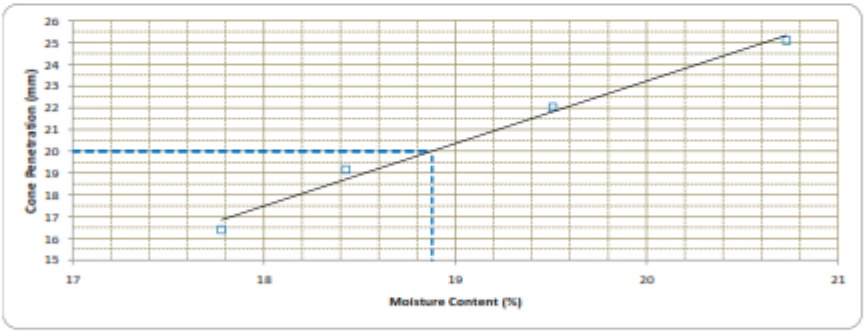
Liquid limit, Plastic limit, Linear Shrinkage & Shrinkage Product

Form №	S04184 - 0B04508	BS 1377: Part 2: 1990

PROJECT	GROUND INVESTIGATION AT INALA BUS TERMINAL TABORA	
CLIENT	GEOPRIMOSI ENGINEERING LIMITED	CHECKED BY:
LOCATION	BH02 [1.00-2.00m] DS	DATE:
TESTED BY	SAUMU/HANNAY	
DATE SAMPLING	20-Aug-22 TESTING: 12-Sep-22	

Cone Penetration:

		LIQUID LIMIT												PLASTIC LIMIT	
TEST No.		1			2			3			4			1	2
Initial gauge reading	mm	0	0	0	0	0	0	0	0	0	0	0	0		
Final gauge reading	mm	16.5	16.4	16.3	19.3	19.2	19.0	21.8	22.0	22.3	25.0	25.0	25.3		
Average penetration	mm	16.4			19.2			22.0			25.1				
Moisture Determination:															
Moisture Container No.		O23			77			O13			H4				
Weight of Wet soil + Container	g	61.44			62.11			65.44			66.20				
Weight of Dry soil + Container	g	56.69			57.35			59.95			60.30				
Weight of Container	g	29.97			31.52			31.81			31.84				
Weight of Moisture	g	4.75			4.76			5.49			5.90				
Weight of Dry soil	g	26.72			25.83			28.14			28.46				
Moisture Content	%	17.8			18.4			19.5			20.7				
											Average:			NP	



Linear Shrinkage and Shrinkage Product:

Specimen No.	D1	Liquid Limit(whole number)%:	
Initial length, Lo	140		19
Oven-dried length, LD	138		
Linear Shrinkage , LS=100(1-LD/Lo)	1.4	Plastic Limit(whole number)%:	NP
Shrinkage Product , SP=LS*%<425µm		Plasticity Index	NP

Comments:

Signed by (Materials Engineer / Manager)	Received by:

C-Labs(Tz) — a credible test result

CIVIL ENGINEERING LABORATORY
DAR ES SALAAM
TANZANIA

C-Labs(Tz) — a credible test result

ATTERBERG LIMITS

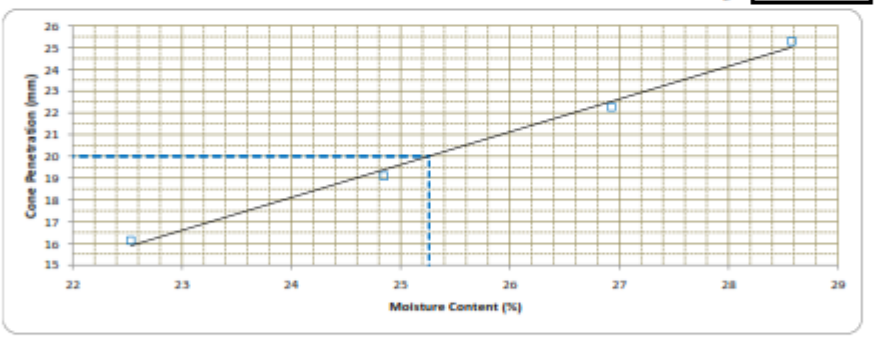
Liquid limit, Plastic limit, Linear Shrinkage & Shrinkage Product

Form №	S04184 - 0B04509	BS 1377: Part 2: 1990

PROJECT	GROUND INVESTIGATION AT INALA BUS TERMINAL TABORA	
CLIENT	GEOPRIMOSI ENGINEERING LIMITED	CHECKED BY:
LOCATION	BH02 [2.00-4.00m] DS	DATE:
TESTED BY	SAUMU/HANNAY	
DATE SAMPLING	20-Aug-22 TESTING: 12-Sep-22	

Cone Penetration:

		LIQUID LIMIT												PLASTIC LIMIT	
TEST No.		1			2			3			4			1	2
Initial gauge reading	mm	0	0	0	0	0	0	0	0	0	0	0	0		
Final gauge reading	mm	16.2	16.0	16.2	19	19.2	19.1	22.4	22.2	22.2	25.3	25.2	25.4		
Average penetration	mm	16.1			19.1			22.3			25.3				
Moisture Determination:															
Moisture Container No.		AA			MH			KI			Y				
Weight of Wet soil + Container	g	60.88			64.55			65.10			67.25				
Weight of Dry soil + Container	g	55.22			57.22			57.77			59.02				
Weight of Container	g	30.10			27.72			30.55			30.22				
Weight of Moisture	g	5.66			7.33			7.33			8.23				
Weight of Dry soil	g	25.12			29.50			27.22			28.80				
Moisture Content	%	22.5			24.8			26.9			28.6				
											Average:			NP	



Linear Shrinkage and Shrinkage Product:

Specimen No.	H	Liquid Limit(whole number)%:	
Initial length, Lo	140		25
Oven-dried length, LD	138		
Linear Shrinkage , LS=100(1-LD/Lo)	1.4	Plastic Limit(whole number)%:	NP
Shrinkage Product , SP=LS*%<425µm		Plasticity Index	NP

Comments:

Signed by (Materials Engineer / Manager)	Received by:

C-Labs(Tz) a credible test result	CIVIL ENGINEERING LABORATORY DAR ES SALAAM TANZANIA	C-Labs(Tz) a credible test result

ATTERBERG LIMITS

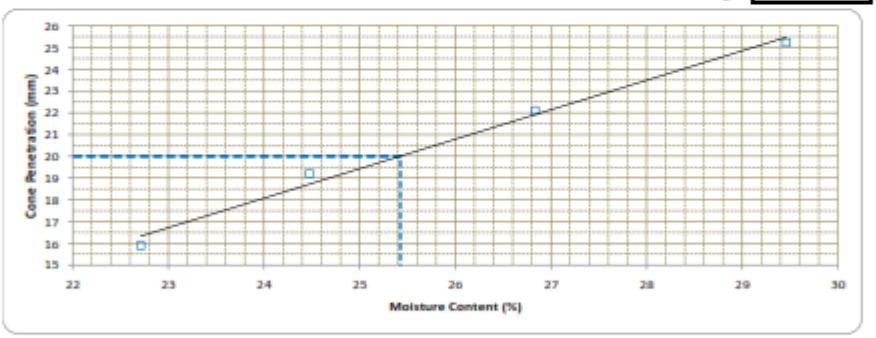
Liquid limit, Plastic limit, Linear Shrinkage & Shrinkage Product

Form №	S04184 - 0B04510	BS 1377: Part 2: 1990

PROJECT	GROUND INVESTIGATION AT INALA BUS TERMINAL TABORA	
CLIENT	GEOPRIMOSI ENGINEERING LIMITED	CHECKED BY:
LOCATION	BH03 [2.00-4.00m] DS	DATE:
TESTED BY	SAUMU/HANNAY	
DATE SAMPLING	20-Aug-22 TESTING: 12-Sep-22	

Cone Penetration:

		LIQUID LIMIT												PLASTIC LIMIT	
TEST No.		1			2			3			4			1	2
Initial gauge reading	mm	0	0	0	0	0	0	0	0	0	0	0	0		
Final gauge reading	mm	15.8	15.9	16.0	19.1	19.2	19.3	22	22.1	22.2	25.0	25.2	25.5		
Average penetration	mm	15.9			19.2			22.1			25.2				
Moisture Determination:															
Moisture Container No.		ZQ2			PR			BD			T				
Weight of Wet soil + Container	g	62.76			72.13			68.23			63.78				
Weight of Dry soil + Container	g	56.83			64.21			60.48			56.07				
Weight of Container	g	30.72			31.85			31.60			29.90				
Weight of Moisture	g	5.93			7.92			7.75			7.71				
Weight of Dry soil	g	26.11			32.36			28.88			26.17				
Moisture Content	%	22.7			24.5			26.8			29.5				
											Average:			NP	



Linear Shrinkage and Shrinkage Product:

Specimen No.	IR	Liquid Limit(whole number)%:	
Initial length, Lo	140		25
Oven-dried length, LD	138		
Linear Shrinkage , LS=100(1-LD/Lo)	1.4	Plastic Limit(whole number)%:	NP
Shrinkage Product , SP=LS*%<425µm		Plasticity Index	NP

Comments:

Signed by (Materials Engineer / Manager)	Received by:

C-Labs(Tz) a credible test result	CIVIL ENGINEERING LABORATORY DAR ES SALAAM TANZANIA	C-Labs(Tz) a credible test result

ATTERBERG LIMITS

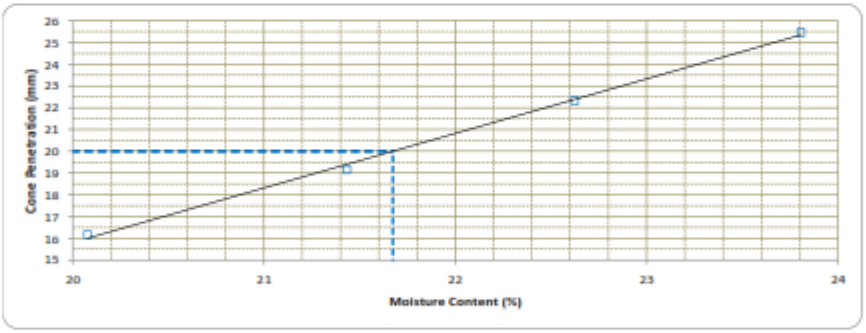
Liquid limit, Plastic limit, Linear Shrinkage & Shrinkage Product

Form №	S04184 - 0B04511	BS 1377: Part 2: 1990

PROJECT	GROUND INVESTIGATION AT INALA BUS TERMINAL TABORA	
CLIENT	GEOPRIMOSI ENGINEERING LIMITED	CHECKED BY:
LOCATION	BH03 [4.00-5.00m] DS	DATE:
TESTED BY	SAUMU/HANNAY	
DATE SAMPLING	20-Aug-22 TESTING: 12-Sep-22	

Cone Penetration:

		LIQUID LIMIT												PLASTIC LIMIT	
TEST No.		1			2			3			4			1	2
Initial gauge reading	mm	0	0	0	0	0	0	0	0	0	0	0	0		
Final gauge reading	mm	16.0	16.2	16.3	19.2	19.3	19.0	22.3	22.4	22.3	25.5	25.5	25.4		
Average penetration	mm	16.2			19.2			22.3			25.5				
Moisture Determination:															
Moisture Container No.		M3			A			99			BH				
Weight of Wet soil + Container	g	61.76			64.66			62.75			68.10				
Weight of Dry soil + Container	g	56.62			58.14			56.99			60.67				
Weight of Container	g	31.02			27.72			31.53			29.46				
Weight of Moisture	g	5.14			6.52			5.76			7.43				
Weight of Dry soil	g	25.60			30.42			25.46			31.21				
Moisture Content	%	20.1			21.4			22.6			23.8				
												Average:		NP	



Linear Shrinkage and Shrinkage Product:

Specimen No.	O5	Liquid Limit(whole number)%:	
Initial length, Lo	140		22
Oven-dried length, LD	138		
Linear Shrinkage , LS=100(1-LD/Lo)	1.4	Plastic Limit(whole number)%:	NP
Shrinkage Product , SP=LS*%<425µm		Plasticity Index	NP

Comments:

Signed by (Materials Engineer / Manager)	Received by:

APPENDIX E:

BULK DENSITY OF ROCK TEST RESULTS

Dar es Salaam Institute of Technology
Civil Engineering Department
Materials Testing Laboratory

BULK DENSITY FOR ROCK CORE SPECIMEN

Client: Geoprimosi Engineering Limited
Project: Ground Investigation at Inala Bus Terminal - Tabora
Location: Tabora
Test Type: Bulk Density
Operator: A.Mathew
Date: 22.08.2022

Description of Rock Samples:

BH ID	Sample ID	Depth(m)	Mass of sample(g)	volume of sample (cm^3)	Bulk Density(g/cm^3)
BH 01	1	3.2 - 4.00	160.67	62.0	2.59
BH 02	1	4.5 - 5.00	89.60	34.8	2.57

Test Technician: Annasai Mathew
Checked by: .....
Zuhura N. Mkindi
Certified by: .....
C.Eng Julius Z. Chacha
Head of Material Testing Laboratory.

ENGINEERS REGISTRATION BOARD
TANZANIA
DAR-ES-SALAAM INSTITUTE OF TECHNOLOGY
P.O.Box 2958 - DAR-ES-SALAAM
Material Testing Laboratory No. 006 L
SIGN ..... DATE 15/11/2022

APPENDIX F:

UNIAXIAL COMPRESSION STRENGTH TEST (UCS)

Dar es Salaam Institute of Technology
Civil Engineering Department
Materials Testing Laboratory

UNIAXIAL COMPRESSIVE STRENGTH TEST OF ROCK SAMPLES

Client: Geoprimosi Engineering Limited
Project: Ground Investigation at Inala Bus Terminal - Tabora
Location: Tabora
Test Type: UCS
Operator: A.Mathew
Date: 04.08.2022

Description of rock Samples:

BH NO.	Sample ID	Depth(m) H	Length (mm) L	Diameter (m) D	Area(m^2) A	Volume(mm^3) V	Ratio L/D	Max. Load at failure (kN)	Compressive strength (MPa)
BH 01	1	3.2 - 4.00	124.00	0.062	3.0E-03	3.7E+05	2.00	24.084	7.98
BH 02	1	4.5 - 5.00	166.00	0.083	5.4E-03	9.0E+05	2.00	133.158	24.623

Test Technician: Annasai Mathew
Checked by: .....
Zuhura N.Mkindi
Certified by: .....
C.Eng Julius Z. Chacha
Head of Material Testing Laboratory.

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Material Testing Laboratory No. 906 L
SIGN ..... DATE 15/11/2022

APPENDIX G

CALCULATION SHEET

REF	CALCULATIONS	OUTPUT

BEARING CAPICITY - PAD FOUNDATION FOR DRAINED CONDITION

Assumptions

- Loading is under drained condition
- The foundation is a pad foundation
- Pad foundation minimum depth 1.5m and maximum depth of 2m
- Factor of safety is 3

Soil parameter

- To be conservative all calculation considered water table is at the surface

Energy ratio as suggested by Skempton (1986) stated by Barnes (2000).

$$C_E = \frac{\text{Energy delivery to rod}}{\text{Free fall energy}} = \frac{1}{60}$$

For automatic hammer

$$N_{60} = C_E = \frac{75}{60} = 1.25$$

The bearing capacity factors of rock taken from Vesic 1973, Peck, Hanson, and Thorburn (1970).

