

**ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR THE
PROPOSED CONSTRUCTION OF WATER SUPPLY SCHEMES IN
MNGAZI VILLAGE, MNGAZI WARD, MOROGORO DISTRICT,
MOROGORO REGION**



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ABBREVIATIONS AND ACRONYMS

| | |
|--------|---|
| DC | District Council |
| EIA | Environmental Impact Assessment |
| ESMP | Environmental and Social Management Plan |
| NBS | National Bureau of Statistics |
| NEMC | National Environmental Management Council |
| RUWASA | Rural Water Supply and Sanitation Agency |
| RWSS | Rural Water Supply and Sanitation |
| SIA | Social Impact Assessment |
| WRBWB | Wami Ruvu Basin Water Board |
| TDHS | Tanzania Demographic Health Survey |

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1 INTRODUCTION

Water as a natural resource is a vital commodity used for socio-economic development. Its availability or inadequacy both in quantity and quality has an impact on improving the standard of living of the population. Tanzania is endowed with abundant of water resources in the form of rivers, lakes, groundwater aquifers, ponds, reservoirs, and wetlands. The country is riparian to some of Africa's largest Trans boundary freshwater lakes including Lake Victoria, Lake Tanganyika and Lake Nyasa. Each of these water bodies exhibits unique characteristics and a complex range of water resources management and development issues and challenges. Tanzania's annual renewable water resource is 89 km³ and the annual average of available water per capita was 2000 m³ in 2012 contrary to 2700 m³ in the year 2001 (URT, 2014). This amount is projected to lessen by 30% corresponding to 1400 cubic meters per capita per year in 2025 as a result of diminution of water resources and increase of population.

Moreover, the distribution of water resource in the country is not uniform temporally and spatially causing unpredictable challenges to social and economic development planning in the country. This situation is coupled with climate variability, uncoordinated sectoral development plans, inadequate water security infrastructures, diminishing water resources, population growth with ever increasing socio-economic activities, catchment degradation, and water use conflicts. Also, rowing competition for national water resources threatens growth and plans for transformational development (URT, 2014).

Taking these issues into account, the Government of the United Republic of Tanzania (GoT) recognizes the need to develop institutions and methods capable for rapid expansion of water supply and sanitation services across the country. Ignatius Ngamesha a registered expert have been commissioned by Ministry of water (Wami Ruvu Basin Water Board) (herein refers as proponent) to register the project titled "Environmental and Social Impact Assessment (ESIA) for Construction of Water Supply Scheme in Mngazi Village, Mngazi Ward, Morogoro District, Morogoro Region.

According to the first Schedule of the (Environmental Impact Assessment and Audit) (Amendment) Regulations, 2018 the proposed project falls under list B, the "List of Small-Scale Activities and Enterprises that require registration (May or May not require full EIA)

This project brief report is part of the project registration process and has been prepared to support and elaborate on what has been outlined in the third schedule of the (Environmental Impact Assessment and Audit) (Amendment) Regulations, 2018. Form No.2 (issued under Regulation 6 (1) of the aforementioned Regulations.

This report includes the information required by the regulations to apply for an environmental certificate to allow NEMC to make an environmental screening decision concerning the necessary requirements for managing the potential environmental impacts of the project.

1.1 General Background

The Wami/Ruvu Basin Water Board (WRBWB), through the Government of the United Republic of Tanzania, has received proceeds of credit from the International Development Agency (IDA) of the World Bank Group to implement the Water Sector Support Project Phase II (WSSP II) from 2017-2022. The IDA support of WSSP aims to improve Integrated Water Resources Management (IWRM) in the country and increase access to Water Supply and Sanitation Services in Dar es Salaam. The project has four components, namely: -

- i) Integrated Water Resources Management (IWRM);
- ii) Dar es Salaam Water Supply Improvement;
- iii) Dar es Salaam Sanitation Improvement and;
- iv) Project Management and Implementation Support.

The overall objective of Component One, “Integrated Water Resources Management (IWRM)”, is on improving the institutions, the information base and the investments that support growth in water-dependent sectors. The three subcomponents described below support strategic and operational decision making on WRM across industries.

1.2 Goals and Objectives of the assignment

The aim of the project brief report is to ensure that the potential impacts on ecological, social, cultural, health and economic aspects as well as physical environment are foreseen and addressed during the project's planning and design, implementation and decommissioning stages of water supply project in Mngazi Village, Mngazi Ward in Morogoro District, Morogoro. The EIA further identifies measures to mitigate or minimize the negative impacts, enhance positive ones and outlines ways to improve the project sustainability. The findings of the assessment are communicated to all stakeholders in the form of a detailed project brief report. It is expected that the EIA will contribute to decision-making about the project and shape it so that its benefits can be achieved and sustained without causing problems to the project areas

1.3 Methodology

Consultant made a site visit to the project area in the 1st week of June, 2021. The aim of the field work was to carry out rapid assessments of the proposed sites. The field visit was highly beneficial in assessing the scale of the impacts for the subproject infrastructure. The methodology employed includes:

- One to one interview with key informants;
- Focus group discussions with communities; and
- Site walk through observations and reviews of various documents.

1.4 Compliance with Regulatory Requirements and Compliance with Regulatory Requirements and Terms of Reference

This Project Brief (PB) Report has been prepared in accordance with Environmental Impact Assessment and Audit Regulations of 2005 read together with its Amendment Regulations of 2018. Specifically, the information contained in this report have complied with the requirements of Regulation 6(1) of the Environmental Management

(Environmental Impact Assessment and Audit) (Amendment) Regulations (2018). The Table of Compliance with Regulation 6(1), indicating Chapters /Sections of the PB Report where requirements of Regulation 6(1) have been complied with or addressed in the report is provided in **APPENDIX 1**

2 DESCRIPTION OF PROJECT AREA

2.1 LOCATION OF THE PROJECT

The Morogoro District Council headquarters, of which the four villages belong to, is located at Mvuha town. Mvuha town is located 78km South-East of Morogoro town. On the North-East direction of Mvuha town there is Dakawa village which is located 9 km from Mvuha town and Dete village is located 33 km from Mvuha town. On the South-West of Mvuha town there are and Mngazi villages which are located 36km from Mvuha town.

2.1.1 Mngazi Village

Mngazi village is located in Mngazi ward, the village has seven Hamlets which are Mngazi, Bane, Kikondeni A, Kikondeni B, Kihuwe, Lego and Matola. In Mngazi village there is one primary school and one dispensary is on plan for construction.

The project map is shown in figure 2-1 overleaf:

Table 2-1: Selected Rural Communities in village

| Ward | Selected Villages | Hamlets |
|--------|-------------------|---|
| Mganzi | Mngazi Village | Mngazi, Bane, Kikondeni A, Kikondeni B, Kihuwe, Lego and Matola |

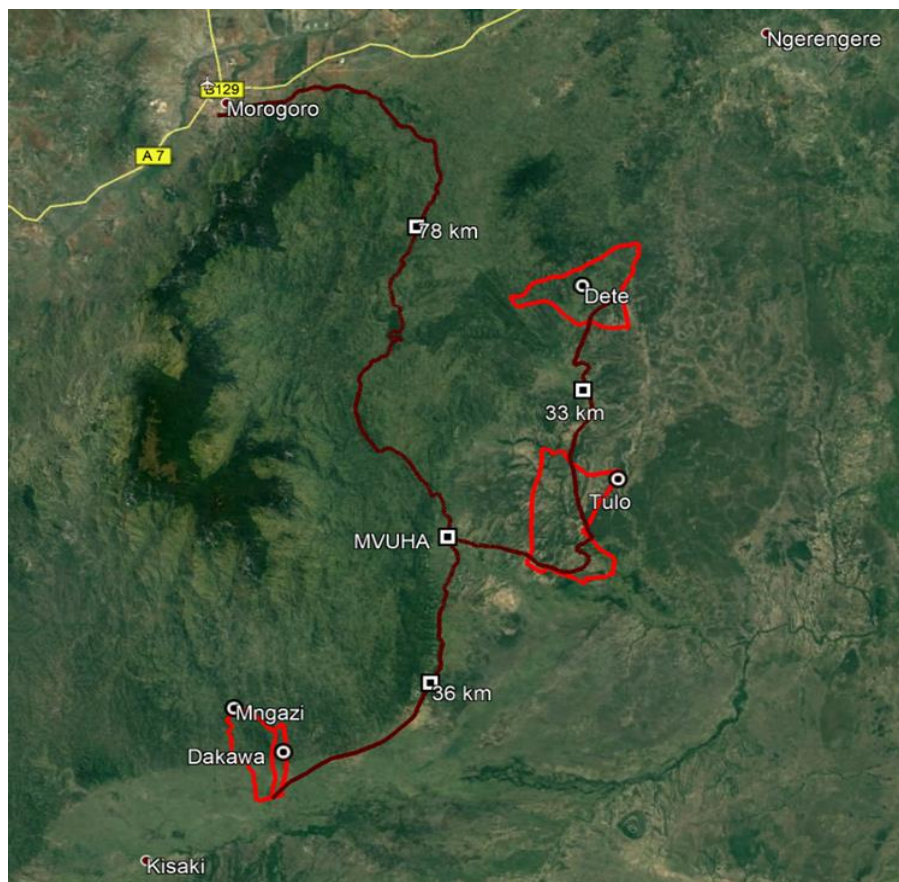


Figure 2-1: The project overview map to show selected Villages
Source: GIS Expert

2.2 Nature of the project

A single, production borehole will be sited and drilled at Dakawa village in the selected area with potential high yield to be equipped with centralized water supply network (pumping system, storage tank, distribution network system from the storage tank to serve all proposed domestic points). The centralized ground water supply system shall have the following key facilities;

- i. Borehole source with enough yield to cater for the entire village water demand
- ii. Power source, Tanesco for Dakawa and alternative for solar,
- iii. Pumping pipeline system (borehole pump with the transmission pipeline to the storage tank)
- iv. One water storage tank that will be located in an elevated area able to supply water by gravity to all proposed domestic points located within Dakawa village
- v. Distribution pipeline network
- vi. Domestic points/water fetching points/cattle troughs

2.2.1 Ground Water Source

The boreholes will be designed according to the 2020 Ministry of Water Design Manual and the best groundwater practices.

The borehole is located at the following areas with its Coordinates, Drilled Depth, and Depth in Completion, Static Water Level and Yield Tested: -

| Borehole No. | Location | Coordinate (Arc 1960, Decimal degrees) | Drilled Depth (m) | Depth in Completion (m) | Static Water Level (m) | Yield Tested (m ³ /h) |
|--|---|--|-------------------|-------------------------|------------------------|----------------------------------|
| I. | MNGAZI VILLAGE, MOROGORO RURAL DISTRICT | 37 M 0353061 9181127, ELV(m): 153 | 110 | 110 | - | >30 |
| Remarks: Yield tested by airlift method during flushing exceeded well beyond 30m ³ /hr. | | | | | | |

Source: Borehole survey report, 2021

2.2.2 Pipelines Design Criteria

Table 2-2: Design Criteria for Water Supply Projects

| No | Criteria | Unit | Value |
|----|---|------|-------|
| 1 | Minimum pressure at the remotest end of the system | m | 5 |
| 2 | Maximum velocity of flow in pipes-Transmission Lines | m/s | 3 |
| 3 | Maximum velocity of flow in pipes in Distribution Lines | m/s | 1.5 |
| 4 | Minimum velocity of flow in pipes | m/s | 0.4 |
| 5 | Minimum value of Demand Factor | - | 0.3 |
| 6 | Maximum value of Demand Factor –Peak Demand | - | 3 |

| | | | |
|----|--|----------------|---------|
| 7 | Minimum allowable head loss in pipes | m/Km | 0.005 |
| 8 | Maximum allowable head loss in pipes | m/Km | 0.01 |
| 9 | Minimum allowable pressure | m | 5 |
| 10 | Maximum allowable pressure | m | 60 |
| 11 | Minimum Demand | factor | 0.3ADD* |
| 12 | Maximum Day Demand | factor | 1.3 ADD |
| 13 | Peak Hour Demand for served population <1000 | m ³ | 3ADD |
| 14 | Peak Hour Demand for served population >1000 | m ³ | 2.5ADD |
| 15 | Allowable Non-Revenue Water for a new system (NRW) | % | 15 |
| 16 | House hold per water point | Households | 50 |

Source: DCOM Manual Volume I

2.2.3 Water Storage Capacity

Water storage tanks will be designed and sized in such a way that they balance supply during peak hour demand. Water supply demand patterns show that there is always two peak times during the day, one in the morning the other in the evening where majority of water will be collected. Water storage tanks will be positioned on the higher ground relative to supply area so as to command pressure.

A storage tank with the capacity of 135 m³ will be positioned on the higher ground for easily supply of water through gravitation

| Village | Average Gross daily Demand (m ³ /day) | Transmission Pipeline flow (l/s) | Distribution Pipeline flow (l/s) | Storage Tank Size Required (m ³) |
|---------|--|----------------------------------|----------------------------------|--|
| Mngazi | 275.15 | 4.78 | 6.37 | 135 |

2.2.4 Treatment Plant Capacity

The raw water treatment plants, if applicable for the selected options, will be designed for the maximum day demand; all chemical dosing units will be designed to have minimum two units with 100% standby capacity.

2.2.5 Pumping Stations

The drilled borehole shall be equipped with submersible pumps for borehole supply applications. They are of multistage centrifugal impeller design and all parts are made from stainless steel with water lubricated rubber bearings. A submersible motor is fitted beneath the pump and suction is affected through a strainer between the pump and motor.

2.3 The Design and Technology of the project

2.3.1 Design Criteria Development

In this report, the major components of the design criteria are presented for quick reference, the design criteria summarized here is to be used as a guide and for comparison of water supply

components to be designed. The water supplies components will be sized in accordance with design criteria guidelines with a view to effectively cater for the estimated 2043 water supply demand.

2.3.2 Water Network Design Data

Water networks sizing data was taken from demographic data and demand forecast for the year 2043 analysed in Section **Error! Reference source not found.** of this report. Summary of network sizing data is presented in Table 2-3 below

Table 2-3: Summary of Water Network Sizing Data

| Village | Average Gross daily Demand (m ³ /day) | Transmission Pipeline flow (l/s) | Distribution Pipeline flow (l/s) | Storage Tank Size Required (m ³) |
|---------|--|----------------------------------|----------------------------------|--|
| Mngazi | 275.15 | 4.78 | 6.37 | 135 |
| Dakawa | 597.92 | 10.38 | 13.84 | 225 |
| Tulo | 309.14 | 5.37 | 7.16 | 135 |
| Dete | 566.96 | 9.84 | 13.12 | 225 |

2.3.3 Design Horizon

The project planning has been taken to be 20 years taken from 2023 (expected year of project commissioning) to 2043, assuming that the project implementation will be completed in 2023, the detailed engineering design for the works will be prepared taking into account the ultimate 2043 water network capacity requirements. For instance, the distribution network will be designed to carry the 2043 peak hour demand; the capacity of the service reservoirs to be constructed will be similarly determined based on ultimate postulated daily water demand pattern.

The design condition considered for each component is explained in the sections where description of each facility is made hereafter in this report.

2.3.4 Ground Water (borehole)

During the Feasibility Study, in Mngazi village, it was noted that the ground water as a water supply source is the best option. The option is described as follows.

Centralized System with enough yield borehole to cater for the entire village demand. In this option, single, production borehole will be sited and drilled in the selected area with potential high yield to be equipped with centralized water supply network (pumping system, storage tank, distribution network system from the storage tank to serve all proposed domestic points).

The exploratory borehole in Mngazi village has resulted into significant yield which can serve the entire village. The production borehole will be drilled closer to the drilled exploratory borehole.

2.3.5 Existing water supply situation

The present main sources of water for the village are shallow boreholes. Other water sources are seasonal rivers and unprotected shallow wells which dry up during dry season. See Table 2-3 for more details

Table 2-4: Existing water supply situation

| Sn | Village | Ward | Existing water supply situation |
|------------------|---------|------|---|
| Boreholes | | | |
| 1 | | | <ul style="list-style-type: none"> • Village is endowed with potential groundwater and surface water sources as evidenced by existing functioning shallow, medium and deep wells/boreholes. Perennial rivers and streams are also found in the village and vicinity. • Hand-dug wells in areas with shallow water table • Shallow to medium depth wells equipped with Hand pumps • Medium depth to deep boreholes equipped with hand pumps • Deep wells and medium depth wells equipped with grid-electrical submersible pumps and • Medium depth to deep boreholes equipped with solar powered submersible pumps |

2.3.6 Domestic Points/ Cattle Troughs in Mngazi Village

| Sn | Point Name / Description | Hamlet | ID | North | East | Elevation | Remarks |
|----|-------------------------------------|-------------|--------|--------|---------|-----------|---|
| 1 | Mngazi B Primary School | Mngazi | MNZ-01 | 354234 | 9179176 | 161 | Domestic Point |
| 2 | Leonard Menga | Mngazi | MNZ-02 | 354521 | 9179497 | 160 | Domestic Point |
| 3 | Jonasi A Nungwe | Kikondeni A | MNZ-03 | 353777 | 9180141 | 165 | Domestic Point |
| 4 | Sudi R Kivurugo | Kikondeni A | MNZ-04 | 353534 | 9180200 | 166 | Domestic Point |
| 5 | Japhethi F. Madando | Kikondeni B | MNZ-05 | 353402 | 9180695 | 168 | Domestic Point |
| 6 | Fedriki A. Ngedere | Kikondeni B | MNZ-06 | 353586 | 9180444 | 166 | Domestic Point |
| 7 | Oska Chasambi | Kihuwe | MNZ-07 | 353152 | 9180826 | 165 | Domestic Point |
| 8 | Michael N. Ruhindila | Kihuwe | MNZ-08 | 352506 | 9180937 | 168 | Domestic Point |
| 9 | Anastazia J. Gumbo* | Bane | MNZ-09 | 366783 | 9183665 | 168 | Domestic Point, location to be verified |
| 10 | Ramadhan Kabuha | Bane | MNZ-10 | 355123 | 9179246 | 157 | Domestic Point |
| 11 | Shera R. Kikwato | Lego | MNZ-11 | 355197 | 9179320 | 156 | Domestic Point |
| 12 | Dismari K. Luhindila | Lego | MNZ-12 | 355497 | 9179350 | 157 | Domestic Point |
| 13 | Kasimu Kiuguzwa | Matola | MNZ-13 | 353866 | 9179711 | 165 | Domestic Point |
| 14 | Mariamamu Matunguru | Matola | MNZ-14 | 354067 | 9179420 | 160 | Domestic Point |
| 15 | Mngazi Village office | Mngazi | MNZ-15 | 354328 | 9179595 | 160 | Domestic Point |
| 16 | Mngazi Sec School (On construction) | Mngazi | MNZ-16 | 352718 | 9181433 | 185 | Domestic Point |



Domestic Points Map in Mngazi Village

Table 2-5: Selected Photos

1. Existing borehole with hand pump near Mngazi Village Office Mngazi Village and Mngazi B Primary School.



2. Mgeta River, source of water Mngazi village during dry season



3. Brokendown boreholes at Mngazi village

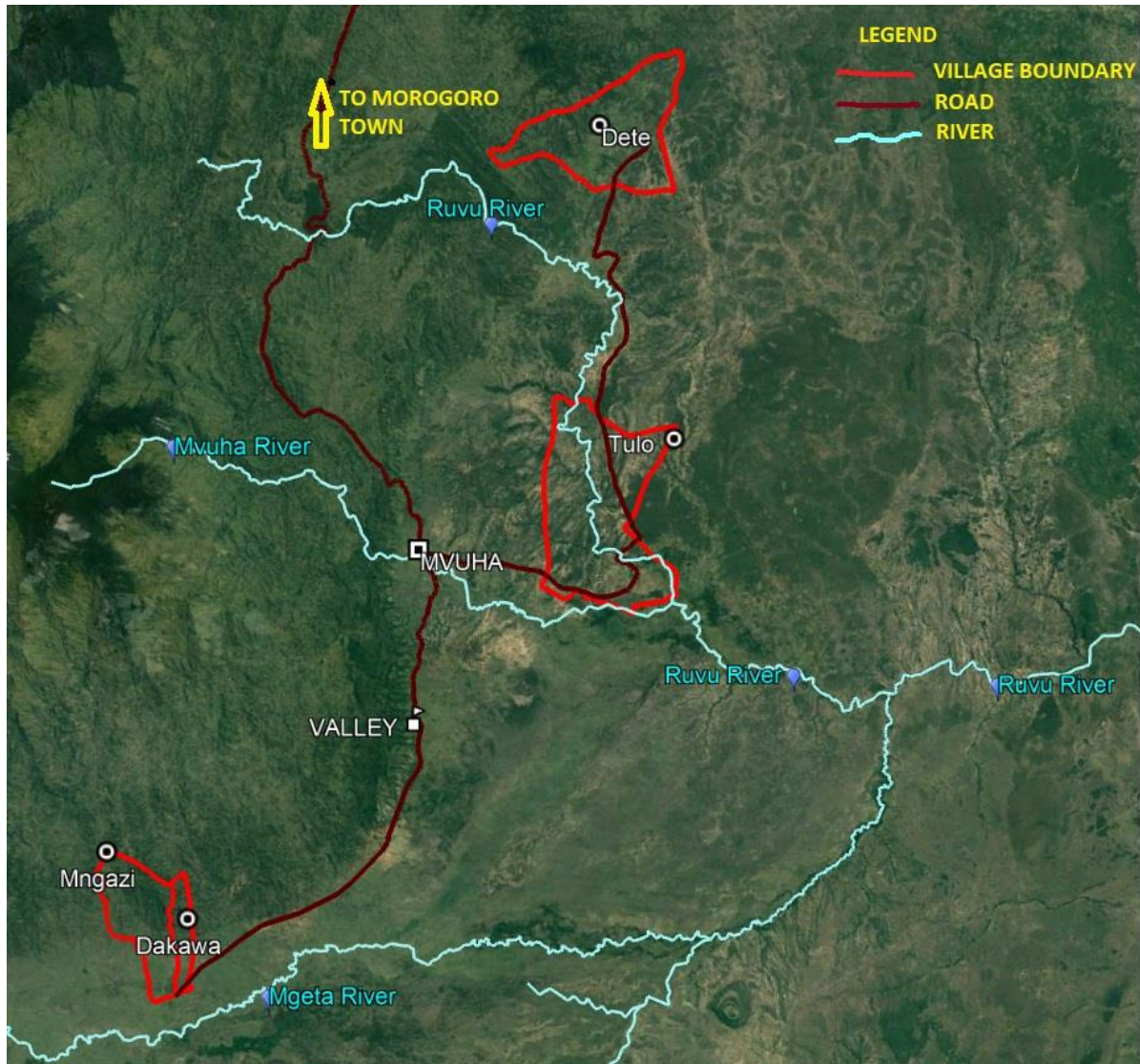


Source: EIA expert, 2021

2.3.7 Hydrology of the area

There are three (3) perennial rivers in the project area namely Ruvu, Mvuha and Mgeta. Village is located closer to Mgeta River which discharges water to Ruvu River. The Figure 2-3 below summarizes the hydrology of the project area.

Figure 2-2: Hydrology of the Project Area



2.3.8 Water Supply proposed options

2.3.8.1 Proposed Water Supply Options in Mngazi village, Mngazi Ward

During the Feasibility Study, in Mngazi village, it was noted that the ground water as a water supply source is the best option. The option is described as follows: -

Centralized System with enough yield borehole to cater for the entire village. In this option, single, production borehole will be sited and drilled in the selected area with potential high

yield to be equipped with centralized water supply network (pumping system, storage tank, and distribution network system from the storage tank to serve all proposed domestic points).

The exploratory borehole in Mngazi village has resulted into significant yield which can serve the entire village. The production borehole will be drilled closer to the drilled exploratory borehole.

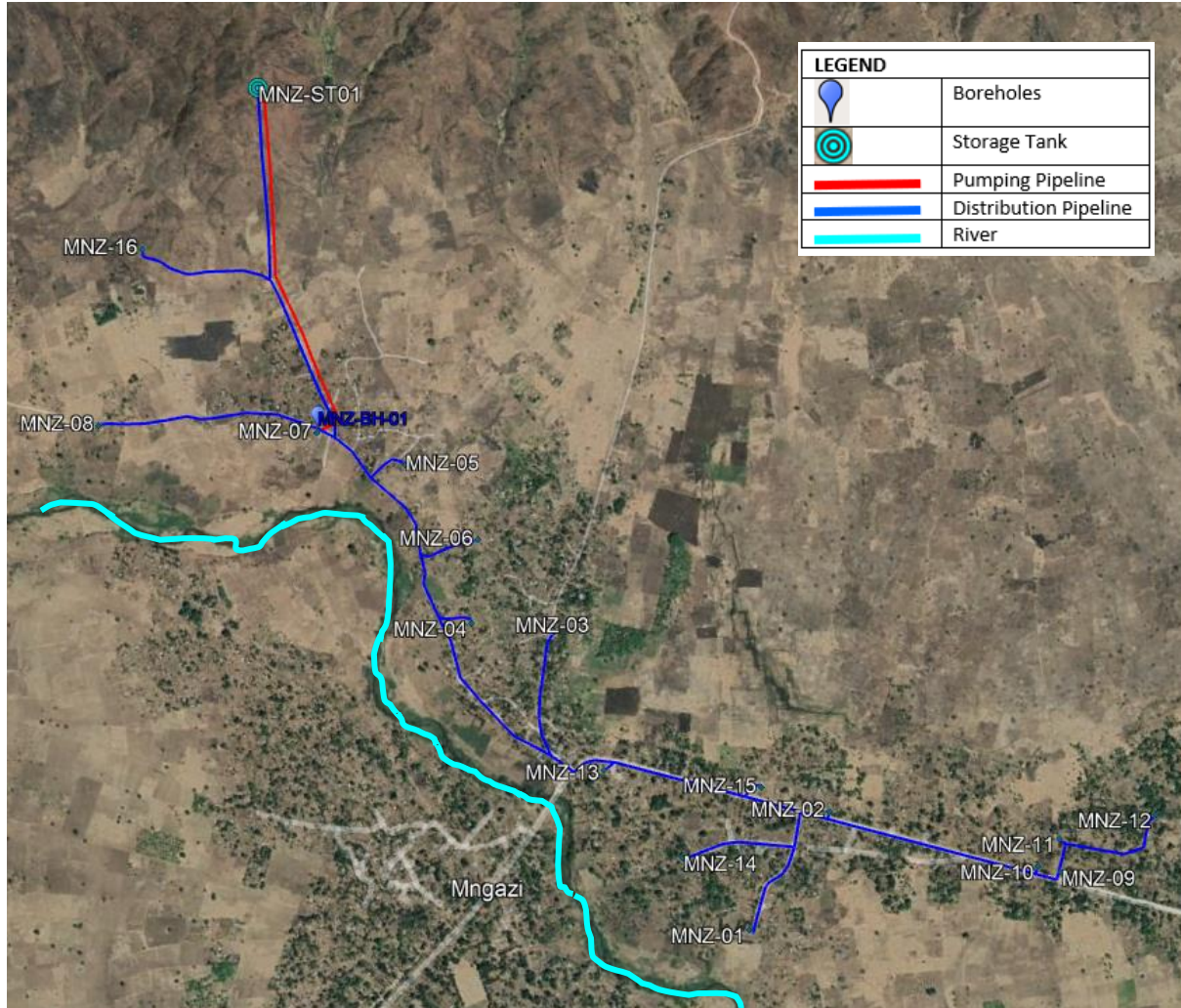


Figure 2-3: Selected Option for Mngazi Village

2.1 Project activities

Major project activities are categorized by Mobilization, pre-construction, construction, operation and decommissioning phases as follows:

2.1.1 Project planning phases

Feasibility study, ESIA and preliminary engineering planning, final engineering planning and construction planning form the planning phase of the project. During the planning process, Proposed Water Supply Schemes in Morogoro District projects is given its form and details which becomes more and more detailed in phases, adjusted to correspond to land use planning.

Preliminary engineering planning determines the approximate location of the borehole, pipeline network connections and land use, basic technical and the principles underlying the prevention of negative impacts to the environment. Planning is performed at a level of detail which ensures that the plan is technically, financially and environmentally feasible. Since Tanzanian legislation requires an environmental and social impact assessment (ESIA), the Proposed Water Supply Schemes in Morogoro District 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 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 Morogoro District, Regional and local government, environmental authorities and other planning organizations, landowners, Institutions, local residents/communities along the project, traders. Extensive interaction is important during preliminary engineering planning in particular, since the most important basic project solutions are decided in this phase.

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

- Evaluation of project concepts and alternatives selection;
- Design of all project components;
- Hydrogeological and geophysical
- Carrying out ESIA of the project;
- Compensations and Land Tenure if required;
- Tendering for construction works;
- Approval of Engineering designs and Environmental Certification

Required Permits

Prior to the approval of the construction and eventual construction of the Project, it is necessary to obtain a number of authorizations and permits from local and central government authorities of Tanzania, related to environmental issues, water abstraction, relocation of public utilities, and resettlement. These permits and authorizations are summarized in *Table 2-5*, including a description of the permit/authorization and the government authority responsible for issuance.

Table 2-6: Required Permits from Regulatory Authorities

| Permit/Authorization | Issuing Authority | Description |
|--|---------------------------|--|
| EIA Certificate | NEMC/VPO | Approval of project implementation |
| TANESCO Infrastructure Relocation Approval | TANESCO-Regional Office | To waive construction of the Proposed Water Supply Schemes |
| Clearance of vegetation along the corridor | Morogoro District Council | To waive construction of the proposed Water Supply Schemes |

2.1.2 Mobilization

Mobilization phase of the project will constitute mobilization of human resources, equipment, construction materials for the plant, storage site and site preparation. The topography and geology of the area will determine some of the extent of activities during the mobilization phase. Additionally, the mobilization phase will involve site preparation that entails clearing ground for constructing the treatment plant and the ponds, transmission lines and storage tank

areas. Further, mobilization will include gathering materials for construction and other facilities related to project operation

2.1.3 Construction

During this phase, the main activity will involve construction of the proposed infrastructures and other associated setups such as, Development of boreholes, construction of pump stations and storage tanks; Excavation of trenches and laying of transmission and distribution pipes; Vegetation clearing at tank location; Earthworks (excavation) at tank location; Landscaping and drainage control; and wastewater management infrastructure and all other facilities associated with the project.

Labour force and equipment required

There will be a number of professionals from the construction industry led by the Project Manager. Other professionals will include Water Supply Design, Engineer, Sanitation Design Engineer, Resident Engineer(s), Water and Waste Water Treatment Expert, Structural Engineer, Engineering surveyor, Sociologist and Environmentalist. Also, there will be unskilled labour to prepare the transmission lines and others to work with the artisans. Apart from the labour force, there will be a number of machineries such as lifts, cranes, forklifts, and all sorts of construction equipment. Also, trucks will be used to transport construction materials to the sites. Proposed construction hours are 8am to 6pm, seven days per week, however the contract may propose otherwise.

Raw Material Acquisition

Types, Amounts and Sources of Project requirements

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

Table 2-7: Types, Amounts and Sources of Project Requirements during Construction Phase

| Requirements | Type | Source | Quantity required |
|---------------|--------------------|--|-----------------------------|
| Raw Materials | Aggregates | Morogoro District | 40-60 Tons |
| | Gravel | Morogoro District | 40-45Tons |
| | Sand | Licensed Sand Mines by the Ministry of Minerals-Within Morogoro District River | 30-50Tons |
| | Water | Stream and rivers within | 25,000-30,000m ³ |
| | Cement | Tanga/ Dar es Salaam | 10-15 Tons |
| | Reinforcement bars | Dar es Salaam | 60-70 Tons |
| | Timber | Iringa & Local Vendors | 10-15Tons |
| Manpower | Skilled | Contractor | 15 |
| | Unskilled | Local People along the road | 50 |

Transportation

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

transported by trucks to the construction site. All safety precautionary measure shall be included as elaborated on EMP.

Storage

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

Types, Amounts and treatment/disposal of Wastes

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

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

| Waste | Types | Amount | Treatment/ Disposal |
|------------------------------|--|---|---|
| Solid Waste (Degradable) | Vegetation (Grasses) and remnants of timber. | Approximately about 720m ³ of biomass | Source of energy for cooking or disposed at required areas |
| | Food remains, cardboards and papers | 60kg/day (based on generation rate of 0.2/day/ person for 100 people) | Collected in a large skip bucket at the construction site then to be disposed at authorised dumpsite |
| Solid Waste (Non-Degradable) | Scrap metals, drums and plastics | 10 -20 kg per day | Sold to Recyclers |
| | Tins, glasses | 2-3 kg per day | Taken to the authorised dumpsite |
| Liquid waste | Sewage | 3.2m ³ /day (Based on 100 people, 40l/capita/day water consumption and 80% becomes wastewater) | Septic tank –Soak away system or temporally pit latrines |
| Hazardous Wastes | waste oils from engines, grease, used oil filters, e.t.c | Oils-30lts/month Oil Filters-4Nos per month Grease– 0.5kg/month | Car maintenance will be done at proper garages Wastes shall be collected by licensed hazardous waste collector |

As construction progresses towards the end, demobilization will be done for proper restoration of the sites under temporary use. After completion of construction, activities such as removing/spreading top-soils piled along the water pipeline installation, removing all temporary structures and clearance of all sorts of wastes including used oil, sewage, solid wastes (plastics, wood, metal, papers, etc) shall be done.

This shall also involve collection and disposal of all wastes to the approved dumpsite and terminal of temporary employments and subcontracts before handling over the projects to the District for operation.

2.1.4 Operation Phase

The activities during the operation phase will include a wide range of water transmission, treatment and storage facilities/accessories ready to be supplied to various beneficiaries within the village. Other activities will include waste management, maintenance, landscaping and planting some vegetation to control erosion in the project affected areas. During the operation phase the main activities will include:

- i. Routine maintenance in order to maintain the efficiency and quality of the facilities, which over time will experience wear and tear.
- ii. General environmental and safety management on site.