The bearing capacity of spread foundation was obtained using the following equation.

$$q_{ult} = cNcF_{cs}F_{cd}F_{ci} + qN_qF_{qs}F_{qd}F_{q_i} + \frac{1}{2}\gamma BN_\gamma F_{\gamma s}F_{\gamma d}F_{\gamma_i}$$

Where

F_{cs} – shape factor correction
F_{cd} – depth factor correction
F_{ci} – inclination factor correction

In both cases no correction factors were applied.

$$\text{Net } q_{ult} = q_{ult} - q_o$$

REF	CALCULATIONS	OUTPUT

$$\text{Net } q_{all} = \frac{\text{Net } q_{ult}}{F}$$

1. Estimation of bearing capacity

Soil parameter

- The maximum effective cohesive strength of $0 \frac{kN}{m^2}$
- The average in situ unit weight of rock $\gamma = 18. \frac{kN}{m^2}$
- N-Values were correct for effective energy ratio and overburden pressure

Estimation of allowable Bearing Capacity of soil, B = 1.5m and D = 1.5m – Drained condition

Parameter	Value
φ`(Degree)	40
γ_w (kN/m^3)	9.81
L (m)	1.5
B (m)	1.5
Load at Foundation level (kN)	200
Base Area (m^2)	2.25
Applied Pressure or Action (kN/m^2)	88.88888889
B/L	1
s_q*N_q-1	104.4669645
N_q-1	63.2
S_c=(s_q*N_q-1)/(N_q-1)	1.6529583
Sin(phai)	0.64278761
s_q=1+B/L*sin(phai)	1.64278761
s_γ =1-0.3*B/L	0.7
F.S (Unitless)	3
D (m)	1.5
γ (kN/m^3)	18
Nγ (Unitless)	79.5
Nq (Unit less)	64.2
Nc (Unitless)	75.3
c (kN/m^2)	0

REF	CALCULATIONS	OUTPUT

c*Nc (kN/m^2)	0
sq*(γ-γ$_w$)*D*Nq (kN/m^2)	1295.661659
sγ*Nγ*B*γ (kN/m^2)	683.66025
γ` = γ-γ$_w$ (kN/m^2)	8.19
q$_{ult}$ (kN/m^2)	1979.321909
ρ$_o$ (kN/m^2)	27
Net q$_{ult}$ (kN/m^2)	1952.321909
q$_a$ (kN/m^2)	650.7739698

Estimation of allowable Bearing Capacity of soil, B = 1.5m and D = 2.0m – Drained condition

Parameter	Value
φ`(Degree)	40
γ$_w$ (kN/m^3)	9.81
L (m)	1.5
B (m)	1.5
Load at Foundation level (kN)	200
Base Area (m^2)	2.25
Applied Pressure or Action (kN/m^2)	88.88888889
B/L	1
s$_q$*N$_q$-1	104.4669645
N$_q$-1	63.2
S$_c$=(s$_q$*N$_q$-1)/(N$_q$-1)	1.6529583
Sin(phai)	0.64278761
s$_q$=1+B/L*sin(phai)	1.64278761
s$_γ$ =1-0.3*B/L	0.7
F.S (Unitless)	3
D (m)	2
γ (kN/m^3)	18
Nγ (Unitless)	79.5
Nq (Unit less)	64.2
Nc (Unitless)	75.3
c (kN/m^2)	0

REF	CALCULATIONS	OUTPUT

c*Nc (kN/m^2)	0
sq*(γ-γ$_w$)*D*Nq (kN/m^2)	1727.548879
sγ*Nγ*B*γ (kN/m^2)	683.66025
γ` = γ-γ$_w$ (kN/m^2)	8.19
q_{ult} (kN/m^2)	2411.209129
ρ_o (kN/m^2)	36
Net q_{ult} (kN/m^2)	2375.209129
q_a (kN/m^2)	791.7363764

SETTLEMENT FROM SPT - N - VALUES DATA

Uses an average SPT - N - Value below foundation at a depth between 1.5B

$$\rho_{max} = q(0.035B^{0.3})$$

$$\rho_{max=200(0.035x1.5^{0.3}}$$

Settlement = 7.9mm

Sheet 4

APPENDIX H

SOIL AND ROCK PROFILE - PHOTOS

INALA BUS TERMINAL TABORA – BH 01

SOIL PROFILE PHOTO-PRESENTATION

BH: 01: 0.00m – 5.00m

INALA BUS TERMINAL TABORA – BH 02 (BOARDIG AREA)

SOIL PROFILE PHOTO-PRESENTATION

BH: 02: 0.00m – 5.00m

INALA BUS TERMINAL TABORA – BH 03 (STAIR AREA)

SOIL PROFILE PHOTO-PRESENTATION

BH: 03: 0.00m – 5.00m

Appendix X: Urban Design, Architectural and Landscape Design Report

INTRODUCTION

Detailed Design Stage

The objective of this stage, is to produce drawings and the related documents needed to facilitate the implementation of the identified projects following the completion of the earlier stages of the project process for the subprojects for Market and Bus Terminal.

The documents have been produced inclusive of inputs from the stake holders on the following factors:

Client/user requirements, People's needs, Physical context, Social economic status, Cultural context, Master plan Guidance, Acts and regulations, Macro and Micro Climate, relevant studies and other Investigations like Topographical and Geotechnical Surveys.

General information

The Government of Tanzania (GoT) has engaged Crown TECH-Consult Ltd (CTC) of Tanzania in Joint venture with Pan Arab Consulting Engineers of Kuwait (PACE) to prepare feasibility studies, urban design, detailed engineering designs, environmental and social instruments, and bidding documents for a pipeline of investments in 4 municipalities. This assignment is one of three consultancies to design the first phase of investments under the proposed World Bank-financed Tanzania Cities Transforming Infrastructure and Competitiveness Project (TACTIC), implemented through the Tabora Municipal Council .The assignment is intended to be an international good practice example of urban development that enhances economic productivity and job growth, inclusiveness, and builds resilience to hazards.

General Description

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 the 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 Authority (LGAs) spread geographically across all regions of Tanzania, ranging in population from 26,402 to 416,442 (2012), divided into three tiers based on population and growth rate. Figure 1 presents a map of all municipalities included under TACTIC.

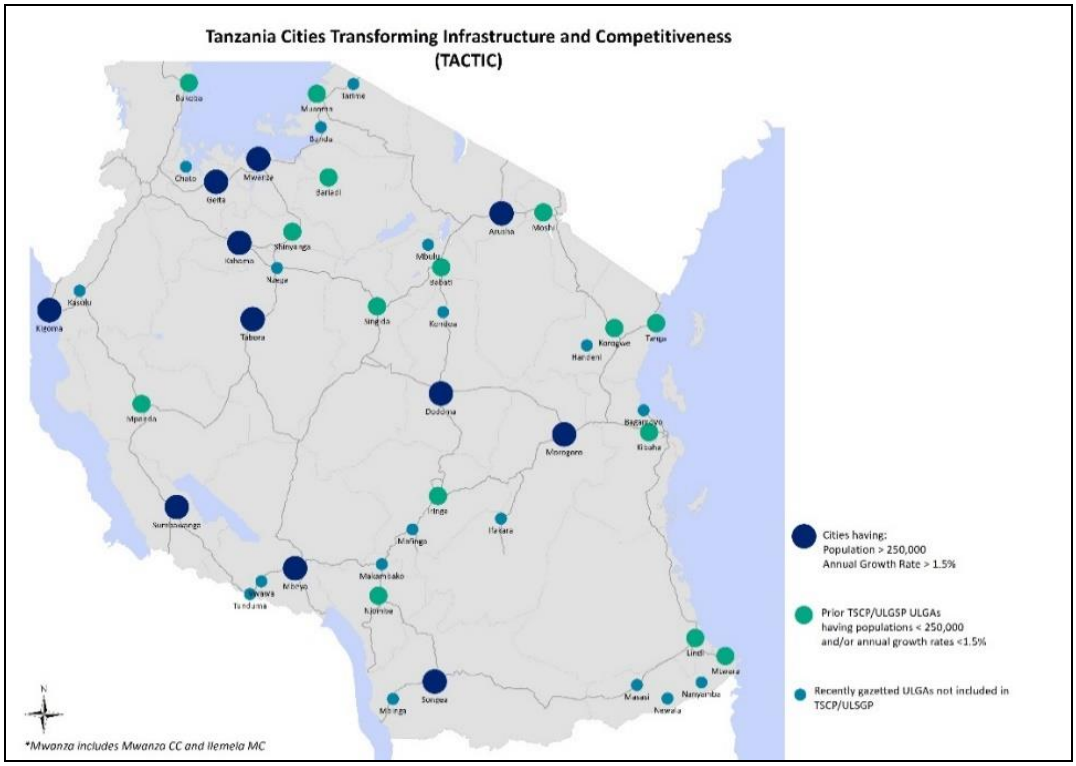


***Figure 1**: Presents a map of all municipalities included under TACTIC.*

The first tier of 12 larger, fast-growing LGAs are included in the initial phase of infrastructure design and implementation (indicated in the larger purple dots in Figure 1 above), a subset of which is the focus of this Terms of Reference.

The theory of change underlying this project is that strengthening urban management will ensure the efficiency and sustainability of prioritized infrastructure and therefore enhance the productivity, liability, and resilience of strategically important cities in Tanzania. Urban management will be strengthened by leveraging ICT to enforce the implementation of land use plans and increase own-source revenue collection, using performance-based contracts to improve service provision in solid waste management, sanitation, and drainage, and mainstreaming urban resilience. Strengthening urban management functions will require local governments to take on increasing responsibilities for the coordination of planning, implementation of plans, and operations and maintenance; and the national government providing policy and regulatory frameworks, supervision, monitoring, and enforcement. The project will implement basic infrastructure and services in participating urban local government authorities and improve the capacities of these local government institutions to plan, implement and maintain infrastructure and services in the longer term.

To date, the first tier of 12 LGAs has developed infrastructure investment proposals in line with the TACTIC objectives, which are at various stages of design and environmental and social due diligence. The LGAs led the process for the selection of investments to be developed through consultations with stakeholders within their jurisdiction. Identification of relevant stakeholders was guided by stakeholder engagement plans and subsequent meetings and focus group discussions were held. Proposed infrastructure investments were then discussed through municipal council committees and finally approved by the council.

Scope of Architectural Works

This report covers the following:

I. Architectural Detailed Design of Bus Terminal at Inala, Ndevelwa District.

II. Architectural Detailed Design of Market at Soko kuu (CBD).

SITE VISITATION AND DATA COLLECTION

Introduction

The visit by the Consultant's team was conducted for the purpose of making an inventory survey of the project Sites in order to familiarize the Consultant with all necessary information required for the assignment as well as awareness of the site condition. The Consultant therefore had a clear picture of what the projects look like in terms of terrain, topography, drainage and the general condition of the urban connectivity.

Therefore, among activities which was done by consultant, during subprojects site visit was conducting meetings with stakeholders and brief them on the Project, and as required in the TOR design approach Requirements from the grass route stakeholders were collected, for Markets, Minibus stand and Lorry Park. The aim of consulting stakeholders to all levels were

i. Informing stakeholders
ii. Gaining their views, concerns, and values
iii. Taking account of public inputs in decision making
iv. Influencing project design
v. Obtaining local knowledge.

Summary of the Stakeholder's Requirements

Market Requirements

1. Old market should be maintained.
2. Fish butcher should be separated from other activities.

3. Enough parking should be provided.
4. Circulation movement should fairly to disabled and elders.
5. Baby sitter room and women room should be available.
6. Design of the new market should be similar to existing.

Bus Terminal Requirements

1. Circulation movement should fairly to disabled and elders.
2. Regional bus slots should be more than 20.
3. Bank services should be available
4. Workshop should be available
5. Emergency room should be at the terminal
6. Women room and baby feeding room should be at the terminal

Other groups of Stakeholders consulted included government agencies and other beneficiaries, including; -

i. TUWASA TABORA
ii. TTCL TABORA
iii. TANROADS TABORA
iv. TANESCO TABORA
v. Fire and rescue force TABORA

DESIGN APPROACH

Introduction

The urban, architectural and landscape design has provided basic services as well as improve infrastructure, economic opportunities, mobility, quality of life and enhance urban resilience. The final results have been highly derived by the desire and comments from the end user as per data obtained from the field.

TACTIC (zone 1) projects include markets, bus stands, bus terminals, roads and bridges, storm water drains and improvement of a pond. The Final Urban, Architectural and Landscape report comprises: the description of the location of the markets, bus terminals, bus stands and other architectural elements within the surrounding urban fabric and how they connect to other critical facilities nearby. Each sub project for each LGA is then described in terms of its urban and architectural features inclusive of the detailed designs for each.

Detailed Design

The location of the two sub-projects of Tabora, namely the Market and Bus terminal are as shown in the figure below. Also shown other features including the Airport, SGR proposed station, main road and rail line to and from Tabora.

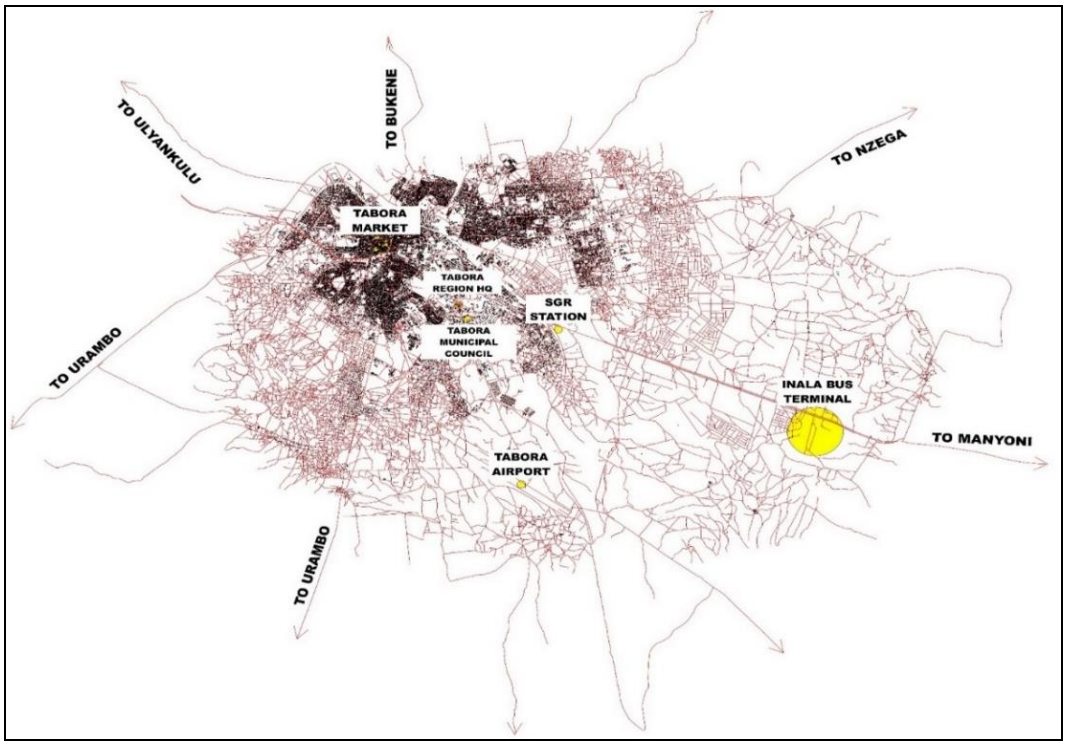
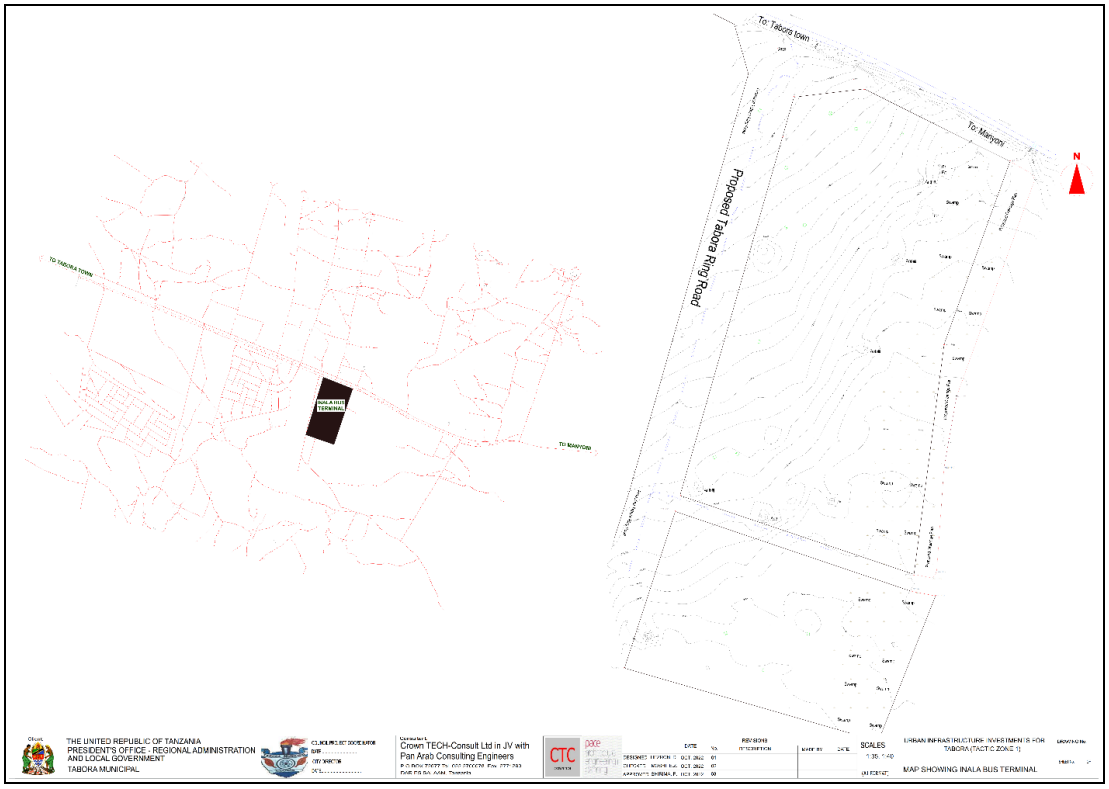


Figure 2: *Shows two sub-projects in connections with other features.*

Bus Terminal at Inala, Ndevelwa District

A. Location and Topography



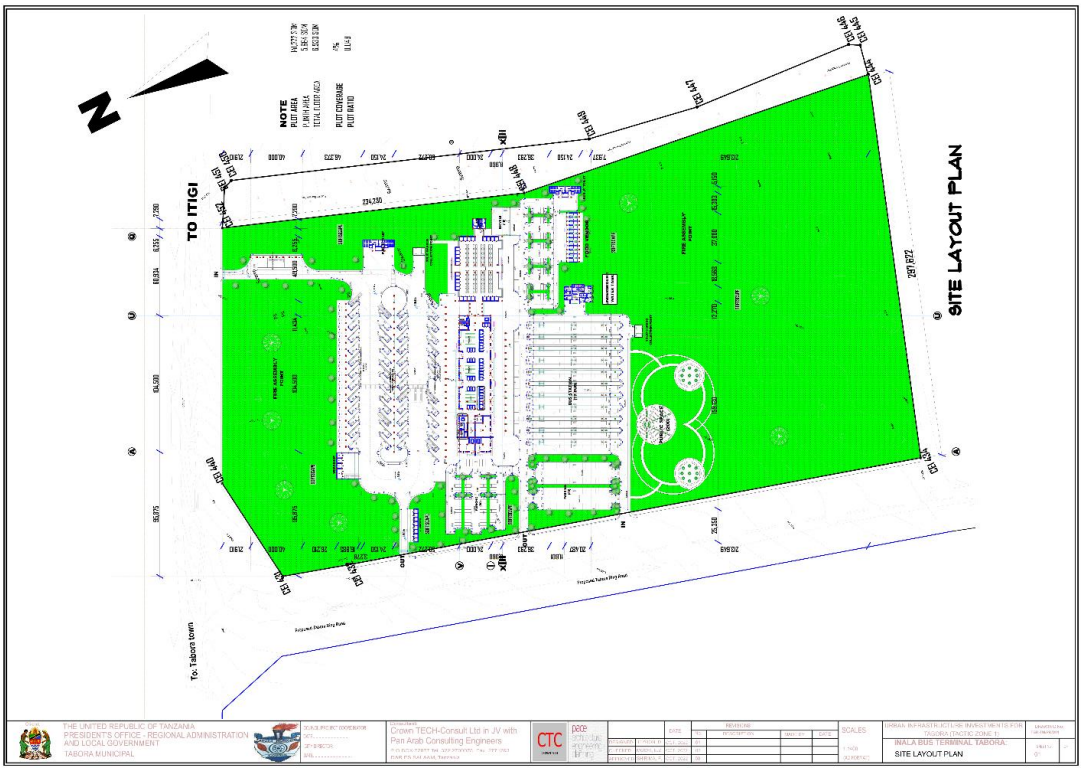


Figure 3: *Shows site location.*

Architectural Features and Elements

The approach was been taken for the design of the Inala Bus terminal building aims was creating simple structural elements but with strong morphological identity that enhances the sense of an important place of the city.