2.1.5 Decommissioning phase

It is envisaged that the project will be operational for a number of decades. In case the development comes to an end, decommissioning of the facility will be undertaken in accordance with the laws and regulations that will be prevalent at the time. This phase will mainly involve demolition of the structures and other associated infrastructures.

A written plan detailing how construction related equipment, materials and wastes will be decommissioned and disposed of on completion of their use will be prepared. The decommissioning and disposal plan will be reviewed by the project proponent prior to mobilization of the contractor to the site, and the proponent will maintain ultimate responsibility for the proper management of equipment, materials and wastes within the project area.

Prior to demobilization, the contractor will prepare a detailed list of all remaining equipment, unused materials, and wastes transported to the project area or generated as a result of work they performed. The equipment, unused materials and waste list will contain a description of the following:

- How each piece of equipment will be prepared for off-site shipment and the type and quantity of waste materials that will be generated during the equipment demobilization effort;
- The quantities and types of all unused materials, and the planned disposition of those materials; and
- The types, quantities and disposal plan for all wastes generated by the contractor which still remain within the project area. The equipment, unused materials and waste list will be submitted to the proponent prior to demobilization of the Contractor to ensure that all equipment, unused materials and wastes are managed and disposed of in accordance with good practices, applicable regulatory requirements, and the procedures

2.2 SOURCE OF ENERGY

The proposed infrastructure will use electricity from TANESCO. The standby generator or used of solar energy is recommended to be installed and operated during power shortages for constant supply of water to the village. Moreover the possibility to use solar energy system for lightening and other minor operation is strongly recommended.

2.3 WASTE MANAGEMENT

2.3.1 SOLID WASTE GENERATION AND MANAGEMENT

The project will generate waste during the construction phase. Some of the solid wastes which are likely to be generated by the project will include waste rocks/sands, dust, as well as remains of construction materials like timber, cement and steel used during the construction. Solid wastes will have to be dumped in a designated area, which will be designed to contain the waste from leakage and contaminated soils. Other solid wastes are expected to be generated from the workers' camps during construction and operation phases.

Such wastes include garbage, redundant raw materials, bottles and containers that need to be disposed of. Waste bins and collection points will be provided to cater for these different types of wastes that are generated from staff house and workers camp. Waste collected from waste bins will be sorted at the main collection point where a prescribed agent/service provider will collect the waste to dispose it in the designated sites as located by the Municipality. It is highly recommended that waste separation as well as decomposition of organic waste and recycling of solid waste be practiced.

2.3.2 LIQUID WASTE

During the construction and operation phases of the project, the anticipated liquid waste from the project will consist of domestic grey water emanating from residential areas, workers camps, and offices. New sewerage systems to be constructed should consider extending the service to those areas with no sewerage services as well as in the treatment plant to cater for workers' camp, and staff offices.

2.4 Land Ownership and Status

Water supply project involves free land donation and no compensation shall be affected to any parties. Community surrounding the project are willingly to donate the piece of land for the distribution network, storage tank and domestic point for water supply. (Refer appendix 8)

3 POLICY FRAMEWORK

This section is aimed at reviewing relevant environmental resource and planning legislations and regulations to ensure that proposed Water Supply Schemes in Morogoro District Morogoro Region meet policy and legislative criteria, World Bank's Environmental and Social Standards (ESSs) and that all relevant requirements are built into project design and implementation. The review also outlines specific procedures and measures to be carried out before, during and after projects' development.

Below are identified policies, legislations, World Bank's ESSs and International Conventions reviewed and included in the project brief describing their relevance to the project.

3.1 World Bank's Environmental and Social Framework

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

This Framework comprises:

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

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

3.1.1 Vision for Sustainable Development

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

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

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

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

The designs of Water Supply Schemes in Morogoro District Morogoro Region have observed the vision of sustainable development by ensuring climate change adaptation strategies have been taken into considerations.

3.1.2 World Bank Environmental and Social Policy for Investment Project Financing

This Environmental and Social Policy for Investment Project Financing sets out the mandatory requirements of the Bank in relation to the projects it supports through Investment Project Financing

The Bank is committed to supporting Tanzania government in the development and implementation of projects that are environmentally and socially sustain-able, and to enhancing the capacity of Borrowers 'environmental and social frameworks to assess and manage the environmental and social risks and impacts of projects.

The Bank will assist Tanzania government in their application of the ESSs to projects supported through Investment Project Financing in accordance with this Environmental and Social Policy for Investment Project Financing (Policy).

To carry out this Policy, the Bank will:

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

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

Wami/Ruvu Basin Water Board project engaged various stakeholders during preparation of Environmental and Social Management Framework (ESMF) and other supporting Environmental and Social Safeguard Instruments i.e. Stakeholders Engagement Plan (SEP) and Gender-Based Violence Action Plan (GBV Plan). However; at projects level, the proposed Water Supply Schemes in Morogoro District Morogoro Region have been conducted with ESIA study to comply with Environmental and Social Policy for Investment Project Financing. During the study, various stakeholders from village level to National Level were engaged, their views captured and used for influencing the design of proposed water supply scheme as indicated in chapter 5 of this project brief report.

3.2 World Bank Environmental and Social Standards (ESSs)

3.2.1 Environmental and Social Standard 1: Assessment and Management of Environmental and Social Risks and Impacts;

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

The Government of Tanzania through Wami/Ruvu Basin water board is required to conduct environmental and social assessment of proposed project for Bank financing project to help ensure that projects are environmentally and socially sound and sustainable. The environmental and social assessment should be proportionate to the risks and impacts of the project. It will inform the design of the project, and be used to identify mitigation measures and actions and to improve decision-making.

Wami/Ruvu Basin will manage environmental and social risks and impacts of the project throughout the project life cycle in a systematic manner, proportionate to the nature and scale of the project and the potential risks and impacts.

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

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

Among the requirements under ESS1 relevant to the proposed Water Supply Schemes in Morogoro District Morogoro Region include: Conduct an environmental and social assessment of the proposed project, including stake holder engagement; Undertake stakeholder engagement and disclose appropriate information in accordance with ESS10; Develop an ESCP, and implement all measures and actions set out in the legal agreement including the ESCP; and Conduct monitoring and reporting on the environmental and social performance of the project against the ESSs.

In addition, the proposed project should apply the relevant requirements of the Environmental Health and Safety Guidelines (EHSs) once Tanzanian requirements differ from the levels and measures presented in the EHSs, the GoT will be required to achieve or implement whichever is more stringent.

The proposed projects have been conducted with ESIA study and adequately undertaken stakeholders' engagement as required by ESS1 in order to create the sense of ownership by the community and sustainability. Wami/Ruvu basin shall prepare ESCP and sign legal agreement on its implementation.

3.2.2 Environmental and Social Standard 2: Labor and Working Conditions;

ESS2 recognizes the importance of employment creation and income generation in the pursuit of poverty reduction and inclusive economic growth. The government of Tanzania is required to promote sound worker-management relationships and enhance the development benefits of Proposed Water Supply Schemes in Morogoro District by treating workers in the project fairly and providing safe and healthy working conditions.

Among ESS2, objectives include:

- To promote safety and health at work
- To promote the fair treatment, nondiscrimination and equal opportunity of project workers

- To protect project workers, including vulnerable workers such as women, persons with disabilities, children (of working age, in accordance with this ESS) and migrant workers, contracted workers, community workers and primary supply workers, as appropriate.
- To prevent the use of all forms of forced labor

The project contractor shall adhere to the objectives under regular audits to be conducted by Wami/Ruvu, OSHA and the project Supervising Engineer. However, specific project's Labour Management Procedures (LMP) shall be prepared to guide labour issues during construction and operation of the Proposed Water Supply Schemes in Morogoro District.

3.2.3 Environmental and Social Standard 3: Resource Efficiency and Pollution Prevention and Management;

ESS3 recognizes that economic activity and urbanization often generate pollution to air, water, and land, and consume finite resources that may threaten people, eco- system services and the environment at the local, regional, and global levels. The current and projected atmospheric concentration of greenhouse gases (GHG) threatens the welfare of current and future generations. At the same time, more efficient and effective resource use, pollution prevention and GHG emission avoidance, and mitigation technologies and practices have become more accessible and achievable.

Among ESS3, objectives include:

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

On pollution prevention and management, the Government of Tanzania through Wami/Ruvu Basin will avoid the release of pollutants or, when avoidance is not feasible, minimize and control the concentration and mass flow of their release using the performance levels and measures specified in national law or the EHSs, whichever is most stringent.

During construction, operation of machineries, equipment and plant shall contribute on GHG emissions. Contractor shall adhere to all recommended actions to reduce GHG emissions from operating vehicles and plant. In addition, installation of diesel generator as an emergency power supply shall be taken into account as GHG contributor. Low emissions generator shall be proposed during construction phase.

3.2.4 Environmental and Social Standard 4: Community Health and Safety;

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

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

Objectives of the ESS4 include:

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

ESS4 requires:

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

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

The Proposed Water Supply Schemes in Morogoro District have identified, evaluated and shall monitor the potential health and safety risks to workers, affected communities and other users throughout the project life cycle. The ESMP has incorporated technically and financially feasible safety measures into the project’s designs to prevent and mitigate potential safety risks to all users and affected communities.

3.2.5 Environmental and Social Standard 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement;

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

Objectives of ESS5 include:

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

Among the requirements of ESS5 include the following:

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

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

13. Compensation standards for categories of land and fixed assets will be disclosed and applied consistently Compensation rates may be subject to upward adjustment where negotiation strategies are employed. In all cases, a clear basis for calculation of compensation will be documented, and compensation distributed in accordance with transparent procedures.

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

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

19. The GoT will ensure that a grievance mechanism for the project is in place, in accordance with ESS10 as early as possible in project development to address specific concerns about compensation, relocation or livelihood restoration measures raised by displaced persons (or others) in a timely fashion.

Proposed Water Supply Schemes in Morogoro District shall require acquisition of land and hence resettlement of residential and commercial structures. Proposed water supply scheme will affect farms plot and some residential areas in which the community were consulted and agreed to contribute their plot for the project without compensation (land donation).

3.2.6 Environmental and Social Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources;

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

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

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

Objective of ESS6 include but not limited to,

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

ESS6 requirements include among others:

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

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

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

As described in chapter 4, the proposed site has no sensitive biodiversity it supports thus no impacts are expected as a result of sites' clearance activities.

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

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

Among the ESS7 objectives include:

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

Among the general requirements of ESS7, include:

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

During ESIA study, no Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities were identified within or near the proposed sites.

3.2.8 Environmental and Social Standard 8: Cultural Heritage;

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

Objectives of the ESS8 include:

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

ESS8 requires:

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

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

During impacts' assessment study and through communities and stakeholders' consultations, no heritage site was identified to be within or near the proposed sites for implementation of Water Supply Schemes in Morogoro District.

3.2.9 Environmental and Social Standard 10: Stakeholder Engagement and Information Disclosure

This ESS 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.

Objectives of ESS10 are:

- 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 their 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

ESS10 requirements among others include:

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

7. The GoT will engage in meaningful consultations with all stakeholders. Will provide stakeholders with timely, relevant, understandable and accessible information, and consult with

them in a culturally appropriate manner, which is free of manipulation, interference, coercion, discrimination and intimidation.

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

Wami/Ruvu Basin project has prepared a specific Stakeholder Engagement Plan (SEP) for the proposed Water Supply Schemes in Morogoro District which guided consultations during the EIA stage. Several meetings have been conducted in the district purposely for stakeholders to air their views, comments and concerns on the type of water scheme infrastructure as indicated in chapter 5 of this report.

3.3 The World Bank ESH Guidelines

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

The EHS Guidelines contain the performance levels and measures that are generally considered to be achievable in new facilities by existing technology at reasonable costs. Application of the EHS Guidelines to existing facilities may involve the establishment of site-specific targets, with an appropriate timetable for achieving them. The applicability of the EHS Guidelines should be tailored to the hazards and risks established for each project based on the results of an environmental assessment in which site-specific variables, such as host country context, assimilative capacity of the environment, and other project factors, are taken into account. Wami/Ruvu Basin project, these guidelines shall be implemented during construction and operation of the Proposed Water Supply Schemes in Morogoro District.

The World Bank's Operational Policies (OPs) are a set of policies and procedures that the bank uses to manage its lending operations. The OPs are designed to ensure that the bank's projects are socially and environmentally sound, and that they achieve their intended results.

There are 10 OPs in total, and each one covers a different aspect of project management, such as environmental assessment, social impact assessment, and procurement. The OPs are updated on a regular basis to reflect the latest best practices in development.

OP 7: Water Resources Management is the most directly relevant OP to water supply projects. OP 7 sets out the bank's requirements for sustainable water resources management, including the need to consider the needs of all stakeholders, to protect the environment, and to promote efficiency and equity.

OP 7 also requires the bank to consider the following factors when financing water supply projects:

- i. The availability and sustainable use of water resources
- ii. The potential impacts of the project on the environment and on downstream users
- iii. The institutional arrangements for managing the water supply system
- iv. The economic and financial viability of the project,
- v. The social impacts of the project, including the impact on vulnerable groups

The World Bank has financed a number of water supply projects in Morogoro District, Tanzania. These projects have helped to improve access to clean water for thousands of people, and to reduce the incidence of waterborne diseases.

For example, the World Bank-financed Morogoro Water Supply and Sanitation Improvement Project (P163876) has helped to improve access to clean water for over 400,000 people in Morogoro District. The project has also helped to reduce the incidence of waterborne diseases by over 50%.

Another World Bank-financed project, the Water Supply and Wastewater Services Improvement Project (P171778), is currently underway in Morogoro District. This project is aimed at improving the quality and reliability of water and wastewater services for over 1 million people.

The World Bank's OPs play an important role in ensuring that the bank's water supply projects are sustainable and that they benefit all stakeholders. By requiring the bank to consider the environmental, social, and economic impacts of its projects, the OPs help to ensure that the bank's projects are successful in the long term

3.4 POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

3.4.1 THE NATIONAL ENVIRONMENT POLICY (NEP, 2021)

The National Environmental Policy seeks to provide the framework for making fundamental changes that needed to bring environmental considerations into the mainstream of decision making in Tanzania. Some of the key objectives of the National Environmental Policy are; To strengthen coordination of environmental management in sectors at all levels; To enhance environmentally sound management of land resource for socio economic development; To promote environmental management of water sources; To strengthen conservation of wildlife habitats and biodiversity; To enhance conservation of forest ecosystems for sustainable provision of environmental goods and services; To manage pollution for safe and healthy environment; To strengthen the national capacity for addressing climate change impacts; To enhance conservation of aquatic system for sustained natural; To promote gender consideration in environmental management; To promote good governance in environmental management at all levels; To ensure safety at all levels of application of modern biotechnology and To ensure predictable, accessible, adequate and sustainable financial resources for environmental management

Chapter 3; section 3.6, Environmental pollution, the policy states to promote green technologies and integrated management of municipal waste, chemicals waste; e-waste and waste emanated from oil and gas operations; ii) Strengthen national capacity in waste management, urban planning and control of noise pollution; iii) Enhance collaboration with Private Sector to address environmental

pollution; iv) Enhance public awareness and participation in pollution control; and v) Enhance regional and international cooperation on pollution control also section 3.11 of this policy states that the genders sector that shall focus on Strengthen gender mainstreaming in environmental management; and ii) Promote public awareness on the role of gender in environmental conservation

Relevance to the Project

The Proposed Water Supply Schemes in Morogoro District have observed the policy objectives at various stages where there will be environmental impacts including transport emission gasses, noise, dust, particulates and spills, road accidents etc. Prior to the execution of the proposed project Environmental and social impact assessment (ESIA) has been conducted including preparation of Environmental and Social Management Plan that will be referred for the purpose of preventing and minimizing environmental and social impacts resulting from the project activities

3.4.2 THE NATIONAL WATER POLICY 2002

Tanzania has been undertaking various water sector reforms in order to address emerging challenges in water resources development and management. The major reforms undertaken include;

- The National Rural Water Supply Programme (1985)
- The First National Water Policy (1991)
- The Water Sector Review (1993)
- The Rapid Water Resources Assessment (1994), and
- The River Basin Management and Small Holder Irrigation Improvement Project, which amongst others revised the 1991 policy to a new National Water Policy (NAWAPO) as approved by the cabinet in July 2002.

The objectives of the NAWAPO are:

- To develop a comprehensive framework for sustainable development and management of the nation's water resources, putting in place an effective legal and institutional framework for its implementation
- To ensure that beneficiaries participate fully in planning, construction, operation, maintenance and management of community-based domestic water supply schemes.
- To address cross-sectoral interests in water, watershed management and integrated and participatory approaches for water resources planning, development and management.
- To lay a foundation for sustainable development and management of water resources in the changing role of the government from service provider to that of coordination, policy and guideline formulation and regulation.

The NAWAPO 2002 in allocating water for different uses, water for basic human needs in adequate quantity and acceptable quality receives highest priority. Sufficient water to protect the ecosystems that underpin Tanzania's water resources now and in the future will attain second priority; this water will be reserved for the environment. Other uses will be subject to social and economic criteria, which will be reviewed from time to time.

Relevance to the Project

The project management will be required to ensure that water abstraction takes into consideration downstream water flow for environmental purposes and protection of ecosystems

3.4.3 NATIONAL WATER SECTOR DEVELOPMENT STRATEGY (NWSDS 2004)

The National Water Sector Development Strategy (NWSDS 2004) has been formulated as guideline in implementing the NAWAPO (2002) and it describes the institutional and legislative framework for its implementation. The NWSDS considers water as a shared common resource as it touches a wide range of economic development sectors. Thus, the NWSDS considers water related aspects of other sectoral policies in order to provide guidance on priority areas for inter-sectoral development planning.

The NWSDS recognizes the role of water in poverty alleviation. According to the NWSDS, the impact of low water supply falls primarily on the poor people. In this case, Water Sector is included among the priority sectors in the National Poverty Reduction Strategy Paper (PRSP).

The strategy also, recognizes the important role played by NGOs and CBOs as service providers and the importance of community ownership and management of water resources. This includes equal gender representation in village water committees. The water strategy is gender sensitive as it calls for involvement of women and men in decision-making related to water resource development and management or provision of water and sanitation services.

Relevance to the Project

The project addresses the problem of inadequate and good quality water supply and provision of sanitation services in the urban area. The project will be required to address gender issues by ensuring involvement of women and men in decision making related to provision of water and sanitation services

3.4.4 NATIONAL HUMAN SETTLEMENTS DEVELOPMENT POLICY (2000)

The overall objective of the National Human Settlements Development Policy (NHSDP) is to promote the development of sustainable human settlement and to facilitate the provision of adequate and affordable shelter to all people, including the poor. The NHSD policy outlines a number of objectives including environmental protection within human settlements and protection of natural ecosystems against pollution, degradation and destruction. The NHSDP recognizes planning and management of human settlement areas as one of the broad human settlement issues. Within this regard, the NHSDP identifies environmental protection as one of the strategic issues in human settlement planning and development. NHSDP also addresses the following issues:

- Lack of solid and liquid waste management, leading to environmental deterioration;

- Emission of noxious gases from vehicles and industrial activities as a major cause of air pollution in urban areas
- Encroachment into fragile and hazardous lands (river valleys, steep slopes and marshlands) leading to land degradation, pollution of water sources, etc.;
- Increasing dependence on firewood and charcoal as a main source of energy charcoal as a main source of energy in human settlements leading to depletion of forest environmental deterioration and air pollution and
- An Un-authorized sand mining in river valleys leading to environmental degradation

Relevance to the Project

Wami/Ruvu Basin Water Board project will be confined with Morogoro District settlement pattern and upcoming Master Plan. Thus, the project might cause an increase of human settlements in the area, increased consumption of water facilities as well as waste generation. The study will also address the unplanned settlements in the catchment areas and water intake points. The impacts of these settlements will be assessed and mitigation measures will be proposed.

3.4.5 WATER SECTOR DEVELOPMENT PROGRAMME (WSDP)

The Ministry of Water and Irrigation is implementing the Water Sector Development Programme (WSDP), for the period 2006–2025. The programme has four components, namely: (i) Water Resources Management; (ii) Rural Water Supply and Sanitation; (iii) Urban Water Supply and Sewerage; and (iv) Institutional Development and Capacity Building. It follows a Sector Wide Approach to Planning (SWAP); with an overall objective of strengthening sector institutions for integrated water resources management and improve access to water supply and sanitation services.

The objective is to attain the aspirations of the National Development Vision 2025; which envisions universal access to water supply services in urban areas by 2025; and covering at least 90% of the population with water supply services in the rural areas by 2025; while ensuring environmental sustainability through integrated water resources management principles. Implementation of the Programme is done throughout the country in all Local Government Authorities (LGAs), Basin Water Boards (BWBs), and Urban Water Supply and Sanitation Authorities (UWSAs).

Relevance to the Project

Water Sector Development Programme second phase is in the course of implementation and has five key components which are relevant to Sustainable Development Goals especially goal 6. These includes Water Resources Management; Rural Water Supply and Sanitation; Urban Water Supply and Sanitation; Sanitation and Hygiene; as well as Programme Delivery Support. Therefore, this project is part and parcel of the implementation of WSDP II focusing on component number two to improve urban water supply in Morogoro district.

3.4.6 THE TANZANIA DEVELOPMENT VISION 2025

Composite Development Goal for the Tanzania Development Vision 2025 foresees the alleviation of poverty through improved socio-economic opportunities, good governance,

transparency and improved public-sector performance. The objectives of the Tanzania Development Vision are not focused on economic issues only, but also highlights on how to tackle social challenges such as education, health, the environment while increasing involvement of the people in working for their own sustainable development.

Moreover, the Tanzania Development Vision 2025 seeks to mobilize the people; the private sector and public resources towards achieving shared goals and achieve sustainable semi-industrialized middle market economy by year 2025. The development of the construction material production factory aims at increasing the availability of concrete materials and increase employment opportunities among other benefits.

Other policies those are relevant to the proposed development, and which may have direct or indirect implications include (a) The National Transport Policy of 2011, (b) National Health Policy of 2003 (c) Women and Gender Development Policy of 2000, (d) The National Investment Policy, (g) National Trade Policy of 2003 and (h) National Construction and Industry Policy, 2003. During the study, impacts arising from the proposed development that may have implications to these policies and several others will be highlighted.

Relevance to the Project

This project contributes in the implementation of the water supply and sanitation by improving and extending water supply and sewerage services in Morogoro Municipality to meet the demands of water and sewerage disposal for the coming 25 years.

3.5 LEGAL FRAMEWORK

3.5.1 ENVIRONMENTAL MANAGEMENT ACT (2004) AS AMENDED IN 2016 AND 2021

The Environmental Management Act No. 20 of 2004 is the principle legislation governing environmental management in the country. The Act recognizes the right of every citizen to clean, safe and health environment, and the right of access to environmental resources for recreational, educational, health, spiritual, cultural and economic purposes. Thus, the Act provides a legal framework for coordinating harmonious and conflicting activities by integrating those activities into overall sustainable environmental management system by providing key technical support to Sectoral Ministries.

For effective implementation of the national environmental policy objectives the Act has identified and outlined specific roles, responsibilities and functions of various key players and provides a comprehensive administrative and institutional arrangement, comprised of:

- National Advisory Committee
- Minister Responsible for Environment
- Director of Environment
- National Environmental Management Council (NEMC)
- Sector Ministries
- Regional Secretariat
- Local Government Authorities (City, Municipal, District and Town Councils)

Part VI Sub-section 81(1) of the Act requires a project proponent or developer of a project to undertake Environmental Impact Assessment (EIA) at his or her own cost prior to commencement or financing of the project or undertaking. The types of projects requiring EIA are listed in the THIRD SCHEDULE of the Act. Thus, in that regard the Act prohibits any development to be initiated without an Environmental Impact Assessment (EIA) Certificate. Sub-section 86(1) stipulates..." the Council shall upon examination of a project brief, require the proponent of a project or undertaking to carry out an Environmental Impact Assessment study and prepare an Environmental Impact Statement". According to Sub-sections 1-4 of the Act the EIS should be submitted to the Council, which carries out a review through its Technical Review Committee (TRC). The Council is also required to make a site visit during the review process for inspection and verification at the Project Proponent's cost.

Relevance to the Project

The Act is relevant to the project because the project is expected to have some negative impacts to the environment. Thus, the project is listed in the THIRD SCHEDULE of the Act and falls under those project that require Environmental Impact Assessment (EIA) study before its commencement. Wami/Ruvu Basin Water Board has prepared this EIA report for registration and review subsequently issuance of Environmental Impact Assessment Certificate.

3.5.2 THE WATER RESOURCE MANAGEMENT ACT (2009)

The Water Resource Management Act No. 11 of 2009 was enacted to provide for institutional and legal framework for sustainable management and development of water resources; to outline principles for water resource management; to provide for the prevention and control of water pollution; to provide for participation of stakeholders and general public in implementation of the National Water Policy, repeal of the Water Utilization (Control and Regulation) Act Cap. 331 of 2002 and to provide for related matters. The objective of this Act is to ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled in ways which take into account fundamental principles. Section 5 outlines the principles of sustainable water resource management. It states that any persons exercising jurisdiction under this Act shall, in relation to any decision, order, exercise of any power or performance of any function, be guided by the following principles of sustainable integrated water resource management and sustainable development:

- (a) The precautionary principle;
- (b) Polluter pay principle;
- (c) The principle of eco-system integrity
- (d) The principle of public participation in the development policies, plans and process for the management of the water resources;
- (e) The principles of international co-operation in management of environmental resources shared by two or more states; and
- (f) The principle of common but differentiated responsibilities.

Sub-Section 6(1) requires any person exercising powers under this Act or under any other written law having a bearing on the provision of water resource management to promote and have regard to National Water Policy, 2002, in respect of water resource management. According to Sub-section 6(2) the preference to water allocation shall be for domestic purposes; environmental resource; and socio-economic activities, depending on the availability of water resources

Section 8 requires the Director of Water Resources to carry out Strategic Environmental Assessment where major water project is planned in accordance with the procedures and regulations made under the Environmental Management Act Cap.191 of 2004.

Section 9 requires Environmental Impact Assessment to be carried out for any proposed development in a water resource area or watershed to which this Act applies, whether that development is proposed by or is to be implemented by a person or organization in the public or private sector in accordance with the provisions of the Environmental Management Act Cap 191 of 2004. Section 12 deals with right to rainwater harvesting or use of recycled water, whereby Sub- section 12(1) allows the owner or occupier of any land to construct any works for rainwater harvesting or for recycling of used water other than in a river or stream and abstract and use the water so conserved or recycled for domestic purposes without a Water Use Permit issued under this Act. Sub-section 12(2) states that notwithstanding the generality of sub-section (1), no works for purpose of rainwater harvesting shall have the capacity greater than the capacity prescribed in regulations by the Minister.

Section 54 deals with application for groundwater permit, whereby it requires any person who intends to construct, sink, enlarge or deepen a well or borehole in a Groundwater Controlled Area declared under Section 38 or any other area to apply for a Groundwater Permit

Relevance to the Project

In general, the project deals with water resource development and therefore the project proponent has to adhere to all provisions given under this Act. Specifically, the project involves groundwater abstraction, rainwater harvesting. In this regard, the project proponent has to adhere to the provisions of Section 12 for rainwater harvesting; Section 54 for groundwater abstraction

3.5.3 Water Supply and Sanitation Act 2019

The Act provides a description of the water resource management framework in Tanzania including roles and responsibilities of every actor and related stakeholders. One of the Key objectives of this Act in Part II section 4(1) is to ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled in ways which take into account the fundamental principles of sustainability including subsection (h) preventing and controlling pollution and degradation of water resources. Proposed Water Supply Schemes in Morogoro District project will adhere to the objective of this Act by ensuring that water sources are protected from pollution during construction.

The provision of Part VI, section 39(1) requires that the owner or occupier of land on which any activity or process is performed which is likely to cause pollution of a water source, shall take all reasonable measures to prevent any such pollution from occurring, continuing or recurring. The Proposed Water Supply Schemes in Morogoro District project will comply with this Act by adhering to proper waste management practices during construction activities.

The provision of Part VIIA, section 43(1) requires that any person who diverts, dams, stores, abstracts or uses water from surface or underground water source, or for any such purpose constructs or maintains any works, shall apply for a Water Use Permit in accordance with this Act. In addition, subject to section 45(2) The Basin Water Board may grant the applicant a temporary Water Use Permit for any purpose under such conditions as may be deemed fit. In

addition to section 48 (b) as the user of water use permit granted under this Act you are required to prevent any damage to the source from which water is taken, or to which water is discharged after use. The Proposed Water Supply Schemes in Morogoro District project will comply with this Act, the water will be obtained from borehole and rivers within the district which shall require water use permit to be granted under requirement of this Act and ensures conservation of its water sources within or near the project site during construction phase.

The provisions of Part VIID, section 63(1) requires that a person who wishes to discharge effluents from any commercial, industrial or agricultural source or from any sewerage works or trade waste systems or from any other source into surface water or underground strata shall apply to the Basin Water Board for a Discharge Permit in accordance with this Act.

Proposed Water Supply Schemes in Morogoro District project will comply with this Act by obtaining water abstraction permit; drilling permit and discharge permit as required by this provision so as to ensure water abstraction from sources and liquid waste are well managed.

3.5.4 The Energy and Water Utilities Regulatory Authority Cap 414 of 2006 As Amended in 2019

This Act provides guidance in the EWURA administrative system by specifying roles and responsibilities of every actor and related stakeholders, power and proceedings of authority, complaints 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.

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

3.5.5 Local Government Laws (Miscellaneous Amendments), No. 13 (2006)

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

The provisions of Part II, section 2, of this Act gives instructions that this part shall read as one with the Local Government (District Authorities) Act, in this Part referred to as the "principal Act". The principal Act is amended in section 54A (a) in Part III, section 20 (h) of this Act requires to provide and secure enabling environment for successful performance of the duties of the urban authority; paragraph (i) ensure compliance by all persons and urban authorities with appropriate government decisions, guidelines in relation to the promotion of the local government system; and paragraph (j) do such acts and things as shall facilitate or secure the effective, efficient and lawful execution by the urban authorities of the statutory or incidental duties."

Proposed Water Supply Schemes in Morogoro District will comply with the provisions of this Act by ensuring consultation with all levels of local government, including Morogoro District council, ward

executive officers and Village executive officers to ensure compliance by all levels of authority in relation to the promotion of the local government system

3.5.6 The Land Use Planning Act Of 2007

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

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

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

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

The Proposed Water Supply Schemes in Morogoro District are compatible with the current land use master plan of the area

3.5.7 The Urban Planning Act, No. 8 of 2007

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

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

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

The provisions of Part IV, section 52(1) requires that no person shall carry out a development on a conservation area without consent of the planning authority. Subject to the provision of part V, section 63(2) that in giving planning consent under the provisions of this Act to the temporary development of any land within a planning area, the planning authority concerned may give such planning consent on the condition that the value of such temporary development shall not be taken into account for the purposes of assessing any compensation payable to the landholder of such land and, in such case the value of any temporary development shall not be

taken into account for the purpose of assessing compensation payable. Subject to section 64(1), However if land is injuriously affected by the coming into operation of the development project compensation will be done, and section 67 that the compensation under this section shall be paid as provided for under the Land Act and the Village Land Act.

Proposed Water Supply Schemes in Morogoro District will ensure to comply with the provisions of this Act by consulting planning authority for fulfilment of all required procedures, has conducted Environmental Impact Assessment and the report will be submitted to the authority, will also ensure compensations are paid at rates required by this Act

3.5.8 Occupational Health and Safety Act of 2003

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

The provisions of Part III, section 15 requires that there shall be a register of workplace in which inspector shall enter such particulars in relation to every work place

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

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

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

The provisions of Part V, section 54(1), requires that the employer shall ensure supply of safe and clean drinking water that is readily accessible to all employees;

The Proposed Water Supply Schemes in Morogoro District will comply with the provisions of Part V of this Act by ensuring that all requirements are met including providing clean drinking water and hygiene services.

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

Proposed Water Supply Schemes in Morogoro District will comply with the provisions of part X of this Act by ensuring that all safety rules are posted and understood by construction workers, safety policies are developed and implemented, employment rights are observed and Health and Safety protection measures are adhered to

3.5.9 Employment and Labour Relation Act, Cap 366 R.E 2019

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

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

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

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

The Proposed Water Supply Schemes in Morogoro District will employ approximately 100 direct employments, notwithstanding the provisions of this Act, the project will comply with the provisions of this Act by ensuring that all the requirements, restriction and rights of employees are respected and guided as underlined by this Act.

3.5.10 The Environmental (Registration of Environmental Experts) Regulations, 2021.

These regulations shall apply to all individual environmental experts and firms of environmental experts certified and registered under these Regulations. Regulation 14 to this regulation provides that “No person shall conduct an environmental impact assessment or carry out any activity relating to the conduct of an environmental impact study, or environmental audit as provided for under the Act, unless that person has been duly certified and registered in accordance with this regulation.”

This ESIA has been undertaken by Mhandisi Consulting Limited, an Environmental Registered Firm of Expert by NEMC.

4 ENVIRONMENTAL BASELINE CONDITIONS

4.1 Geographical Location:

Morogoro District is one among the 9 Districts in Morogoro Region .The District is located at North East of Morogoro Region between 6°00' and 8°00' Latitudes South of Equator also between Longitudes 36°00' and 38° East of Greenwich. It is bordered by Bagamoyo and Kisarawe districts (Coast region) to the East, Kilombero district to the south and Mvomero district to the North and West.

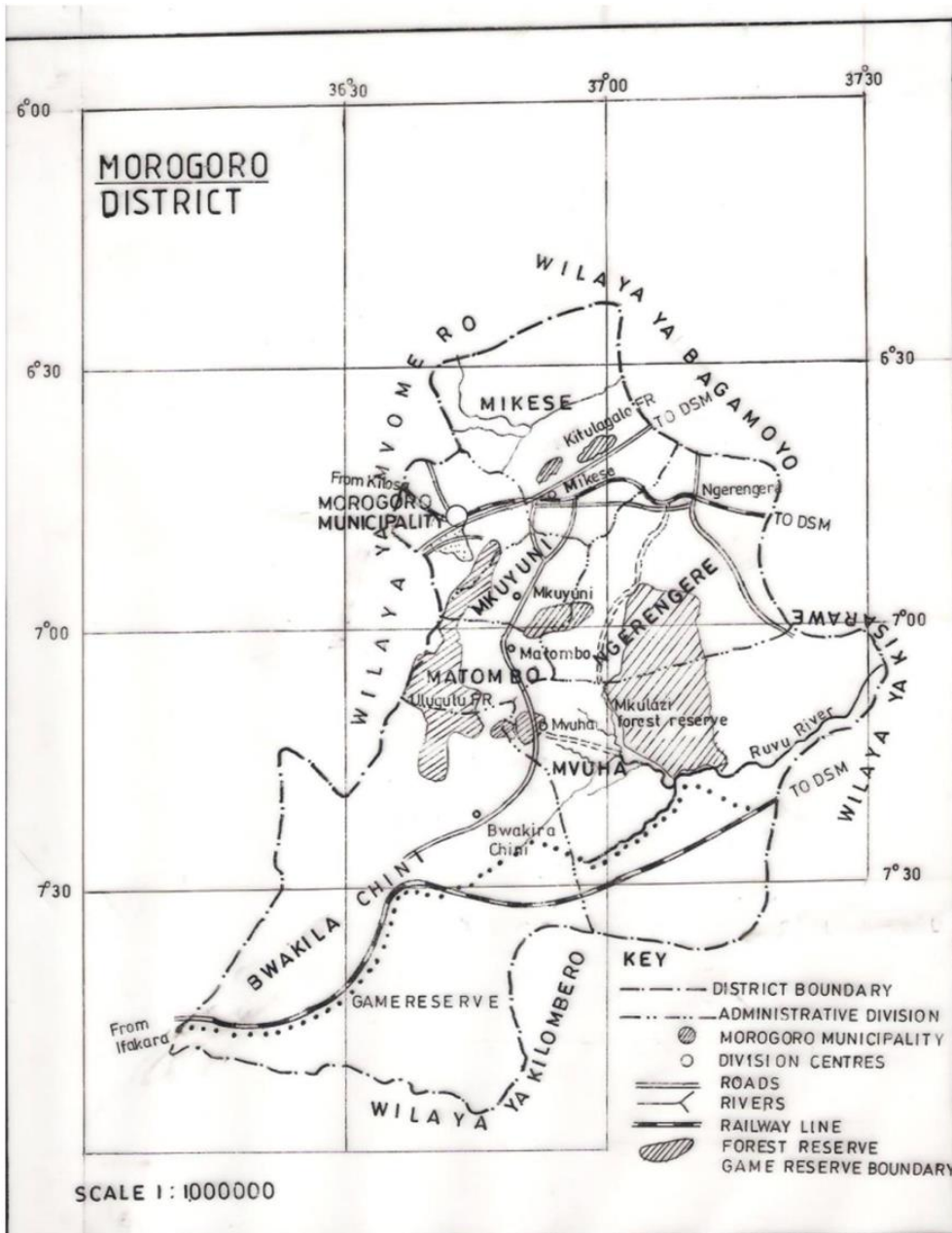


Figure 4-1: Morogoro District map

Source: Morogoro District Council Strategic Plan for the Year 2016/2017 – 2020/2021

4.2 Climate and Soils:

Temperature normally is changing from 200c “Centigrade” to 300c “Centigrade”. It rains from 600mm in flat areas up to 300mm in the mountainous areas. Heavy rain is in the month of March – May. January to February is a dry season while August – November is a hot season. Also, January to July is a cold season. There are different types of soils in our Districts namely; Sand soils in the places like Ngerengere, Kisaki. Cley type of soils in a place like Ngerengere - Kidugalo, Loam Soil type in Ngerengere – Matuli

The subsurface rocks are blanketed by undifferentiated alluvium and mbuga soils (undifferentiated continental sedimentary formations) of Neogene geological age. The basement is assumed to be high-grade metamorphic complex underlying presumably the Karoo sediments.

Geology, structural geology and hydrogeology: The surface geology at morogoro village is mainly alluvium and mbuga soils (undifferentiated continental sedimentary formations) of Neogene geological age. The area is dominated by Neoproterozoic formation comprising of high grade mafic and felsic granulite gneiss and migmatite interlayered with amphibolite, marble, quartzite, schist and mylonite. The area to the south east about 10km is dominated by the palaeozoic-mesozoic (PZ – MZ) Basins of Karoo deposits (Upper Carboniferous and middle Jurassic). The subsurface geology of Morogoro will be inferred during geophysical survey and test drilling.

4.3 Climate Change Projection

4.3.1 Temperature

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

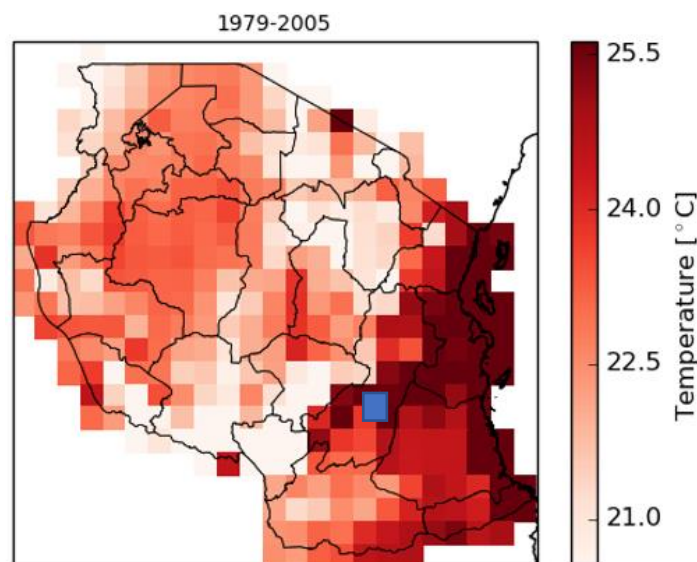


Figure 4-2: Temperature average over the reference period 1979-2005. This map is based on the EWEMBI dataset. Source: <http://regioclim.climateanalytics.org/choices>

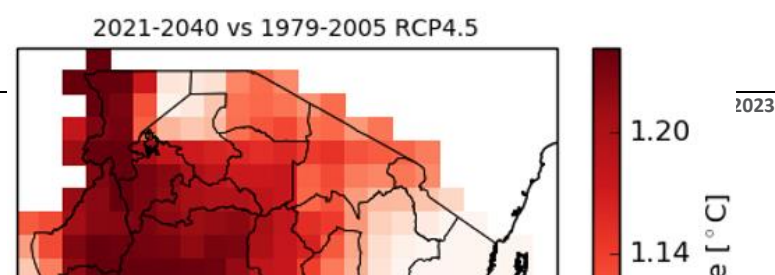




Figure 4-3: Projected change in temperature for 2021-2040 compared to the reference period 1979-2005. Here the ensemble mean of regional climate model projections is displayed. Grid-cells for which a model-disagreement is found are colored in grey. The projections are based on the emission scenario RCP4.5.
Source: <http://regioclim.climateanalytics.org/choices>

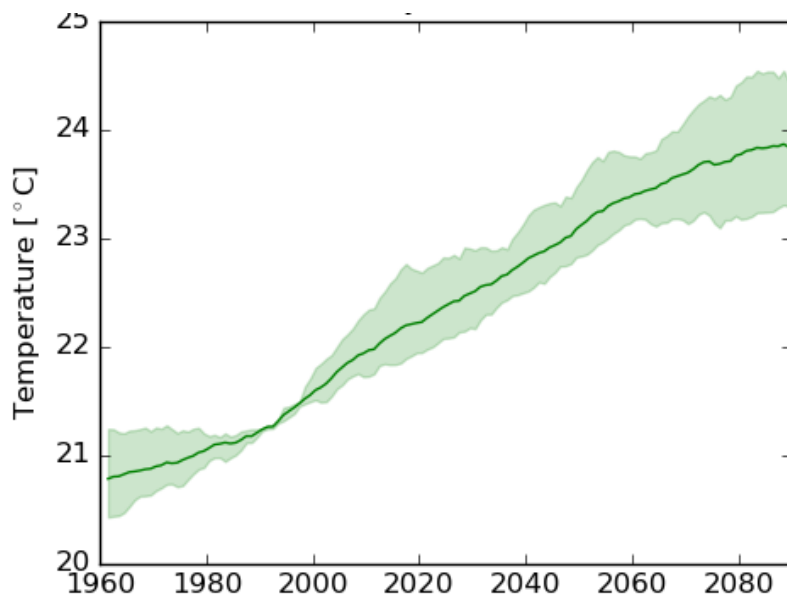


Figure 4-4: Regional climate model projections for temperature displayed as 20 year running mean. The line represents the ensemble mean while the shaded area represents the model spread. The projections are based on the emission scenario RCP4.5.

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

Temperature is predicted to increase throughout from year 2021 to 2040, figure 6-8 indicates the highest increase of 1.3°C in April and the lowest of 1.1°C in March. Notable period of steady temperature increase is between April and June. Climate change might result into increased temperature by an average 2.3°C by 2050 which is likely to impact the availability of ground water source and water supply scheme in the future only if climate change adaptation measures shall not be taken into consideration on the design and construction of the proposed project.

4.3.2 Hot Extreme

Hot extreme conditions have been projected for Morogoro District by using RCP4.5 as indicate in figures below.

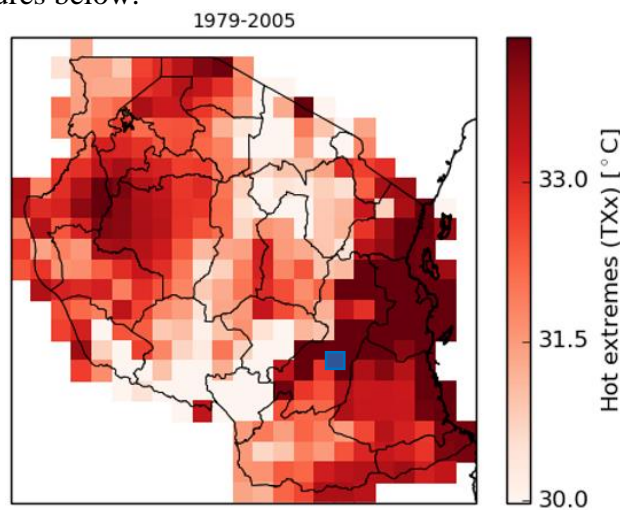


Figure 4-5: Hot extremes (TXx) average over the reference period 1979-2005. This map is based on the EWEMBI dataset. Source: <http://regioclim.climateanalytics.org/choices>

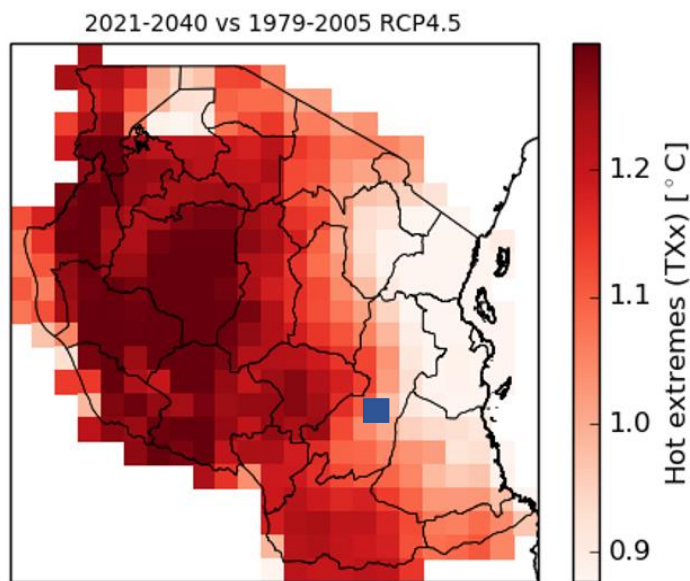


Figure 4-6: Projected change in hot extremes (TXx) for 2021-2040 compared to the reference period 1979-2005. Here the ensemble mean of regional climate model projections is displayed. Grid-cells for which a model-disagreement is found are colour in gray. The projections are based on the emission scenario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

Morogoro District is continuing to experience hot weather extremes, currently is experiencing an average of 31°C with projected yearly slight increase, in 2040 hot extreme expected to attain 31°C. Highest hot extreme weather is and shall be experienced in April. Hot extreme is among the climate variable that will contribute drought and drying of water sources. Climate adaptation measures should be considered with regard to the effect of hot weather extremes on Propose water schemes supply.

4.3.3 Rainfall

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

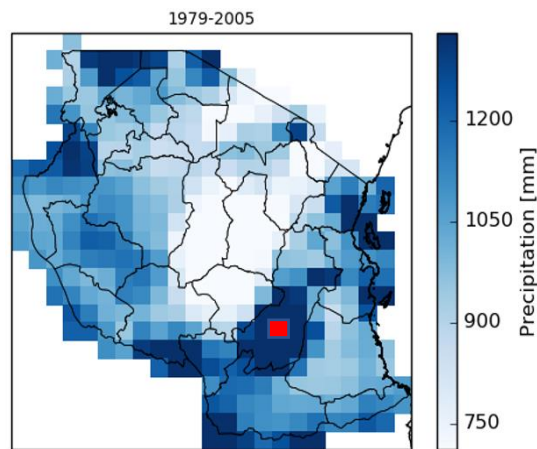


Figure 4-7: Precipitation sum over the reference period 1979-2005. This map is based on the EWEMBI dataset. Source: <http://regioclim.climateanalytics.org/choices>

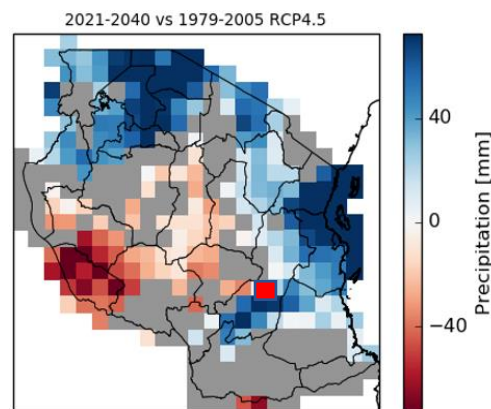


Figure 4-8: Projected change in precipitation for 2021-2040 compared to the reference period 1979-2005. Here the ensemble mean of regional climate model projections is displayed. Grid-cells for which a model-disagreement is found are coloured in grey. The projections are based on the emission scenario RCP4.5. Source: <http://regioclim.climateanalytics.org/choices>

From the analysis, the Morogoro District will experience an average of 975mm rainfall up to 2029 and start to decrease from 2021 to 2040 at an average of -40mm. In comparison with the reference period of 1979-2005, Decrease in rainfall water supply project shall causes inconvenient to the community hence consideration on the design for sustainable network and storage capacity shall be considered in future.

4.4 Agro-Ecological Zones:

Geographically, Morogoro District divided into 3 areas; as follows:

4.4.1 Mountainous Areas:

This area takes the large part of Uluguru Mountainous; This Area takes 25% of the whole area of this District of Morogoro. Average total Rainfall is in 1000–3000mm annually.

This area is good for growing Beans, Cardamon, Coffee, Black Pepper, Vegetables and Fruits.

Major problems in this zone are many and serious namely: soil erosion and deforestation caused by residents clearing land for crop farming. Transport communication is a very serious problem in the area due to the mountainous nature of the area.

4.4.2 Low Mountainous Zones:

This zone takes the biggest part of the area of North Morogoro and it takes 20% of the whole area of Morogoro. This area is on the highest ranging from 600m to 1200m from the sea level. Average total rainfall in this zone is 1000 – 2000mm annually. This area has sand type of soil which is good for growing Maize, Cassava, and Finger Millet. The area is also good for Cattle keeping, Temperature of 290c.

4.4.3 Savannah Zones:

This area is bigger than all other areas, it takes 55% of the whole area of the Morogoro District. The area is on the highest range between 600 to 800m from the sea level. Annually Rainfall is in between 900 – 1200 mm. The area comprises of rivers like Mgeta kafa, Ruvu, Wami, Msongozi, Mbulumi, and Ngerengere. The type of soil in this zone is good for cultivation of maize and rice. Also fishing activities is done in this zone

4.4.4 Environmental Flows

The National Water Policy of Tanzania, as revised in 2002, recognizes the flow needs of the environment as a second priority in allocation of water resources, following water requirements for basic human needs and domestic activities (URT 2002).

River and stream flows in the proposed Kidunda dam area (which will be used to store and supply water to Dar es Salaam) follow the nature of rainfall with sharp increases in the rainy season. Historic peak flows in the Ruvu at Kidunda have been recorded to be as high as 400m³/s, with mean flow at about 50 m³/s. Low flows have occurred relatively frequently with the probability of not meeting the stipulated demand once every four years. Securing adequate amounts of water to existing infrastructure is a key driver to the proposed Kidunda Dam (Norconsult 2008).

The Kidunda Dam will result in changes in downstream flow and seasonal inundation. This in turn will have an impact on the ecology, disrupt wildlife corridors, affect reproductive behaviour of aquatic organisms and the nutrient supply to estuarine species, as well as negatively impact other wetland habitats. On the other hand, wildlife will find secure water and grazing, but may compete with livestock. The dam will also increase access to water downstream for irrigation and recharge to ground water (Norconsult 2008).

To reduce the severity of negative impacts as a result of an altered flow regime, Norconsult (2008) recommended that the flow release strategy mimics historical flow patterns and allows mixing of the upper and lower water layers. Otherwise changes in flow patterns and deoxygenated water could result in a significant reduction in the downstream fishery.

Maintenance of the environmental flow requirements would be controlled by outlet towers. Water can be released through the outlets at the beginning of the rainy season in order to avoid

a delay in stream flow as the dam fills. If the outlets are open at peak flow, this allows a 33% reduction in the buildup of headwaters during flood peaks. To reduce saltwater intrusion, a minimum environmental flow of 200 ml/day is required (Norconsult 2008)

4.4.5 Ecological indicator

Within the Eastern Arc Mountains, at least 96 vertebrate species are endemic, which include 10 mammals, 19 bird, 29 reptile and 38 amphibian species. At least 800 vascular plant species are endemic and almost 10% of these are trees. Seventy-one of the endemic or near endemic vertebrates are threatened by extinction (8 critical, 27 endangered, 36 vulnerable), with an additional seven wide-ranging threatened species. Hundreds of plant species are also threatened (Burgess et al. 2007a).

Table: Summary of the species richness and endemism of the uluguru Mountains

| Taxon | Species richness | Endemics | Near endemics | No. species not recorded in the last 10 years |
|--------------|------------------|-----------|---------------|---|
| Mammals | 76 | 3* | 10 | 30 |
| Birds | 140 | 2 | 10 | 2 |
| Reptiles | 45 | 5* | 16 | 12 |
| Amphibians | 39 | 6 | 18 | 3 |
| Total | 300 | 15 | 54 | 47 |

At least 47 species have not been recorded from the Ulugurus over the last decade. The majority of these species are mammals, which probably reflects a low survey intensity. However, it is possible that some animals previously recorded in the Ulugurus are no longer present due to habitat loss. Of greatest concern are those species endemic to the Ulugurus that have not been recorded during the last 10 years, as it is possible that they are now extinct. These are the four endemics that have not been recorded for ten years are: the sub-species of golden mole *Chrysochloris stuhlmanni tropicalis*, the snakes *Typhlops uluguruensis* and *Prosymna ornatissima* and the amphibian *Hyperolius tornieri*, although the validity of that species has been questioned. Of greatest concern are the low- and mid-altitude endemics *Prosymna ornatissima* and *Typhlops uluguruensis* because habitat loss has been most severe in the mid- and low-altitude sites

4.4.6 Uluguru Mountains

The Uluguru range contains seven forest reserves supporting Eastern Arc habitats within Morogoro Rural District (Uluguru North, Uluguru South, Kasanga, Mkangala, Mlaliwila, Ngambaula and Tongeni River) (EAMCEF 2007). In terms of endemic species (Table 2.4) the Uluguru Mountains possess at least 14 strictly endemic vertebrate species with at least 3 additional species that have not yet been described. A further 16 Eastern Arc endemic species have also been identified in this mountain. There are also at least 26 Eastern Arc endemic trees. The forests of the main ridge are quite well known biologically, although each new survey continues to uncover additional species. The outlying areas are poorly known, with some having had almost no biological investigation (EAMCEF 2007).

4.5 DISTRICT ECONOMY

Morogoro District's Economy is no exception it also depends on Agriculture, mainly from Crop production. Major food crops are Maize, Paddy, Cassava and Sorghum. Main cash crops produced are Cotton and Sisal. 82% of the adult population in Morogoro Rural earns their livelihood from Agriculture though mainly at subsistence level, 6% in Business Operation, 6% in Elementary Occupations, 4% in Office Work and 2% in Livestock Keeping.

4.6 Population Size and Growth

As from the National level, at the District level the four Censuses have shown definite trends in the various characteristics of the Morogoro Rural. In 1967 population of 291,373, 1978 population of 344,083, in 1988 population of 430,237. Latest 2012 Population and Housing Census Morogoro District Population is 263,920 (Males 129,285, Females 134,635). As from the 2002 census, the 2010 population projection is 299,066, where Male is 146,386 and Female is 152,680. **For 2016 total population is 304,019, male 148,869 and female 155,150.** In Morogoro District, Generally the population of females continues to be bigger than the males.

Population Projection for the selected Village

| Ward | Village | Level of Urbanisation | Growth rate (%) | Population | | | | |
|--------|---------|-----------------------|-----------------|-------------|---------|-----------|----------|----------|
| | | | | As Recorded | Current | Base Year | Mid term | Ultimate |
| | | | | 2012 | 2021 | 2023 | 2033 | 2043 |
| Mngazi | Mngazi | Rural setting | 2.4 | 2,521 | 3,121 | 3,273 | 4,149 | 5,259 |

4.6.1 Ethnic Groups

Initially inhabitants were mainly of the Luguru tribe. However, the composition of the current population is getting more cosmopolitan due to the influx of workers, businessmen and fortune seekers from different regions of Tanzania, as well as from outside the country. Nevertheless, the Council has three main ethnic groups namely: Waluguru, Wapogoro and Wakutu. The majority of Waluguru occupy the largest part of the district area which covers all wards, followed by Wapogoro occupying some parts of the Municipal wards. In addition, the district is also occupied by other ethnic tribes including Wazaramo, Wakwere, Wachaga, Wasukuma, Wanyakyusa and Maasai.

4.6.2 Population Density:

The number of people per Square Kilometer of Land area, or population density in Morogoro Rural is increasing. Population Census of 2002 shows population density of 22 people per square Kilometer from 25 people per square kilometer of 1988 and 15 people per square kilometer in 1967. Therefore the 2012 population density is projected to be 16.34 people per square km.

4.6.3 Project Beneficiaries

The project is expecting to benefit a total of 9,812 people (current 2021 population). The distribution of population per village is presented in Table 4-1 below.

Table 4-1: Population of the Selected Villages

| Sn | Village | Population (2012) | Current (2021) Population |
|----|---------|-------------------|---------------------------|
| 1 | Mngazi | 2,521 | 3,121 |

Source: National Bureau of Statistics, 2012 Census Report, growth rate 2.4%

4.6.4 THE HEALTH SECTOR

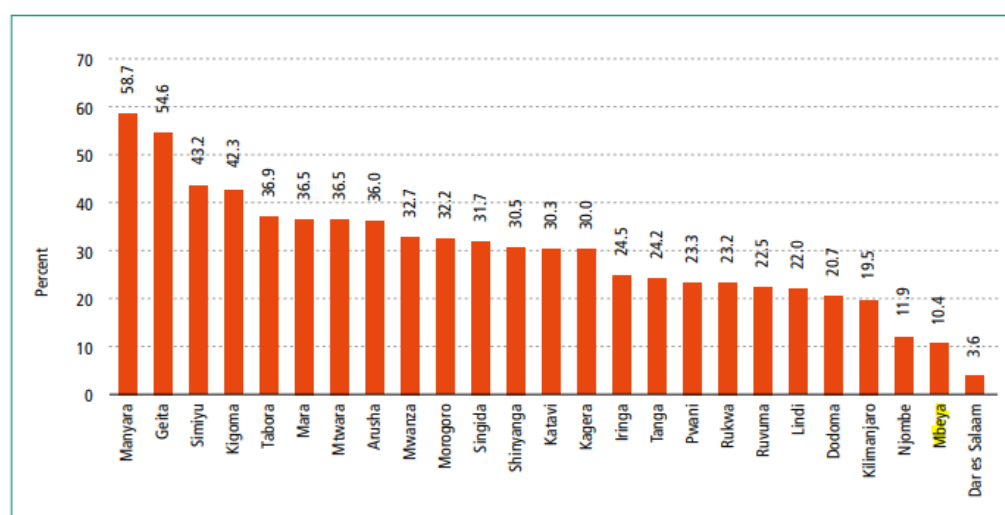
In Morogoro district there is no hospital. In the district there are 8 RHC (7 owned by Government and 1 owned by RC), 43 Dispensaries which are owned by Government, Tanzania People’s Defense Force (TPDF) 4, Prisons 3, Parastatal Organization 1, Religion Institutions 10 and Individual People 3, that make a total of 62 functioning Health facilities in the District. Water supply project will enhance health service by ensuring constant supply of water.

4.6.5 Children Labor aged 5–13 years

Around one in four children aged 5–13 years (25%), almost 2.8 million in absolute terms, are in child labour. But these overall estimates marks important differences by individual and household background characteristics. Child labour increases with age and is much higher in rural areas than in cities and towns. Proposed Construction of water supply project in Morogoro District being with 32.2% will lead to creation of employment to unskilled workers and related associated activities that shall increase musculoskeletal disorders, physical impairment, and psychological distress to children.

Children aged 5–17 years

Figure A1. Prevalence of child labour by region, 5-17 years



Source: Based on Tanzania Integrated Labour Force Survey (ILFS), 2014.

Figure 4-9: Prevalence of child labour by region, 5-17 years

Source: Based on Tanzania Integrated Labour Force Survey (ILFS), 2014.

4.6.6 Gender Based Violence (GBV)

According to a WHO 2013 report, nearly one-third of women globally aged 15 years and above have experienced physical and/or sexual violence with the highest instances of GBV reported

in Africa and Asia. A WHO study on violence and women's health across 10 countries including Tanzania, reported that between 13–62% of women had experienced physical violence over the course of their lifetime, 29% reported violence within the past year, while only 3% had sought GBV health services. Additionally, the report demonstrated that GBV particularly in African countries was a major cause of ill health among women and girls, as it can cause disability due to injuries, a range of physical and mental impairments and can even result in death. Access to GBV health services among adolescent girls and young women (AGYW) is a growing body of concern several studies have reported that health care seeking behavior is a multifarious, reflecting socio-demographics and health characteristics which can thereby challenge access to GBV services (Mtaita, C.. et al, 2021)

The number of women who seek GBV health services in Tanzania remains low. The Tanzania Demographic Health Survey (TDHS) 2016 indicates that less than 1.1% of women aged 15–49 years who experienced physical and sexual violence sought GBV health care service. Furthermore, a study conducted in rural Tanzania (Morogoro district), revealed that women who had only completed primary school education had lesser GBV knowledge compared to those who had secondary school education- thereby highlighting additional barriers to GBV service access (Mtaita, C.. et al, 2021)

Proposed Construction of water supply project in Morogoro District shall create gender violence due to employment opportunity if preference shall be only to male gender.

5 STAKEHOLDERS AND PUBLIC CONSULTATION

Stakeholders' consultation took place in the 1st and 2nd week of June, 2021. Key stakeholders who were consulted and their views are presented in section 1.1.1 of this report. Stakeholders who were consulted and their signatures are shown in **Error! Reference source not found.** while stakeholders' minutes from the communities are shown in **Error! Reference source not found.**

5.1 Stakeholders identified and consulted

List of stakeholders identified and consulted is shown in Table 7-1 below

Table 5-1 Stakeholders Identified and Consulted

| District/Town | Position | Name of Person Consulted |
|------------------------------------|---|--------------------------|
| Morogoro District Council | District Community Development Officer | Castus R Kalokola |
| | District Environmental Management Officer | Joseph Ndunguru |
| | District Planning Officer (PO) | Godfrey G Luguma |
| | Urban Planning and Land Officer | Helman Ambala |
| Communities | Village Executive Officer (VEO)-Dete | Mawazo Mgoli |
| | Village Executive Officer (VEO)-Dakawa | Fatuma Abdallah |
| | Village Executive Officer (VEO)-Tullo | Magreth Ngonyani |
| | Village Executive Officer (VEO)-Mgazi | Galus Lugeni |
| | Village Executive Officer (VEO)-Mgazi | Galus Lugeni |
| Village Government Committee (VGC) | VGC Members | 10 member/village |

| Name of the stakeholder | Issues/views discussed | Response |
|---|--|--|
| <ul style="list-style-type: none"> District Officer Planning | <ul style="list-style-type: none"> Water can provide opportunities for livelihood activities such as horticulture as an alternative to charcoal production that accelerates deforestation. Since the project will be under water basin authority, they can develop an environment management and monitoring plan for project operations. This will encourage record keeping and compliance. | <ul style="list-style-type: none"> |
| | <ul style="list-style-type: none"> We anticipate economic improvement in terms of water users on entrepreneurship such as horticulture, poultry and food vendors. Revenue collection via water kiosks or collection points | <ul style="list-style-type: none"> Positive this shall be taken to educate the community of economic diversity RUWASA shall prepare the revenue methods if available |
| <ul style="list-style-type: none"> District Officer Planning | <ul style="list-style-type: none"> Land acquisition: Careful design should be considered from the main line to the tanks as well as to the distributions areas to avoid compensations. There are some areas where people have settled and established permanent structures hence detailed consultations are needed to avoid future conflicts. All main lines should be demarcated to avoid encroachment and, if possible, the pipes should be aligning close to road reserve to avoid compensation. Project development and design does not compromise with our land use plans or VLUPs for particular villages affected by the project. | <ul style="list-style-type: none"> Land is donated freely by the community for the project, no any compensation shall be undertaken. And evidence of donation are attached as appendix in the main report Land of the project and also project is self-have involved community and the Leaders on the site selection and also distribution |
| Dakawa Village | <ul style="list-style-type: none"> Previous water projects formed committees during construction and operations. Some committee members were engaged in directly in project construction and thus gained skills necessary for repair and maintenance works post-project period. | <ul style="list-style-type: none"> Local skills shall be gained by the local community who shall participate in the project Feasibility study has been conducted to identify the borehole and distribution network The project shall involve construction and distribution of 14 domestic point (DP) |

| Name of the stakeholder | Issues/views discussed | Response |
|-------------------------|--|--|
| | <ul style="list-style-type: none"> • Among main causes for collapse of water committees include; <i>Most wells were shallow and seasonal.</i> <i>Frequency breakdown of servicing of wells made operations costs surpass revenues.</i> <i>High maintenance costs as inflated with scarcity and high prices for spare parts and repair kits.</i> <i>Weakness among committee members on aspects like; coordination, skills/experience on project management and commitment.</i> • Water projects in the village includes÷ <i>GWASCO Project 1997 (13 boreholes)</i> <i>Rope boreholes 2016 (5 boreholes)</i> <i>Muslim support 2018/19</i> <i>Birika la maji project (1 borehole)</i> • Currently at the village there are 12 boreholes and community prefer only two for consumption as others claimed to contain excess salt. • They proposed for project design to consider sourcing water from or close to birika la maji project which is situated at Magona Hamlet. • They have developed and implements a village land-use plan (VLUP) of 2009-19. • Project area has been offered by community members free and willingly through a public meeting and with | <ul style="list-style-type: none"> • Final design water from each village will be sourced from a drilled borehole • Land is donated freely by the community for the project, no any compensation shall be undertaken. And evidence of donation are attached as appendix in the main report |

| Name of the stakeholder | Issues/views discussed | Response |
|-------------------------|--|--|
| | village government council with records/minutes maintained. | |
| Mngazi village | <ul style="list-style-type: none"> • Water committees are available and functional and among roles played include patrols for protection and monitoring encroachments. Besides, they lack trainings and capacity building for effectiveness. • Water sources currently existing includes, 11-Boreholes and Mngazi River. Only seven boreholes are functional out of eleven. • The village developed VLUP since 2009 to last until 2019. <p>Some challenges highlighted includes;</p> <ul style="list-style-type: none"> • No trainings offered • Most boreholes are not functional and hence increased travel time and distance in search for water. <p>Project area has been offered by community members free and willingly through a public meeting and with village government council with records/minutes maintained.</p> | <ul style="list-style-type: none"> • The project only involves supply of water to the village. Concerning training and capacity building Basin Board office shall take to the Board for discussion • Final design water from each village will be sourced from a drilled borehole |
| Tulo | <p>i. There is one water committee formed in 2021 under Birika la maji project with 8 members (4-Tulo village/4-Lukulungu village). This is the only water project in the village and was financed by world bank comprising of a borehole; solar-powered pump; 10,000-liter poly-tank and 2 cattle troughs costing around 172 million (Tsh).</p> <p><i>Challenges of Birika la maji project:</i></p> | <ul style="list-style-type: none"> • This project involved the feasibility study, included the water analysis of each borehole to determine the capacity and supply • Final design water from each village will be sourced from a drilled borehole • Challenges encountered from the previous project shall be taken into consideration. • |