Figure 4: *Shows the architectural design for the Inala Bus Terminal Building.*

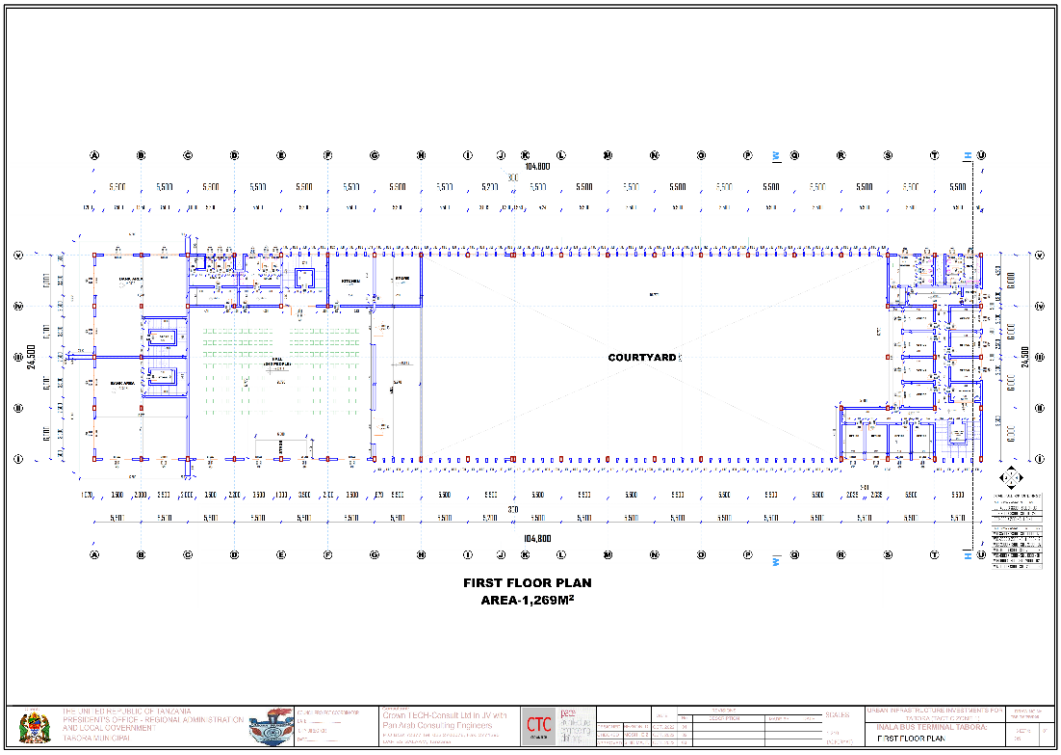
B. Street lights, power lines, storm water drainage

Solar powered street lights have been provided for the circulation spaces to give assured light during the night to improve security of the area. To avert flooding, storm water channels are directed to the main roads for efficient disposal and on the rear side of the building the storm water are directed to the nearby channels (see service details drawing). The paved areas are slope gently towards the channels to maintain clean surfaces without ponds.

Figure 5: *Shows street light.*

C. Open Spaces and vegetation

To enhance a green character of Tabora, the site is subdivided into its various zones using trees which are create urban rooms for the different functional zones. In addition to the urban rooms the main streets are lined up with trees creating urban corridors for the movement of both the vehicles and pedestrians.



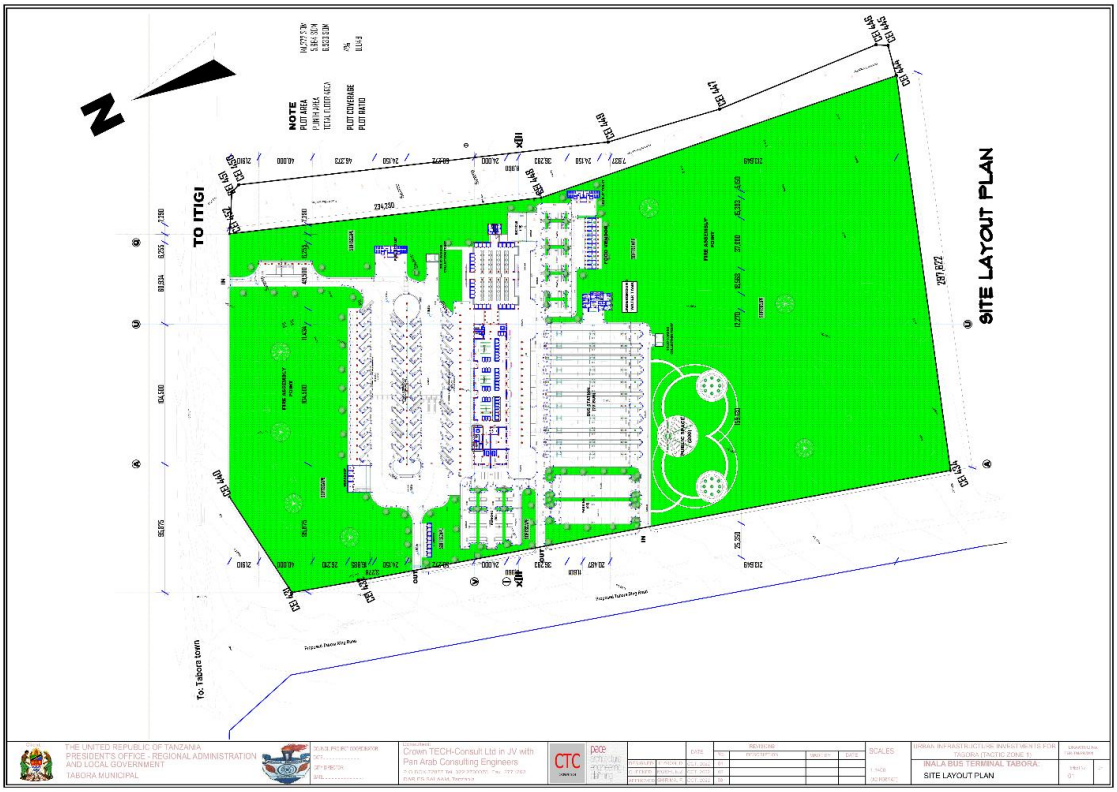


Figure 6: *Shows open spaces and vegetation.*

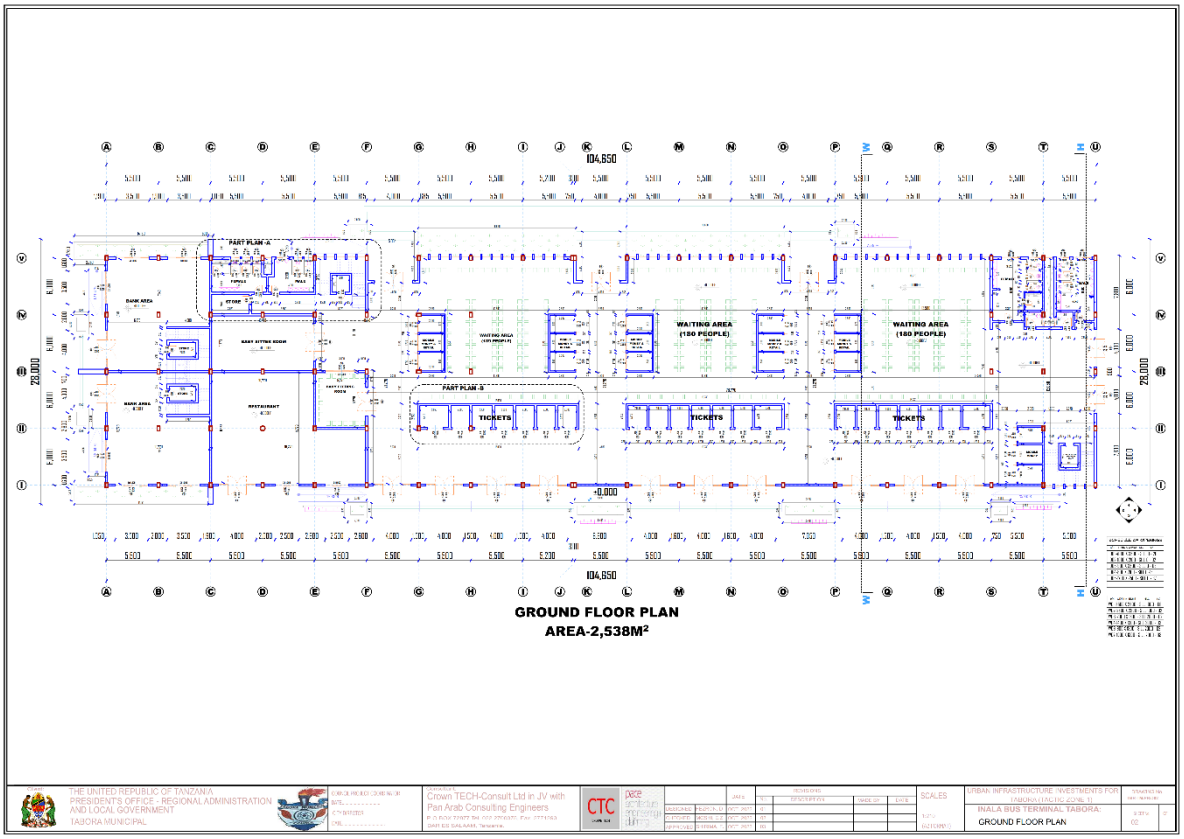
D. Environmental protection/preservation

All unbuilt areas are provided with vegetation to hold the soil together as well as creating positive visual character. To enhance the environment, garbage collection spaces are designated to specific areas that can be controlled by the Authorities. Space are provided near the collection place for entrepreneurs who would like to add value to the garbage through re-cycling, mature production and the like. On the other hand, sewerage systems will be as per engineering designs.

Figure 7: *Shows garbage collection point.*

E. Social Spaces, Spaces for formal and informal economic activities

The space organization of the terminal building provides not only movement spaces to and fro the buses but also includes lobbies for informal interactions well as formal spaces for the provision of social services. It is also anticipated that some of the spaces can be temporarily allocated to petty traders.



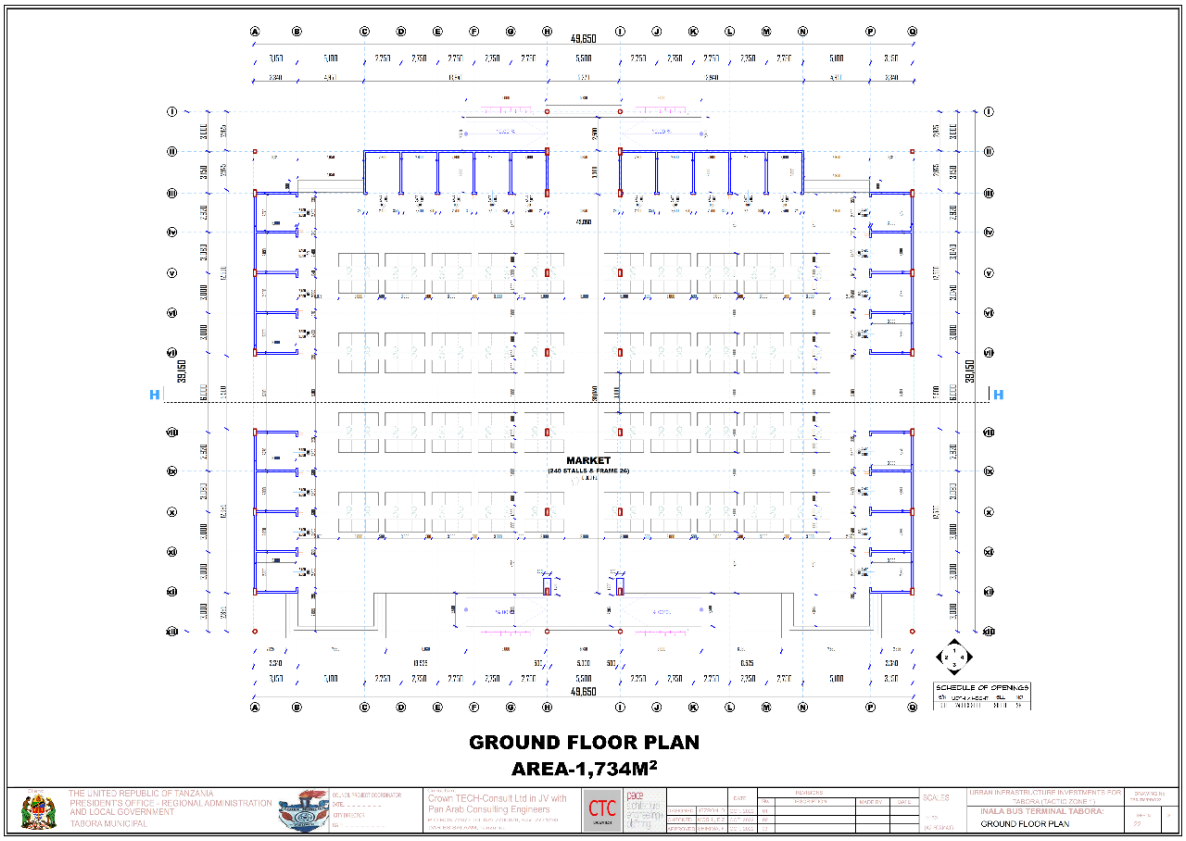


Figure 8: *Shows the architectural design for ground floor Plan at the Inala Bus Terminal*

F. Signage type and positioning

In the architectural and engineering detail design, consideration is given to all the needed signage to direct people and vehicles to and from the bus terminal. These are lighted or provided with sufficient light for proper viewing as appropriate.