| Name of the stakeholder | Issues/views discussed | Response |
|-------------------------|--|--|
| | <ul style="list-style-type: none"> • Poor design affecting smooth and adequate flow of water up to cattle troughs that depends on gravity. Existing storage tank is raised only 3m above the ground. • Limited engagements, information accessibility, quality control (workmanship) and decision making (procurements). <p>ii. We anticipate for the project to be more participatory and consider community opinions for attaining sustainability of the project. Eg we advised on distribution pipe to connect subsurface but the project connected on surface and it has been damaged twice by pastoralists knowingly.</p> <p>iii. Project area has been offered by community members free and willingly through a public meeting and with village government council with records/minutes maintained. Such areas include; water kiosks, main distribution lines and storage facilities/tanks.</p> | |
| Dete village | <ul style="list-style-type: none"> • The village had only two water projects implemented since 2004. The first project was two shallow boreholes funded by world vision and the second project was four boreholes which were financed by Islamic institutions. All boreholes or wells are seasonal and contains water during wet seasons. Two are located in Gongani hamlet and two at Dete-shuleni. • Water sources in the villages are, four boreholes; Uduzungwa/Kenge seasonal stream; a shallow sand-dam located at Kwa-Isayaka and sometimes during | <ul style="list-style-type: none"> • Noted and water shall e distributed in 14 domestic point to each center, village, institutions and other places in need depend on the population |

| Name of the stakeholder | Issues/views discussed | Response |
|---|--|--|
| | <p>dry seasons people can access Ruvu River about 7 km from Dete.</p> <ul style="list-style-type: none"> • Majority had suggested for surface water to be prioritized as records indicated that underground water sources are not suitable for consumption with lot of chlorine and salty taste. • We believe availability of water will improve livelihoods and attract more services and public servants/staff to work in the village such as teachers, nurses and extension officers. | |
| <p>TARURA MANAGER- Morogoro</p> <p>Eng. Mohamed. A. Muanda</p> | <ul style="list-style-type: none"> • Did you get the shapefiles from TARURA? • We would like to see the proposed water layouts together with road shapefiles from TARURA • The project should abide with all TARURA road regulations, any site activities include the excavations, crossing over road structures, boundary to lay the pipes and structures should be according to TARURA guidelines • We need to be in the project supervision as well • The project should abide with the environmental regulations and we need to know the impacts of the projects to the environment • We need to know if the project will across TARURA road infrastructures • TARURA should be involved at 100% in every project phase | <ul style="list-style-type: none"> • Before project implementation contractor shall contact TARURA for shapefile, • About supervision, Basin Office shall consider this during project implementation • Environmental impact is ongoing and shall take consideration off all the recommendation • The distribution network might cross the TARURA and before project implementation, contractor shall discuss with the office • |
| <p>Eng Alinanuswe L. Kyamba – Regional TANROADS manager</p> | <ul style="list-style-type: none"> • Obtain permit for installation of pipeline along the road reserve corridor, • Get Center line data (survey) for the Newly designed road of your concern | <ul style="list-style-type: none"> • WRBWB shal contact Tanroads before project takes off |

| Name of the stakeholder | Issues/views discussed | Response |
|--|--|---|
| Eng.Magreth Sakaya-TANROADS | <ul style="list-style-type: none"> WRBWB should write a letter to get the approval of placing water pipelines along the road reserve | |
| Eizabeth Madaba-Nurse of Tulo clinic | <ul style="list-style-type: none"> We need the domestic point within Tulo clinic which will not be interfered with Tulo primary school | <ul style="list-style-type: none"> Design team shall take consideration to this, and will ensure each institution has the Domestic point for water supply |
| Kassim.m.kisomi Hamza Chau Abed R Chuma Dete village-Tunanguo ward | <ul style="list-style-type: none"> We need information of the water points/Distribution locations We need to be engaged during water distribution phase | <ul style="list-style-type: none"> Design team shall take consideration to this, and will ensure each institution has the Domestic point for water supply Engagement shall be conducted |
| Mch.Elia Taleck -FPTC church Dakawa village | <ul style="list-style-type: none"> Water services should be close to community gathering centers, such as Churches, Clinics, village markets, Domestic animals rearing points. The current water supply doesn't meet the present domestic animal's demand The water distribution points are located far away from the users | <ul style="list-style-type: none"> Design team shall take consideration to this, and will ensure each institution has the Domestic point for water supply |
| Rehema D John-Second Mistress (Dete primary school) Amina S Sang'anya-Teacher (Dete primary school) | <ul style="list-style-type: none"> We are lacking the enough water supply to our school; students are not getting enough water. Water is important in conserving environment around our school, Planting trees and vegetables garden Student are dodging class hours to search for drinking water, if we will be distributed with water this problem will be eliminated | <ul style="list-style-type: none"> Design team shall take consideration to this, and will ensure each institution has the Domestic point for water supply |

| Name of the stakeholder | Issues/views discussed | Response |
|---|--|--|
| Boniphace Nindo Shikone-Head master MNGAZI ‘B’ Primary school | <ul style="list-style-type: none"> We are aware of the project, and we were involved and the school gave the area for establishment of the domestic point for school uses and neighborhood community supply. We need addition of one D.p point so as to satisfy the whole school effectively | <ul style="list-style-type: none"> Design team shall take consideration to this, and will ensure each institution has the Domestic point for water supply |
| Richard Josta- UPPER RUVU DIRECTOR | <ul style="list-style-type: none"> This project is good and has been received well by the villagers of Morogoro DC, especially in the respective village where the project will be operating, including Mngazi,Tulo,Dete and Dakawa The project is requested also to reach different institutes such as market, Clinics, Schools and worship areas so as to eliminate the environmental impacts | <ul style="list-style-type: none"> Design team shall take consideration to this, and will ensure each institution has the Domestic point for water supply |
| RUWASA DISTRICT OFFICE Warda A. Metta – Ag district Manager | <p>I agree with the concept of the project as it is parallel with the environmental conservation.</p> <p>This project aims to reduce/ eliminate misuse of water sources that are found around the area, as it will provide proper areas/facilities where animals will have water, so as water facilities for domestic and other human use. Above all that, I can also advise proper protection of all water sources from borehole, rivers and other sources by at least protecting the 60 meters boundary, planting more preferably trees, educate people around on effects of environmental changes on how bad it will be if they keep on ignoring the effect of tampering with nature/environment by giving out vivid examples ie what is happening in SA, etc</p> | <ul style="list-style-type: none"> Noted This shall be further suggested in the management plan of the project |

| Name of the stakeholder | Issues/views discussed | Response |
|---|---|--|
| Eng Amani F Nyekela – Senior Engineer EWURA-EASTERZONE | <ul style="list-style-type: none"> • Ensure infrastructure are laid in properly land to avoid conflicts • Ensure water supply and sanitation Act, particularly section 21 and 22 on proper way leave • Avoid of pollution of water sources | <ul style="list-style-type: none"> • Engineers in consultation with other public utilities campy shall communicate before project takeoff • Water supply and sanitation act shall be adhered |

6 POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACT

6.1 Pre-construction and Mobilization Phase

6.1.1 Vegetation clearance

Vegetation will be cleared in order to demarcate areas to prepare locations for the proposed boreholes, domestic point, construction camps and material storage areas. In addition, vegetation will be cleared to demarcate access roads to the new boreholes etc. The type of natural vegetation present is mostly secondary vegetation of bush and grass. Clearing may cause a direct negative short term local impact.

6.1.2 Loss of Land

The acquisition of land will therefore result in the physical displacement of existing households and livelihood assets, which may lead to the impoverishment of the affected communities. However, there are areas proposed for tank locations and boreholes of which communities will donate land voluntarily without compensation

6.1.3 Accidents

Site preparation activities such as clearing of vegetation, preparation of construction camps and movement of construction materials expose labourers to potential risks that may result in injury and accidents such as cuts and injury from heavy lifting. This is a direct negative short-term site-specific impact.

6.1.4 Employment opportunity

Site preparation and mobilization activities will require labourers- both formal and informal or casual labour. In this way employment opportunities will be made available to resident residing at Mngazi Village. This is a direct positive short term local impact.

6.2 Construction phase

6.2.1 Vegetation clearance

Site clearing for construction will result into loss of trees and removal of vegetation cover. The existing vegetation, grass and shrubs are common in the area and do not have high biological significance, not protected and are not threatened. However, their removal might accelerate soil erosion. It is expected that after construction and refurbishment there won't be any further removal of vegetation cover, and therefore this impact is categorised as a short-term impact.

6.2.2 Employment opportunities

Construction works at Dete (boreholes, DP will create short-term employment for locals. It is expected that both unskilled and skilled labourers will be employed, preferably in the Dete area.

The involvement of locals in construction activities will increase income to locals. It is also expected that these locals will acquire skills which might be utilized elsewhere when such an

opportunity arises. It is also expected that local food vendors will have opportunities to sell food/water to construction workers and hence increase their income.

This is a positive impact, locally and short term, as will be apparent during the construction phase.

6.2.3 Soil erosion

Sourcing of some materials such as stones/aggregates, sand and gravel will involve excavation of soils, thus exposing it to agent of erosion such as wind and rain leading to land degradation particularly at borrow areas, thus reducing their nutrients, water retention and physical properties; and depletion of soil and mineral resources. This is an indirect negative long-term local impact and small in magnitude.

6.2.4 Increase incidence of HIV/AIDS

Construction activities are likely to attract a lot of people into the project area due to availability of employment opportunities as well as other opportunities. This will increase interaction between people for the purpose of livelihood sustenance or social relaxation.

Increased interaction between newcomers and locals can accelerate disease transmission rates, especially sexually transmitted diseases such as HIV/AIDS.

Accelerated AIDS transmission can also reach other villages outside the project area, and even the entire District. This is an indirect, negative, long-term impact that can affect the wider general area of influence.

6.2.5 Waste generation

Construction activities will result into generation of construction wastes such as stock piled soils, damaged materials like pipes; packaging materials etc. Significant soil piles will result from excavation works, and this shall be used to reinstate the site after construction. Damaged construction materials such as broken pipes and iron bars, nails etc shall be sorted to allow recovery of recyclable materials either by WAMI RUVU WATER BASIN BOARD or any other interested people.

6.2.6 Air and Noise Pollution

Air pollution due to exhaust emissions from construction machinery and dust generation from earthworks. Likewise, the use of heavy machinery may cause noise nuisance. This potential effect is characterized as negative, direct, site-specific, short term, very small magnitude impact.

6.3 Operations phase

6.3.1 Increased accessibility to safe and clean water

In the long run the project will increase accessibility to safe and clean water in Mngazi village. Availability of clean and safe water is expected to reduce water-borne diseases i.e., cholera and diarrhoea, and improve sanitation in general. This is an indirect positive, general and long-term impact as it will occur throughout the operation period.

6.3.2 Reducing time spent to collect water:

It is expected that upon successful implementation of the project women will have ample time of engaging in other income generating activities such as horticulture as water will be available near their homestead or can be easily fetched at one of the public kiosks which will be built in strategic locations. Children who sometimes help their mothers looking for water will also have time to participate in schools and do their homework when coming back from school. This is a direct, general, positive impact and long term as it will occur during the operation phase of the project.

6.3.3 Diminished water quality

Human activities near river or at the intake area can negatively affect the water quality at the intake. Such activities include washing of domestic items and clothes, livestock grazing, agriculture that uses fertilisers and pesticides and harmful fishing methods.

This is a direct, negative, local and long-term impact unless proper mechanisms are put in place to alleviate the situation.

6.3.4 Vandalism of infrastructure

Vandalism and illegal connections sometimes done by unfaithful workers who collude with locals will reduce water availability and subsequently jeopardize the water project.

7 MITIGATION MEASURES

7.1 Pre-construction and Mobilizations

7.1.1 Vegetation clearance

- Ensuring no unnecessary removal of natural vegetation is done beyond the primary constriction sites, way leave of the pipelines and access roads, and the construction buffers for tank, treatment unit and intake facilities;
- Backfilling must be carried out accordingly; and
- Post-construction landscaping to allow for natural regeneration

7.1.2 Loss of land

- Consultations and sensitization of the communities through awareness meeting will be properly conducted.
- Land donation voluntarily from the villages for implementation of the project especially in areas proposed for construction of tanks and boreholes.

7.1.3 Accidents

- During the laying of the pipe, all laborers exposed to vehicle traffic are to have PPE provided such as reflective vests, helmet and hazard cones to demarcate the working area. This will improve the visibility of the construction work by vehicles to prevent accidents.
- A well-stocked First Aid kit (administered by a trained first aider) shall be made available at the site.
- Additionally, the laying of the pipe should avoid the rainy season so that the soil is not slippery during excavation and lifting of the pipes.

7.1.4 Employment opportunity

- Optimize local employment preferably resident from residing in the project area
- Allocate jobs fairly /equally among community members using set criteria for allocation: (consider gender, marginalized groups)
- Involve community leaders/ committees to identify suitable/able people for the jobs

7.2 Construction phase

7.2.1 Vegetation clearance

- Ensuring no unnecessary removal of natural vegetation is done beyond the primary constriction sites, wayleave of the pipelines and access roads, and the construction buffers for tank, treatment unit and intake facilities;
- Backfilling must be carried out accordingly; and
- Post-construction landscaping to allow for natural regeneration

7.2.2 Employment opportunities

- local employment preferably resident residing at Dete is optimized;
- Jobs are located fairly /equally among community members using set criteria for allocation: (consider gender, marginalized groups);
- Involvement of community leaders/ committees to identify suitable/able people for the jobs;
- Remuneration for all employees shall be not less than minimum of Tanzania Government scale; and
- Recruitment process need to be transparent and all job advertisement should be in public places i.e., village government offices.

7.2.3 Soil erosion

- Implementation of erosion control measures to minimize sediment influx and resulting in-stream turbidity upon the construction of bridges (e.g. retaining barriers, grassing and consolidation with rock fill);
- Ground disturbance must be limited to only the areas necessary for project-related construction activities;
- During earthmoving activities, topsoil must be reused wherever practicable and stockpiled for later application during reclamation of disturbed areas;

7.2.4 Increase incidence of HIV/AIDS

- A prevention of the spread of contagious diseases like HIV/AIDS requires educational programs to raise the community awareness, counselling, HIV/testing centres;
- The contractor is required to conduct relevant awareness seminars and campaigns on HIV/AIDS to both workers and communities, proper usage of condoms, posters, use video displays to show the impact of HIV/AIDS;
- Give camp-workers some few days off every few weeks to go to their homes specially the married to reduce their levels of temptation to search for new partners;
- Provide education on basic hygiene practices to minimize spread of diseases. Increase workers' HIV/AIDS and sexually transmitted disease (STD) awareness, including information on methods of transmission and protection measures. Prohibit usage of drugs and alcohol on construction sites and undertake regular alcohol testing; and
- Identifying, in consultation with districts'/Regional department of health, adequate procedures to ensure distribution of STI treatment drugs and HIV testing kits to worksite medical units and local health centers.

7.2.5 Waste generation

- The waste generated from the laying of the pipe and the construction of the borehole such as cement, soil, metal, wood, plastic and glass will be collected by the contractor and dumped at the existing dumpsite.
- In addition, the construction camp will include a pit latrine for sanitation services for construction workers to contain the liquid waste.

7.2.6 Air and Noise Pollution

Contractor shall make sure activities producing excessive noise levels (work in borrow pits and quarries) should be restricted to the day time, and equipment normally producing high levels should be suppressed or screened when working within a distance of 200 m from any settlement (schools, hospitals, villages) or religious building. To cause the least disruption to the local population, it is recommended that construction producing nuisance level noise shall be minimized or rescheduled so as not to occur at night or locally recognized religious days and Sundays.

7.3 Operation phase

7.3.1 Increased accessibility to safe and clean water

- Availability of safe and clean water in the area is expected to reduce water borne diseases in the project area. The project has a potential to provide domestic water points along the pipeline route to increase accessibility of clean water for low-income and vulnerable groups. Domestic points are suggested at schools, hospitals and ward offices. Providing domestic points can also serve as a deterrence to vandalize the pipeline by residents along the pipeline route, and will also indirectly reduce the spread of waterborne diseases.
- Reduce domestic conflicts over delays resulting from fetching water at distant locations.
- Enable people to spend more time for other income generating activities.

7.3.2 Reducing time spent to collect water:

Provision of public kiosks at central locations shall further reduce time spent fetching water. Women should be involved in planning the locations of such public kiosks.

7.3.3 Diminished water quality

Human activities near river or at the intake area can negatively affect the water quality at the intake. Such activities include washing of domestic items and clothes, livestock grazing, agriculture that uses fertilisers and pesticides and harmful fishing methods.

7.3.4 Vandalism of infrastructure

Vandalism and illegal connections sometimes done by unfaithful workers who collude with locals will reduce water availability and subsequently jeopardize the water project.

8 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

This chapter presents the Environmental and Social Management Plan (ESMP) for managing the impacts during implementation and operation phases of the project. The ESMP includes a description of proposed mitigation measures, implementation responsibilities for ESMP, reporting procedure, cost estimates for implementing the contents of the ESMP and a plan to monitor the ESMP.

General Environmental Management Plan is shown in Table 8-1 overleaf

Table 8-1: Environmental and Social Management Plan

| Project phase | Impact | Management measures (mitigation/ enhancement) | Responsibility | Estimated annual cost TSH |
|------------------|---|---|-------------------|---------------------------|
| Pre-construction | Land and vegetation clearance | <ul style="list-style-type: none"> ▪ Ensuring no unnecessary removal of natural vegetation is done beyond the primary constriction sites, wayleave of the pipelines and access roads, and the construction buffers for tank, treatment unit and intake facilities; ▪ Backfilling must be carried out accordingly; and ▪ Post-construction landscaping to allow for natural regeneration ▪ The cutting of trees within the construction corridor must only be done with the required permits in compliance with the applicable regulations and all the necessary permits must be obtained prior to the clearance of vegetation | Ministry of Water | 5,000,000.00 |
| | Damage to and /or restriction of access to public roads | <ul style="list-style-type: none"> ▪ Identify main access roads that will be affected by construction works and have prior consultations with respective road authorities on traffic management and rehabilitation works. ▪ Identify any power line/telecommunication corridors and mark them. Prior notification to the utility companies to be given. | Ministry of Water | 10,000,000.00 |
| | Refuse from material excavation, transportation, delivery, site preparation, and earthworks | <ul style="list-style-type: none"> ▪ Prohibit littering within working areas; ▪ Routine maintenance checks and repairs for heavy machinery done at one controlled location for storing replaced mechanical parts, containers, tools; ▪ Implementation of a waste management plan to allow for the collection, transfer, and disposal of construction waste to dumpsite specified by the District Council; and ▪ Identify potential informal or formal service providers to take waste such as scrap metal, wood, plastics for reuse or recycling. | Ministry of Water | 2,000,000.00 |

| Project phase | Impact | Management measures (mitigation/ enhancement) | Responsibility | Estimated annual cost TSH |
|----------------------|--|---|-----------------------|--|
| | Increased short term/casual employment opportunities | <ul style="list-style-type: none"> ▪ Engagement of the Ward Officers to maximize local employment ▪ Sensitization of communities on the existing work opportunities in the project ▪ Affirmative action in employment to provide women with an opportunity to earn cash income | Ministry of Water | 2,000,000.00 |
| Construction | Creation of local employment opportunities | <ul style="list-style-type: none"> ▪ Engagement of the Ward Officers to maximize local employment ▪ Promote labour-based construction works to employ unskilled ▪ Advertise the jobs locally to attract skilled labour resident to the areas | Ministry of Water | 2,000,000.00 |
| | Increased noise and vibration/acoustic nuisance from construction activities | <ul style="list-style-type: none"> ▪ Limiting construction works, particularly noise-generating activities, to daytime to avoid acoustic disturbance during the night; ▪ Using mufflers wherever possible and provide acoustic PPE for construction workers involved in noisy operations. ▪ Routine maintenance checks and repairs for heavy machinery; ▪ Limiting the noise-generating operations to daytime working hours and designated sites (e.g. transport routes, stockpile sheds); ▪ Issuance of prior notice to nearby sensitivities before high noise impact activities. | Ministry of Water | 2,000,000.00 |
| | Land pollution from littering of solid waste | <ul style="list-style-type: none"> ▪ Prohibit littering within working areas; ▪ Routine maintenance checks and repairs for heavy machinery done at one controlled location for storing replaced mechanical parts, containers, tools; ▪ Implementation of a waste management plan to allow for the collection, transfer, and disposal of construction waste to dumpsite specified by the District Council; and | Ministry of Water | 4,000,000.00 |

| Project phase | Impact | Management measures (mitigation/ enhancement) | Responsibility | Estimated annual cost TSH |
|--------------------------|---|---|-----------------------|--|
| | | <ul style="list-style-type: none"> Identify potential informal or formal service providers to take waste such as scrap metal, wood, plastics for reuse or recycling. | | |
| | Reduced water quality of water sources from uncontrolled human activities | <ul style="list-style-type: none"> Install self-contained portable toilets for on-site sewage containment prior to recovery by an approved sanitation contractor; Ensure proper handling and storage of construction chemicals/liquids as guided by the material safety data sheets; Deep boreholes with casings to avoid possible contamination from surface water ingress Prevention of livestock rearing, intensive agriculture and sanitation facilities within the prescribed legal limits | Ministry of Water | 3,000,000.00 |
| | Occupational, public health and safety hazards | <ul style="list-style-type: none"> Construction labor to be provided with Personal Protection Equipment (PPE) and first aid kits and emergency protocols to be made available; and Installation of warning signage where necessary and observation of speed limits. | Ministry of Water | 10,000,000.00 |
| Operational phase | Improved in livelihood and access to informal income generating opportunities | <ul style="list-style-type: none"> Enhance activities such as water vendors, horticulture, food vendors, through the continuous water supply | Ministry of Water | 15,000,000.00 |
| | Emancipation of women and children from onerous water collection duties and opportunity costs | <ul style="list-style-type: none"> Enhance through affordability of the services, e.g. water tariffs (community rate) to be at an affordable rate | Ministry of Water | 10,000,000.00 |
| | Reduced water quality of water sources from uncontrolled human activities | <ul style="list-style-type: none"> Avoid all activities within 60m from water sources such as agriculture and grazing of animals (cattle's, goats, sheep) | Ministry of Water | 5,000,000.00 |
| | Risk of vandalization of the improved WS | <ul style="list-style-type: none"> MDC should ensure security at the main BH and water tanks Enhance community ownership and awareness | Ministry of Water | 10,000,000.00 |

| Project phase | Impact | Management measures (mitigation/ enhancement) | Responsibility | Estimated annual cost TSH |
|---|--------|--|----------------|---------------------------------|
| | | <ul style="list-style-type: none"> ▪ Enhance community security policy/bylaws regarding water resources | | |
| Total cost for a management plan | | | | 80,000,000.00 |

9 ENVIRONMENTAL AND SOCIAL MONITORING PLAN

Monitoring refers to the systematic collection of data through a series of repetitive measurements over a long period to provide information on characteristics and functioning of environmental and social variables in specific areas over time. There are four types of monitoring that are also relevant to this ESIA.

- **Baseline monitoring**-the measurement of environmental parameters during a pre-project period and operation period to determine the nature and ranges of natural variations and where possible establish the process of change.
- **Impact/effect monitoring**: involves the measurement of parameters (performance indicators) during establishment, operation and decommissioning phase in order to detect and quantify environmental and social change, which may have occurred as a result of the project. This monitoring provides experience for future projects and lessons that can be used to improve methods and techniques.
- **Compliance monitoring**: takes the form of periodic sampling and continuous measurement of levels of compliance with standards and thresholds – e.g. for waste discharge, air pollution.
- **Mitigation monitoring**: aims to determine the suitability and effectiveness of mitigation programmes, designed to diminish or compensate for adverse effects of the project.

To ensure that mitigation measures are properly done, monitoring is essential. Table 9-1 provides details of the attributes to be monitored, frequency and institutional responsibility. Monitoring frequency should be sufficient to provide representative data for the parameter being monitored. Wami/Ruvu office shall ensure that monitoring is conducted by trained individuals following monitoring and record-keeping procedures and using properly calibrated and maintained equipment. Monitoring data shall be analysed and reviewed at regular intervals and compared with the operating standards so that any necessary corrective actions can be taken.

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.

The project contractor pursuant to her contractual obligations to undertake inspections, monitoring and reporting, will carry out monitoring

Table 9-1: Environmental and Social Monitoring Plan

| Phase | Impact | Monitoring Requirements | | | | | | |
|--------------|--|---|--------------------------|----------------------------|--|--|-------------------|-----------------------------|
| | | Parameters | Monitoring frequency | Sampling sites | Measurement/unit | Target/ standard | Responsibility | Estimated annual cost (TSH) |
| Construction | Creation of local employment opportunities | Employment of locals | Monthly | Construction site/campsite | Contractors' employment record, site inspections | Increase the number of employments to locals | Ministry of Water | 10,000,000 |
| | Increased noise and vibration/acoustic nuisance from construction activities | Ambient noise and vibration levels from construction machines | Quarterly | Construction footprint | Leq / LA90 (dBA) | EMDC 6 (1733) P 3: ACOUSTICS - General Tolerance Limits for Environmental Noise | Ministry of Water | 15,000,000 |
| | Reduced water quality of water sources from uncontrolled human activities | Water quality parameters (physical characteristics such as turbidity, color, and taste) | Quarterly/twice per year | All Construction site | Baseline data, complaints, | TZS 789. Drinking (potable) water – Specification, 74, (2005) | Ministry of Water | 10,000,000 |

| Phase | Impact | Monitoring Requirements | | | | | | |
|--|---|--|---------------------------|------------------------|--|------------------|-------------------|-----------------------------|
| | | Parameters | Monitoring frequency | Sampling sites | Measurement/unit | Target/ standard | Responsibility | Estimated annual cost (TSH) |
| | Occupational and public health and safety hazards | Accidents/incidents, near misses, HSE induction, PPE | Daily during construction | All construction sites | Number of health and safety incidents/accidents, HSE induction sessions and daily toolbox talk | Zero accidents | Ministry of Water | 10,000,000 |
| Total costs for monitoring plan | | | | | | | | 45,000,000. |

10 COST BENEFIT ANALYSIS OF THE PROJECT

The cost benefit analysis of the proposed project highlights the costs the developer will incur in terms of investment and the cost of dealing with mitigation measures proposed to offset negative impacts emanating from various activities of the project as well as benefits that will be generated by the project. Similarly, the assessment has identified a number of benefits and costs that will be borne by local communities, the district and Tanzania as a nation at large. These were identified by stakeholders, analysed by the EIA team and followed up in later consultations

THE PROJECT COSTS

A cost/benefit analysis (CBA) is a systematic evaluation of the economic advantages (benefits) and disadvantages (costs) of a set of investment alternatives. The analysis evaluates incremental differences between the base case and the alternative(s). In other words, a benefit-cost analysis tries to answer the question: What additional benefits will result if this alternative is undertaken, and what additional costs are needed to bring it about? The CBA have covered the financial analysis, economic analysis of the original project proposal and an extended cost-benefit analysis for the project. However, for a project to be judged viable or not, a comprehensive feasibility study that includes the costs related to mitigation/enhancement of environmental impacts of the project have to be included. The initial investment costs of the proposed project estimated to 1.5 billion Tsh which will cover the cost for construction of the project. In addition to cost directly related to the project there will be other cost for addressing environmental issues including cost of implementing mitigation measures to offset foreseen impacts as well as cost of implementing the project management plan as stipulated in chapter eight of this report.

NON-QUANTIFIABLE BENEFITS AND COSTS

The proposed project is expected to bring benefits to local communities, District and to Government at large. This would be represented by the value of employment level as result of the project and growth of income from the project and auxiliary activities. Local communities expect to benefit in terms of employment opportunities directly from the enterprise or from jobs created in the local economy as a result of other auxiliary economic activities. This EIA is proposing enhancement measures to ensure that this actually happens. The project will also benefit the community by resolving the long-lasting problems caused by shortage of clean and safe water for domestic use as well as inadequate sanitation facilities in the District, the community will benefit in terms of the improvements to health of men, women and children as a result of improved water supply and sanitation, reduction in time spent collecting water, thus utilization of saved time in other family activities and therefore improvement of quality of life, significant improvements in household income levels and thus improvement of economic status of the households, improvement of security of livelihoods due to limited travel times especially in the evenings in search of water, as well as increased school attendance resulting from better child care arising from improved water supply and sanitation.

Local communities expect the project will stimulate growth of District economy and increase revenue, hence contribute to District efforts to reduce poverty. The areas that are likely to grow because of project include increase commercial activities, employment and increase market for farm products inside and outside the area. The project will create a market for food products, livestock products and auxiliary services. The money spent locally will again generate multiplier effects to the local economy.

The Central Government (MoW) is also expecting to derive benefits from the proposed development in terms of revenue generation, employment creation and development of associated infrastructures. The project will diversify the economy of the area and the government will gain through corporate tax payable from time to time. This is in addition to other taxes such as Pay As You Earn (PAYE), which is paid monthly on the basis of the payroll and the Value Added Tax from various established enterprises.

The local government will benefit from local taxes payable and dividends paid from various investments. The presence of the project is expected to boost the tax collection in the area. The District treasury expects to increase its revenue from own sources through increased property tax and taxes from small businesses in Morogoro District. In general, the proposed development will stimulate improvement of infrastructure and improved livelihoods for the people. Thus, although these benefits cannot be quantified due to unavailability of data, if they are added on to the quantifiable ones, the value of benefits will increase greatly. This EIA is proposing mitigation and enhancement measures to reinforce those activities that will increase the benefits to local people, local government and central government.

COSTS TO LOCAL COMMUNITIES AND GOVERNMENT

Despite the benefits, there are also possible costs to local communities and central government, which include the following:

- Increased prices for commodities and cost of living,
- Increase in levels of accidents (from construction activities and road traffic).
- Possible increases levels of crime due to the increase of population in the area.
- Cost of maintaining law and order in an area that is growing fast due to construction activities.
- The government will bear some costs such as provision of infrastructure for the project – road maintenance, increased cost of law and order and overall administration costs.

These costs are expected whenever a new investment is planned in an area that previously did not have such an investment. Thus, in a way they are unavoidable. What is important is to propose a series of mitigation measures as proposed in chapter 7 and 8 covering the cost to communities so as to minimize the negative effects and impacts of the project on these aspects. Communities may also incur costs due to excessive use of local materials by the project, environmental pollution, increased pressure on local resources and illness and diseases (respiratory and poisoning) associated with the project development in the area

11 DECOMMISSIONING

Decommissioning is a stage the project or activity of the project is formally ending. Tanzania has experienced challenges in dealing with the decommissioning of most of the development projects including construction projects, since many of these were decommissioned without addressing the social and environmental implications arising from the decommissioning process. The Regulations for Environmental Impact Assessment (URT, 2005) directs developers to address the implication of decommissioning process as part of the EIA process.

The proposed project constitutes activities such as levelling of the site, construction of, construction of the plant and storage tanks and other related infrastructures. So far, no specific time for the decommissioning of the project has been set but this will depend on the operation lifespan of the water supply and sanitation project.

Several impacts (negative and positive) are likely to occur as result of the decommissioning. This chapter outlines the implications of decommissioning of the proposed development and suggest mitigation measures to deal with impacts. However, as a precondition to effective and comprehensive implementation of the mitigation measures for decommissioning, the developer must prepare and implement a Closure and Restoration Plan and set aside sufficient funds for post operation reclamation activities. The project Closure and Restoration Plan should include the reclamation of the area and address the mitigation measures to minimize the projected impacts.

Impacts associated with decommissioning have been described and assessed in chapter 7 and monitoring plans that covers aspects of mitigation measures associated with decommissioning have been highlighted in chapter 8 of this report. Some of the proposed measures require Government intervention in terms of ensuring greater opportunities of investments in other area for the workers as well as acquiring skills and knowledge that could be used either in similar areas or alternative employments. Similarly, the estimated costs for decommissioning specific activity are provided; these however are indicative costs that are likely to change given the technology, time of implementation and the level of integrity of the environment required.

12 SUMMARY AND CONCLUSION

Most of the significant observation associated with this EIA is that the proposed development of water supply scheme will have significant contributions to the socio-economic growth of Morogoro District. Several other benefits at both local and national level in terms of revenue generation and the multiplier effects associated with linkages with local and national economy have been highlighted in this document. Importantly, the project complies well with key national policies and legislations including the National Environmental Policy, the Environmental Management Act, the Land policy, and the Land Act, among other aforementioned legislations.

Apart from the project positive impacts there are some negative primary and secondary impacts on the natural environment, pollution and waste management. These impacts have been carefully assessed and evaluated and mitigation measures proposed in a comprehensive Environmental and Social Monitoring Plan.

The study concludes that apart from the highly significant benefits to the national and local economy, most of the observed negative impacts can be mitigated or minimized. Therefore, the development project is ecologically manageable, socially desirable and economically viable with more benefits compared to project costs.