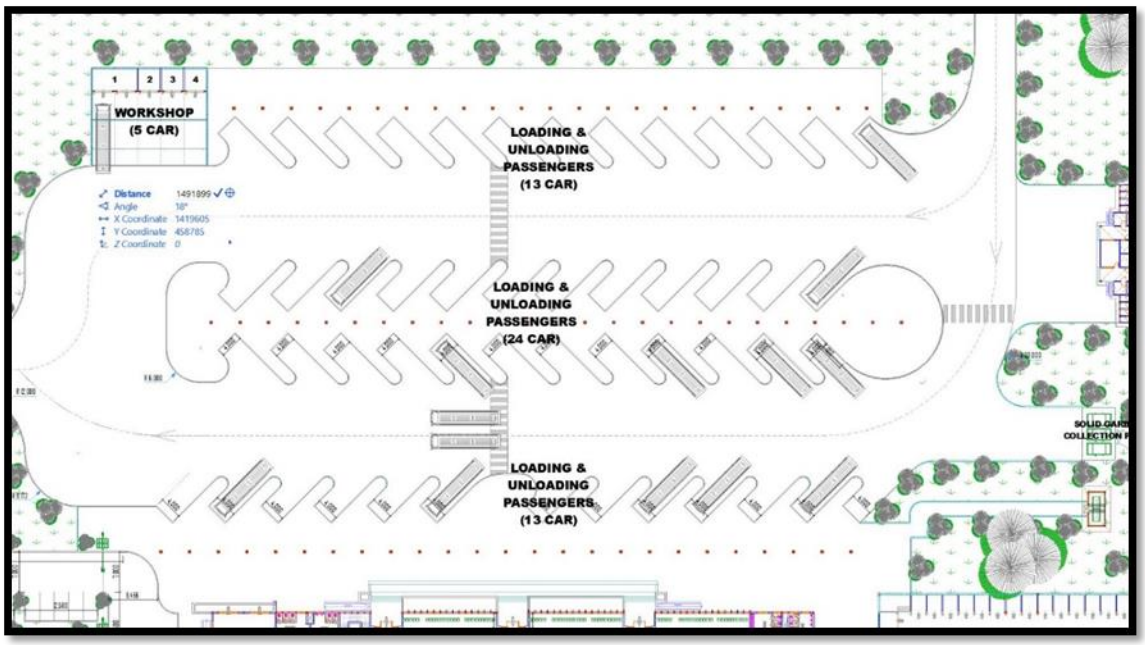


Figure 9: *shows the signage type and positioning at the Inala Bus Terminal*

Architectural Design

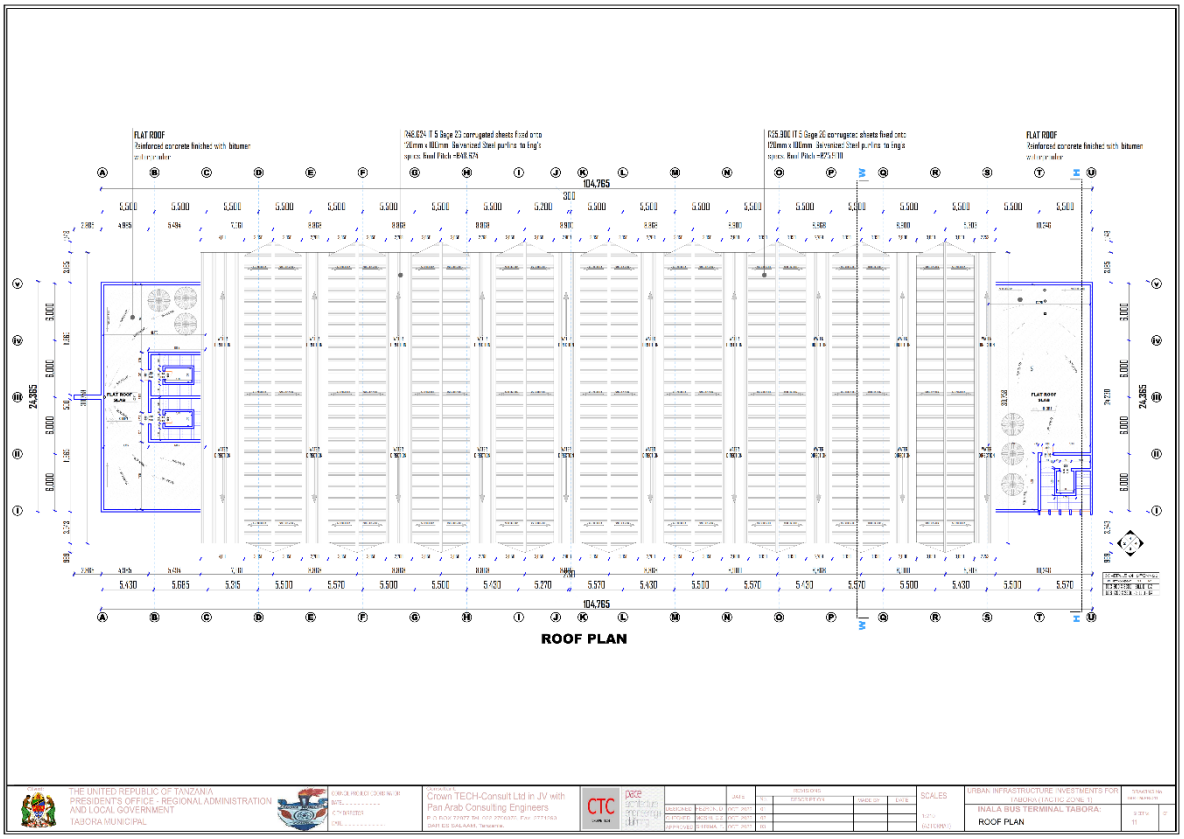
A. Aesthetics and design elements (morphology, views etc.)

The architecture of the terminal building comprise light building elements arranged horizontally between two vehicular and pedestrian movement spaces with the interior spaces visible from outside thus visually linking both the indoor and outdoor activities. Large roof overhangs have been adopted to protect the external envelope from rain and sun rays at the same time providing pedestrian movement corridors. The major spaces are organized into two major zones, one serving the city commuter buses and the other serving the inter regional buses.

Figure 10: *shows image of the terminal building at the proposed Inala Bus Terminal*

B. Climatic and Environmental considerations

The building which has adopted a linear form is oriented with its main elevations facing the access roads. Large roof overhangs provide sun shading while the large window/glass panels and openings provide the needed day lighting into the indoor spaces. Rain water is collected through gutters and collected for various uses including reserve for firefighting.



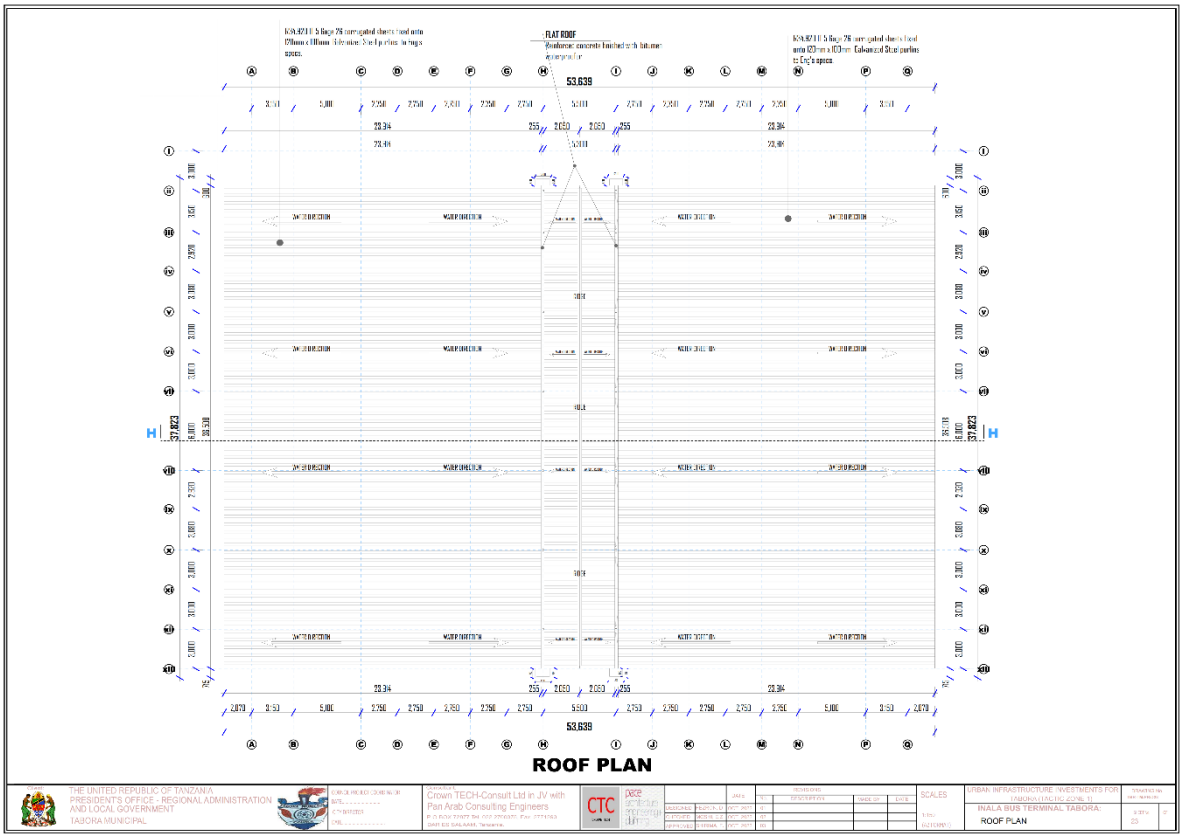
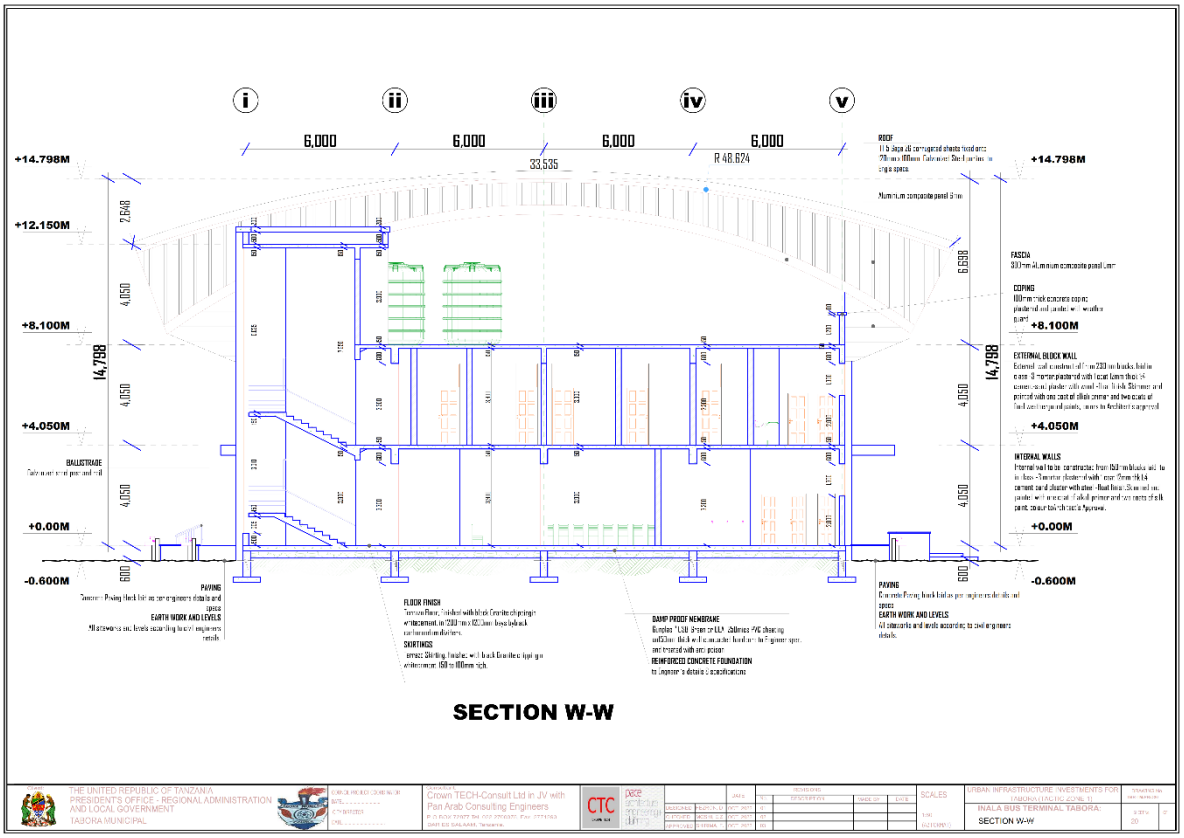


Figure 11: *Shows the roof overhang from the building.*

C. Structural considerations

The structural system adopted is of columns beams and slab frame providing the possibility for large openings and flexible subdivision of the functional spaces that allows for multiple space options.



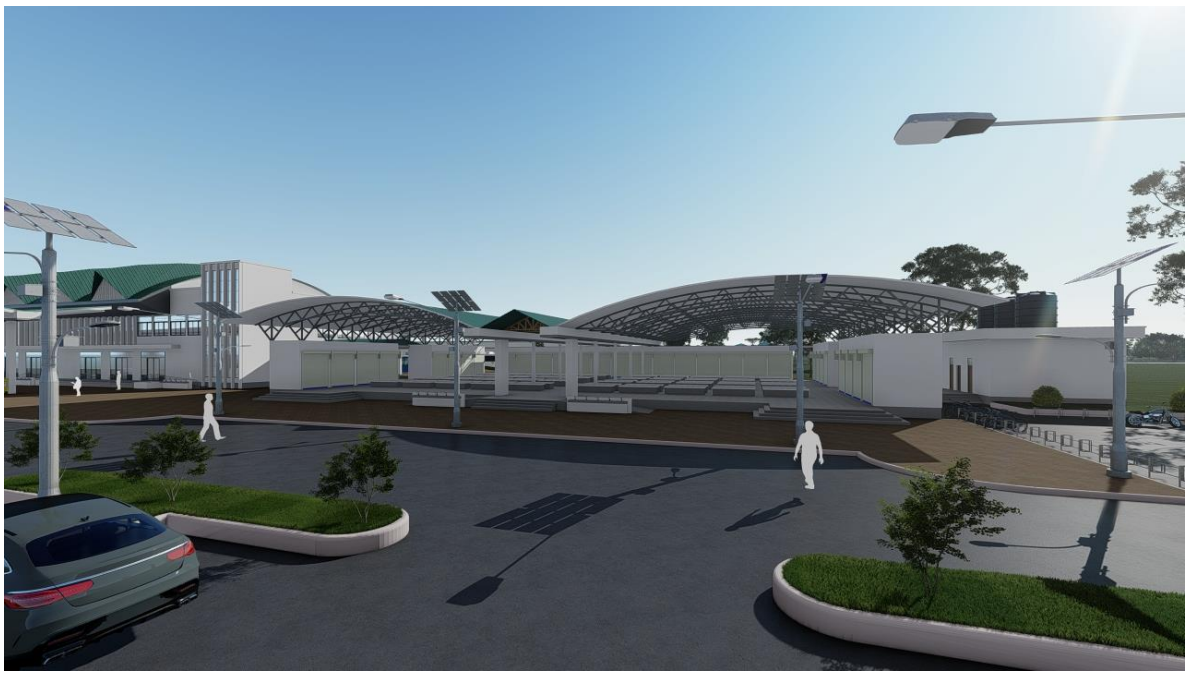
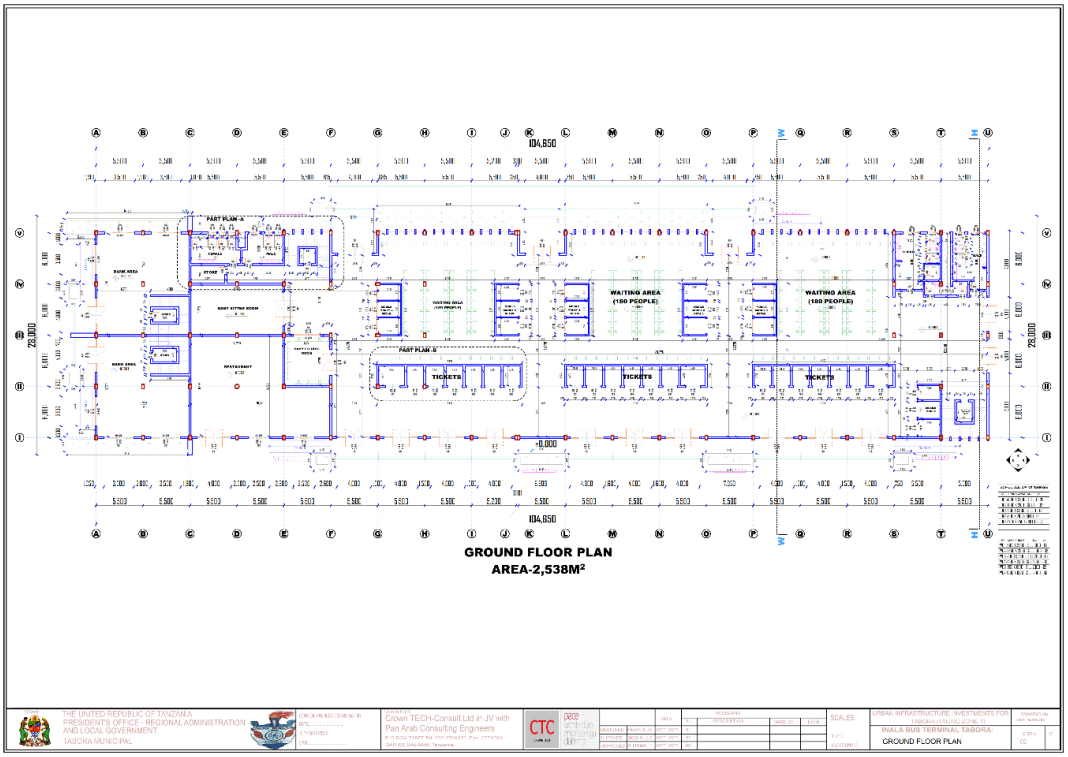


Figure 12: *Shows structural elements.*

D. Spatial Organization, accessibility, circulation

The terminal building provides the central movement linkage for pedestrians between different arrival and departure spaces along its spine form. Vertical movement is provided through stairs to the first floor.



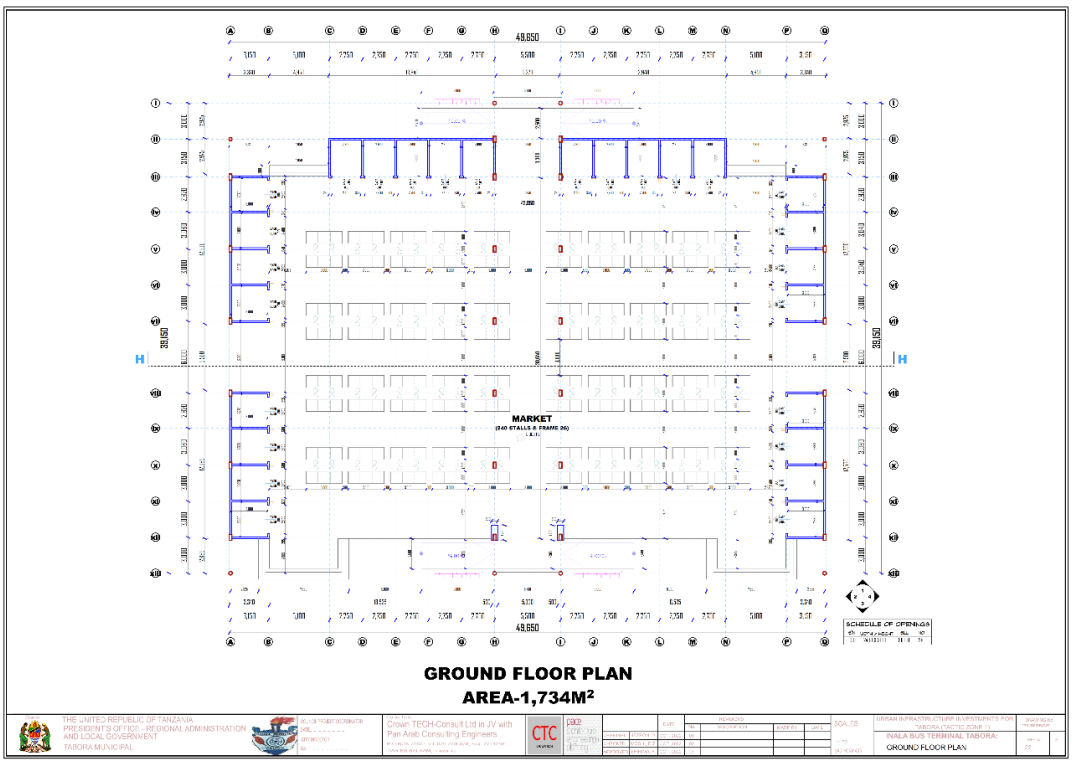


Figure 13: *Shows spatial organization.*

E. Schedule of Accommodation

The schedule of areas provided are detailed in the drawings which are submitted under a separate cover. The main areas include: …

-usable area-5,742 SQM

-percentage of circulation area -24.5%

-soft landscaping coverage area-87,549 SQM

-hard landscape coverage area-34,641 SQM

BUS TERMINAL SCHEDULE OF SPACES ACCOMMODATED

Sn	Space Name	Quantity	Total Area
1.	Loading and unloading Passengers (Bus)	51	6,696m^2
2.	Mobile shop and retail (Frame)	15	75m^2
3.	Market vizimba	160	240m^2
4.	Parking	243	7,475m^2
5.	Waiting area	1000	5,696m^2
6.	Market Frame	30	270m^2
7.	Bank area	2	440m^2
8.	Offices	11	110m^2
9.	Baby sitter room	20	62m^2
10.	Baby feeding room	22	30m^2
11.	Store	2	8m^2
12.	Restaurant (soft drink)	50	158m^2
13.	Hall	240	544m^2
14.	Ticket booth(office)	21	510m^2
15.	Public space	200	8,529m^2
16.	Food vender	96	376m^2
17.	Policy station	1	262m^2
18.	Toilet (wc)	46	624m^2
19.	Checkpoint (office)	8	72m^2
20.	Power house	1	12m^2
21.	Workshop	5	346m^2
22.	Station (Bus)	77	2,079m^2
23.	Solid garbage collection point	2	110m^2
24.	Hardscape	1	36,998m^2
25.	Softscape	1	87,869m^2
			160,676m^2

General schedule of Materials and Components

FINISH SCHEDULE AND SPECIFICATIONS

LOCATION	FLOOR & SKIRTING	WALLS	DOORS	WINDOWS	COLUMNS	WORKTOPS & STALLS	CEILING	ROOF	REMARKS
OFFICES/MARKET VENUES/TERMINAL WAITING LOBBY	-Terrazo Floor, finished with black Granite chippingin whitecement, in 1200mm x 1200mm bays byblack carborundum dividers. -Terrazo Skirting, finished with black Granite chippingin whitecement, 150 to 100mm high.	-Plastered and painted	Main doors-Hardwood doors (Tiki/ Mkongo)	Aluminium profile 8mm thick glass	-Plastered and painted -Tailoring Rendering		-Industrial ceiling finish (Exposed trusses with zinc chromite)	-IT 5 Gage 26 corrugated sheets IT 5 Gage 26 transparent/ polycarbonate corrugated sheets	
STAIRS / RAMP	-Rough Terrazo Floor, finished with black Granite chippingin whitecement, in 1200mm x 1200mm bays byblack carborundum dividers. -Rough Terrazo Skirting, finished with black Granite chippingin whitecement, 150 to 100mm high.		Main doors Hardwood doors (Tiki/ Mkongo)	Aluminium profile 8mm thick glass				-IT 5 Gage 26 corrugated sheets -IT 5 Gage 26 transparent/ polycarbonate corrugated sheets	
KITCHEN/PANTRY/DINING AREA	-Terrazo Floor, finished with black Granite chippingin whitecement, in 1200mm x 1200mm bays byblack carborundum dividers. -Terrazo Skirting, finished with black Granite chippingin whitecement, 150 to 100mm high.	200 x 400 x 6mm Glazed Ceramic wall tiles.	Main doors-Hardwood doors (Tiki/ Mkongo)	Aluminium profile 8mm thick glass		-Terrazo finished with black Granite chippingin whitecement.	-Industrial ceiling finish (Exposed trusses with zinc chromite)	-IT 5 Gage 26 corrugated sheets IT 5 Gage 26 transparent/ polycarbonate corrugated sheets	
SHOPS(CUBES)	-Terrazo Floor, finished with black Granite chippingin whitecement, in 1200mm x 1200mm bays byblack carborundum dividers. -Terrazo Skirting, finished with black Granite chippingin whitecement, 150 to 100mm high.	-Plastered and painted	Galvanised steel Roll shutter doors				-Industrial ceiling finish (Exposed trusses with zinc chromite)	-IT 5 Gage 26 corrugated sheets IT 5 Gage 26 transparent/ polycarbonate corrugated sheets	
WET AREAS(TOILETS & BATHROOMS) AND CHANGING ROOMS	200 x 200 x 6mm non slippery anti-skid Porcelain Tiles ,butt jointed at 45° non slippery anti-skid Porcelain Tiles	200 x 400 x 6mm Glazed Ceramic wall tiles.		Aluminium profile 8mm thick glass		-HWB-Concrete with ceramic tile finish	Cornice Gypsum and paint	-IT 5 Gage 26 corrugated sheets -IT 5 Gage 26 transparent/ polycarbonate corrugated sheets	

THE UNITED REPUBLIC OF TANZANIA
PRESIDENT'S OFFICE - REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT
TABORA MUNICIPAL
COUNCIL PROJECT COORDINATOR
DATE..............
CITY DIRECTOR
DATE..............
Consultant:
Crown TECH-Consult Ltd in JV with Pan Arab Consulting Engineers
DAR ES SALAAM, Tanzania.
CTC
DESIGNED | OCT. 2022
CHECKED | MOSHI E.Z | OCT. 2022
APPROVED | OCT. 2022
REVISIONS: No | DESCRIPTION | MADE BY | DATE
SCALES
URBAN INFRASTRUCTURE INVESTMENTS FOR TABORA (TACTIC ZONE 1)
INALA BUS TERMINAL TABORA:
MATERIAL SCHEDULE
54

Landscape design

A. Sustainable energy considerations

The approach adopted for landscape design appreciates the fact that our sites are in the tropical climate zone of the world. In this regard therefore, use of solar energy in terms of solar street lights and additional outdoor and security lights in coordination with the engineering design.

Rainwater harvesting has been incorporated in the roof designs for its collection and discharge into storage tanks. On the other hand, the management of rainwater on other surfaces are coordinated with the roads and pavement design for discharge into designated areas.

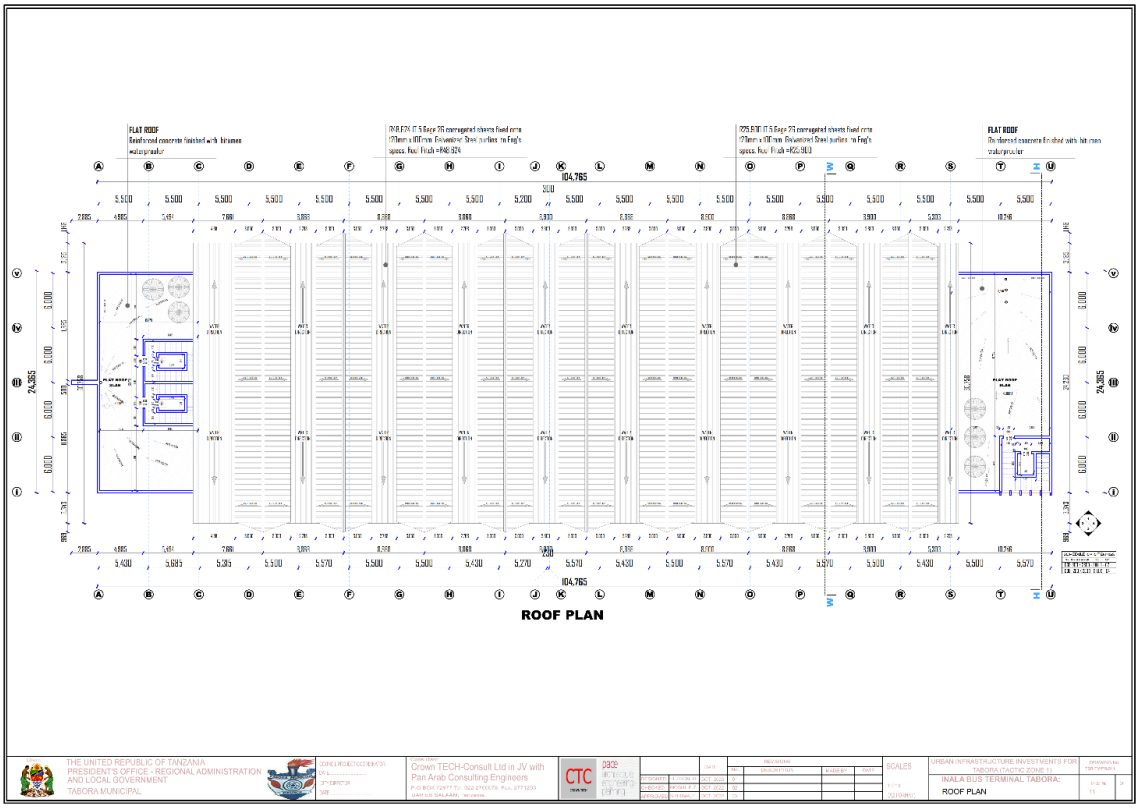


Figure 14: *Shows roof gutter.*

B. Soft and hard landscapes (percentages and environmental responsiveness)

Bus terminals, by their nature have large hard landscape areas in terms of parking roads and pavement areas. To create the needed balance, tree planting is organized in the detailed design to provide as much shading as possible and also to create the green character common to Tabora.

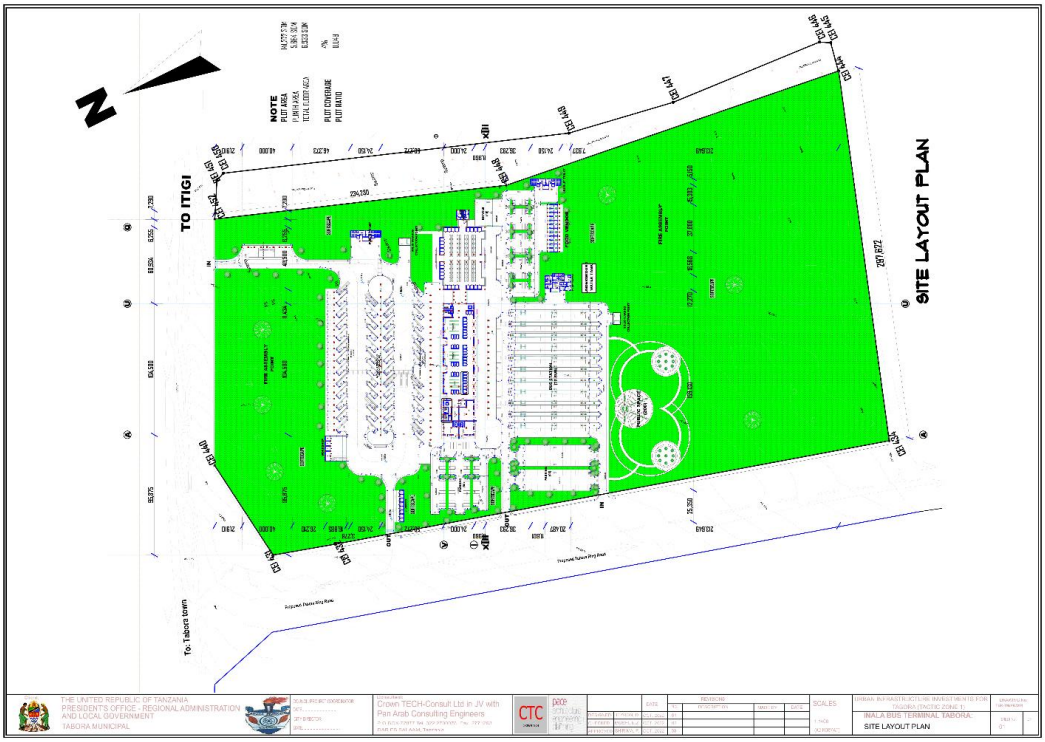


Figure 15: *Shows soft and hard landscape.*

C. Footpaths and Urban furniture

Footpaths are paved and lighted with solar power and are designed to include informal interaction spaces on their way.

Figure 16: *Shows footpath.*

D. Lighting systems, fire hydrants, fire assembly points

Lighting systems are provided into all outdoor functional and circulation spaces including the spaces allocated as fire assembly points.