The Project will improve the health and sanitation conditions of the urban communities and strengthen the environmental planning, management and monitoring functions. The improvement of water supply under this project will enhance the overall urban environmental quality and public health of Morogoro District Council and its surroundings. Environmental benefits include improved ground and surface water quality as well as improved sewage collection and treatment. This will significantly improve health and quality of life of the urban population

13 REFERENCES

- 1) The Environmental Management (Environmental Impact Assessment and Audit) (Amendment) Regulations, 2018
- 2) United Republic of Tanzania (URT) (2002). Water Policy, Ministry of Water, Dar es Salaam
- 3) United Republic of Tanzania (URT) (2004). Environmental Management Act (EMA). Government Printer, Dar es Salaam.
- 4) United Republic of Tanzania (URT) (2017). National Five Years Development Programme II (2016/17 -2020/21), Government Printer, Dar es Salaam
- 5) United Republic of Tanzania (URT) (2014). Water Sector Development Programme (WSDP II) (2016/17 -2020/21), Ministry of Water and Irrigation, Dar es Salaam
- 6) Feasibility Study Report Volume I-Water Supply March 2022, Provision of Consultancy Services for Feasibility Study, Detailed Design, Preparation of Bidding Documents and Supervision for the Project for Water Supply Schemes located in four villages of Tulo, Dete, Dakawa and Mngazi- Morogoro.
- 7) URT, Regional administrative and local government, Morogoro District Council Strategic Plan for the Year 2016/2017 – 2020/2021
- 8) Mtaita, C.; Likindikoki, S.; McGowan, M.; Mpembeni, R.; Safary, E.; Jahn, A. Knowledge, Experience and Perception of Gender-Based Violence Health Services: A Mixed Methods Study on Adolescent Girls and Young Women in Tanzania. *Int. J. Environ. Res. Public Health* 2021, 18, 8575. <https://doi.org/10.3390/ijerph18168575>

14 LIST OF APPENDICES

1: NEMC SCREENING LETTER



THE UNITED REPUBLIC OF TANZANIA

VICE PRESIDENT OFFICE



**NATIONAL ENVIRONMENT MANAGEMENT COUNCIL
(NEMC)**

In reply please quote:

Ref: EC/EIA/2022/0141

Date: 15/12/2022

Ministry of Water
P. O. Box 456,
Dodoma

RE: SCREENING DECISION ON THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) FOR CONSTRUCTION OF WATER SUPPLY SCHEME IN MNGAZI VILLAGE MNGAZI WARD MOROGORO DISTRICT MOROGORO REGION

Reference is made to the above captioned subject.

2. We acknowledge receipt of your application attached with the project brief and Environmental Impact Assessment (EIA) registration forms for the above project. For your future reference the project has been registered and assigned with **Application Reference Number (ARN) EC/EIA/2022/0141**
3. Following the review of the submitted documents, the Council has reached a decision that your project will end up at a Project Brief Stage. Thus, you are required to prepare a Comprehensive Project Brief, which will guide the Council in decision making. Moreover, the following information must be included in the project brief;
 - i. Ensure that the actual size (the total area to be covered by the project) of the proposed project is clearly described with its network
 - ii. Ensure that all key stakeholders are consulted including neighbors and the Local Government Authorities. Their views and concerns should be addressed. Records of meetings, communication and comments should be provided with proof of service. Consultation forms should bear **date** and each consulted stakeholder should **sign** against his/her **name** as the law requires;
4. Upon submission of the Comprehensive Project Brief, the Council will arrange for a technical review of the document. As you submit the Comprehensive Project Brief you will be required to pay to the Council a review cost though control number to be generated by the system Upon submission of comprehensive project brief.
5. We are looking forward to your cooperation concerning this project.


A. N. Sembeka
For: Director General

Cc: MHANDISI Consultancy Ltd, P. O. Box 12965, Dar Es Salaam

Head Office, Kambarage Tower, 6th Floor, P.O. Box 2724, Dodoma. Phone: +255 262960098, 0713608930,
Email Address: nemcdg@nemc.or.tz Website: www.nemc.or.tz

APPENDIX 2: TABLE OF COMPLIANCE WITH REGULATON 6(1)


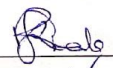
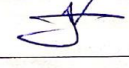
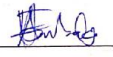
| | |
|--|--------------------------------|
| | |
| According to Regulation 6(1), an application for Category B2 projects Certificate shall be made in the prescribed format, stating the following: | |
| (a) the nature of the project; | Section 2.2 |
| (b) the location of the project including the physical area that may be affected by the project's activities; | Section 2.1 |
| (c) the activities that shall be undertaken during the project construction, operation and decommissioning phases; | Section 2.5 |
| (d) the design and technology of the project; | Section 2.3 |
| (e) the site layout plan; | |
| (f) the materials to be used and source, products and by-products, including waste to be generated by the project and the methods of their management; | Section 2.5.2 Section 2.2.6 |
| (g) the potential environmental impacts of the project and the mitigation measures to be taken during and after implementation of the project; | Chapter 6 |
| (h) the economic and socio-cultural impacts to the local community and the nation in general; | Chapter |
| (i) emergence preparedness and response plan to ensure (safeguarding) the health and safety of the workers and neighbouring communities during the project life cycle; | Chapter 8 |
| (j) Environmental and Social Management Plan(ESMP) and Monitoring Plan; | Chapter 9 |
| (k) the project budget; and (l) any other relevant information which the Council may require. | Chapter 11 |

APPENDIX 3: STAKEHOLDERS SIGNATURES

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR

FOR FEASIBILITY STUDY, DETAILED DESIGN, PREPARATION OF BIDDING DOCUMENTS AND SUPERVISION FOR THE PROJECT FOR WATER SUPPLY SCHEMES IN TWO VILLAGES IN MVUHA WARD AND TWO VILLAGES IN DUTHUMI WARD-MOROGORO

STAKEHOLDERS CONSULTATION FORM

| DATE | NAME OF STAKEHOLDER | DESIGNATION | PHONE NUMBER | SIGNATURE |
|------------|---------------------|----------------|--------------|---|
| 05/06/2021 | CASIMIR R. KALIKOLA | CEO | 0789-748228 |  |
| 05/06/2021 | ROSEMARY RONELA | MIPANGA (PO) | 0745811547 |  |
| 11-11-21 | JOSEPH NDUNURU | AUSA Masingira | 078420707 |  |
| 05-06-21 | HELMAN AMBALA | AUSA ARDI | 0784055528 |  |
| | | | | |
| | | | | |
| | | | | |

MATHUDHERIO YA KIKAO CHA KAMATI YA MAJI
 KAMATI YA UENZI NA USALAMA KAMATI YA MARINIRA NA KAMATI
 YA ~~AMBAHA~~ KULI CHA MNGAZI KAO

MATHUDHERIO

| SN | JINA KAMALI | CHEO | SM NENO | SATHI |
|----|---------------------|---------|--------------|--------------------|
| 1 | | | | |
| 2 | GARESI K. LEGENI | NEO | 0710-996437 | <i>[Signature]</i> |
| 3 | RASHIDI ALIYI MATHI | Njumbao | 0682716149 | <i>[Signature]</i> |
| 4 | JAPHET F. MABANO | " | 0682538347 | <i>[Signature]</i> |
| 5 | KENETH Emmanuel | " | 0657-1500 24 | <i>[Signature]</i> |
| 6 | HADIJA H. NGUYA | " | 0733065741 | <i>[Signature]</i> |
| 7 | JOSEPHINA D. MAMAS | " | 0786-454542 | <i>[Signature]</i> |
| 8 | GEORGE F. MABWE | " | 0782591811 | GEORGE |
| 9 | MARIAMU MIBWAGE | " | | MARIAMU |
| 10 | | | | |
| 11 | | | | |
| 13 | | | | |

APPENDIX 4: STAKEHOLDERS MINUTES

MUHTASARI WA KIKAO CHA KAMATI YA KIJiji YA HUKUJI VIONGOZI WA
 KAMATI NA VIONGOZI WA KAMATI YA MAJI KAD-06-06-2021
KUJiCHA MNGAZI:

AGENDA ZA KIKAO

1. KUfungua
2. KAMATI ZA MAJI
3. UYANZO YA MAJI
4. MIRADI YA MAJI
5. MAfUMIZI BORA YA ADHI
6. ADHI kwa Afili YA MRADI
7. UYANZO UYA MAJI NA UMBALI
8. MENGINE YO
9. KUfungua KIKAO.



AGENDA NO1 KUfungua KIKAO:

Mwenzeli alifungua kikao mwendo wa saa 5:15 asubuhi kwa kuwazindua Mjambie Mlilotika na kuwazomba kuwa wakati wa na kuchangia Gwenda zilizo po na kuzipatia ufumbuzi. kwa Mse-
 ndeleo. es kijiji.

AGENDA NO2: KAMATI ZA MAJI:

Mdugu, Mjambie nambe niwape ulingulizi ya kusamba
 kwa kums Mradi Mkuu wa Maji katika kijiji lileli.
 hiyo kwa tasiri zinaulizwa kuziwa katika Apeloso pia
 katika Mlilotika. Hiyo Hijiwa Msweli wa es kiji-
 -! kamati zipo

- Mjambie es kamati es Maji niu
 - (A) kuhakikisha Uyanzo Uya Maji Viongozi
 - (B) Uyanzo Uya Maji kavi vamiwi viongozi kwa kufunza
 Bora es Maji kwa Maji na Alisi wa jasi es kiji-
- Mafuikio - Mabomb es Viamu Vitupi 7 Viongozi kwa
 Vibovu 4. Jambo II

→ Chugamba, kamati. Tangis ziondwe lakwa Mafunzo
 kuhakikisha. kesiwa kazi za kamati.

AGENAA NO 3 UYANZO UYA MAJI

- Ujarzo Uja Maji ni Mta Mngazi na Visimo Ustafi Uja Maji
- Hali ya Ujarzo Uja Maji Mta Upo Selamu
 - Visimo 11: Visimo 7 Vizimo na Vichumicho Visimo Viuno Vibovu kavitumiwi (Vimelarisika)
 - I dadi ya Ujarzo Uja maji (i) mta mmoja (ii) Visimo 11.
 - Chongamali - ksmali: hujeevi kazi tke kwani kavyengeus Uwezo:

AGENAA NO 4 MIRADI YA MAJI

- Kuu Miradi ya Maji Inayopendelea kapa
- KISUMBE - HAKUUS:
- KUNA MIRADI ILIYO PATIKA HAPU AWAJI
- KISUMBE - IPO:
- CHANGAMOTO - Mabombu Mengina kuzaji Maji na kusitoto a Maji ni chumvi
- Mshauri - tpo katu klausipili. pia krefu wabafari
- kufuta maji Chino Mama klausipili chongamali na kusimereza
 - kusichereu, kuka kweudeko kufuta kudu na maji, pia kate
 - kusufuri kusachereu - suka kur Chlo - a Feleni - amaji
 - Mshauri - Jamii kwanjiz kipata kuu kuluwa Brestani
 - z Mbezo Mbezo: na kuuza kuu kuyipatu Pasa.

AGENAA NO 5 MATUMIZI BORA YA ARATHI

Ndugu Kisumbe kila kijiji kuu Mpango wa Matumizi bora ya Cerdia, katika kijiji chetu Mpango luo lpo kama Chino Mawee kuu Chlo ya Matumizi ya kilimo kufuji na Ndau Mshamba Makazi na Mawee ya kasisi: Nk Mpango Uufutuo.

AGENAA NO 6 ARATHI KWA AJILI YA MAJI

Kauandi kimeridha kika Mawee kuu Chlo ya Maji Mshauri na kimefanyika katika Vilezo Uja ndau Uja Halma Choni ya kijiji na Mshauri Mkuu wa kijiji

AGENAA NO 7 UYANZO UYA MAJI

- Mta Mngazi Mmoja. Visimo Uja Maji Ustafi 7 vizimo Viuno Vibovu jeele 11
- Chumvi kutsaka kapa kijiji Mpalo Ujarzo Uja Maji kwanu

Kilometa kilometa 10-15

Chuchuka Mada wa Mas 2-3

AGENDA NO 7 MINGIWA

Mawia ya hii dar kubwa Mada
Mada tumepokea kwa mkono mwisho ili kama 2
Maji zilizogawa lwezo wa kipezo Mafurao na Mada
kwa Mada ili kujawa kaji wa wab.

AGENDA NO 8 KUFUNGA KIKAO

Mwenzeliki cefunga kikao saa 5:45 Azubuhi
kwa kuwastuhuru kaji wa hii kichangizi cefunga kizi
kwa kaji wa lilelisa uliyo katika Mawazizi
Akisuti ni




KATIBU

BAWENI LUGEN
VSO

ARISA MTENDAJI
KILIJILCHA MTAJI

STAKEHOLDERS CONSULTED DURING ENVIRONMENTAL IMPACT AND SOCIAL IMPACT ASSESSMENT (ESIA) REPORT FOR THE PROPOSED CONSTRUCTION OF WATER SUPPLY SCHEME LOCATED IN FOUR VILLAGES OF TULO, DETE, DAKAWA AND MNGAZI - MOROGORO DISTRICT IN MOROGORO REGION
 Date

CLIENT: WAMI/RUVU BASIN WATER BOARD
 COMMENTS SHEET FORM

| S/N NAME/JINA ORGANISATION/TAASISI/ TITLE/CHEO | COMMENTS, CONCERNS AND VIEWS | CONTACT | SIGNATURE |
|---|---|-----------------|---|
| 1 Eng. Mgnetz Sakaya - TANZANIA MORO | 1. Kuamlika barua ya kuomba kibali cha kujiitika madom- ba ndani ya hifadhi, ya barabara | 0688- 160783 |  |

STAKEHOLDERS CONSULTED DURING ENVIRONMENTAL IMPACT AND SOCIAL IMPACT ASSESSMENT (ESIA) REPORT FOR THE PROPOSED CONSTRUCTION OF WATER SUPPLY SCHEME LOCATED IN FOUR VILLAGES OF TULO, DETE, DAKAWA AND MINGAZI - MOROGORO DISTRICT IN MOROGORO REGION

Date 19/09/2023

CLIENT: WAMI/RUVU BASIN WATER BOARD

COMMENTS SHEET FORM

| S/N | NAME/JINA ORGANISATION/TAASISI/ TITLE/CHEO | COMMENTS, CONCERNS AND VIEWS | CONTACT | SIGNATURE |
|-----|---|--|---------------------------|----------------------|
| 1 | ELIZABETH MADABA MUUQUZI WA ZAHANATI YA TULO SOPHA S. SAIDI MHUDUMU WA AFYA ZAHANATI YA TULO | KATI YA MVUHA -TUNADIMBA KITUO CHA MAFI KIWEPO KWENYE ZAHANATI YA TULO / KISIIPAILIPE WA MATUMIZI YA SHULE YA MSINGI TULO - USTILIKISHWATI UMEKUA HAFU KWA WATUMISHI WA AFYA MGANGA MKUU ZAHANATI YA TULO S.L.P 1862 MOROGORO | 0786-522929 0784240457 | Elizabeth Selfman |

Date 19/09/2023

STAKEHOLDERS CONSULTED DURING ENVIRONMENTAL IMPACT AND SOCIAL IMPACT ASSESSMENT (ESIA) REPORT FOR THE PROPOSED CONSTRUCTION OF WATER SUPPLY SCHEME LOCATED IN FOUR VILLAGES OF TULO, DETE, DAKAWA AND MINGAZI - MOROGORO DISTRICT IN MOROGORO REGION

CLIENT: WAMI/RUVU BASIN WATER BOARD

COMMENTS SHEET FORM

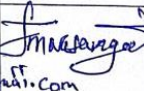
| S/N | NAME/JINA ORGANISATION/TAASISI/ TITLE/CHEO | COMMENTS, CONCERNS AND VIEWS | CONTACT | SIGNATURE |
|-----|--|--|------------|-----------|
| 1 | Meneja W Morogoro Eng. Mohamed- A. Muanda TARURA | -Je mipaka shapafiter kutoka TARURA -Tunajipata kuona layout pamoja na shapafiter za barabara kutoka TARURA -Waziingatie namna ya ba rabara lakatawa, boundaries namna ya barabara kucross, waingatie road reserve, Tunahi tani zimekama kwenye layout. - Pia tunahitaji kuwepo katika supervisions na kuwekwa gharama - Kuangalia suala la kimozi ng'ara na tjue madhara ya kimozi ng'ara -Tume mrapitaje katika ma daraja au miundombinu mingine na mtalindaje mabamba. -TARURA uhitaki kwe asili mia 100 katika mada'hanu | 0767235236 | |

STAKEHOLDERS CONSULTED DURING ENVIRONMENTAL IMPACT AND SOCIAL IMPACT ASSESSMENT (ESIA) REPORT FOR THE PROPOSED CONSTRUCTION OF WATER SUPPLY SCHEME LOCATED IN FOUR VILLAGES OF TULO, DETE, DAKAWA AND MNGAZI - MOROGORO DISTRICT IN MOROGORO REGION

Date 19/09/2023

CLIENT: WAMI/RUVU BASIN WATER BOARD

COMMENTS SHEET FORM

| S/N | NAME/JINA ORGANISATION/TAASISI/ TITLE/CHEO | COMMENTS, CONCERNS AND VIEWS | CONTACT | SIGNATURE |
|-----|--|--|--|---|
| 1 | RICHARD JOSTA MKUU WAKIDAKHO RUVU JUU: BODI YA MASI BONDE LA WAMI/ RUVU | MRADI HUU NI MZURI NA UME POKELEWA VIZURI NA WANANCHI WA HALIM MOROGORO - HUSANI USIJI HUSIKA, MNGAZI, TULO, DETE NA DAKAWA -PIA MRADI HUU UNAO MBAWA KUWAFIKIA PIA KWA TAASISI ZA SERIKALI KAMA, ZAHANATI, SHULE NA JENEMU ZA IBADA NA MASOKO KUPUNGUZA ATHARI ZA KIMAZINGIRA | 0689574476 richardjosta58@gmail.com |  |



-TUMEPOKEA KWA UTEKE
LEZASI ZAIDI

STAKEHOLDERS CONSULTED DURING ENVIRONMENTAL IMPACT AND SOCIAL IMPACT ASSESSMENT (ESIA) REPORT FOR THE PROPOSED CONSTRUCTION OF WATER SUPPLY SCHEME LOCATED IN FOUR VILLAGES OF TULO, DETE, DAKAWA AND MINGAZI - MOROGORO DISTRICT IN MOROGORO REGION

Date 19/09/2023.....

CLIENT: WAMI/RUVU BASIN WATER BOARD

COMMENTS SHEET FORM

| S/N | NAME/JINA ORGANISATION/TAAISIS/ TITLE/CHEO | COMMENTS, CONCERNS AND VIEWS | CONTACT | SIGNATURE |
|-----|--|--|-------------|--|
| 1 | REHEMA D. JITHI KATIWI MKAU WA SHULE MULU WA E.K | <p>-Kusta hapa shule Mahitaji ya Maji ni mkali mu kwani wanafunzi wanapata shida hasa maji ya kunywa na pia kuhimiza chesoni</p> <p>-pia maji husawidha sana katika utunzaji wa mazingira hasa kuu waanaguruzi ili waweze kuteunza kupanda maiti na mbuga mbuga kuu agili ya kupata cha kula cha mchama</p> <p>-N.B. Uanaguruzi uwarakua watoto katika suala la kiridi ingimbari kuendelea kutegutei maji ya kinyuua hivyo tuki patte kisinga cha maji tathasikuru sana ili kupunguza utoro wa uanaguruzi shule</p> <p>-Mahitaji ya Maji shule ya miringi Deteni ma kambi shule inapokua wanafunzi 455 kila mwa kwa sampa haina chanzo chochote cha maji</p> | 0734 796520 |   |

STAKEHOLDERS CONSULTED DURING ENVIRONMENTAL IMPACT AND SOCIAL IMPACT ASSESSMENT (ESIA) REPORT FOR THE PROPOSED CONSTRUCTION OF WATER SUPPLY SCHEME LOCATED IN FOUR VILLAGES OF TULO, DETE, DAKAWA AND INGAZI - MOROGORO DISTRICT IN MOROGORO REGION

Date CLIENT: WAMI/RUVU BASIN WATER BOARD

COMMENTS SHEET FORM



| S/N | NAME/JINA ORGANISATION/TAASISI/ TITLE/CHEO | COMMENTS, CONCERNS AND VIEWS | CONTACT | SIGNATURE |
|-----|---|---|----------------------------|-----------|
| 1 | Beniphaee NINDO SIKUMU, S/M MNGAZI B, MWAHIMU MKUU. | Mzee Tunufulwanu na Tunufulu kufika na shule tumbo esha la kutoka kutia kwa akili ya kujiitua na kama pana na makazi ya wananchi wa esha ambalo wanatumika, esha la shule, jumuiyaa kwa akili ya esha kelasa, kamba - sana kwa jumuiyaa makabata ya uterai na kuti esha mji. mzee kuu. haina ahoari ya ya kubani pia kuliviana na idadi ya wananchi wa Mwan na kubwa naomba kutagawa D.P nji nyire. | 0785-534529 0682-575468 | Bto |

STAKEHOLDERS CONSULTED DURING ENVIRONMENTAL IMPACT AND SOCIAL IMPACT ASSESSMENT (ESIA) REPORT FOR THE PROPOSED CONSTRUCTION OF WATER SUPPLY SCHEME LOCATED IN FOUR VILLAGES OF TULO, DETE, DAKAWA AND MNGAZI - MOROGORO DISTRICT IN MOROGORO REGION

Date 18/09/2023

CLIENT: WAMU/RUVU BASIN WATER BOARD

COMMENTS SHEET FORM

| S/N | NAME/JINA ORGANISATION/TAASISI/ TITLE/CHEO | COMMENTS, CONCERNS AND VIEWS | CONTACT | SIGNATURE |
|-----|--|-------------------------------|--------------------------|--|
| 1 | HUSEN S. UZELIHO GALLEN K. LULANI | MUKUJI MNGAZI CEO - MNGAZI | 0785255800 0757996937 |   |

AFISA MTENDAJI
KIJJI CHA MNGAZI

STAKEHOLDERS CONSULTED DURING ENVIRONMENTAL IMPACT AND SOCIAL IMPACT ASSESSMENT (ESIA) REPORT FOR THE PROPOSED CONSTRUCTION OF WATER SUPPLY SCHEME LOCATED IN FOUR VILLAGES OF TULO, DETE, DAKAWA AND MINGAZI - MOROGORO DISTRICT IN MOROGORO REGION

Date 18/09/2023

CLIENT: WAMIRUVU BASIN WATER BOARD

COMMENTS SHEET FORM

| S/N | NAME/JINA ORGANISATION/TAASISI/ TITLE/CHEO | COMMENTS, CONCERNS AND VIEWS | CONTACT | SIGNATURE |
|-----|--|---|-----------|-------------|
| 1 | Mku. Elya Tadele wa kamisa la FPC Dakawa. | <p>Huduma za maji zisogezawe katika mji wa Mwanjiko ya Jimii hususani kamisa na mji chini, Shule, Zahanati, eneo la wa Fugiji Ofisi na kijiiji na elia kasaka, kusambana maji kuu wa Fugiji na na unamaliza pembeni - Maji bado ni madogo kuhitana na idadi ya mifugo - Inadakar umbali mrefu kadu kuamaji kuhita katika matani.</p> <p>- Ulimu vingine viongozi pembe na D.P point kuu upende wa wa Fugiji ali omyambani - kiongozi wa mawazo ya kunguza Uhaa mifugo.</p> | 068212538 | [Signature] |

STAKEHOLDERS CONSULTED DURING ENVIRONMENTAL IMPACT AND SOCIAL IMPACT ASSESSMENT (ESIA) REPORT FOR THE PROPOSED CONSTRUCTION OF WATER SUPPLY SCHEME LOCATED IN FOUR VILLAGES OF TULO, DETE, DAKAWA AND MNGAZI - MOROGORO DISTRICT IN MOROGORO REGION

Date

CLIENT: WAMI/RUVU BASIN WATER BOARD


COMMENTS SHEET FORM

| S/N | NAME/JINA ORGANISATION/TAASISI/ TITLE/CHEO | COMMENTS, CONCERNS AND VIEWS | CONTACT | SIGNATURE |
|-----|--|--|--|-----------|
| 1 | KASSIM M. KISOMI | UHAS | 0737-199580 | KISSIM |
| 2 | Wam Lu. Chuma | TUTUMBA. TARKA. ITOLEWA. | 073820726 | CHUMA |
| 3 | ABED. R. CHUMA | KUENYE MBEUO YA KUBIFADHWA MASI. | 0737394996 | ABED |
| | KISSI CHADETE KATA. TUNGANQUR. | USIAFI SHWASI. TUNAKA. KUSHUKISHWA. PINDI WASHAPATAKA. KUTOA. HUBUMA. YA MASI. | AMENYENITI KA SELKAL YA KISSI CHADETE. S.L.P 1880-MOROGORO | |

STAKEHOLDERS CONSULTED DURING ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED WATER SUPPLY SCHEMES LOCATED IN FOUR VILLAGES OF TULO, DETE, DAKAWA AND MINGAZI, MOROGORO DISTRICT.

Date

CLIENT: WAMIRUVU BASIN WATER BOARD
COMMENTS SHEET FORM


| S/N | NAME/JINA ORGANISATION/TAASISI/ TITLE/CHEO | COMMENTS, CONCERNS AND VIEWS | CONTACT | SIGNATURE |
|-----|--|---|------------------------------------|---|
| 1 | Eng Anwar F Nyakale Senior Engineer FWMRA - Esipini Zone | <p><u>Positive Impact.</u></p> <ul style="list-style-type: none"> - Improvement of water supply to both Rural and townships of Dakawa, increase of access to water. Improve Public Health and support economic growth. <p><u>Issues to note.</u></p> <ul style="list-style-type: none"> - Ensure infrastructures are laid in properly acquired land be a Public Land, Compensated or freely granted by Beneficiary to avoid land conflict in future; - Adherence to Sec. 21 and 22 of Water supply and sanitation Act, 2019 on paper Wayleaves for pipelaying. - Ensuring there is proper demarcation and contracts on any land acquired or freely offered, Ensuring the ownership documents are safely kept by WSA or FWMRA. | Anwar Nyakale @anwarf.go, t2 |  |

1/2

STAKEHOLDERS CONSULTED DURING ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED WATER SUPPLY SCHEMES LOCATED IN FOUR VILLAGES OF TULO, DETE, DAKAWA AND MNGAZI, MOROGORO DISTRICT.

Date


CLIENT: WAMI/RUVU BASIN WATER BOARD
COMMENTS SHEET FORM

| S/N | NAME/JINA ORGANISATION/TAASISI/ TITLE/CHEO | COMMENTS, CONCERNS AND VIEWS | CONTACT | SIGNATURE |
|-----|--|--|---------------------------------------|---|
| 1 | | <ul style="list-style-type: none"> - Emarning design reflects cost of running the project to ensure sustainability - Increase of water supply will cause a need to manage wastewater, thus water supply need to go hand in hand with improvement/construction of wastewater treatment facilities. - Issues of Environmental Protection for water source sustainability and avoidance of pollution of waterways - Looking for alternative economic activities other than those that are not environmental friendly; Eg farming that cause erosion and siltation and also mining activities. | <p>Amawi nyekale @evanwa.gofa</p> |  |

STAKEHOLDERS CONSULTED DURING ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED WATER SUPPLY SCHEMES LOCATED IN FOUR VILLAGES OF TULO, DETE, DAKAWA AND MNGAZI, MOROGORO DISTRICT.

Date

CLIENT: WAMI/RUVU BASIN WATER BOARD
COMMENTS SHEET FORM

| S/N | NAME/JINA ORGANISATION/TAASISI/ TITLE/ CHEO | COMMENTS, CONCERNS AND VIEWS | CONTACT | SIGNATURE |
|-----|--|--|-----------|--|
| 1 | RM-TAN/ROKOS MOROGORO H. Kiyawda H. Kiyawda | <ul style="list-style-type: none"> - Obtain permit for installation of pipe line along the Road Reserve corridors - Get centre line data (survey) for the newly designed Road of your concern. | 076583403 |  |



APPENDIX 5: RUWASA DISTRICT OFFICE

STAKEHOLDERS CONSULTED DURING ENVIRONMENTAL IMPACT AND SOCIAL IMPACT ASSESSMENT (ESIA) REPORT FOR THE PROPOSED CONSTRUCTION OF WATER SUPPLY SCHEME LOCATED IN FOUR VILLAGES OF TULO, DETE, DAKAWA AND MNGAZI – MOROGORO DISTRICT IN MOROGORO REGION

DATE: 20/09/2023

CLIENT: WAMI/RUVU BASIN WATER BOARD

COMMENTS SHEET FORM

| S/N | NAME/JINA ORGANISATION/TAASISI TITLE/CHEO | COMMENTS, CONCERNS AND VIEWS | CONTACT | SIGNATURE |
|-----|--|--|--|--|
| 1 | Warda A. Metta RUWASA DISTRICT OFFICE Ag. District Manager | <p>I agree with the concept of the project as it is parallel with environmental conservation. This project aims to reduce/eliminate misuse of water sources that are found around the area, as it will provide proper areas/facilities where animals will have water, so as water facilities for domestic and other human use.</p> <p>Above all that, I can also advise proper protection of all water sources from boreholes, river and all other sources by at least protecting the 60 meters' boundary, planting more preferable trees, educate people around on effects of environmental changes and on how bad it will be if they will keep on ignoring the effect of tampering with nature/environment by giving out vivid examples i.e. what is happening in SA, etc.</p> | <p>warda.metta@ruwasa.go.tz 0718-690002</p> |   |

APPENDIX 6: BOREHOLE SURVEY REPORT

MHANDISI CONSULTANCY LIMITED

REPORT

ON THE

**HYDROGEOLOGICAL/ GEOPHYSICAL
SURVEY FOR GROUNDWATER**

AT

MNGAZI VILLAGE

MOROGORO RUAL DISTRICT

MOROGORO REGION

JULY 2021

HYDROGEOLOGICAL AND GEOPHYSICAL SURVEY REPORT FOR MS MHANDISI CONSULTANCY / LUPTAN AT MNGAZI VILLAGE

1.0 INTRODUCTION

Both Geophysical and Hydrogeological Surveys were conducted within Mngazi village in all seven Hamlets in Morogoro rural district in July 2021. This was in response to the request by the client to search for source of clean and potable water in the area.

The aim of the survey was to locate water-bearing formation. The instrument used to carry out the geophysical survey was ABEM TERRAMETER SAS 4000 deploying Schlumberger configuration. Seven Vertical Electrical Soundings (VESs) were done in the area preceded by detailed hydro geological investigation and the VES data obtained were analyzed and interpreted using a Computer Program IX1D.

2.0 LOCATION OF SURVEY AREA

The surveyed area is located within Mngazi village in all seven Hamlets in Morogoro rural district (see GPS coordinates in ARC 1960)

3.0 GEOLOGY AND CLIMATE

The geology of the surveyed area is mainly dominated by the rocks of PZ/MZ Domains. The formations are characterized by Jurassic and Cretaceous sediments i.e., marine estuary and continental in origin. N-S & NW-SE trending faults are found in the surveyed area to the West.

Morogoro in general receive long term rainfall from March to June and short rains October to December. There are some variations in terms of rainfall yearly and between ecological zones. An average rainfall is 1000mm-1400mm is common in the southern flood plains whilst in the north average 800-1100mm. However, the mountain forest areas can receive up to 1600mm annually. All over the district, the dry period extends from June to October. The average annual temperature is typically 25°C.

4.0 GEOPHYSICS

4.1 Data Analysis by IX1D

In order to select the best site and depth for a borehole drilling, geo-electrical sounding was performed using ABEM TERRAMETER SAS 4000 deploying Schlumberger configuration. Seven Vertical Electrical Soundings (VESs) were made (Figures 1-7). The maximum electrode spread was 150m and maximum electric potential spacing was 25 m. The field geo-electric data were calculated, interpreted by IX1D Computer Program and then plotted on the VES curve. The results are shown below (see Tables 1-7).

4.1.1 Kiue

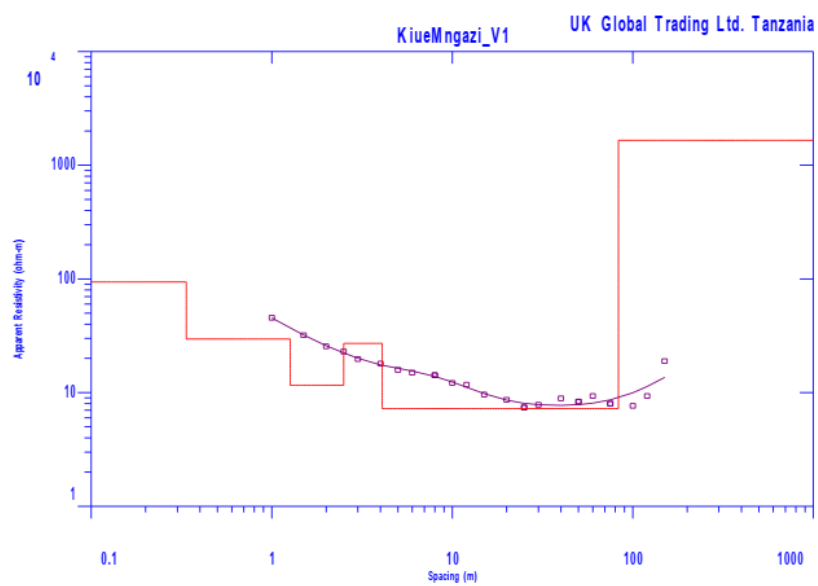


Figure1

DATASET: KiueMngazi_V1 NORTH:0.00 EAST:0.00
ELEVATION:153.00

| LAYER | RESISTIVITY | THICKNESS | DEPTH | ELEVATION |
|-------|-------------|-----------|-------|-----------|
| 1 | 94.0 | 0.3 | 0.3 | 152.7 |
| 2 | 29.6 | 0.9 | 1.3 | 151.7 |
| 3 | 11.6 | 1.2 | 2.5 | 150.5 |
| 4 | 27.1 | 1.6 | 4.1 | 148.9 |
| 5 | 7.2 | 79.1 | 83.2 | 69.8 |
| 6 | 1656.2 | | | |

Table1

5.1 VES 1, 2, 3, 4, 5, 6 & 7

The Geophysical results from VES 1, 2, 3, 4, 5, 6 & 7 show six to four layers subsurface model. Depth to consolidated formation ranges 9.6 – 83.2 ohm-m and basal resistivity 6.2 - 1656.2 ohm-m. Quite thick regolith and fractured weathered metamorphic basement is a significant lithological characteristic of the surveyed area.

6. RECOMMENDATIONS

Basing on the results obtained from the geoelectrical sounding and the existing hydrogeological data i.e., under the given geological and climatological conditions the following is recommended:

- The sites show the possibility of having metamorphic complex basement in valleys fractured and or weathered aquifer overlain by thick alluvial aquifer. It is recommended to drill at the surveyed points as follows:

| VES Point | Location Coordinates in UTM, ARC 1960, HAMLET | Depth to Hard Bedrock, M BGL/ Basal Resistivity | Remarks (Hardness, Fractures etc.) | Drilling Depth, M, BGL | Drilling Choice/ Priority Ranking |
|-----------|--|---|---|------------------------|-----------------------------------|
| 1 | 37 M 0353061 9181127, ELV(m): 153, KIUE | 83.2/1656.2(IX1D) 59/1087(IP2WIN) | Fractured/Weathered basement and thick regolith | 120-150 | GOOD |
| 2 | 37 M 0353308 9180999, ELV(m): 150, KIKONDENI-B | 11.6/6.2(IX1D) 10.9/50.5(IP2WIN) | Fractured/highly Weathered basement and moderately thick regolith | 120-150 | GOOD |
| 3 | 37 M 0353686 9180443, ELV(m): 161, KIKONDENI-A | 28.6/214.5(IX1D) 10.1/10.2(IP2WIN) | Fractured/highly Weathered basement and thick regolith | 120-150 | GOOD |
| 4 | 37 M 0354010 9179909, ELV(m): 150, MATOLA | 10.4/12.9(IX1D) 16/18.8(IP2WIN) | Fractured/highly Weathered basement and moderately thick regolith | 120-150 | GOOD |
| 5 | 37 M 0354428 9179798, ELV(m): 156, MNGAZI | 9.6/8.1(IX1D) 35.6/325(IP2WIN) | Fractured/highly Weathered basement and moderately thick regolith | 120-150 | GOOD |
| 6 | 37 M 0354428 9179798, ELV(m): 150, LEGO | 8.9/10.5(IX1D) 12.5/77.1(IP2WIN) | Fractured/highly Weathered basement and moderately thick regolith | 120-150 | GOOD |
| 7 | 37 M 0354428 9179798, ELV(m): 150, BANE | 28.8/550.9(IX1D) 18.3/606(IP2WIN) | Fractured/Weathered basement and thick regolith | 120-150 | GOOD |

- The drilling works should be supervised by a qualified and experienced hydro geologist who will measure physical parameters of each water strikes estimated yields during drilling to identify favorable aquifers to be exploited fully.
- Completion depth will depend on encountered water strikes as per the table above
- The borehole should be lined with 5" or 6" uPVC casing class C.
- The borehole should be packed with clean river gravel of 2 to 4 mm in size.
- Quality and actual quantity of water will be known only during drilling and or pumping test
- Development should be done for 2 to 3 hrs by an appropriate compressor system.

APPENDIX 7: WATER QUALITY REPORT

THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF WATER

Telegrams "MAJI DODOMA"
Email: domlab@maji.go.tz
In reply, please quote
Ref.No: DOMWQL/020/2022



DODOMA WATER QUALITY
LABORATORY,
P.O. BOX 412,
DODOMA.

Date: 15/01/2022

GENERAL

Analysis Requested by: **MUHANDISI CONSULTANCY LTD**
Region: **MOROGORO**, District: **MOROGORO DC**, Ward: -
Sampling Location: **MNGAZI VILLAGE**, Water source: **NEW BOREHOLE**
Purpose of Sampling: **DOMESTIC USES**, Date of sampling: **07/01/2022**
Date received at the Lab: **13/01/2022**, Date of analysis: **13/01/2022**
Sample collected by Laboratory Personnel: ___ YES NO. ___

| Parameters | Unit | Measured Value | Natural Potable Water Tanzanian Standards (TZ 789:2018-EAS 12: 2018) |
|------------------------------------|--------------------------|----------------|--|
| Physico-Chemical Parameters | | | |
| Temperature | °C | 25 | n.m |
| pH | n.m | 6.90 | 5.5-9.5 |
| Conductivity | µS/cm | 382 | 2500 |
| Total Dissolved Solids | mg/L | 228 | 1500 |
| Colour | TCU | 6 | 50 |
| Turbidity | NTU | 22 | 25 |
| Phenol Alkalinity | mg/l asCaCO ₃ | 0.0 | n.m |
| Total Alkalinity | mg/l asCaCO ₃ | 200 | n.m |
| Carbonate Hardness | mg/l asCaCO ₃ | 185 | n.m |
| Non Carbonate Hardness | mg/l asCaCO ₃ | 0.0 | n.m |
| Total Hardness | mg/l asCaCO ₃ | 185 | 600 |
| Calcium | mg/L | 32 | 150 |
| Magnesium | mg/L | 25.5 | 100 |
| Sulphate | mg/L | 10 | 400 |
| Orthophosphate | mg/L | 0.06 | 2.2 |
| Nitrite-Nitrogen | mg/L | 0.02 | 0.9 |
| Nitrate | mg/L | 5.3 | 45 |
| Ammonia | mg/L | 0.06 | 0.5 |
| Fluoride | mg/L | 0.21 | 1.5 |
| Iron | mg/L | 0.02 | 0.3 |
| Manganese | mg/L | 0.00 | 0.1 |
| Sodium | mg/L | 15 | 200 |
| Potassium | mg/L | 1.8 | 50 |
| Chloride | mg/L | 24.8 | 250 |
| Salinity | ppt | 0.2 | n.m |

Scanned with CamScanner

| Microbiological Parameters | Unit | Measured Value | Microbiological Limit for potable water Tanzanian Standards (TZ 789:2018-EAS 12: 2018) |
|----------------------------|-----------|----------------|--|
| Total Coliform | CFU/100ml | n.d | Not detectable |
| Feacal Coliform | CFU/100ml | n.d | Not detectable |
| Escherichia Coli | CFU/100ml | n.d | Not detectable |
| Free Residue Chlorine | mg/L | n.d | 0.2-0.5 |

n.m - not mention
n.d – not determined

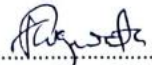
Remarks

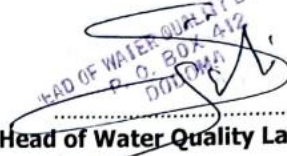
- ❖ Water is moderately hard

Recommendation

- ❖ According to the parameters analyzed as per received water sample, water is suitable for human consumptions
- ❖ The borehole regular water quality monitoring and chlorination treatment of water is recommended

15/10/2022
Date


Reporting Officer


Ag: Head of Water Quality Laboratory

HEAD OF WATER QUALITY LABORATORY
P. O. BOX 412
DODOMA

APPENDIX 8: FREE LAND DONATION AGREEMENTS FORM

MIKATABA WA KURIDHIA KUTOA ARDHI KWA HIARI



MAKUBALIANO

KATI YA

Bw/Biti SUDI RAMADHANI KIVULU

NA

MAMLAKA YA SERIKALI YA KIJJI

MH GAZI

KWA LENGU LA

KUTOA ARDHI KWA HIARI

MWEZI/MWAKA

10 / 2022

MRADI WA KUSAIDIA SEKTA YA MAJI AWAMU YA PILI (WSSP II)

MKATABA HUU umesainiwa leo Tarehe 01 ya Mwezi 010 Mwaka 2022

BAINA YA

^{SUDI}
NDUGU RAMADHAN KIVURUTE Sanduku la Posta 1880, Kijiji cha MULTAZI, Wilaya ya MAROTIYO Mkoa wa MOROGORO (ambaye atajulikana kama "**Mtoa Ardhi**") msembo ambao utajumuisha warithi wake kwa upande mmoja);

NA

MTENDAJI WA KIJJI CHA MULTAZI Sanduku la Posta 1880 (atakaejulikana kwa jina "**Mpokeaji Ardhi**") msembo ambao utajumuisha warithi wake kwa upande mwingine).

^{1/2}
KWA KUWA MTOA ARDHI ni mmiliki halali wa eneo/ardhi/kiwanja/shamba lenye ukubwa wa mita....., (upana wa mita na urefu wa mita) lililopo katika Kijiji cha MULTAZI, Kata ya MULTAZI, Tarafa BUNYILA, Wilaya ya MOROGORO, Mkoa MOROGORO kwa hiari yake mwenyewe bila kulamizimishwa akiwa na akili timamu ameamua kutoa sehemu ya eneo tajwa katika Mkataba huu kwa **SERIKALI YA KIJJI CHA MULTAZI** kwa ajili ya Mradi wa KUSAMBATA MAJI KIJJI MULTAZI (D P).

MAELEZO YA AWALI:

Serikali kwa kushirikiana na Wadau wa Maendeleo inatakeleza Programu ya Maendeleo ya Sekta ya Maji nchini (WSDP 2006-2025). Mtekelezaji wa Programu ni Serikali ya Jamhuri ya Muungano wa Tanzania ambayo imetoa jukumu hilo kwa Wizara ya Maji.

Wananchi wa maeneo yote yatakayopitiwa na Mradi huo wa maji kwa pamoja na kwa hiari yao na kwa lengo la kuwezesha utekelezaji wa mradi huo kwa manufaa ya umma, wamekubali kutoa ardhi zao kwa Serikali ya Kijiji husika itakayotumika kwa ajili ya utekelezaji wa mradi huo.

HIVYO BASI pande zote mbili zinashuhudia na kukubaliana kama ifuatavyo:-

1. **KWAMBA** Mtoa Ardhi kwa hiari yake mwenyewe anaridhia kutoa eneo/shamba/kiwanja tajwa katika mkataba huu kwa ajili ya kuwezesha mradi wa KUSAMBATA MAJI MULTAZI (D P)

2. **KWAMBA** Mpokea Ardhi atatumia eneo analopewa kwa ajili ya kujenga miundombinu ya mradi wa usambazaji maji na si kwa matumizi mengine
3. **KWAMBA** Mtoaji Ardhi hatoruhusiwa kufanya shughuli yoyote ya kudumu ambayo itahatarisha uwepo wa miundombinu ya mradi kwa ujumla katika maeneo yote kama vile kujenga Nyumba na kupanda miti mikubwa.
4. **KWAMBA** Mtoa Ardhi ambaye eneo lake lina miundombinu ya kudumu ambayo itaharibiwa kwa namna moja ama nyingine na ujenzi wa mradi atalipwa kwa utaratibu utakaoelekezwa kutokana na uthamini utakaofanyika.
5. **KWAMBA** Mtoaji Ardhi anahakikisha kuwa ardhi aliyotoa kwa ajili ya mradi ni mali yake mwenyewe na hakuna mtu mwingine mwenye umiliki na eneo hilo na endapo atatokea mwingine kudai umiliki wa eneo hilo na ikathibitika kuwa ndiye mmiliki halali wa eneo hilo, basi mtoa ardhi atakuwa na jukumu la kulipa fidia kwa mtu huyo.
6. **KWAMBA** mkataba huu utasimamiwa na Sheria ya Mkataba ya Jamhuri ya Muungano wa Tanzania.

KAMA USHUHUDA kuwa **MTOA ARDHI** na **MPOKEA ARDHI** wamekubaliana na masharti ya Mkataba huu kwa hiari yao wenyewe wamesaini mkataba huu Tarehe...10/10/2022...Mwezi...10... Mwaka...2022...kama inavyoonekana hapa chini:

MTOA ARDHI:

JINA: SULI RAMADHAN KIUURUGO

SAINI: [Signature]

CHEO: MW/KITONGO

TAREHE: 01/10/2022
0683-004608

MBELE YA MWENYEKITI WA KIJJI:

JINA: HUSEINI S. UZENGO

SAINI: [Signature]

CHEO: MW/K.A.D

TAREHE: 1/10/2022

SHAHIDI WA MTOA ARDHI:

JINA: ABDUL MASAMGULA A-MASAMGULA

SAINI: [Signature]

CHEO: MUKULIMA, BALOZI

TAREHE: 10/10/2022
0782-240930

MWENYEKITI WA KIJJI CHA M...
SAINI: [Signature]

MPOKEA ARDHI

KWA NIABA YA SERIKALI YA KIJIZI: MBELE YA MWAKILISHI WA HALMASHAURI:

JINA: BALUN K. LUGO

JINA: HELLA K. MLIMANAZI

SAINI: [Signature]

SAINI: [Signature]

CHEO: NEO

CHEO: AFISA SHERIA H/WILAYA MOROGORO
MWANASHERIA (W)
HALMASHAURI YA WILAYA MOROGORO

TAREHE: 01/10/2022

TAREHE: 03/10/2023

MBELE YA MWAKILISHI WA WIZARA YA MAJI (BONDE LA WAMI/RUVU):

JINA: ELIBARIKI J. MUMST

SAINI: [Signature]

CHEO: MKURU GSMZ

TAREHE: 13/10/2022

BASIN WATER DIRECTOR
WAMI / RUVU BASIN
WATER BOARD
P O. BOX 826
MOROGORO

MKATABA WA KURIDHIA KUTOA ARDHI KWA HIARI



MAKUBALIANO

KATI YA

Bw/Bibi......*SHERA RASHID KIKWATU*.....

NA

MAMLAKA YA SERIKALI YA KIJJI

.....*MNGAZI*.....

KWA LENGU LA

KUTOA ARDHI KWA HIARI

MWEZI/MWAKA

.....*October*...../.....*2022*.....

MRADI WA KUSAIDIA SEKTA YA MAJI AWAMU YA PILI (WSSP II)

MKATABA HUU umesainiwa leo Tarehe 01 ya Mwezi 10 Mwaka 2022

BAINA YA

NDUGU Shora Rashid wa Sanduku la Posta 1850, Kijiji cha Mngazi, Wilaya ya Morogoro Mkoa wa Morogoro (ambaye atajulikana kama "Mtoa Ardhi" msembo ambao utajumuisha warithi wake kwa upande mmoja);

NA

MTENDAJI WA KIJIKI CHA Mngazi Sanduku la Posta 1850 (atakaejulikana kwa jina "Mpokeaji Ardhi") msembo ambao utajumuisha warithi wake kwa upande mwingine).

KWA KUWA MTOA ARDHI ni mmiliki halali wa eneo/ardhi/kiwanja/shamba lenye ukubwa wa mita....., (upana wa mita na urefu wa mita) lililopo katika Kijiji cha Mngazi, Kata ya Mngazi, Tarafa Bwakis, Wilaya ya Morogoro, Mkoa Morogoro. Kwa hiari yake mwenyewe bila kulamizimishwa akiwa na akili timamu ameamua kutoa sehemu ya eneo tajwa katika Mkataba huu kwa **SERIKALI YA KIJIKI CHA** Mngazi kwa ajili ya Mradi wa Ushirikiano wa Maji ktk Kijiji che Mngazi (DP)

MAELEZO YA AWALI:

Serikali kwa kushirikiana na Wadau wa Maendeleo inatakeleza Programu ya Maendeleo ya Sekta ya Maji nchini (WSDP 2006-2025). Mtekelezaji wa Programu ni Serikali ya Jamhuri ya Muungano wa Tanzania ambayo imetoa jukumu hilo kwa Wizara ya Maji.

Wananchi wa maeneo yote yatakayopitiwa na Mradi huo wa maji kwa pamoja na kwa hiari yao na kwa lengo la kuwezesha utekelezaji wa mradi huo kwa manufaa ya umma, wamekubali kutoa ardhi zao kwa Serikali ya Kijiji husika itakayotumika kwa ajili ya utekelezaji wa mradi huo.

HIVYO BASI pande zote mbili zinashuhudia na kukubaliana kama ifuatavyo:-

1. **KWAMBA** Mtoa Ardhi kwa hiari yake mwenyewe anaridhia kutoa eneo/shamba/kiwanja tajwa katika mkataba huu kwa ajili ya kuwezesha mradi wa Ushirikiano wa Maji ktk Kijiji che Mngazi

2. **KWAMBA** Mpokea Ardhi atatumia eneo analopewa kwa ajili ya kujenga miundombinu ya mradi wa usambazaji maji na si kwa matumizi mengine
3. **KWAMBA** Mtoaji Ardhi hatoruhusiwa kufanya shughuli yoyote ya kudumu ambayo itahatarisha uwepo wa miundombinu ya mradi kwa ujumla katika maeneo yote kama vile kujenga Nyumba na kupanda miti mikubwa.
4. **KWAMBA** Mtoa Ardhi ambaye eneo lake lina miundombinu ya kudumu ambayo itaharibiwa kwa namna moja ama nyingine na ujenzi wa mradi atalipwa kwa utaratibu utakaoelekezwa kutokana na uthamini utakaofanyika.
5. **KWAMBA** Mtoaji Ardhi anahakikisha kuwa ardhi aliyotoa kwa ajili ya mradi ni mali yake mwenyewe na hakuna mtu mwingine mwenye umiliki na eneo hilo na endapo atatokea mwingine kudai umiliki wa eneo hilo na ikathibitika kuwa ndiye mmiliki halali wa eneo hilo, basi mtoa ardhi atakuwa na jukumu la kulipa fidia kwa mtu huyo.
6. **KWAMBA** mkataba huu utasimamiwa na Sheria ya Mkataba ya Jamhuri ya Muungano wa Tanzania.

KAMA USHUHUDA kuwa **MTOA ARDHI** na **MPOKEA ARDHI** wamekubaliana na masharti ya Mkataba huu kwa hiari yao wenyewe wamesaini mkataba huu Tarehe.....Mwezi Mwaka.....kama inavyoonekana hapa chini:

MTOA ARDHI:

JINA: Shers R. Kikwetu
 SAINI:
 CHEO: Mkulima
 TAREHE: 01.10.2022

SHAHIDI WA MTOA ARDHI:

JINA: Maria Athanas Ally
 SAINI: MARIYA ATHANAS
 CHEO: x Mkulima
 TAREHE: 01.10.22
 0685 93 18 83

MBELE YA MWENYEKITI WA KIJJI:

JINA: HUSENI S. UZENGO
 SAINI: ~~.....~~
 CHEO: M.M. K.S.S
 TAREHE: 1/10/2022

MWENYEKITI WA KIJJI CHA MNGAZI
 SAHIHI.....

MPOKEA ARDHI

KWA NIABA YA SERIKALI YA KIJJI: MBELE YA MWAKILISHI WA HALMASHAURI:

JINA: FARESI K. LUGOBI

JINA: HELLA K. MLIMANAZI

SAINI: [Signature]

SAINI: [Signature]

CHEO: NEO

CHEO: AFISA UHERIA H/WILAYA MOROGORO
MWANASHERIA W/ HALMASHAURI YA WILAYA MOROGORO

TAREHE: 01/10/2022

TAREHE: 03/10/2022

AFISA MTENDAJI
KIJJI CHA MNGAZI

MBELE YA MWAKILISHI WA WIZARA YA MAJI (BONDE LA WAMI/RUVU):

JINA: ELIBARIK J. MUMBI

SAINI: [Signature]

CHEO: MKEBUNGI

TAREHE: 12/10/2022

BASIN WATER DIRECTOR
WAMI / RUVU BASIN
WATER BOARD
P O. BOX 826
MOROGORO

MKATABA WA KURIDHIA KUTOA ARDHI KWA HIARI



MAKUBALIANO

KATI YA

Bw/Bibi..... JONAS ADOLF NUNGWE.....

NA

MAMLAKA YA SERIKALI YA KIJIZI

MUGAZI

KWA LENGU LA

KUTOA ARDHI KWA HIARI

MWEZI/MWAKA

..... 01 / 2022

MRADI WA KUSAIDIA SEKTA YA MAJI AWAMU YA PILI (WSSP II)

MKATABA HUU umesainiwa leo Tarehe 01 ya Mwezi 10 Mwaka 2022

BAINA YA

NDUGU JONAS ADROFNUGWE wa Sanduku la Posta 1880, Kijiji cha MNGAZI, Wilaya ya MOROGORO Mkoa wa MOROGORO (ambaye atajulikana kama "**Mtoa Ardhi**" msembo ambao utajumuisha warithi wake kwa upande mmoja);

NA

MTENDAJI WA KIJJI CHA MNGAZI Sanduku la Posta 1880 (atakaejulikana kwa jina "**Mpokeaji Ardhi**") msembo ambao utajumuisha warithi wake kwa upande mwingine).

Holca 1/2

KWA KUWA MTOA ARDHI ni mmiliki halali wa eneo/ardhi/kiwanja/shamba lenye ukubwa wa mita....., (upana wa mita na urefu wa mita) lililopo katika Kijiji cha MNGAZI, Kata ya MNGAZI, Tarafa BWAKWA, Wilaya ya MOROGORO Mkoa MOROGORO Kwa hiari yake mwenyewe bila kulamizimishwa akiwa na akili timamu ameamua kutoa sehemu ya eneo tajwa katika Mkataba huu kwa **SERIKALI YA KIJJI CHA** MNGAZI kwa ajili ya Mradi wa USAMBAZAJI WA MAJI (CBP)

MAELEZO YA AWALI:

Serikali kwa kushirikiana na Wadau wa Maendeleo inatakeleza Programu ya Maendeleo ya Sekta ya Maji nchini (WSDP 2006-2025). Mtekelezaji wa Programu ni Serikali ya Jamhuri ya Muungano wa Tanzania ambayo imetoa jukumu hilo kwa Wizara ya Maji.

Wananchi wa maeneo yote yatakayopitiwa na Mradi huo wa maji kwa pamoja na kwa hiari yao na kwa lengo la kuwezesha utekelezaji wa mradi huo kwa manufaa ya umma, wamekubali kutoa ardhi zao kwa Serikali ya Kijiji husika itakayotumika kwa ajili ya utekelezaji wa mradi huo.

HIVYO BASI pande zote mbili zinashuhudia na kukubaliana kama ifuatavyo:-

1. **KWAMBA** Mtoa Ardhi kwa hiari yake mwenyewe anaridhia kutoa eneo/shamba/kiwanja tajwa katika mkataba huu kwa ajili ya kuwezesha mradi wa MRADI WA USAMBAZAJI WA MAJI KATIKA KIJJI CHA MNGAZI

2. **KWAMBA** Mpokea Ardhi atatumia eneo analopewa kwa ajili ya kujenga miundombinu ya mradi wa usambazaji maji na si kwa matumizi mengine
3. **KWAMBA** Mtoaji Ardhi hatoruhusiwa kufanya shughuli yoyote ya kudumu ambayo itahatarisha uwepo wa miundombinu ya mradi kwa ujumla katika maeneo yote kama vile kujenga Nyumba na kupanda miti mikubwa.
4. **KWAMBA** Mtoa Ardhi ambaye eneo lake lina miundombinu ya kudumu ambayo itaharibiwa kwa namna moja ama nyingine na ujenzi wa mradi atalipwa kwa utaratibu utakaoelekezwa kutokana na uthamini utakaofanyika.
5. **KWAMBA** Mtoaji Ardhi anahakikisha kuwa ardhi aliyotoa kwa ajili ya mradi ni mali yake mwenyewe na hakuna mtu mwingine mwenye umiliki na eneo hilo na endapo atatokea mwingine kudai umiliki wa eneo hilo na ikathibitika kuwa ndiye mmiliki halali wa eneo hilo, basi mtoa ardhi atakuwa na jukumu la kulipa fidia kwa mtu huyo.
6. **KWAMBA** mkataba huu utasimamiwa na Sheria ya Mkataba ya Jamhuri ya Muungano wa Tanzania.

KAMA USHUHUDA kuwa **MTOA ARDHI** na **MPOKEA ARDHI** wamekubaliana na masharti ya Mkataba huu kwa hiari yao wenyewe wamesaini mkataba huu Tarehe D.I. Mwezi 10 Mwaka 2022 kama inavyoonekana hapa chini:

MTOA ARDHI:

JINA: IDNAS ADROF NUGWE

SAINI: [Signature]

CHEO: MKULIMA

TAREHE: 01/10/2022
0788-010397

MBELE YA MWENYEKITI WA KIJJI:

JINA: HUSEIN S. UZENGU

SAINI: [Signature]

CHEO: MU/KIJJI

TAREHE: 11/10/22

MWENYEKITI WA KIJJI CHA MNGAZI

SAINI: [Signature]

SHAHIDI WA MTOA ARDHI:

JINA: MERINA JONAS

SAINI: [Signature]

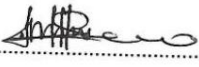
CHEO: MKULIMA

TAREHE: 01/10/2022
0783-534803

MPOKEA ARDHI

KWA NIABA YA SERIKALI YA KIJIZI: MBELE YA MWAKILISHI WA HALMASHAURI:

JINA: GALANI K. LUGWI

SAINI: 

CHEO: NEO

TAREHE: 01/10/2022

JINA: HELLA K. MLIMASAZI

SAINI: 

CHEO: AFISA SHERIA H/WILAYA MOROGORO MWANASHERIA (W)

TAREHE: 03/10/2022 HALMASHAURI YA WILAYA MOROGORO

AFISA MTENDAJI
KIJIZI CHA MNGAZI

MBELE YA MWAKILISHI WA WIZARA YA MAJI (BONDE LA WAMI/RUVU):

JINA: SLIBARIKI G. DUMAYI

SAINI: 

CHEO: MKEBUNGAZI

TAREHE: 18/10/2022

BASIN WATER DIRECTOR
WAMI / RUVU BASIN
WATER BOARD
P O. BOX 826
MOROGORO

MKATABA WA KURIDHIA KUTOA ARDHI KWA HIARI



MAKUBALIANO

KATI YA

Bw/Bibi Peter Mtaleba

NA

MAMLAKA YA SERIKALI YA KIJJI

MINGAZI

KWA LENGOLA

KUTOA ARDHI KWA HIARI

MWEZI/MWAKA

October / 2022

MRADI WA KUSAIDIA SEKTA YA MAJI AWAMU YA PILI (WSSP II)

MKATABA HUU umesainiwa leo Tarehe 01 ya Mwezi 10 Mwaka 2022

BAINA YA

NDUGU Peter Mtalens wa Sanduku la Posta 1880, Kijiji cha Mngazi, Wilaya ya Mwananyembe Mkoa wa Mwananyembe (ambaye atajulikana kama "Mtoa Ardhi" msembo ambao utajumuisha warithi wake kwa upande mmoja);

NA

MTENDAJI WA KIJIKI CHA Mngazi Sanduku la Posta (atakaejulikana kwa jina "Mpokeaji Ardhi") msembo ambao utajumuisha warithi wake kwa upande mwingine).

KWA KUWA MTOA ARDHI ni mmiliki halali wa eneo/ardhi/kiwanja/shamba lenye ukubwa wa mita (upana wa mita na urefu wa mita) lililopo katika Kijiji cha Mngazi, Kata ya Mngazi, Tarafa Bukira, Wilaya ya Mwananyembe Mkoa Mwananyembe. Kwa hiari yake mwenyewe bila kulamizimishwa akiwa na akili timamu ameamua kutoa sehemu ya eneo tajwa katika Mkataba huu kwa **SERIKALI YA KIJIKI CHA Mngazi** kwa ajili ya Mradi wa Usumbuzaji mji

MAELEZO YA AWALI:

Serikali kwa kushirikiana na Wadau wa Maendeleo inatakeleza Programu ya Maendeleo ya Sekta ya Maji nchini (WSDP 2006-2025). Mtekelezaji wa Programu ni Serikali ya Jamhuri ya Muungano wa Tanzania ambayo imetoa jukumu hilo kwa Wizara ya Maji.

Wananchi wa maeneo yote yatakayopitiwa na Mradi huo wa maji kwa pamoja na kwa hiari yao na kwa lengo la kuwezesha utekelezaji wa mradi huo kwa manufaa ya umma, wamekubali kutoa ardhi zao kwa Serikali ya Kijiji husika itakayotumika kwa ajili ya utekelezaji wa mradi huo.

HIVYO BASI pande zote mbili zinashuhudia na kukubaliana kama ifuatavyo:-

- KWAMBA** Mtoa Ardhi kwa hiari yake mwenyewe anaridhia kutoa eneo/shamba/kiwanja tajwa katika mkataba huu kwa ajili ya kuwezesha mradi wa Usumbuzaji mji ktk kijiji che mngazi

2. **KWAMBA** Mpokea Ardhi atatumia eneo analopewa kwa ajili ya kujenga miundombinu ya mradi wa usambazaji maji na si kwa matumizi mengine
3. **KWAMBA** Mtoaji Ardhi hatoruhusiwa kufanya shughuli yoyote ya kudumu ambayo itahatarisha uwepo wa miundombinu ya mradi kwa ujumla katika maeneo yote kama vile kujenga Nyumba na kupanda miti mikubwa.
4. **KWAMBA** Mtoa Ardhi ambaye eneo lake lina miundombinu ya kudumu ambayo itaharibiwa kwa namna moja ama nyingine na ujenzi wa mradi atalipwa kwa utaratibu utakaoelekezwa kutokana na uthamini utakaofanyika.
5. **KWAMBA** Mtoaji Ardhi anahakikisha kuwa ardhi aliyotoa kwa ajili ya mradi ni mali yake mwenyewe na hakuna mtu mwingine mwenye umiliki na eneo hilo na endapo atatokea mwingine kudai umiliki wa eneo hilo na ikathibitika kuwa ndiye mmiliki halali wa eneo hilo, basi mtoa ardhi atakuwa na jukumu la kulipa fidia kwa mtu huyo.
6. **KWAMBA** mkataba huu utasimamiwa na Sheria ya Mkataba ya Jamhuri ya Muungano wa Tanzania.

KAMA USHUHUDA kuwa **MTOA ARDHI** na **MPOKEA ARDHI** wamekubaliana na masharti ya Mkataba huu kwa hiari yao wenyewe wamesaini mkataba huu Tarehe...01...Mwezi...6..... Mwaka...22.....kama inavyoonekana hapa chini:

MTOA ARDHI:

JINA: Peter Mtaleba

SAINI: 


CHEO: x Mwalimu

TAREHE: 01/10/2022

06 89 35 55 70

MBELE YA MWENYEKITI WA KIJILI:

JINA: Hussein S. UZENGU

SAINI: 

CHEO: Mul/KJJ

TAREHE: 1/10/2022

SHAHIDI WA MTOA ARDHI:

JINA: Damadheni Rajab

SAINI: 

CHEO: x Mkulima

TAREHE: 01-10-2022

06 85 42 74 86

MWENYEKITI WA KIJILI GHA MNGAZI
SAHIMI.....

MPOKEA ARDHI

KWA NIABA YA SERIKALI YA KIJIZI: MBELE YA MWAKILISHI WA HALMASHAURI:

JINA: Geesey K. Luleen

SAINI: [Signature]

CHEO: VED

TAREHE: 01/10/2022

JINA: HELLA K. MLIWAZI

SAINI: [Signature]

CHEO: AFISA SHERIA H/WILAYA MOROGORO

TAREHE: 03/10/2022
MWANASHERIA (W)
HALMASHAURI YA WILAYA MOROGORO

AFISA MTENDAJI
KIJIZI CHA MNGAZI

MBELE YA MWAKILISHI WA WIZARA YA MAJI (BONDE LA WAMI/RUVU):

JINA: ELIBARIKI S. Mungisi

SAINI: [Signature]

CHEO: MKURUGSHTI

TAREHE: 13/10/2022

BASIN WATER DIRECTOR
WAMI / RUVU BASIN
WATER BOARD
P O. BOX 826
MOROGORO

MKATABA WA KURIDHIA KUTOA ARDHI KWA HIARI



MAKUBALIANO

KATI YA

Bw/Bibi. BONAVENTURA SIDIKA JOHN

NA

MAMLAKA YA SERIKALI YA KIJJI

MNGAZI

KWA LENGU LA

KUTOA ARDHI KWA HIARI

MWEZI/MWAKA

OKTOBA / 2022

MRADI WA KUSAIDIA SEKTA YA MAJI AWAMU YA PILI (WSSP II)

MKATABA HUU umesainiwa leo Tarehe1.....ya Mwezi10.....Mwaka2022.....

BAINA YA

NDUGU ~~BONAVENTURA SIRIELA JOHN~~ wa Sanduku la Posta.....~~KSP~~....., Kijiji cha ~~MNGAZI~~....., Wilaya ya ~~MOROGORO~~..... Mkoa wa ~~MOROGORO~~..... (ambaye atajulikana kama "**Mtoa Ardhi**") msembo ambao utajumuisha warithi wake kwa upande mmoja);

NA

MTENDAJI WA KIJIKI CHA ~~MNGAZI~~..... Sanduku la Posta ~~1810~~..... (atakaejulikana kwa jina "**Mpokeaji Ardhi**") msembo ambao utajumuisha warithi wake kwa upande mwingine).

KWA KUWA MTOA ARDHI ni mmiliki halali wa eneo/ardhi/kiwanja/shamba lenye ukubwa wa mita....., (upana wa mita na urefu wa mita) lililopo katika Kijiji cha ~~MNGAZI~~....., Kata ya ~~MNGAZI~~....., Tarafa.....~~BWA KILA~~....., Wilaya ya Mkoa Kwa hiari yake mwenyewe bila kulamizimishwa akiwa na akili timamu ameamua kutoa sehemu ya eneo tajwa katika Mkataba huu kwa **SERIKALI YA KIJIKI CHA** ~~MNGAZI~~..... kwa ajili ya Mradi wa ~~USAMBAZAJI WA MAJI KIJIKI CHA~~ ~~MNGAZI~~.....

MAELEZO YA AWALI:

Serikali kwa kushirikiana na Wadau wa Maendeleo inatakeleza Programu ya Maendeleo ya Sekta ya Maji nchini (WSDP 2006-2025). Mtekelezaji wa Programu ni Serikali ya Jamhuri ya Muungano wa Tanzania ambayo imetoa jukumu hilo kwa Wizara ya Maji.

Wananchi wa maeneo yote yatakayopitiwa na Mradi huo wa maji kwa pamoja na kwa hiari yao na kwa lengo la kuwezesha utekelezaji wa mradi huo kwa manufaa ya umma, wamekubali kutoa ardhi zao kwa Serikali ya Kijiji husika itakayotumika kwa ajili ya utekelezaji wa mradi huo.