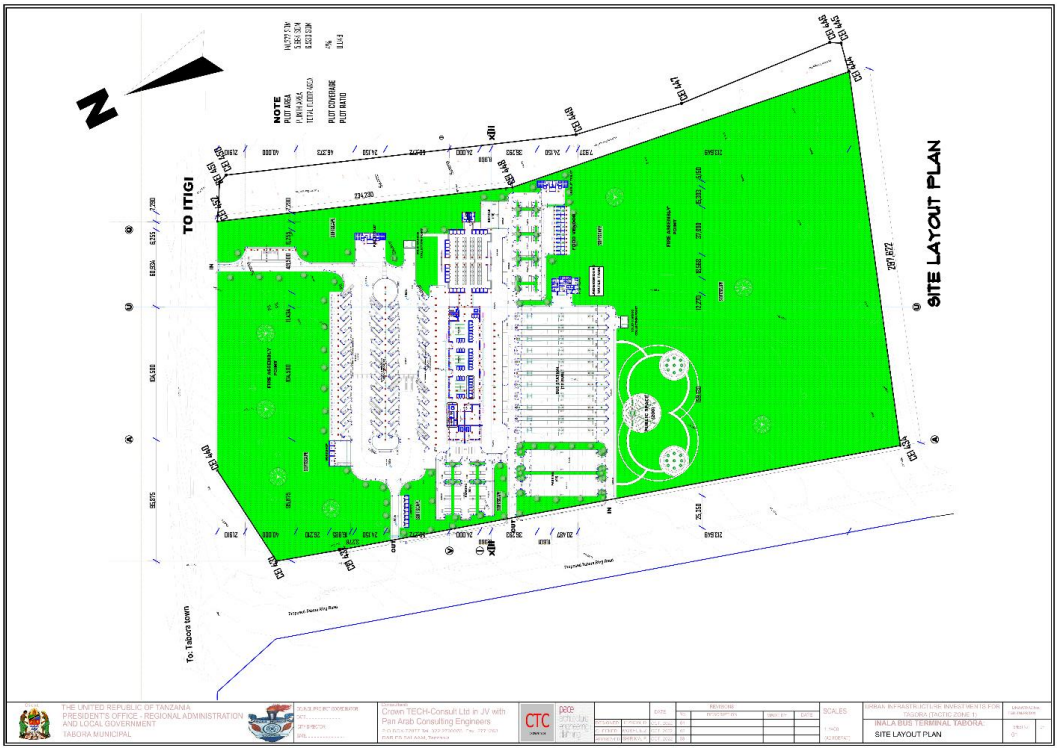
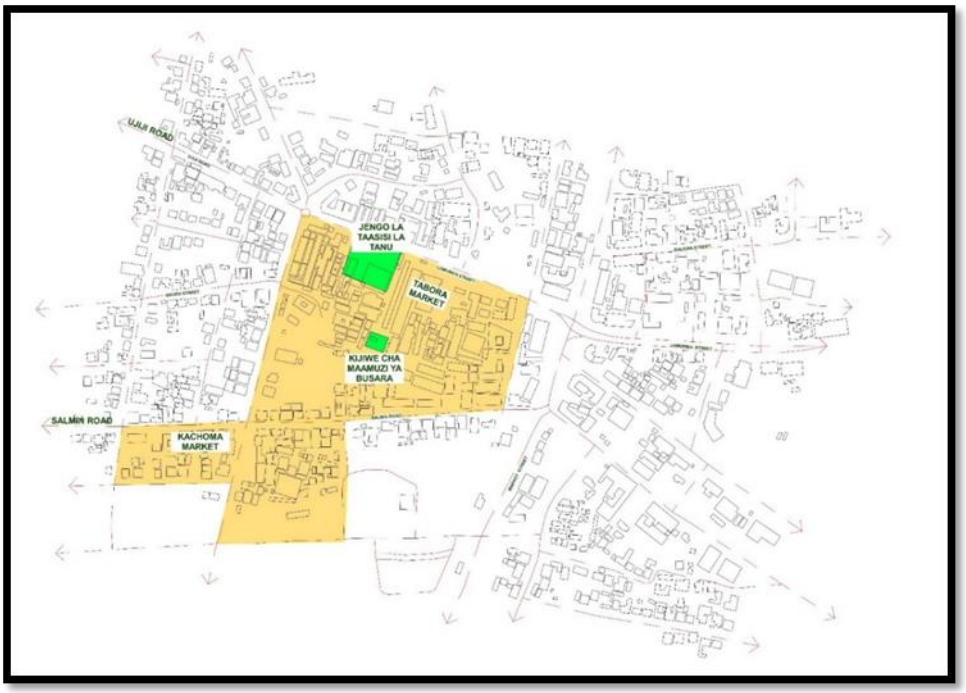


Figure 17: *Shows fire assembly point.*

TABORA CBD MARKET

A. Location and Topography



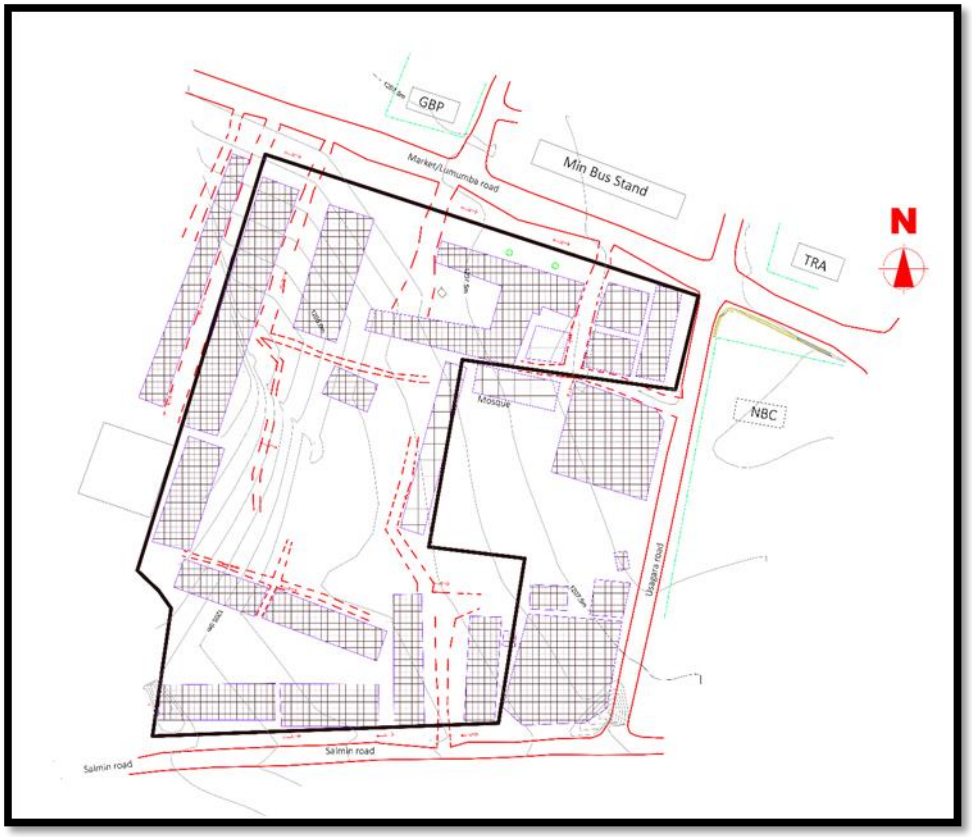


Figure 18: *Shows site location.*

B. Architectural Features and Elements

The approach taken for the design of the market building is to conform with the existing old market character which are allowed to remain dominant, with a strong morphological identity that enhances the sense of an important place of the city, as the residents of Tabora give it a special historical respect.

Figure 19: *Show Tabora CBD market.*

C. Street lights, power lines, storm water drainage

Solar powered street lights are provided for the circulation spaces to give assured light during the night to improve security of the area. To avert flooding, storm water channels will be directed to the main roads for efficient disposal. The paved areas are slope gently towards the channels to maintain clean surfaces without ponds.

Figure 20: *Shows street light.*

D. Open Spaces and vegetation

The design is striving to create open spaces that are planted with trees to soften the character of the area.

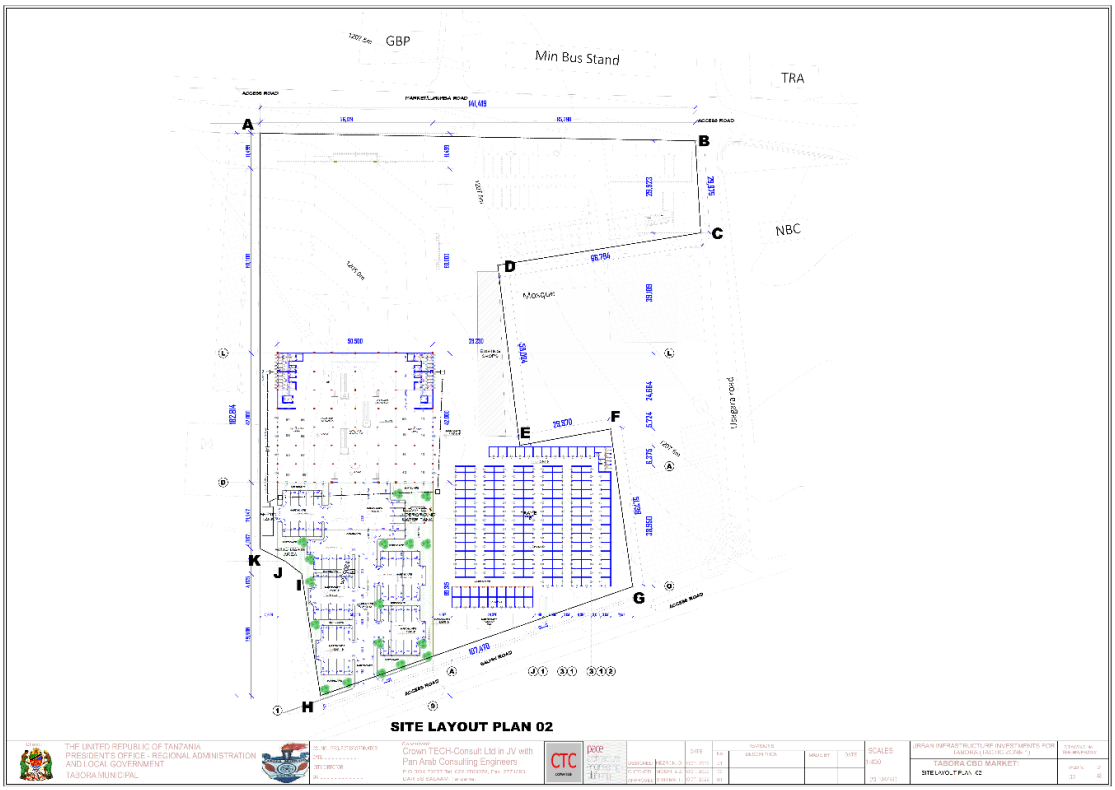


Figure 21: *Show open space and vegetation.*

E. Environmental protection/preservation

In this detailed Architectural and Engineering design stage, cares are taken to provide details that are avoiding the chances of soil erosion. All unbuilt areas are provided with vegetation to hold the soil together as well as creating positive visual character. To enhance the environment, garbage collection spaces are designated to specific areas that can be controlled by the Authorities. On the other hand, sewerage systems will be as per engineering designs.

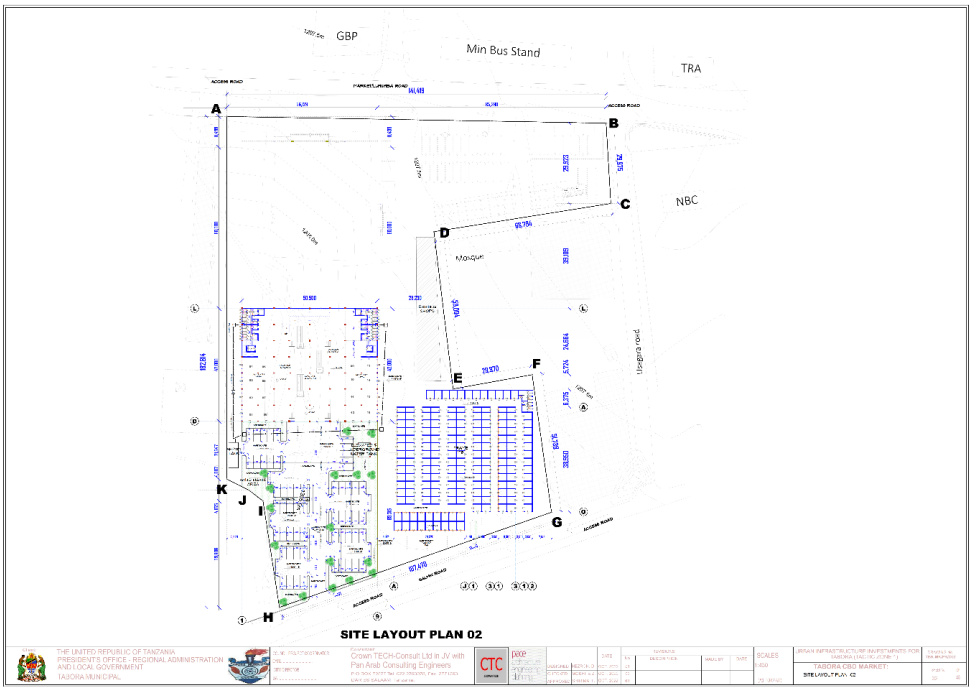


Figure 22: *Show soil protection.*

F. Social Spaces, Spaces for formal and informal economic activities

The space organization of the market provided not only movement spaces to and fro the people but also included lobbies for informal interactions well as formal spaces for the provision of social services.

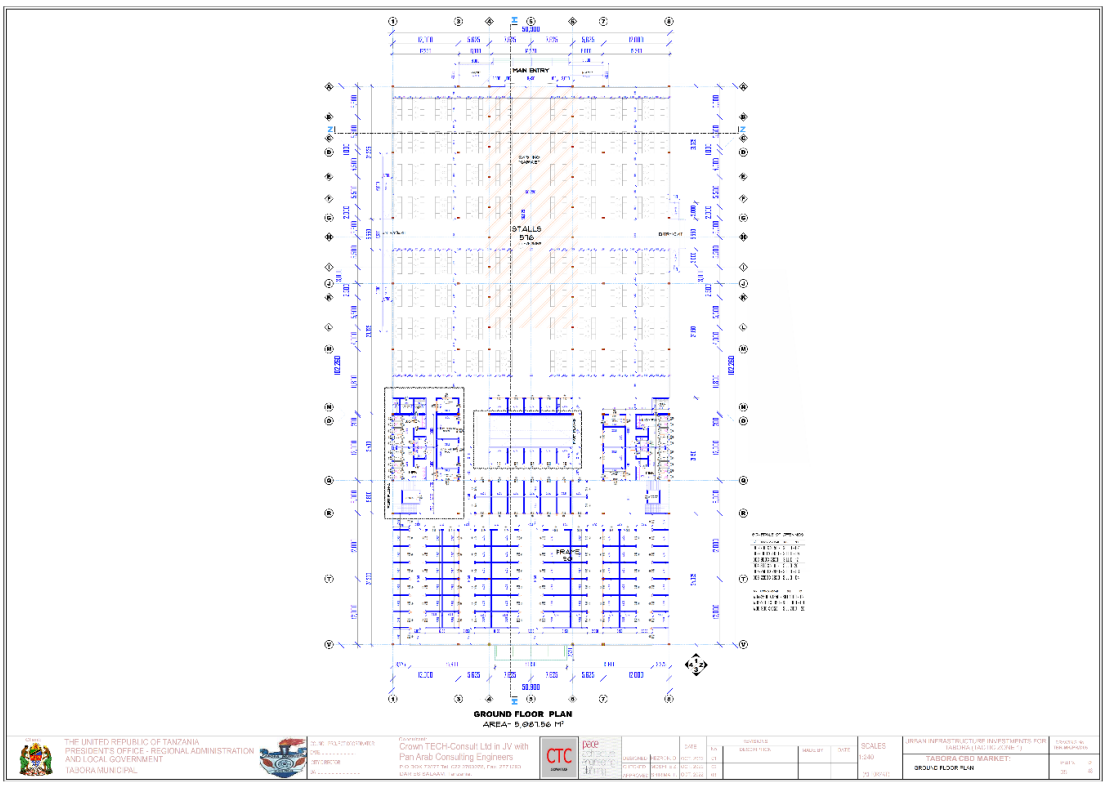


Figure 22: *Show open space and vegetation.*

G. Signage type and positioning

In the architectural and engineering detail design, consideration is taken to all the needed signage to direct people and vehicles to and from the market. These are lighted or provided with sufficient light for proper viewing as appropriate.

Architectural design

A. Aesthetics and design elements (morphology, views etc)

The architecture of the market comprises two main parts: the lower part which serves for the bulk supplies and the upper part which sits on the lower part providing the day to day retail activities.

This arrangement is due to the topography of the site which is accessed from both lower and upper roads. The existing market is connecting with the upper level.

Figure 23: *Show Tabora CBD market.*

B. Climatic and Environmental considerations

The building which has adopted a linear form is oriented with its front and rear elevation facing the main road. Large roof overhangs provide sun shading while the large window/glass panels and openings provide the needed day lighting into the indoor spaces. Rain water is collected through gutters and collected for various uses including reserve for firefighting.

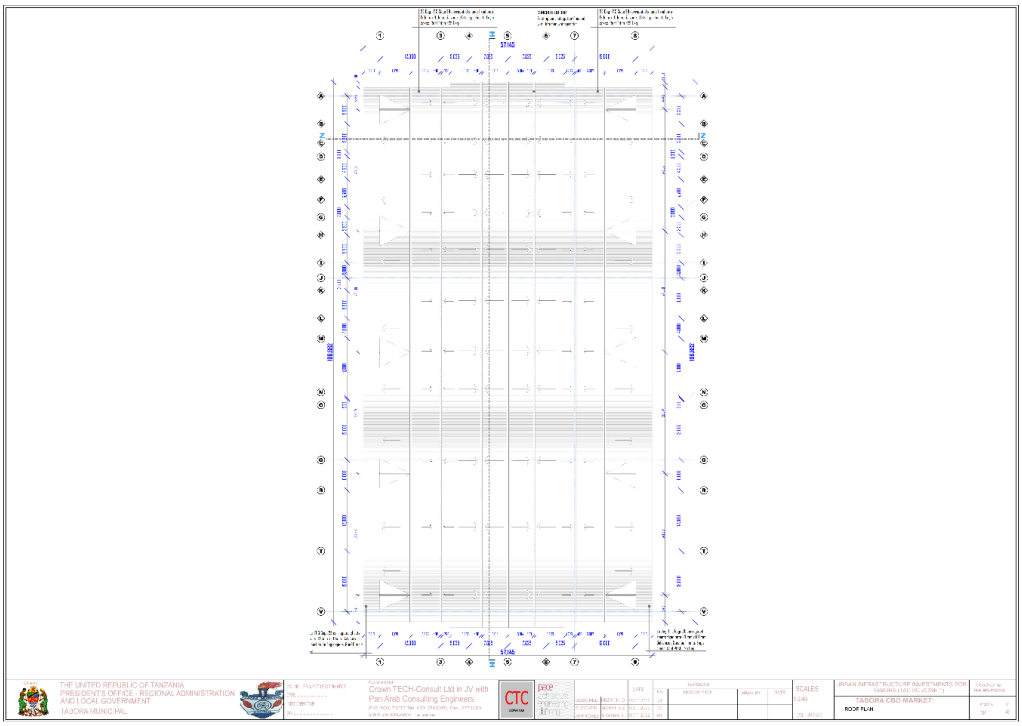


Figure 24: *Show roof overhang.*

C. Structural considerations

The structural system adopted is of columns beams and slab frame providing the possibility for large openings and flexible subdivision of the functional spaces that allows for multiple space options.

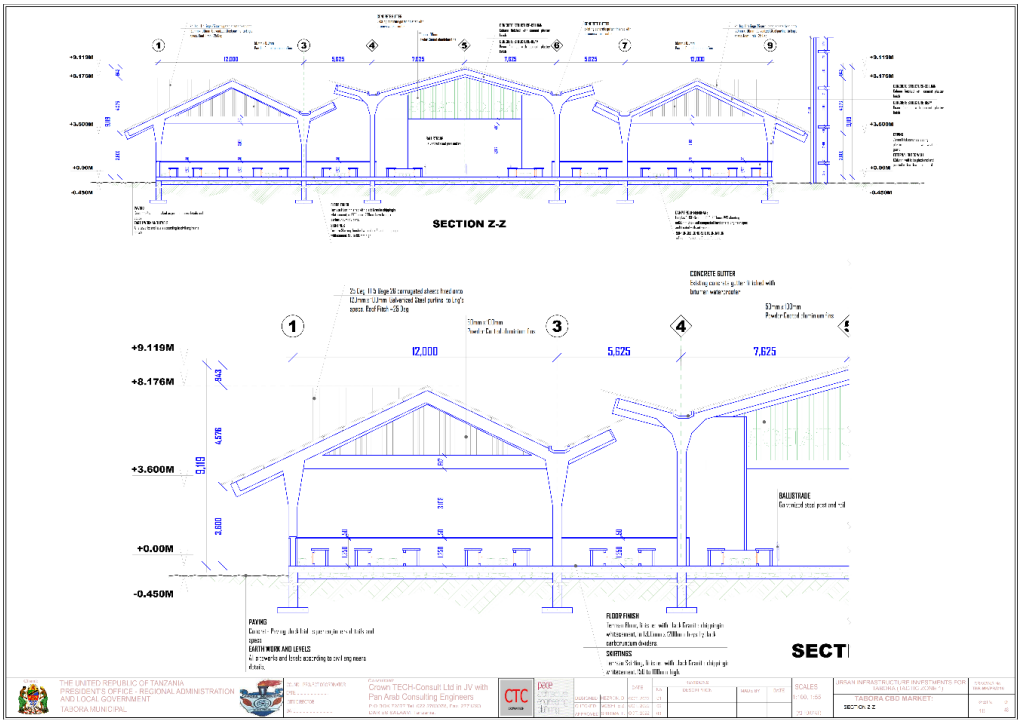


Figure 25: *Show structural element.*

Spatial Organization, accessibility, circulation

The new market building is organized around the existing market which forms a landmark to the city. Vertical movement is provided through ramps to the first floor.

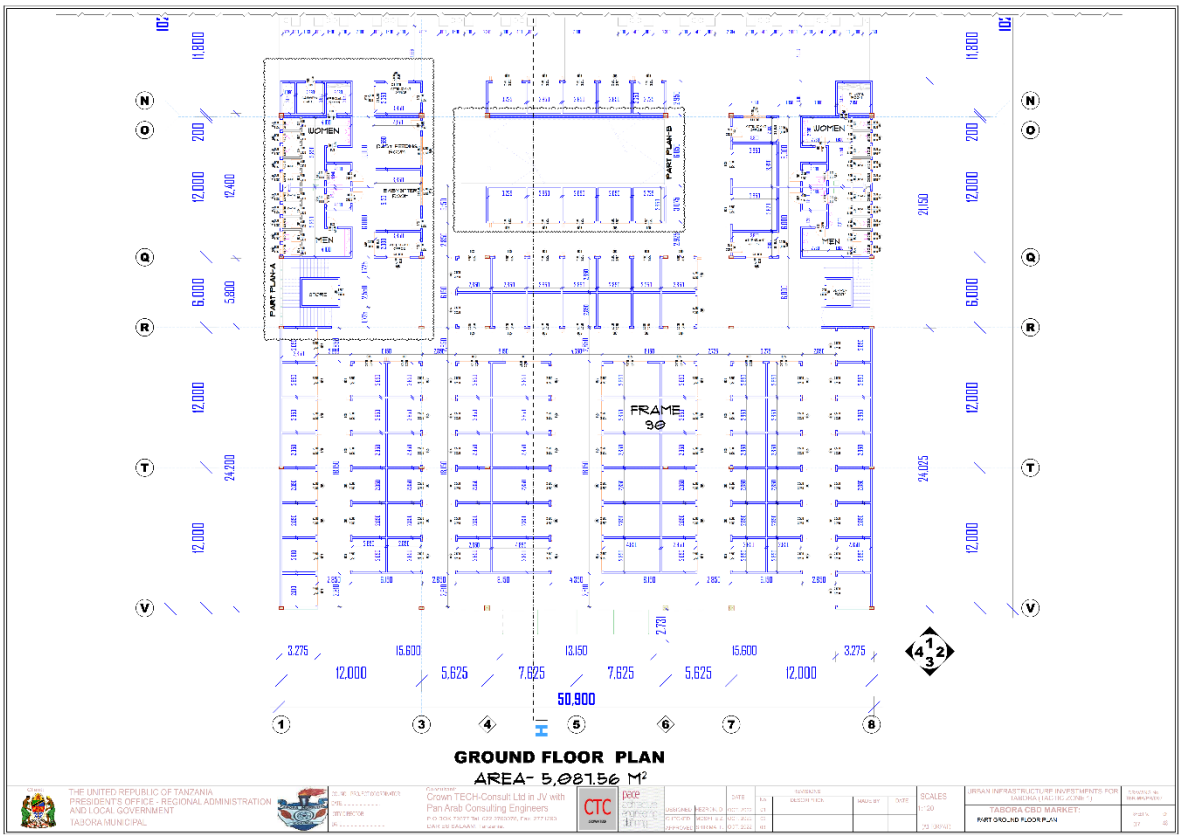


Figure 26: *Show spatial organization.*

e) Schedule of Accommodation

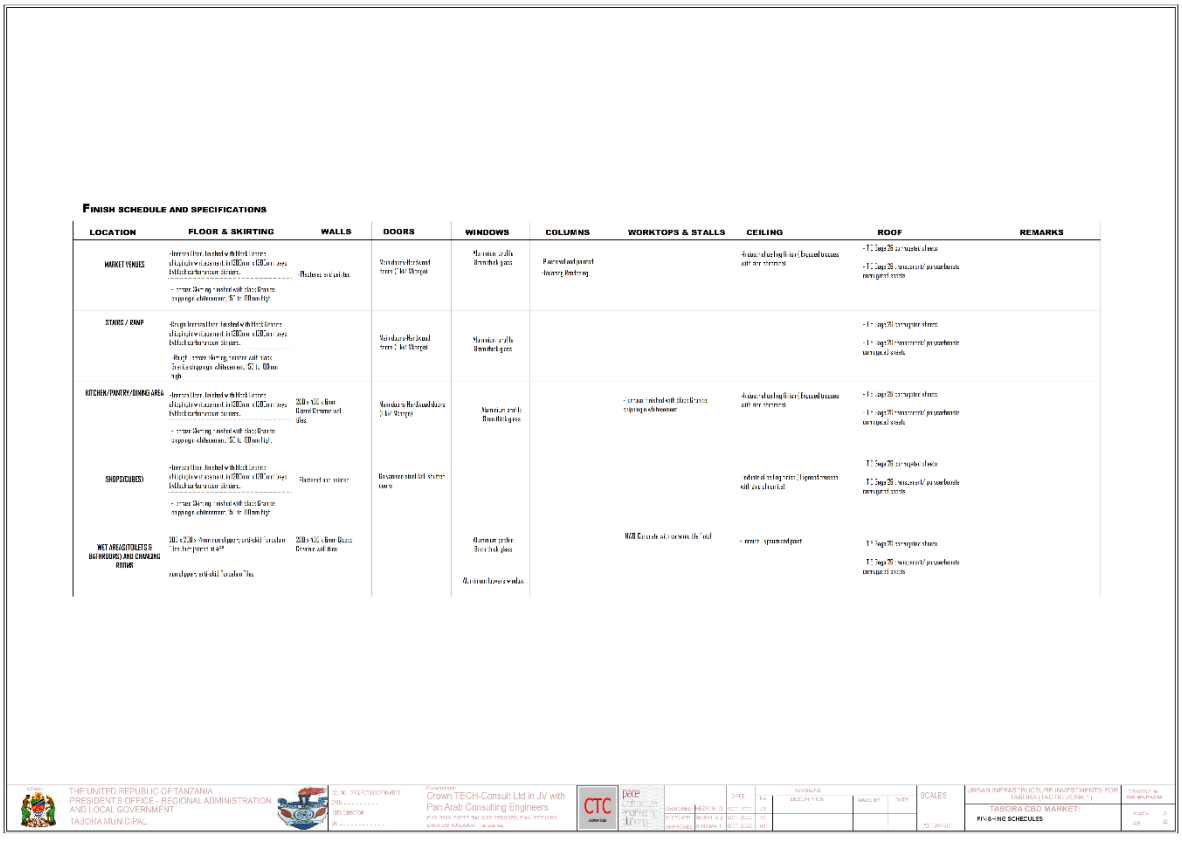
The schedule of areas provided are detailed in the drawings which are submitted under a separate cover. The main areas include: ……

- usable area- 10,740.42 sqm
- percentage of circulation area -37.7%
- soft landscaping coverage area-1,172.22 sqm
- hard landscape coverage area-6,627.11 sqm

TABORA CBD MARKET SCHEDULE OF SPACES ACCOMMODATED

1	2	Space Name	3	Quant	4	Total Area
5	6	Whole seller	7	16	8	566m^2
9	10	Kizimba	11	612	**12**	4,630m^2
13	14	Outdoor Frame	15	250	16	2,409.3m^2
17	18	Baby sitter room	19	1	20	32.5m^2
21	22	Baby feeding room	23	1	24	32.5m^2
25	26	lory parking	27	6	28	216m^2
29	30	Parking	31	111	32	1,954.84m^2
33	34	Toilet	35	38	36	359.14m^2
37	38	Garbage chute	39	2	40	36.2m^2
41	42		43		44	**10,236.48m**

General schedule of Materials and Components

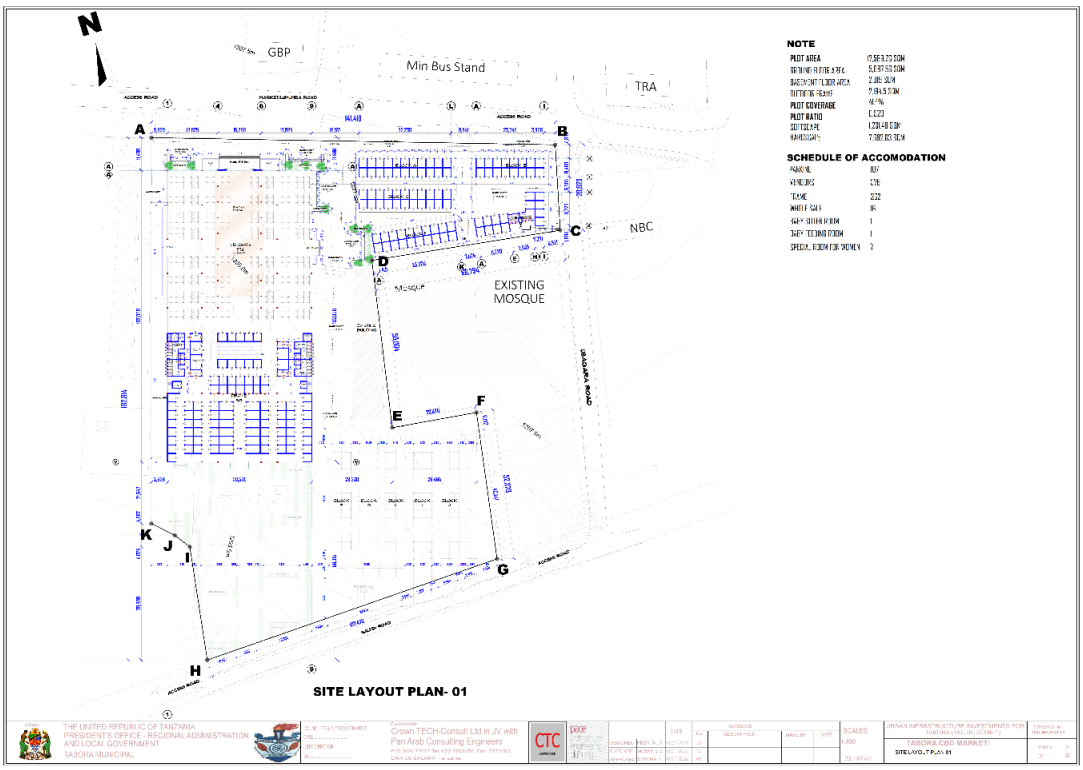


Landscape Design

A. Sustainable energy considerations

The approach adopted for landscape design appreciates the fact that our site is within a well built up city centre. While movement areas are paved, the remaining areas are planted with grass, flowers and shrubs to soften the environment.

Rainwater harvesting has been incorporated in the roof designs for its collection and discharge into storage tanks. On the other hand, the management of rainwater on other surfaces are coordinated with the roads and pavement design for discharge into designated areas.



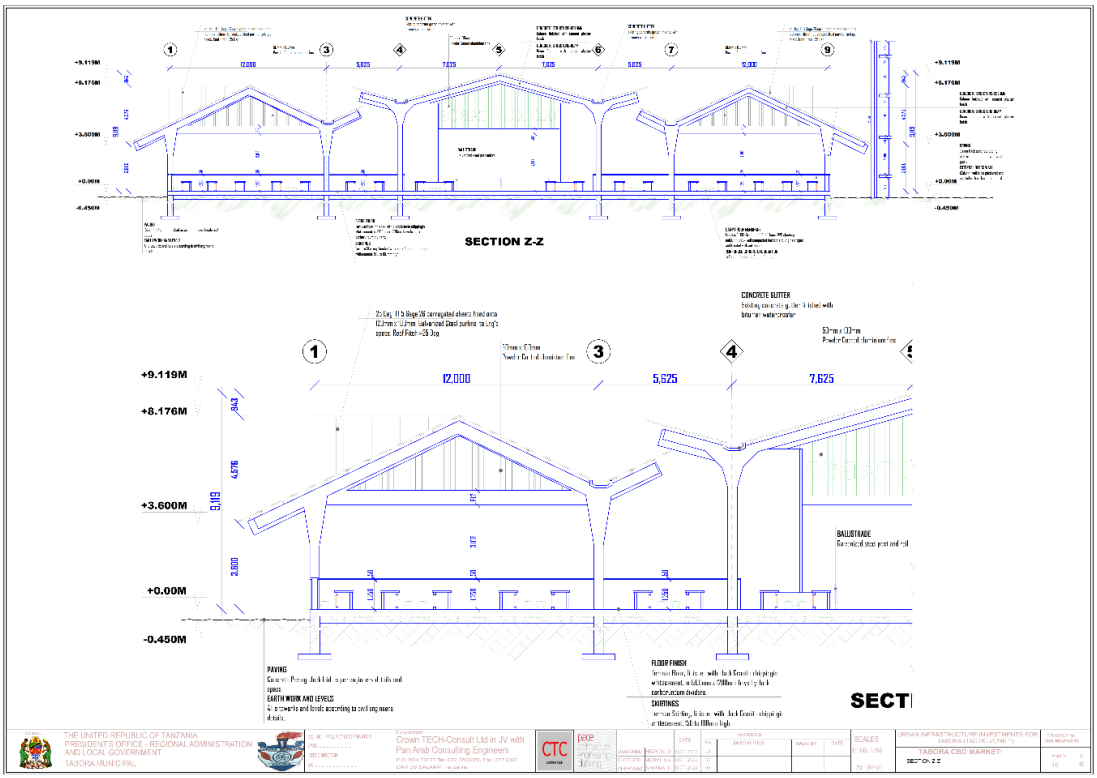


Figure 27: *Show roof gutter.*

Soft and hard landscapes (percentages and environmental responsiveness)

To create the needed balance, tree planting is organized in the detailed design to provide as much shading as possible and also to create the green character common to Tabora.