HIVYO BASI pande zote mbili zinashuhudia na kukubaliana kama ifuatavyo:-

1. **KWAMBA** Mtoa Ardhi kwa hiari yake mwenyewe anaridhia kutoa eneo/shamba/kiwanja tajwa katika mkataba huu kwa ajili ya kuwezesha mradi wa ~~USAMBAZAJI WA MAJI KIJIKI CHA MNGAZI~~

2. **KWAMBA** Mpokea Ardhi atatumia eneo analopewa kwa ajili ya kujenga miundombinu ya mradi wa usambazaji maji na si kwa matumizi mengine.
3. **KWAMBA** Mtoaji Ardhi hatoruhusiwa kufanya shughuli yoyote ya kudumu ambayo itahatarisha uwepo wa miundombinu ya mradi kwa ujumla katika maeneo yote kama vile kujenga Nyumba na kupanda miti mikubwa.
4. **KWAMBA** Mtoa Ardhi ambaye eneo lake lina miundombinu ya kudumu ambayo itaharibiwa kwa namna moja ama nyingine na ujenzi wa mradi atalipwa kwa utaratibu utakaoelekezwa kutokana na uthamini utakaofanyika.
5. **KWAMBA** Mtoaji Ardhi anahakikisha kuwa ardhi aliyotoa kwa ajili ya mradi ni mali yake mwenyewe na hakuna mtu mwingine mwenye umiliki na eneo hilo na endapo atatokea mwingine kudai umiliki wa eneo hilo na ikathibitika kuwa ndiye mmiliki halali wa eneo hilo, basi mtoa ardhi atakuwa na jukumu la kulipa fidia kwa mtu huyo.
6. **KWAMBA** mkataba huu utasimamiwa na Sheria ya Mkataba ya Jamhuri ya Muungano wa Tanzania.

KAMA USHUHUDA kuwa **MTOA ARDHI** na **MPOKEA ARDHI** wamekubaliana na masharti ya Mkataba huu kwa hiari yao wenyewe wamesaini mkataba huu Tarehe.....¹.....Mwezi¹⁰..... Mwaka...2022...kama inavyoonekana hapa chini:

MTOA ARDHI:

JINA: BONAVENTURA SIRIELA JOHN

SAINI: B. S.

CHEO: MKULIMA

TAREHE: 1/10/2022

SHAHIDI WA MTOA ARDHI:

JINA: MATEO P. BOKO

SAINI: Mateo

CHEO: MKULIMA

TAREHE: 1/10/2022

MBELE YA MWENYEKITI WA KIJJI:

JINA.....

SAINI.....

CHEO.....

TAREHE:.....

MPOKEA ARDHI

KWA NIABA YA SERIKALI YA KIJIKI: MBELE YA MWAKILISHI WA HALMASHAURI:

JINA: GAIUSI-K. MURGO

JINA: HELIA K. MUMAZI

SAINI: 

SAINI: 

CHEO: NEO

CHEO: AFISA SHERIA H/WILAYA MOROGORO

TAREHE: 01/10/2022

TAREHE: 03/10/2022

AFISA MTENDAJI
KIJIKI CHA WINGAZI

MWANASHERIA (W)
HALMASHAURI YA WILAYA MOROGORO

MBELE YA MWAKILISHI WA WIZARA YA MAJI (BONDE LA WAMI/RUVU):

JINA: ELIBARI J. MUMAZI

SAINI: 

CHEO: MKURUGA

TAREHE: 18/10/2022

BASIN WATER DIRECTOR
WAMI / RUVU BASIN
WATER BOARD
P. O. BOX 826
MOROGORO

MKATABA WA KURIDHIA KUTOA ARDHI KWA HIARI



MAKUBALIANO

KATI YA

Bw/Bibi. ROZI ADRIANI KINSA MRAZI

NA

MAMLAKA YA SERIKALI YA KIJJI

MRAZI

KWA LENGU LA

KUTOA ARDHI KWA HIARI

MWEZI/MWAKA

010, 2022

MRADI WA KUSAIDIA SEKTA YA MAJI AWAMU YA PILI (WSSP II)

MKATABA HUU umesainiwa leo Tarehe 01.....ya Mwezi 10.....Mwaka 2022.....

BAINA YA

NDUGU.....wa Sanduku la Posta....., Kijiji cha....., Wilaya ya MOROOGORO..... Mkoa wa MOROOGORO..... (ambaye atajulikana kama "**Mtoa Ardhi**" msembo ambao utajumuisha warithi wake kwa upande mmoja);

NA

MTENDAJI WA KIJJI CHA M.M. GAZI..... Sanduku la Posta 1880..... (atakaejulikana kwa jina "**Mpokeaji Ardhi**") msembo ambao utajumuisha warithi wake kwa upande mwingine).

KWA KUWA MTOA ARDHI ni mmiliki halali wa eneo/ardhi/kiwanja/shamba lenye ukubwa wa mita....., (upana wa mita na urefu wa mita) lililopo katika Kijiji cha M.M. GAZI....., Kata ya BUNYATI....., Tarafa BUNYATI....., Wilaya ya MOROOGORO....., Mkoa MOROOGORO Kwa hiari yake mwenyewe bila kulamizimishwa akiwa na akili timamu ameamua kutoa sehemu ya eneo tajwa katika Mkataba huu kwa **SERIKALI YA KIJJI CHA** M.M. GAZI..... kwa ajili ya Mradi wa KUSAMBATA MAJI KIJJI CHA M.GAZI

MAELEZO YA AWALI:

Serikali kwa kushirikiana na Wadau wa Maendeleo inatakeleza Programu ya Maendeleo ya Sekta ya Maji nchini (WSDP 2006-2025). Mtekelezaji wa Programu ni Serikali ya Jamhuri ya Muungano wa Tanzania ambayo imetoa jukumu hilo kwa Wizara ya Maji.

Wananchi wa maeneo yote yatakayopitiwa na Mradi huo wa maji kwa pamoja na kwa hiari yao na kwa lengo la kuwezesha utekelezaji wa mradi huo kwa manufaa ya umma, wamekubali kutoa ardhi zao kwa Serikali ya Kijiji husika itakayotumika kwa ajili ya utekelezaji wa mradi huo.

HIVYO BASI pande zote mbili zinashuhudia na kukubaliana kama ifuatavyo:-

1. **KWAMBA** Mtoa Ardhi kwa hiari yake mwenyewe anaridhia kutoa eneo/shamba/kiwanja tajwa katika mkataba huu kwa ajili ya kuwezesha mradi wa KUSAMBATA MAJI KIJJI CHA M.GAZI (DP).

2. **KWAMBA** Mpokea Ardhi atatumia eneo analopewa kwa ajili ya kujenga miundombinu ya mradi wa usambazaji maji na si kwa matumizi mengine
3. **KWAMBA** Mtoaji Ardhi hatoruhusiwa kufanya shughuli yoyote ya kudumu ambayo itahatarisha uwepo wa miundombinu ya mradi kwa ujumla katika maeneo yote kama vile kujenga Nyumba na kupanda miti mikubwa.
4. **KWAMBA** Mtoa Ardhi ambaye eneo lake lina miundombinu ya kudumu ambayo itaharibiwa kwa namna moja ama nyingine na ujenzi wa mradi atalipwa kwa utaratibu utakaoelekezwa kutokana na uthamini utakaofanyika.
5. **KWAMBA** Mtoaji Ardhi anahakikisha kuwa ardhi aliyotoa kwa ajili ya mradi ni mali yake mwenyewe na hakuna mtu mwingine mwenye umiliki na eneo hilo na endapo atatokea mwingine kudai umiliki wa eneo hilo na ikathibitika kuwa ndiye mmiliki halali wa eneo hilo, basi mtoa ardhi atakuwa na jukumu la kulipa fidia kwa mtu huyo.
6. **KWAMBA** mkataba huu utasimamiwa na Sheria ya Mkataba ya Jamhuri ya Muungano wa Tanzania.

KAMA USHUHUDA kuwa **MTOA ARDHI** na **MPOKEA ARDHI** wamekubaliana na masharti ya Mkataba huu kwa hiari yao wenyewe wamesaini mkataba huu Tarehe..01...Mwezi...10..... Mwaka..2022...kama inavyoonekana hapa chini:

MTOA ARDHI:

JINA: ROZI ADRIAN KINANGARA

SAINI: 

CHEO: Mkuulima

TAREHE: 01/10/2022

SHAHIDI WA MTOA ARDHI:

JINA: MATEI P BORO


SAINI: 

CHEO: Mkuulima

TAREHE: 1/10/2022

MBELE YA MWENYEKITI WA KIJJI:

JINA: HUSENI S. UZENGA

SAINI: 

CHEO: Mkuulima

TAREHE: 1/10/2022

MWENYEKITI WA KIJJI CHA MNG'ARA

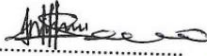
SAINI

MPOKEA ARDHI

KWA NIABA YA SERIKALI YA KIJIKI: MBELE YA MWAKILISHI WA HALMASHAURI:

JINA: GALISI K. LEEWA

JINA: HELLA M. MUMAWAZI

SAINI: 

SAINI: 

CHEO: N.E.O

CHEO: AFISA SHERPA H/ WILAYA MOF
ORO

TAREHE: 01/10/2022

TAREHE: 02/10/2022

AFISA MTENDAJI
KIJIKI CHA MWASAZI

MWANASHERIA (W)
HALMASHAURI YA WILAYA MOROGORO

MBELE YA MWAKILISHI WA WIZARA YA MAJI (BONDE LA WAMI/RUVU):

JINA: HUSEINI S. UZUNGO ELIBREKI J. MUMASSI

SAINI: 

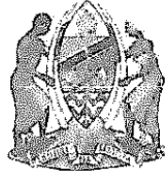
CHEO: M.M. KASS

TAREHE: 1/10/2022

MURUGENJI
12/10/2022

BASIN WATER DIRECTOR
WAMI / RUVU BASIN
WATER BOARD
P O. BOX 826
MOROGORO

MKATABA WA KURIDHIA KUTOA ARDHI KWA HIARI



MAKUBALIANO

KATI YA

Bw/Bibi.....**RAMADHANI SALUMU MLANGO**

NA

MAMLAKA YA SERIKALI YA KIJILI

.....**MNGAZI**.....

KWA LENGU LA

KUTOA ARDHI KWA HIARI

MWEZI/MWAKA

.....**10**...../**2022**.....

MRADI WA KUSAIDIA SEKTA YA MAJI AWAMU YA PILI (WSSP II)

MKATABA HUU umesainiwa leo Tarehe 01.....ya Mwezi 010.....Mwaka 2022

BAINA YA

NDUGU PANADHAN SASU...M...Wa Sanduku la Posta 1880....., Kijiji cha M.H.GAZI, Wilaya ya M.H.GAZI Mkoa wa M.H.GAZI (ambaye atajulikana kama "Mtoa Ardhi" msembo ambao utajumuisha warithi wake kwa upande mmoja);

NA

MTENDAJI WA KIJJI CHA M.H.GAZI Sanduku la Posta 1880 (atakaejulikana kwa jina "Mpokeaji Ardhi") msembo ambao utajumuisha warithi wake kwa upande mwingine).

1/3
KWA KUWA MTOA ARDHI ni mmiliki halali wa eneo/ardhi/kiwanja/shamba lenye ukubwa wa mita....., (upana wa mita na urefu wa mita) lililopo katika Kijiji cha M.H.GAZI, Kata ya M.H.GAZI, Tarafa BWA KILA....., Wilaya ya M.H.GAZI, Mkoa M.H.GAZI. Kwa hiari yake mwenyewe bila kulamizimishwa akiwa na akili timamu ameamua kutoa sehemu ya eneo tajwa katika Mkataba huu kwa SERIKALI YA KIJJI CHA M.H.GAZI kwa ajili ya Mradi wa KUSAIDIA MAJI K CHA M.H.GAZI (DP)

MAELEZO YA AWALI:

Serikali kwa kushirikiana na Wadau wa Maendeleo inatakeleza Programu ya Maendeleo ya Sekta ya Maji nchini (WSDP 2006-2025). Mtekelezaji wa Programu ni Serikali ya Jamhuri ya Muungano wa Tanzania ambayo imetoa jukumu hilo kwa Wizara ya Maji.

Wananchi wa maeneo yote yatakayopitiwa na Mradi huo wa maji kwa pamoja na kwa hiari yao na kwa lengo la kuwezesha utekelezaji wa mradi huo kwa manufaa ya umma, wamekubali kutoa ardhi zao kwa Serikali ya Kijiji husika itakayotumika kwa ajili ya utekelezaji wa mradi huo.

HIVYO BASI pande zote mbili zinashuhudia na kukubaliana kama ifuatavyo:-


1. KWAMBA Mtoa Ardhi kwa hiari yake mwenyewe anaridhia kutoa eneo/shamba/kiwanja tajwa katika mkataba huu kwa ajili ya kuwezesha mradi wa KUSAIDIA MAJI KIJJI CHA M.H.GAZI (DP)

2. **KWAMBA** Mpokea Ardhi atatumia eneo analopewa kwa ajili ya kujenga miundombinu ya mradi wa usambazaji maji na si kwa matumizi mengine
3. **KWAMBA** Mtoaji Ardhi hatoruhusiwa kufanya shughuli yoyote ya kudumu ambayo itahatarisha uwepo wa miundombinu ya mradi kwa ujumla katika maeneo yote kama vile kujenga Nyumba na kupanda miti mikubwa.
4. **KWAMBA** Mtoa Ardhi ambaye eneo lake lina miundombinu ya kudumu ambayo itaharibiwa kwa namna moja ama nyingine na ujenzi wa mradi atalipwa kwa utaratibu utakaoelekezwa kutokana na uthamini utakaofanyika.
5. **KWAMBA** Mtoaji Ardhi anahakikisha kuwa ardhi aliyotoa kwa ajili ya mradi ni mali yake mwenyewe na hakuna mtu mwingine mwenye umiliki na eneo hilo na endapo atatokea mwingine kudai umiliki wa eneo hilo na ikathibitika kuwa ndiye mmiliki halali wa eneo hilo, basi mtoa ardhi atakuwa na jukumu la kulipa fidia kwa mtu huyo.
6. **KWAMBA** mkataba huu utasimamiwa na Sheria ya Mkataba ya Jamhuri ya Muungano wa Tanzania.

KAMA USHUHUDA kuwa **MTOA ARDHI** na **MPOKEA ARDHI** wamekubaliana na masharti ya Mkataba huu kwa hiari yao wenyewe wamesaini mkataba huu Tarehe...01/10/2022... Mwaka...2022...kama inavyoonekana hapa chini:

MTOA ARDHI:

JINA: RAMADHANI SALIMU MACHUKU

SAINI: 

CHEO: NUKULIMA

TAREHE: 01/10/2022
0687 26 8627

MBELE YA MWENYEKITI WA KIJJI:

JINA: HUSENI S. UZENGO

SAINI: 

CHEO: MWI KJJ

TAREHE: 1/10/2022

SHAHIDI WA MTOA ARDHI:

JINA: ABDU ALI MASANGULA

SAINI: A-Masungula

CHEO: NUKULIMA, BALOZI MIF

TAREHE: 01/10/2022
0782-240930

SHAHIDI WA MTOA ARDHI
 MWENYEKITI WA KIJJI CHA MNG'AZI
 HUSUNI S. UZENGO
 0782-240930

MPOKEA ARDHI

KWA NIABA YA SERIKALI YA KIJIKI: MBELE YA MWAKILISHI WA HALMASHAURI:

JINA: GAEISI K. LUGEMO

JINA: HELLA K. MLIMANAZI

SAINI: [Signature]

SAINI: [Signature]

CHEO: NEO

CHEO: AFISA SHERIA H/WILAYA MOROGORO

TAREHE: 01/10/2022

TAREHE: 03/10/2022

AFISA MTENDAJI
KIJIJI CHA MNGAZI

MWANASHERIA (W)
HALMASHAURI YA WILAYA MOROGORO

MBELE YA MWAKILISHI WA WIZARA YA MAJI (BONDE LA WAMI/RUVU):

JINA: ELIKORIKI S. MUMBI

SAINI: [Signature]

CHEO: MTENDAJI

TAREHE: 13/10/2022

BASIN WATER DIRECTOR
WAMI / RUVU BASIN
WATER BOARD
P. O. BOX 826
MOROGORO

MKATABA WA KURIDHIA KUTOA ARDHI KWA HIARI



MAKUBALIANO

KATI YA

Bw/Bibi..... *ALLY JASHO MOHAMED*.....

NA

MAMLAKA YA SERIKALI YA KIJIZI

..... *MINGAZI*

KWA LENGU LA

KUTOA ARDHI KWA HIARI

MWEZI/MWAKA

..... *OKTOBA, 2022*

MRADI WA KUSAIDIA SEKTA YA MAJI AWAMU YA PILI (WSSP II)

MKATABA HUU umesainiwa leo Tarehe 01.....ya Mwezi 10.....Mwaka 2022

BAINA YA

NDUGU ALLY JASHO MOHAMMED wa Sanduku la Posta 1880....., Kijiji cha MNGAZI....., Wilaya ya MORO DC..... Mkoa wa MOROGORO..... (ambaye atajulikana kama "**Mtoa Ardhi**") msembo ambao utajumuisha warithi wake kwa upande mmoja);

NA

MTENDAJI WA KIJIKI CHA MNGAZI..... Sanduku la Posta 1880..... (atakaejulikana kwa jina "**Mpokeaji Ardhi**") msembo ambao utajumuisha warithi wake kwa upande mwingine).

KWA KUWA MTOA ARDHI ni mmiliki halali wa eneo/ardhi/kiwanja/shamba lenye ukubwa wa mita....., (upana wa mita 35..... na urefu wa mita 70.....) lililopo katika Kijiji cha Mngazi....., Kata ya Mngazi....., Tarafa Bwakala....., Wilaya ya Moro DC....., Mkoa Morogoro..... Kwa hiari yake mwenyewe bila kulamizimishwa akiwa na akili timamu ameamua kutoa sehemu ya eneo tajwa katika Mkataba huu kwa **SERIKALI YA KIJIKI CHA** Mngazi..... kwa ajili ya Mradi wa Usambazaji Maji Mngazi

MAELEZO YA AWALI:

Serikali kwa kushirikiana na Wadau wa Maendeleo inatakeleza Programu ya Maendeleo ya Sekta ya Maji nchini (WSDP 2006-2025). Mtekelezaji wa Programu ni Serikali ya Jamhuri ya Muungano wa Tanzania ambayo imetoa jukumu hilo kwa Wizara ya Maji.

Wananchi wa maeneo yote yatakayopitiwa na Mradi huo wa maji kwa pamoja na kwa hiari yao na kwa lengo la kuwezesha utekelezaji wa mradi huo kwa manufaa ya umma, wamekubali kutoa ardhi zao kwa Serikali ya Kijiji husika itakayotumika kwa ajili ya utekelezaji wa mradi huo.

HIVYO BASI pande zote mbili zinashuhudia na kukubaliana kama ifuatavyo:-

1. **KWAMBA** Mtoa Ardhi kwa hiari yake mwenyewe anaridhia kutoa eneo/shamba/kiwanja tajwa katika mkataba huu kwa ajili ya kuwezesha mradi wa Usambazaji Maji Mngazi

2. **KWAMBA** Mpokea Ardhi atatumia eneo analopewa kwa ajili ya kujenga miundombinu ya mradi wa usambazaji maji na si kwa matumizi mengine
3. **KWAMBA** Mtoaji Ardhi hatoruhusiwa kufanya shughuli yoyote ya kudumu ambayo itahatarisha uwepo wa miundombinu ya mradi kwa ujumla katika maeneo yote kama vile kujenga Nyumba na kupanda miti mikubwa.
4. **KWAMBA** Mtoa Ardhi ambaye eneo lake lina miundombinu ya kudumu ambayo itaharibiwa kwa namna moja ama nyingine na ujenzi wa mradi atalipwa kwa utaratibu utakaoelekezwa kutokana na uthamini utakaofanyika.
5. **KWAMBA** Mtoaji Ardhi anahakikisha kuwa ardhi aliyotoa kwa ajili ya mradi ni mali yake mwenyewe na hakuna mtu mwingine mwenye umiliki na eneo hilo na endapo atatokea mwingine kudai umiliki wa eneo hilo na ikathibitika kuwa ndiye mmiliki halali wa eneo hilo, basi mtoa ardhi atakuwa na jukumu la kulipa fidia kwa mtu huyo.
6. **KWAMBA** mkataba huu utasimamiwa na Sheria ya Mkataba ya Jamhuri ya Muungano wa Tanzania.

KAMA USHUHUDA kuwa **MTOA ARDHI** na **MPOKEA ARDHI** wamekubaliana na masharti ya Mkataba huu kwa hiari yao wenyewe wamesaini mkataba huu Tarehe...⁰¹...Mwezi ¹⁰..... Mwaka...²⁰²²...kama inavyoonekana hapa chini:

MTOA ARDHI:

JINA: AJLY JASHO MOHAMED

SAINI: AJLY

CHEO: MKUHMA

TAREHE: 01/10/2022

0788 856809

MBELE YA MWENYEKITI WA KIJIKI:

JINA: HUSEN S. UZENGO

SAINI: [Signature]

CHEO: MU. KES

TAREHE: 1/10/2022

MWENYEKITI WA KIJIKI GHA M...
S. A... ..

SHAHIDI WA MTOA ARDHI:

JINA: ZAITUNI JASHO MOHAMED

SAINI: Z. J. mohamed

CHEO: MWANAFUNZI

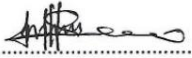
TAREHE: 01/10/2022

MPOKEA ARDHI

KWA NIABA YA SERIKALI YA KIJJI: MBELE YA MWAKILISHI WA HALMASHAURI:

JINA: GARASI K. LUGWA

JINA: HELLA K. MLIMANZI

SAINI: 

SAINI: 

CHEO: NEO

CHEO: AFISA SHERIA H/WILAYA
MORO GORO

TAREHE: 01/10/2022

TAREHE: 03/10/2022
MWANASHERIA (W)
HALMASHAURI YA WILAYA MORO

AFISA MTENDAJI
KIJJI CHA MWGAZI

MBELE YA MWAKILISHI WA WIZARA YA MAJI (BONDE LA WAMI/RUVU):

JINA: SUBARIKI J. MUMBI

SAINI: 

CHEO: MKURUGEMU

TAREHE: 12/10/2022

BASIN WATER DIRECTOR
WAMI / RUVU BASIN
WATER BOARD
P O. BOX 826
MOROGORO

MKATABA WA KURIDHIA KUTOA ARDHI KWA HIARI



MAKUBALIANO

KATI YA

Bw/Bibi..... MATEI PETER BOKO.....

NA

MAMLAKA YA SERIKALI YA KIJJI

..... CHA MNGAZI.....

KWA LENGU LA

KUTOA ARDHI KWA HIARI

MWEZI/MWAKA

..... OKTOBA / 2022.....

MRADI WA KUSAIDIA SEKTA YA MAJI AWAMU YA PILI (WSSP II)

MKATABA HUU umesainiwa leo Tarehe ...1.....ya Mwezi10.....Mwaka2022.....

BAINA YA

NDUGU MATEI PETER BOKO wa Sanduku la Posta.....1880....., Kijiji cha MNGAZI, Wilaya ya MOROORO Mkoa wa MOROORO (ambaye atajulikana kama "**Mtoa Ardhi**" msemu ambao utajumuisha warithi wake kwa upande mmoja);

NA

MTENDAJI WA KIJJI CHA MNGAZI Sanduku la Posta1880... (atakaejulikana kwa jina "**Mpokeaji Ardhi**") msemu ambao utajumuisha warithi wake kwa upande mwingine).

KWA KUWA MTOA ARDHI ni mmiliki halali wa eneo/ardhi/kiwanja/shamba lenye ukubwa $\frac{1}{4}$ wa mita....., (upana wa mita na urefu wa mita) lililopo katika Kijiji cha MNGAZI, Kata ya MNGAZI, Tarafa.....CHAKILIA.....Wilaya ya MOROORO, Mkoa MOROORO Kwa hiari yake mwenyewe bila kulamizimishwa akiwa na akili timamu ameamua kutoa sehemu ya eneo tajwa katika Mkataba huu kwa **SERIKALI YA KIJJI CHA** MNGAZI kwa ajili ya Mradi wa UAMBAZAJI MAJI KIJJI CHA MNGAZI

MAELEZO YA AWALI:

Serikali kwa kushirikiana na Wadau wa Maendeleo inatakeleza Programu ya Maendeleo ya Sekta ya Maji nchini (WSDP 2006-2025). Mtekelezaji wa Programu ni Serikali ya Jamhuri ya Muungano wa Tanzania ambayo imetoa jukumu hilo kwa Wizara ya Maji.

Wananchi wa maeneo yote yatakayopitiwa na Mradi huo wa maji kwa pamoja na kwa hiari yao na kwa lengo la kuwezesha utekelezaji wa mradi huo kwa manufaa ya umma, wamekubali kutoa ardhi zao kwa Serikali ya Kijiji husika itakayotumika kwa ajili ya utekelezaji wa mradi huo.

HIVYO BASI pande zote mbili zinashuhudia na kukubaliana kama ifuatavyo:-

1. **KWAMBA** Mtoa Ardhi kwa hiari yake mwenyewe anaridhia kutoa eneo/shamba/kiwanja tajwa katika mkataba huu kwa ajili ya kuwezesha mradi wa UAMBAZAJI MAJI KIJJI CHA MNGAZI

2. **KWAMBA** Mpokea Ardhi atatumia eneo analopewa kwa ajili ya kujenga miundombinu ya mradi wa usambazaji maji na si kwa matumizi mengine
3. **KWAMBA** Mtoaji Ardhi hatoruhusiwa kufanya shughuli yoyote ya kudumu ambayo itahatarisha uwepo wa miundombinu ya mradi kwa ujumla katika maeneo yote kama vile kujenga Nyumba na kupanda miti mikubwa.
4. **KWAMBA** Mtoa Ardhi ambaye eneo lake lina miundombinu ya kudumu ambayo itaharibiwa kwa namna moja ama nyingine na ujenzi wa mradi atalipwa kwa utaratibu utakaoelekezwa kutokana na uthamini utakaofanyika.
5. **KWAMBA** Mtoaji Ardhi anahakikisha kuwa ardhi aliyotoa kwa ajili ya mradi ni mali yake mwenyewe na hakuna mtu mwingine mwenye umiliki na eneo hilo na endapo atatokea mwingine kudai umiliki wa eneo hilo na ikathibitika kuwa ndiye mmiliki halali wa eneo hilo, basi mtoa ardhi atakuwa na jukumu la kulipa fidia kwa mtu huyo.
6. **KWAMBA** mkataba huu utasimamiwa na Sheria ya Mkataba ya Jamhuri ya Muungano wa Tanzania.

KAMA USHUHUDA kuwa **MTOA ARDHI** na **MPOKEA ARDHI** wamekubaliana na masharti ya Mkataba huu kwa hiari yao wenyewe wamesaini mkataba huu Tarehe.....¹.....Mwezi¹⁰..... Mwaka...²⁰²².....kama inavyoonekana hapa chini:

MTOA ARDHI:

JINA: MAITEI P. BORO

SAINI: *[Signature]*

CHEO: MKULIMA

TAREHE: 1/10/2022 ..
0693849047

SHAHIDI WA MTOA ARDHI:

JINA: KENNETH LEMARUGU

SAINI: *[Signature]*

CHEO: MKULIMA

TAREHE: 01/10/2022
0657-150024

MBELE YA MWENYEKITI WA KIJJI:

JINA: HUSEINI S. UZUGU

SAINI: *[Signature]*

CHEO: M.M.K.S

TAREHE: 1/10/2022

MKENYEKITI WA KIJJI CHA MNGAZI
SAHIMI.....

MPOKEA ARDHI

KWA NIABA YA SERIKALI YA KIJJI: MBELE YA MWAKILISHI WA HALMASHAURI:

JINA: Galusi K. Lalen

JINA: HELLA K. MLIMANAZI

SAINI: [Signature]

SAINI: [Signature]

CHEO: VED

CHEO: AFISA SHERIA H/WILAYA MOROGO
MWANASHERIA (W)

TAREHE: 01/10/2022

TAREHE: 03/10/2022
HALMASHAURI YA WILAYA MOROGORO

AFISA MTENDAJI
KIJJI CHA MNGAZI

MBELE YA MWAKILISHI WA WIZARA YA MAJI (BONDE LA WAMI/RUVU):

JINA: ELIBARIKI J. MUMASI

SAINI: [Signature]

CHEO: MKURUGATI

TAREHE: 13/10/2022

BASIN WATER DIRECTOR
WAMI / RUVU BASIN
WATER BOARD
P. O. BOX 826
MOROGORO

MKATABA WA KURIDHIA KUTOA ARDHI KWA HIARI



MAKUBALIANO

KATI YA

Bw/Bibi..... *S/M MNGAZI B'*

NA

MAMLAKA YA SERIKALI YA KIJJI

MNGAZI

KWA LENGU LA

KUTOA ARDHI KWA HIARI

MWEZI/MWAKA

10 / *2022*

MRADI WA KUSAIDIA SEKTA YA MAJI AWAMU YA PILI (WSSP II)

MKATABA HUU umesainiwa leo Tarehe 01.....ya Mwezi 10.....Mwaka 2022.....

BAINA YA

NDUGU S/M MINGAZI B.....wa Sanduku la Posta 610....., Kijiji cha MINGAZI....., Wilaya ya MAROCORO..... Mkoa wa MAROCORO (ambaye atajulikana kama "**Mtoa Ardhi**") msembo ambao utajumuisha warithi wake kwa upande mmoja);

NA

MTENDAJI WA KIJIKI CHA MINGAZI..... Sanduku la Posta 1880..... (atakaejulikana kwa jina "**Mpokeaji Ardhi**") msembo ambao utajumuisha warithi wake kwa upande mwingine).

KWA KUWA MTOA ARDHI ni mmiliki halali wa eneo/ardhi/kiwanja/shamba lenye ukubwa wa mita Ekaru 4....., (upana wa mita na urefu wa mita) lililopo katika Kijiji cha MINGAZI....., Kata ya MINGAZI....., Tarafa BWAHARA....., Wilaya ya MAROCORO....., Mkoa MAROCORO..... Kwa hiari yake mwenyewe bila kulamizimishwa akiwa na akili timamu ameamua kutoa sehemu ya eneo tajwa katika Mkataba huu kwa **SERIKALI YA KIJIKI CHA** MINGAZI..... kwa ajili ya Mradi wa MAJI.....

MAELEZO YA AWALI:

Serikali kwa kushirikiana na Wadau wa Maendeleo inatakeleza Programu ya Maendeleo ya Sekta ya Maji nchini (WSDP 2006-2025). Mtekelezaji wa Programu ni Serikali ya Jamhuri ya Muungano wa Tanzania ambayo imetoa jukumu hilo kwa Wizara ya Maji.

Wananchi wa maeneo yote yatakayopitiwa na Mradi huo wa maji kwa pamoja na kwa hiari yao na kwa lengo la kuwezesha utekelezaji wa mradi huo kwa manufaa ya umma, wamekubali kutoa ardhi zao kwa Serikali ya Kijiji husika itakayotumika kwa ajili ya utekelezaji wa mradi huo.

HIVYO BASI pande zote mbili zinashuhudia na kukubaliana kama ifuatavyo:-

1. **KWAMBA** Mtoa Ardhi kwa hiari yake mwenyewe anaridhia kutoa eneo/shamba/kiwanja tajwa katika mkataba huu kwa ajili ya kuwezesha mradi wa MRADI WA KUSAIDIA SEKTA YA MAJI KAFIKA KIJIKI CHA MINGAZI.

2. **KWAMBA** Mpokea Ardhi atatumia eneo analopewa kwa ajili ya kujenga miundombinu ya mradi wa usambazaji maji na si kwa matumizi mengine
3. **KWAMBA** Mtoaji Ardhi hatoruhusiwa kufanya shughuli yoyote ya kudumu ambayo itahatarisha uwepo wa miundombinu ya mradi kwa ujumla katika maeneo yote kama vile kujenga Nyumba na kupanda miti mikubwa.
4. **KWAMBA** Mtoa Ardhi ambaye eneo lake lina miundombinu ya kudumu ambayo itaharibiwa kwa namna moja ama nyingine na ujenzi wa mradi atalipwa kwa utaratibu utakaoelekezwa kutokana na uthamini utakaofanyika.
5. **KWAMBA** Mtoaji Ardhi anahakikisha kuwa ardhi aliyotoa kwa ajili ya mradi ni mali yake mwenyewe na hakuna mtu mwingine mwenye umiliki na eneo hilo na endapo atatokea mwingine kudai umiliki wa eneo hilo na ikathibitika kuwa ndiye mmiliki halali wa eneo hilo, basi mtoa ardhi atakuwa na jukumu la kulipa fidia kwa mtu huyo.
6. **KWAMBA** mkataba huu utasimamiwa na Sheria ya Mkataba ya Jamhuri ya Muungano wa Tanzania.