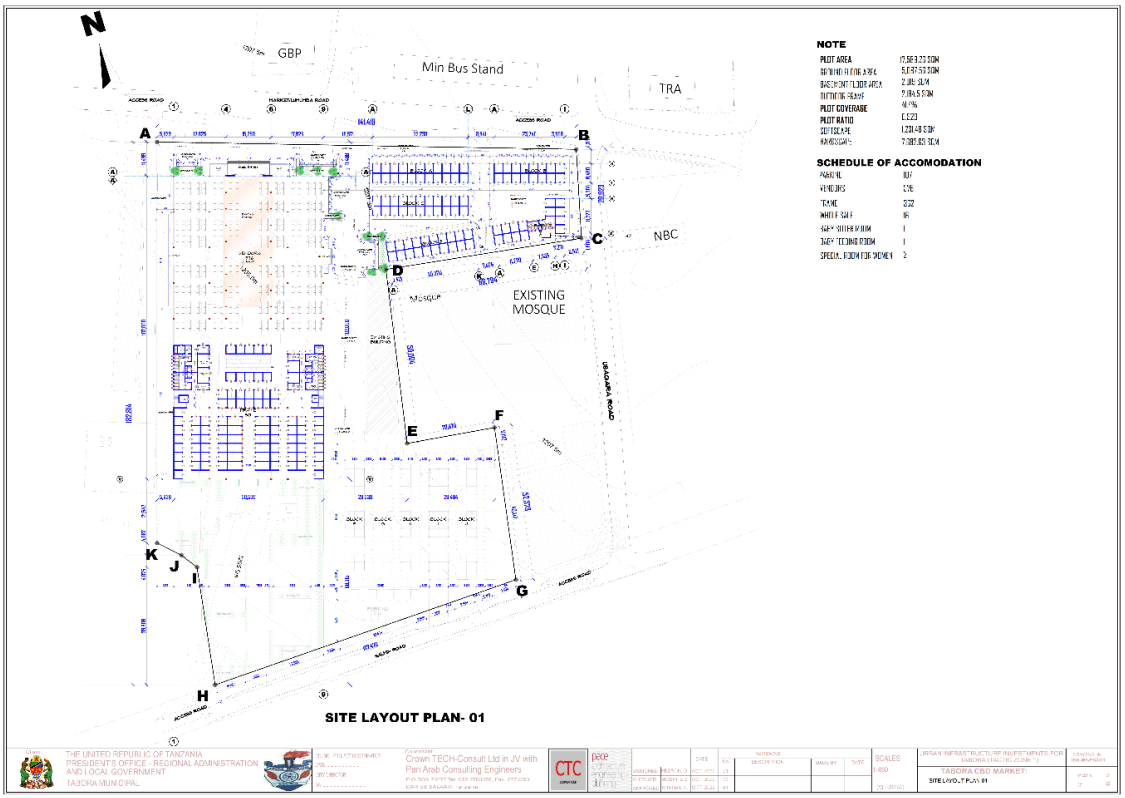


Figure 28: *Shows soft and hard lanscape.*

B. Footpaths and Urban furniture

Footpaths will be paved and lighted with solar power and will be designed to include informal interaction spaces on their way as will be achievable in the detailed design.

C. Lighting systems, fire hydrants, fire assembly points

Lighting systems will be provided into all outdoor functional and circulation spaces including the spaces allocated as fire assembly points.

Appendix XI: Proof of Land Ownership Documents

A: Tabora CBD Market

TITLE No. 17497
REGISTERED ON 31-03-2023
AT 01:00 pm
Registrar of Titles

Land Form No. 22

TANGANYIKA STAMP DUTY ACT
Stamp Duty Shs. 999001/- Paid
On Original Receipt Shs 92106614
89848 of 30.03.2023
Stamp Duty Officer

TANGANYIKA STAMP DUTY ACT
Stamp Duty Shs. 100/- Paid
Receipt No. 92106616498 7848
of 30.03.2023
Stamp Duty Officer

THE UNITED REPUBLIC OF TANZANIA

THE LAND ACT, 1999
(NO. 4 OF 1999)
CERTIFICATE OF OCCUPANCY
(Under Section 29)

Title No. 17497 TBR
L.O. No. 1479075
L.D. No.TMC/33967

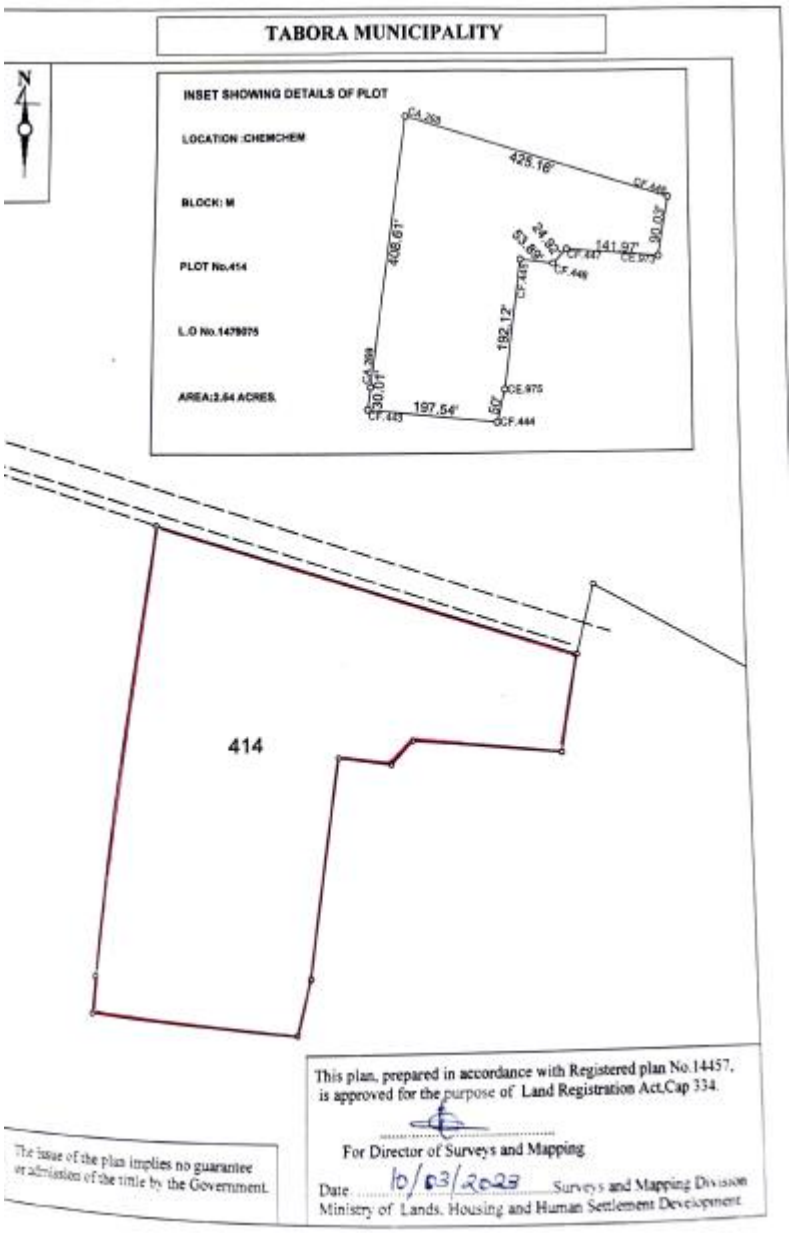
The 30th day of March Two Thousand and Twenty Three.

THIS IS TO CERTIFY that **TABORA MUNICIPAL COUNCIL, the Local Government established under the Local Government (Urban Authorities) Act No. 7 of 1982** of P.O.Box 174, **TABORA** (hereinafter called **"the Occupier"**) is 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 Three** 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 there for or amendment thereof and to the following special conditions:-

1. The Occupier having paid rent up to the thirtieth day of **June, 2023** shall thereafter pay rent of shillings **Two Million, One Hundred Fifty Eight Thousand, Seven Hundred (2,158,700/=) 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 Occupier 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.**


TABORA MUNICIPALITY
INSET SHOWING DETAILS OF PLOT
LOCATION :CHEMCHEM
BLOCK: M
PLOT No.414
L.O No.1479075
AREA:2.64 ACRES
425.16'
408.61'
141.97'
192.12'
197.54'
90.00'
414
This plan, prepared in accordance with Registered plan No.14457, is approved for the purpose of Land Registration Act,Cap 334.
For Director of Surveys and Mapping
Date 10/03/2023 Surveys and Mapping Division
Ministry of Lands, Housing and Human Settlement Development
The issue of the plan implies no guarantee or admission of the title by the Government.

(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) Erect on land 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 **Tabora Municipal Council** (hereinafter called "**the Authority**")

(iv) Submit to the Authority building plans within Six months from the date of commencement of the **Right**

(v) Begin building construction within six months after the approval of the building plans by the Authority.

(vi) Complete the building construction within Thirty Six months from the date of commencement of the **Right.**

USER: The land shall be used for **Market** purposes only, Use group '**E**' Use class **(e)** as defined in the Urban Planning Act No. 8 of 2007 (Use Groups and Classes) Regulations **2018.**

The Occupier shall not assign the Right within three years of the date hereof without the prior approval of the Commissioner.

The Occupier 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.

The **President** may revoke the right for **good cause** and in **public interest.**

SCHEDULE

ALL that Land known as Plot .No. **414 Block 'M'** situated at **Chemchem Area in Tabora Municipality** containing an area of **Two point Five Four (2.54) Acres** shown for identification only edged **red** on the plan attached to this Certificate and defined on the registered survey plan numbered **14457** deposited at the Office of the Director for Surveys and Mapping at Dar es Salaam.

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

.....

ASSISTANT COMMISSIONER FOR LANDS

We, the within named **TABORA MUNICIPAL COUNCIL** hereby accept the terms and conditions contained in the foregoing Certificate of Occupancy.

SEALED with a common **SEAL** of the said)
TABORA MUNICIPAL COUNCIL)
In the presence of us)
this.....day of.....2023.)

Name. DR. PETER. MAKA. NYAMO)

Signature.....)

Postal Address.....)

Qualification: MUNICIPAL DIRECTOR)

Name ROBERT MAJUNGWA)

Signature.....)

Postal Address P.O. 174, TBR)

Qualification: MUNICIPAL LEGAL OFFICER)

B: Tabora Bus Terminal (Inala Bus Terminal)

Land Form 23 A.

TANZANIA

THE LAND ACT 1999
(NO. 4 OF 1999)

CERTIFICATE OF OCCUPANCY

(Under Section 29)

Date of Issue: 11.11.2022
Title Number: 16746 TBR
Land Office Number: 1259616
Land: PLOT NO. 1 BLOCK 'E' INALA AREA - TABORA MUNICIPALITY

Term: NINETY NINE YEARS

TITLE No 16746
REGISTERED ON: 11·11·2022
AT: 10:00 AM
Senior Asst. Registrar of Titles

Land Form No. 22

TANGANYIKA STAMP DUTY ACT
Stamp Duty Shs: 99990/- Paid
On Original Receipt Shs: 922305136
of: 101469 of· 01·11·2022
Stamp Duty Office

TANGANYIKA STAMP DUTY ACT
Stamp Duty Shs: 100/- Paid
Receipt No: 922305136101469
of: 01·11·2022
Stamp Duty Office

THE UNITED REPUBLIC OF TANZANIA

THE LAND ACT, 1999
(NO. 4 OF 1999)
CERTIFICATE OF OCCUPANCY
(Under Section 29)

Title No. 16746 TBR
L.O. No.1259616
L.D. No.TMC/32706

The 9th day of November Two Thousand and Twenty Two

THIS IS TO CERTIFY that **TABORA MUNICIPAL COUNCIL the local Government Established Under the Local Government (Urbam Authorities) Act No.7 of 1982** of P.O. Box **174 TABORA** (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 **October, 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 there for or amendment thereof and to the following special conditions:-

1. The Occupiers having paid rent up to the thirtieth day of **June, 2023 shall** thereafter pay rent of shillings **Two Million, Eight Hundred Twenty Seven Thousand, Four Hundred Fifty (2,827,450/=)** 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.**

(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) Erect on land 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 **Tabora Municipal Council** (hereinafter called **"the Authority"**)

(iv) Submit to the Authority building plans within Six months from the date of commencement of the **Right**

(v) Begin building construction within six months after the approval of the building plans by the Authority.

(vi) Complete the building construction within Thirty Six months from the date of commencement of the **Right.**

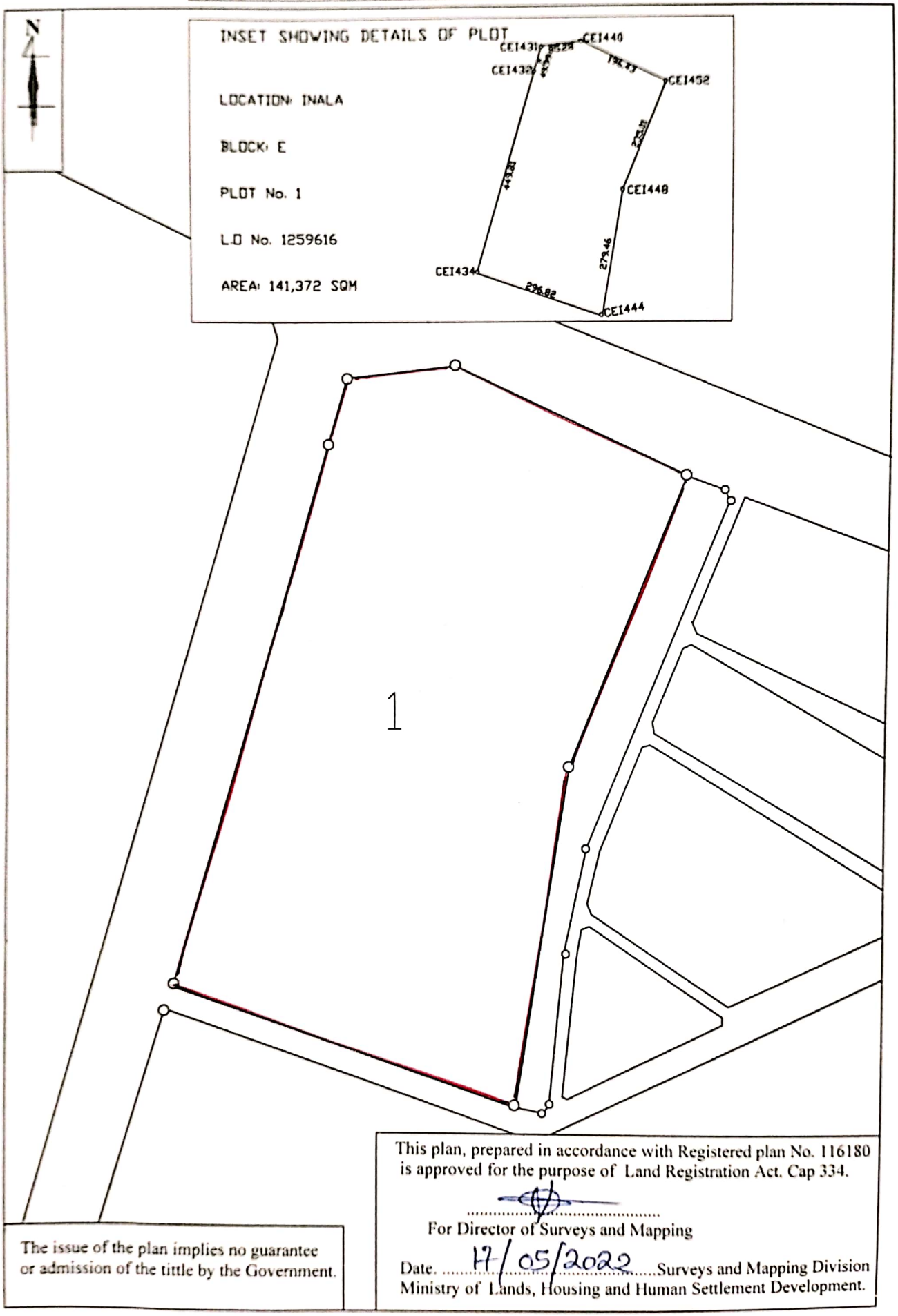
3. **USER:** The land shall be used for **BUS TERMINAL** purposes only, Use group **'P'** Use classes **(a)** as defined in Urban Planning Act No. 8 of 2007 (Use Groups and Classes) Regulations,2018

4. The Occupiers shall not assign the Right within three years of the date hereof 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** and in **public interes**

TABORA MUNICIPALITY



The issue of the plan implies no guarantee or admission of the tittle by the Government.

This plan, prepared in accordance with Registered plan No. 116180 is approved for the purpose of Land Registration Act. Cap 334.

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For Director of Surveys and Mapping

Date. 17/05/2022 Surveys and Mapping Division
Ministry of Lands, Housing and Human Settlement Development.

SCHEDULE

ALL that Land known as Plot .No. **1 Block 'E'** situated at **Inala Area in Tabora Municipality** containing an area of **One Forty One Thousand, Three Hundred and Seventy Two (141372) Square Meters** shown for identification only edged **red** on the plan attached to this Certificate and defined on the registered survey plan numbered **116180** deposited at the Office of the Director for Surveys and Mapping at Dar es Salaam.

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

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ASSISTANT COMMISSIONER FOR LANDS

We, the within named **TABORA MUNICIPAL COUNCIL** hereby accept the terms and conditions contained in the foregoing Certificate of Occupancy.

SEALED with a common **SEAL** of the said)
TABORA MUNICIPAL COUNCIL)
In the presence of us)
this 12...day of MAY .....2022.)

Witness's)

Signature.....)

Postal Address.....174, Tabora...)

Qualification: MUNICIPAL DIRECTOR)

Witness's)

Signature.....)

Postal Address.....174, TABORA)

Qualification:.....LEGAL OFFICER)