KAMA USHUHUDA kuwa **MTOA ARDHI** na **MPOKEA ARDHI** wamekubaliana na masharti ya Mkataba huu kwa hiari yao wenyewe wamesaini mkataba huu Tarehe...01...Mwezi...10... Mwaka...2022...kama inavyoonekana hapa chini:

MTOA ARDHI:

JINA: BONIPHACE NIMBO SHIKOMBE

SAINI: [Signature]

CHEO: MWU MKUU

TAREHE: 01/10/2022
0682-575468

MBELE YA MWENYEKITI WA KIJJI:

JINA: HUSENI S. UZENGA

SAINI: [Signature]

CHEO: MWU/KJS

TAREHE: 1/10/2022

MWENYEKITI WA KIJJI CHA MNGAZI
SAHIMI:

SHAHIDI WA MTOA ARDHI:

JINA: RAHMAN K. LILIAN

SAINI: [Signature]

CHEO: NEO

TAREHE: 01/10/2022

AFISA MTENDAJI
KIJJI CHA MNGAZI

MPOKEA ARDHI

KWA NIABA YA SERIKALI YA KIJIKI: MBELE YA MWAKILISHI WA HALMASHAURI:

JINA: Galasi - K. Lelwa

SAINI: [Signature]

CHEO: NEO

TAREHE: 01/10/2022

JINA: HELLA K. MLIMANAZI

SAINI: [Signature]

CHEO: AFISA SHERIA H/WILAYA MOROGORO

TAREHE: 03/10/2022

AFISA MTENDAJI
KIJIKI CHA MNGAZI

MWANASHERIA (W)
HALMASHAURI YA WILAYA MOROGORO

MBELE YA MWAKILISHI WA WIZARA YA MAJI (BONDE LA WAMI/RUVU):

JINA: ELIBARIK J. MUMASI

SAINI: [Signature]

CHEO: MKURUGHEZI

TAREHE: 13/10/2022

BASIN WATER DIRECTOR
WAMI / RUVU BASIN
WATER BOARD
P. O. BOX 826
MOROGORO

MKATABA WA KURIDHIA KUTOA ARDHI KWA HIARI



MAKUBALIANO

KATI YA

Bw/Bibi ASHA JUMA MTIMI

NA

MAMLAKA YA SERIKALI YA KIJJI

MNGAZI

KWA LENGU LA

KUTOA ARDHI KWA HIARI

MWEZI/MWAKA

10 / 2022

MRADI WA KUSAIDIA SEKTA YA MAJI AWAMU YA PILI (WSSP II)

MKATABA HUU umesainiwa leo Tarehe 01.....ya Mwezi 10.....Mwaka 2022

BAINA YA

NDUGU Asm I. Mtomi.....wa Sanduku la Posta.....1880....., Kijiji cha Mngazi....., Wilaya ya Morogoro Dc..... Mkoa wa Morogoro..... (ambaye atajulikana kama "Mtoa Ardhi" msembo ambao utajumuisha warithi wake kwa upande mmoja);

NA

MTENDAJI WA KIJIKI CHA Mngazi..... Sanduku la Posta (atakaejulikana kwa jina "Mpokeaji Ardhi") msembo ambao utajumuisha warithi wake kwa upande mwingine).

KWA KUWA MTOA ARDHI ni mmiliki halali wa eneo/ardhi/kiwanja/shamba lenye ukubwa wa mita....., (upana wa mita na urefu wa mita) lililopo katika Kijiji cha Mngazi....., Kata ya Mngazi....., Tarafa Busukira....., Wilaya ya Morogoro Dc....., Mkoa Morogoro..... Kwa hiari yake mwenyewe bila kulamizimishwa akiwa na akili timamu ameamua kutoa sehemu ya eneo tajwa katika Mkataba huu kwa **SERIKALI YA KIJIKI CHA Mngazi.....** kwa ajili ya Mradi wa Uambazaji wa maji kitika kijiji che mradi (DP)

MAELEZO YA AWALI:

Serikali kwa kushirikiana na Wadau wa Maendeleo inatakeleza Programu ya Maendeleo ya Sekta ya Maji nchini (WSDP 2006-2025). Mtekelezaji wa Programu ni Serikali ya Jamhuri ya Muungano wa Tanzania ambayo imetoka jukumu hilo kwa Wizara ya Maji.

Wananchi wa maeneo yote yatakayopitiwa na Mradi huo wa maji kwa pamoja na kwa hiari yao na kwa lengo la kuwezesha utekelezaji wa mradi huo kwa manufaa ya umma, wamekubali kutoa ardhi zao kwa Serikali ya Kijiji husika itakayotumika kwa ajili ya utekelezaji wa mradi huo.

HIVYO BASI pande zote mbili zinashuhudia na kukubaliana kama ifuatavyo:-

1. **KWAMBA** Mtoa Ardhi kwa hiari yake mwenyewe anaridhia kutoa eneo/shamba/kiwanja tajwa katika mkataba huu kwa ajili ya kuwezesha mradi wa Uambazaji wa maji kitika kijiji che Mngazi (DP)

2. **KWAMBA** Mpokea Ardhi atatumia eneo analopewa kwa ajili ya kujenga miundombinu ya mradi wa usambazaji maji na si kwa matumizi mengine
3. **KWAMBA** Mtoaji Ardhi hatoruhusiwa kufanya shughuli yoyote ya kudumu ambayo itahatarisha uwepo wa miundombinu ya mradi kwa ujumla katika maeneo yote kama vile kujenga Nyumba na kupanda miti mikubwa.
4. **KWAMBA** Mtoa Ardhi ambaye eneo lake lina miundombinu ya kudumu ambayo itaharibiwa kwa namna moja ama nyingine na ujenzi wa mradi atalipwa kwa utaratibu utakaoelekezwa kutokana na uthamini utakaofanyika.
5. **KWAMBA** Mtoaji Ardhi anahakikisha kuwa ardhi aliyotoa kwa ajili ya mradi ni mali yake mwenyewe na hakuna mtu mwingine mwenye umiliki na eneo hilo na endapo atatokea mwingine kudai umiliki wa eneo hilo na ikathibitika kuwa ndiye mmiliki halali wa eneo hilo, basi mtoa ardhi atakuwa na jukumu la kulipa fidia kwa mtu huyo.
6. **KWAMBA** mkataba huu utasimamiwa na Sheria ya Mkataba ya Jamhuri ya Muungano wa Tanzania.

KAMA USHUHUDA kuwa **MTOA ARDHI** na **MPOKEA ARDHI** wamekubaliana na masharti ya Mkataba huu kwa hiari yao wenyewe wamesaini mkataba huu Tarehe...01...Mwezi ...10... Mwaka...2022...kama inavyoonekana hapa chini:

MTOA ARDHI:

JINA: Asha Juma Mtimi

SAINI: 

CHEO: Mkulima

TAREHE: 01.10.2022

SHAHIDI WA MTOA ARDHI:

JINA: Leonard Anton Mngi

SAINI: 


CHEO: Mkulima

TAREHE: 01.10.2022

0683 48 97 88

MBELE YA MWENYEKITI WA KIJJI:

JINA: HUSENI S. UZENO

SAINI: 

CHEO: MUKOJO

TAREHE: 1/10/2022

MWENYEKITI WA KIJJI CHA MNGI
SHAHIDI

MPOKEA ARDHI

KWA NIABA YA SERIKALI YA KIJIZI: MBELE YA MWAKILISHI WA HALMASHAURI:

JINA: GAEUSI K. LUGAW

JINA: HELLA K. MLIMANAZI

SAINI: [Signature]

SAINI: [Signature]

CHEO: CEO

CHEO: AFISA UHERIA H/WILAYA MOROGORO
MWANASHERIA (W)

TAREHE: 01/10/2022

TAREHE: 03/10/2022
HALMASHAURI YA WILAYA MOROGORO

AFISA MTENDAJI
KIJIZI CHA MNGAZI

MBELE YA MWAKILISHI WA WIZARA YA MAJI (BONDE LA WAMI/RUVU):

JINA: ELIBORIK G. MUMBA

SAINI: [Signature]

CHEO: MKURUGETI

TAREHE: 12/10/2022

BASIN WATER DIRECTOR
WAMI / RUVU BASIN
WATER BOARD
P O. BOX 826
MOROGORO

MKATABA WA KURIDHIA KUTOA ARDHI KWA HIARI



MAKUBALIANO

KATI YA

Bw/Bibi.....**FREDRICK ALLY NGEDERE**.....

NA

MAMLAKA YA SERIKALI YA KIJJI

.....**MNGAZI**.....

KWA LENGU LA

KUTOA ARDHI KWA HIARI

MWEZI/MWAKA

.....**OKTOBA / 2022**.....

MRADI WA KUSAIDIA SEKTA YA MAJI AWAMU YA PILI (WSSP II)

MKATABA HUU umesainiwa leo Tarehe 01.....ya Mwezi 10.....Mwaka 2022

BAINA YA

NDUGU FREDRICK ALLY NGIDERE wa Sanduku la Posta 1880....., Kijiji cha Mngazi....., Wilaya ya Moro DC..... Mkoa wa Morogoro (ambaye atajulikana kama "**Mtoa Ardhi**") msembo ambao utajumuisha warithi wake kwa upande mmoja);

NA

MTENDAJI WA KIJJI CHA Mngazi..... Sanduku la Posta 1880..... (atakaejulikana kwa jina "**Mpokeaji Ardhi**") msembo ambao utajumuisha warithi wake kwa upande mwingine).

KWA KUWA MTOA ARDHI ni mmiliki halali wa eneo/ardhi/kiwanja/shamba lenye ukubwa wa mita Kobo Eka....., (upana wa mita 17..... na urefu wa mita 17.....) lililopo katika Kijiji cha Mngazi....., Kata ya Mngazi....., Tarafa Bwakila....., Wilaya ya Moro DC....., Mkoa Morogoro..... Kwa hiari yake mwenyewe bila kulamizimishwa akiwa na akili timamu ameamua kutoa sehemu ya eneo tajwa katika Mkataba huu kwa **SERIKALI YA KIJJI CHA** Mngazi..... kwa ajili ya Mradi wa Usambazaji Maji Mngazi

MAELEZO YA AWALI:

Serikali kwa kushirikiana na Wadau wa Maendeleo inatakeleza Programu ya Maendeleo ya Sekta ya Maji nchini (WSDP 2006-2025). Mtekelezaji wa Programu ni Serikali ya Jamhuri ya Muungano wa Tanzania ambayo imetoa jukumu hilo kwa Wizara ya Maji.

Wananchi wa maeneo yote yatakayopitiwa na Mradi huo wa maji kwa pamoja na kwa hiari yao na kwa lengo la kuwezesha utekelezaji wa mradi huo kwa manufaa ya umma, wamekubali kutoa ardhi zao kwa Serikali ya Kijiji husika itakayotumika kwa ajili ya utekelezaji wa mradi huo.

HIVYO BASI pande zote mbili zinashuhudia na kukubaliana kama ifuatavyo:-

1. **KWAMBA** Mtoa Ardhi kwa hiari yake mwenyewe anaridhia kutoa eneo/shamba/kiwanja tajwa katika mkataba huu kwa ajili ya kuwezesha mradi wa Usambazaji Maji Mngazi (DP)

2. **KWAMBA** Mpokea Ardhi atatumia eneo analopewa kwa ajili ya kujenga miundombinu ya mradi wa usambazaji maji na si kwa matumizi mengine
3. **KWAMBA** Mtoaji Ardhi hatoruhusiwa kufanya shughuli yoyote ya kudumu ambayo itahatarisha uwepo wa miundombinu ya mradi kwa ujumla katika maeneo yote kama vile kujenga Nyumba na kupanda miti mikubwa.
4. **KWAMBA** Mtoa Ardhi ambaye eneo lake lina miundombinu ya kudumu ambayo itaharibiwa kwa namna moja ama nyingine na ujenzi wa mradi atalipwa kwa utaratibu utakaoelekezwa kutokana na uthamini utakaofanyika.
5. **KWAMBA** Mtoaji Ardhi anahakikisha kuwa ardhi aliyotoa kwa ajili ya mradi ni mali yake mwenyewe na hakuna mtu mwingine mwenye umiliki na eneo hilo na endapo atatokea mwingine kudai umiliki wa eneo hilo na ikathibitika kuwa ndiye mmiliki halali wa eneo hilo, basi mtoa ardhi atakuwa na jukumu la kulipa fidia kwa mtu huyo.
6. **KWAMBA** mkataba huu utasimamiwa na Sheria ya Mkataba ya Jamhuri ya Muungano wa Tanzania.

KAMA USHUHUDA kuwa **MTOA ARDHI** na **MPOKEA ARDHI** wamekubaliana na masharti ya Mkataba huu kwa hiari yao wenyewe wamesaini mkataba huu Tarehe.....Mwezi Mwaka.....kama inavyoonekana hapa chini:

MTOA ARDHI:

JINA: FREDRICK ALLY NGEDELE

SAINI: F. A. NGEDELE

CHEO: MKULIMA

TAREHE: 01/10/2022

SHAHIDI WA MTOA ARDHI:

JINA: MARIA EMILIAN

SAINI: M. E. DISULIKA

CHEO: MKTI - KITONGORU KONDENI B

TAREHE: 01/10/2022

MBELE YA MWENYEKITI WA KIJJI:

JINA: H. S. M. : S. UZENGO

SAINI: [Signature]

CHEO: MU. K. J.

TAREHE: 1.10.2022

MWENYEKITI WA KIJJI CHA MNGAZI
SHAHIDI.....

MPOKEA ARDHI

KWA NIABA YA SERIKALI YA KIJIKI: MBELE YA MWAKILISHI WA HALMASHAURI:

JINA: Rafiqi K. Lelwa

JINA: HELLA K. MUMMANAZI

SAINI: [Signature]

SAINI: [Signature]

CHEO: NEO

CHEO: AFISA SHERIA HIWILAYA MOROGORO

TAREHE: 01/10/2022

TAREHE: 03/10/2022 **MWANASHERIA (W)
HALMASHAURI YA WILAYA MOROGORO**

MBELE YA MWAKILISHI WA WIZARA YA MAJI (BONDE LA WAMI/RUVU):

JINA: ELIBRAK J. MUMMANAZI

SAINI: [Signature]

CHEO: MW. RUGSIT

TAREHE: 12/10/2022



MKATABA WA KURIDHIA KUTOA ARDHI KWA HIARI



MAKUBALIANO

KATI YA

Bw/Bibi..... JAPHET FRANCIS MADANDO.....

NA

MAMLAKA YA SERIKALI YA KIJIKI

CHA DAKAWA MNGAZI

KWA LENGOLA

KUTOA ARDHI KWA HIARI

MWEZI/MWAKA

OKTOBA...../..... 2022.....

MRADI WA KUSAIDIA SEKTA YA MAJI AWAMU YA PILI (WSSP II)

MKATABA HUU umesainiwa leo Tarehe1.....ya Mwezi10.....Mwaka2022.....

BAINA YA

NDUGU JAPHET FRANCIS MADANDA wa Sanduku la Posta.....1880....., Kijiji cha MNGAZI, Wilaya ya MOROGORO Mkoa wa MOROGORO (ambaye atajulikana kama "Mtoa Ardhi" msembo ambao utajumuisha warithi wake kwa upande mmoja);

NA

MTENDAJI WA KIJIKI CHA MNGAZI Sanduku la Posta1880..... (atakaejulikana kwa jina "Mpokeaji Ardhi") msembo ambao utajumuisha warithi wake kwa upande mwingine).

KWA KUWA MTOA ARDHI ni mmiliki halali wa eneo/ardhi/kiwanja/shamba lenye ukubwa wa mita.....729m²....., (upana wa mita 27 na urefu wa mita 27...) lililopo katika Kijiji cha MNGAZI, Kata ya MNGAZI, Tarafa BUAKILA, Wilaya ya MOROGORO, Mkoa MOROGORO Kwa hiari yake mwenyewe bila kulamizimishwa akiwa na akili timamu ameamua kutoa sehemu ya eneo tajwa katika Mkataba huu kwa **SERIKALI YA KIJIKI CHA** MNGAZI kwa ajili ya Mradi wa USAMBAZAJI MAJI KIJIKI CHA MNGAZI

MAELEZO YA AWALI:

Serikali kwa kushirikiana na Wadau wa Maendeleo inatakeleza Programu ya Maendeleo ya Sekta ya Maji nchini (WSDP 2006-2025). Mtekelezaji wa Programu ni Serikali ya Jamhuri ya Muungano wa Tanzania ambayo imetoa jukumu hilo kwa Wizara ya Maji.

Wananchi wa maeneo yote yatakayopitiwa na Mradi huo wa maji kwa pamoja na kwa hiari yao na kwa lengo la kuwezesha utekelezaji wa mradi huo kwa manufaa ya umma, wamekubali kutoa ardhi zao kwa Serikali ya Kijiji husika itakayotumika kwa ajili ya utekelezaji wa mradi huo.

HIVYO BASI pande zote mbili zinashuhudia na kukubaliana kama ifuatavyo:-

1. **KWAMBA** Mtoa Ardhi kwa hiari yake mwenyewe anaridhia kutoa eneo/shamba/kiwanja tajwa katika mkataba huu kwa ajili ya kuwezesha mradi wa USAMBAZAJI MAJI KIJIKI CHA MNGAZI

2. **KWAMBA** Mpokea Ardhi atatumia eneo analopewa kwa ajili ya kujenga miundombinu ya mradi wa usambazaji maji na si kwa matumizi mengine
3. **KWAMBA** Mtoaji Ardhi hatoruhusiwa kufanya shughuli yoyote ya kudumu ambayo itahatarisha uwepo wa miundombinu ya mradi kwa ujumla katika maeneo yote kama vile kujenga Nyumba na kupanda miti mikubwa.
4. **KWAMBA** Mtoa Ardhi ambaye eneo lake lina miundombinu ya kudumu ambayo itaharibiwa kwa namna moja ama nyingine na ujenzi wa mradi atalipwa kwa utaratibu utakaoelekezwa kutokana na uthamini utakaofanyika.
5. **KWAMBA** Mtoaji Ardhi anahakikisha kuwa ardhi aliyotoa kwa ajili ya mradi ni mali yake mwenyewe na hakuna mtu mwingine mwenye umiliki na eneo hilo na endapo atatokea mwingine kudai umiliki wa eneo hilo na ikathibitika kuwa ndiye mmiliki halali wa eneo hilo, basi mtoa ardhi atakuwa na jukumu la kulipa fidia kwa mtu huyo.
6. **KWAMBA** mkataba huu utasimamiwa na Sheria ya Mkataba ya Jamhuri ya Muungano wa Tanzania.

KAMA USHUHUDA kuwa **MTOA ARDHI** na **MPOKEA ARDHI** wamekubaliana na masharti ya Mkataba huu kwa hiari yao wenyewe wamesaini mkataba huu Tarehe.....¹.....Mwezi¹⁰..... Mwaka....~~2022~~.....kama inavyoonekana hapa chini:

MTOA ARDHI:

JINA: JAPHET FRANZIS MADANDO

SAINI:

CHEO: MKULIMA

TAREHE: 1/10/2022
0682538347

MBELE YA MWENYEKITI WA KIJIKI:

JINA.....

SAINI.....

CHEO.....

TAREHE:.....

SHAHIDI WA MTOA ARDHI:

JINA: THEKLA JONAS BENARD

SAINI:

CHEO: MKULIMA

TAREHE: 01/10/2022

MPOKEA ARDHI

KWA NIABA YA SERIKALI YA KIJIKI: MBELE YA MWAKILISHI WA HALMASHAURI:

JINA: GARIBI K. LUGONT

JINA: HELLA K. MLIMANAZI

SAINI: [Signature]

SAINI: [Signature]

CHEO: NEO

CHEO: AFISA SHERIA H/WILAYA MOROGORO
MWANA SHERIA (W)
HALMASHAURI YA WILAYA MOROGORO

TAREHE: 01/10/2022

TAREHE: 03/10/2022

AFISA MTENDAJI
KIJIKI CHA MWANAZI

MBELE YA MWAKILISHI WA WIZARA YA MAJI (BONDE LA WAMI/RUVU):

JINA: ELIABIKI J. MUMBI

SAINI: [Signature]

CHEO: MKURU CSHTU

TAREHE: 13/10/2022

BASIN WATER DIRECTOR
WAMI / RUVU BASIN
WATER BOARD
P O. BOX 826
MOROGORO

MKATABA WA KURIDHIA KUTOA ARDHI KWA HIARI



MAKUBALIANO

KATI YA

Bw/Bibi. DISMAS KAROLI

NA

MAMLAKA YA SERIKALI YA KIJJI

MNGAZI

KWA LENGU LA

KUTOA ARDHI KWA HIARI

MWEZI/MWAKA

01 / 2022

MRADI WA KUSAIDIA SEKTA YA MAJI AWAMU YA PILI (WSSP II)

MKATABA HUU umesainiwa leo Tarehe 01 ya Mwezi 10 Mwaka 2022

BAINA YA

NDUGU DISMAS KAROLI wa Sanduku la Posta 1880, Kijiji cha MUGAZI, Wilaya ya MOROGORO, Mkoa wa MOROGORO (ambaye atajulikana kama "**Mtoa Ardhi**" msembo ambao utajumuisha warithi wake kwa upande mmoja);

NA

MTENDAJI WA KIJJI CHA MUGAZI Sanduku la Posta 1880 (atakaejulikana kwa jina "**Mpokeaji Ardhi**") msembo ambao utajumuisha warithi wake kwa upande mwingine).

Helca YA
KWA KUWA MTOA ARDHI ni mmiliki halali wa eneo/ardhi/kiwanja/shamba lenye ukubwa wa mita....., (upana wa mita na urefu wa mita) lililopo katika Kijiji cha MUGAZI, Kata ya MUGAZI, Tarafa BWAKILA, Wilaya ya MOROGORO, Mkoa MOROGORO. Kwa hiari yake mwenyewe bila kulamizimishwa akiwa na akili timamu ameamua kutoa sehemu ya eneo tajwa katika Mkataba huu kwa **SERIKALI YA KIJJI CHA** MUGAZI kwa ajili ya Mradi wa USAMBAAZI WA MAJI KIJJI CHA MUGAZI (DP)

MAELEZO YA AWALI:

Serikali kwa kushirikiana na Wadau wa Maendeleo inatakeleza Programu ya Maendeleo ya Sekta ya Maji nchini (WSDP 2006-2025). Mtekezaji wa Programu ni Serikali ya Jamhuri ya Muungano wa Tanzania ambayo imetoa jukumu hilo kwa Wizara ya Maji.

Wananchi wa maeneo yote yatakayopitiwa na Mradi huo wa maji kwa pamoja na kwa hiari yao na kwa lengo la kuwezesha utekezaji wa mradi huo kwa manufaa ya umma, wamekubali kutoa ardhi zao kwa Serikali ya Kijiji husika itakayotumika kwa ajili ya utekezaji wa mradi huo.

HIVYO BASI pande zote mbili zinashuhudia na kukubaliana kama ifuatavyo:-

1. **KWAMBA** Mtoa Ardhi kwa hiari yake mwenyewe anaridhia kutoa eneo/shamba/kiwanja tajwa katika mkataba huu kwa ajili ya kuwezesha mradi wa USAMBAAZI WA MAJI KIJJI CHA MUGAZI

2. **KWAMBA** Mpokea Ardhi atatumia eneo analopewa kwa ajili ya kujenga miundombinu ya mradi wa usambazaji maji na si kwa matumizi mengine
3. **KWAMBA** Mtoaji Ardhi hatoruhusiwa kufanya shughuli yoyote ya kudumu ambayo itahatarisha uwepo wa miundombinu ya mradi kwa ujumla katika maeneo yote kama vile kujenga Nyumba na kupanda miti mikubwa.
4. **KWAMBA** Mtoa Ardhi ambaye eneo lake lina miundombinu ya kudumu ambayo itaharibiwa kwa namna moja ama nyingine na ujenzi wa mradi atalipwa kwa utaratibu utakaoelekezwa kutokana na uthamini utakaofanyika.
5. **KWAMBA** Mtoaji Ardhi anahakikisha kuwa ardhi aliyotoa kwa ajili ya mradi ni mali yake mwenyewe na hakuna mtu mwingine mwenye umiliki na eneo hilo na endapo atatokea mwingine kudai umiliki wa eneo hilo na ikathibitika kuwa ndiye mmiliki halali wa eneo hilo, basi mtoa ardhi atakuwa na jukumu la kulipa fidia kwa mtu huyo.
6. **KWAMBA** mkataba huu utasimamiwa na Sheria ya Mkataba ya Jamhuri ya Muungano wa Tanzania.

KAMA USHUHUDA kuwa **MTOA ARDHI** na **MPOKEA ARDHI** wamekubaliana na masharti ya Mkataba huu kwa hiari yao wenyewe wamesaini mkataba huu Tarehe. 01/10/2022 Mwezi 10 Mwaka 2022 kama inavyoonekana hapa chini:

MTOA ARDHI:

JINA: DIGMAS KAROLI

SAINI: [Signature]

CHEO: MKULIMA

TAREHE: 01/10/2022
0789-831487

MBELE YA MWENYEKITI WA KIJJI:

JINA: HUSENI S. UZENIGO

SAINI: [Signature]

CHEO: Mu/K 55

TAREHE: 1/10/2022

SHAHIDI WA MTOA ARDHI:

JINA: JENIFA SAID OMARY

SAINI: [Signature]

CHEO: MKULIMA

TAREHE: 01/10/2022
0782-870940

MWENYEKITI WA KIJILI CHA MNGAZI
SAHIMI

MPOKEA ARDHI

KWA NIABA YA SERIKALI YA KIJJI: MBELE YA MWAKILISHI WA HALMASHAURI:

JINA: BALESI -K- LILWA

JINA: HELLA K. MLIMANAZI

SAINI: [Signature]

SAINI: [Signature]

CHEO: NEO

CHEO: AFISA SHERIA H/WILAYA MOROGORO
MWANASHERIA (W)
HALMASHAURI YA WILAYA MOROGORO

TAREHE: 01/10/2022

TAREHE: 03/10/2022

MBELE YA MWAKILISHI WA WIZARA YA MAJI (BONDE LA WAMI/RUVU):

JINA: ELIBARI J. MMAPSI

SAINI: [Signature]

CHEO: MKURUGETI

TAREHE: 12/10/2022

BASIN WATER DIRECTOR
WAMI / RUVU BASIN
WATER BOARD
P O. BOX 826
MOROGORO

MKATABA WA KURIDHIA KUTOA ARDHI KWA HIARI



MAKUBALIANO

KATI YA

Bw/Bibi.....EMANUEL DAMAS DAUSO.....

NA

MAMLAKA YA SERIKALI YA KIJIZI

.....AGAZI MNGAZI.....

KWA LENGU LA

KUTOA ARDHI KWA HIARI

MWEZI/MWAKA

.....01...../.....2022.....

MRADI WA KUSAIDIA SEKTA YA MAJI AWAMU YA PILI (WSSP II)

MKATABA HUU umesainiwa leo Tarehe 01 ya Mwezi 10 Mwaka 2022

BAINA YA

NDUGU EMANUEL MAMAS DADDU wa Sanduku la Posta 1880, Kijiji cha MNGAZI, Wilaya ya MOROGORO Mkoa wa MOROGORO (ambaye atajulikana kama "**Mtoa Ardhi**" msembo ambao utajumuisha warithi wake kwa upande mmoja);

NA

MTENDAJI WA KIJIKI CHA MNGAZI Sanduku la Posta 1880 (atakaejulikana kwa jina "**Mpokeaji Ardhi**") msembo ambao utajumuisha warithi wake kwa upande mwingine).

KWA KUWA MTOA ARDHI ni mmiliki halali wa eneo/ardhi/kiwanja/shamba lenye ukubwa wa mita....., (upana wa mita na urefu wa mita) lililopo katika Kijiji cha MNGAZI, Kata ya MNGAZI, Tarafa BWAKIWA, Wilaya ya MOROGORO, Mkoa MOROGORO kwa hiari yake mwenyewe bila kulamizimishwa akiwa na akili timamu ameamua kutoa sehemu ya eneo tajwa katika Mkataba huu kwa **SERIKALI YA KIJIKI CHA** MNGAZI kwa ajili ya Mradi wa USAMBAZAJI WA MAJI KIJIKI CHA MNGAZI

MAELEZO YA AWALI:

Serikali kwa kushirikiana na Wadau wa Maendeleo inatakeleza Programu ya Maendeleo ya Sekta ya Maji nchini (WSDP 2006-2025). Mtekelezaji wa Programu ni Serikali ya Jamhuri ya Muungano wa Tanzania ambayo imetoa jukumu hilo kwa Wizara ya Maji.

Wananchi wa maeneo yote yatakayopitiwa na Mradi huo wa maji kwa pamoja na kwa hiari yao na kwa lengo la kuwezesha utekelezaji wa mradi huo kwa manufaa ya umma, wamekubali kutoa ardhi zao kwa Serikali ya Kijiji husika itakayotumika kwa ajili ya utekelezaji wa mradi huo.

HIVYO BASI pande zote mbili zinashuhudia na kukubaliana kama ifuatavyo:-

1. **KWAMBA** Mtoa Ardhi kwa hiari yake mwenyewe anaridhia kutoa eneo/shamba/kiwanja tajwa katika mkataba huu kwa ajili ya kuwezesha mradi wa USAMBAZAJI WA MAJI - KIJIKI CHA MNGAZI

2. **KWAMBA** Mpokea Ardhi atatumia eneo analopewa kwa ajili ya kujenga miundombinu ya mradi wa usambazaji maji na si kwa matumizi mengine
3. **KWAMBA** Mtoaji Ardhi hatoruhusiwa kufanya shughuli yoyote ya kudumu ambayo itahatarisha uwepo wa miundombinu ya mradi kwa ujumla katika maeneo yote kama vile kujenga Nyumba na kupanda miti mikubwa.
4. **KWAMBA** Mtoa Ardhi ambaye eneo lake lina miundombinu ya kudumu ambayo itaharibiwa kwa namna moja ama nyingine na ujenzi wa mradi atalipwa kwa utaratibu utakaoelekezwa kutokana na uthamini utakaofanyika.
5. **KWAMBA** Mtoaji Ardhi anahakikisha kuwa ardhi aliyotoa kwa ajili ya mradi ni mali yake mwenyewe na hakuna mtu mwingine mwenye umiliki na eneo hilo na endapo atatokea mwingine kudai umiliki wa eneo hilo na ikathibitika kuwa ndiye mmiliki halali wa eneo hilo, basi mtoa ardhi atakuwa na jukumu la kulipa fidia kwa mtu huyo.
6. **KWAMBA** mkataba huu utasimamiwa na Sheria ya Mkataba ya Jamhuri ya Muungano wa Tanzania.

KAMA USHUHUDA kuwa **MTOA ARDHI** na **MPOKEA ARDHI** wamekubaliana na masharti ya Mkataba huu kwa hiari yao wenyewe wamesaini mkataba huu Tarehe.....Mwezi Mwaka.....kama inavyoonekana hapa chini:

MTOA ARDHI:

JINA: EMANUEL DAMAS DADDO
 SAINI: [Signature]
 CHEO: Mkuu Lina
 TAREHE: 01/10/2022

SHAHIDI WA MTOA ARDHI:

JINA: EUROPA MARI
 SAINI: [Signature]
 CHEO: Mkulima
 TAREHE: 1/10/2022

MBELE YA MWENYEKITI WA KIJJI:

JINA: HU SENI S. UZENGA
 SAINI: [Signature]
 CHEO: MW/K.S.S
 TAREHE: 1/10/2022

MWENYEKITI WA KIJJI CHA MNGAZI
 SAINI:

MPOKEA ARDHI

KWA NIABA YA SERIKALI YA KIJIKI: MBELE YA MWAKILISHI WA HALMASHAURI:

JINA: RAEYESI-K. LIEBA

JINA: HELLA K. MLIMANAZI

SAINI: [Signature]

SAINI: [Signature]

CHEO: NEO

CHEO: AFISA SHERIA. H/WILAYA MOROGORO
MWANASHERIA (W)
HALMASHAURI YA WILAYA MOROGORO

TAREHE: 01/10/2022

TAREHE: 03/10/2022

AFISA MTEWAZI
KIJIJI CHA NIABA ZI

MBELE YA MWAKILISHI WA WIZARA YA MAJI (BONDE LA WAMI/RUVU):

JINA: ELIBRIE T. MUMBI

SAINI: [Signature]

CHEO: MURUGSHI

TAREHE: 13/10/2022

BASIN WATER DIRECTOR
WAMI / RUVU BASIN
WATER BOARD
P O. BOX 826
MOROGORO

APPENDIX 9: RUWASA ENDORSMENT LETTER

JAMHURI YA MUUNGANO WA TANZANIA
WIZARA YA MAJI
WAKALA WA MAJI NA USAFI WA MAZINGIRA VIJIJINI



S. L. P 1140
Tovuti: www.ruwasa.go.tz ,
Barua pepe: morogororm@ruwasa.go.tz



Unapojibu Tafadhali taja:
KUMB. NA.RUW/MORO/RM/MA.4/51/01/83

17/01/2023

MKURUNGEZI WA MAJI
BODI YA MAJI BONDE LA WAMI/RUVU
S.L.P 826
MOROGORO.

YAH: KUWASILISHA TAARIFA YA MWISHO YA USANIFU (FINAL DESIGN REPORT) YA MRADI WA KUSAMBAZA MAJI KATIKA VIJJI VYA MNGAZI NA DAKAWA WILAYA YA MOROGORO

1. RUWASA inakiri kupokea barua yako yenye kumbu. Na AC.117/220/F.1/17 ya tarehe 16/01/2023 iliyowasilisha taarifa ya mwisho ya usanifu (Final Design Reports) wa mradi wa usambazaji maji kwa vijiji vya Dakawa na Mngazi kwa mapitio ya mwisho kuruhusu taratibu za manunuzi kuanza.
2. Baada ya kujidhirisha kuwa mapendekezo yamefanyiwa kazi katika taarifa ya usanifu zilizowasilishwa ya vijiji vya Dakawa na Mngazi, ofisi ya RUWASA Mkoa, inashauri taratibu za manunuzi kwa vijiji hivi kuendelea kama sehemu ya kwanza ya mradi (Lot 1).
3. Kwa vijiji vya Tullo na Dete, mtaalamu mshauri ahakikishe mapendekezo yaliyotolewa hasa katika vyanzo vya maji yanafanyiwa kazi kwa kushirikiana na Bonde na RUWASA.
4. Hata hivyo masuala ya uendeleu wa miradi utakamilishwa baada ya mradi kukamilika na kukabidhiana kwa kusini MOU ya pamoja.
5. Naomba kuwasilisha.

ENG. SOSPETER LUTONJA
KAIMU MANEJA RUWASA (M)
MOROGORO

MENEJA WA RUWASA
MKOA - MOROGORO

APPENDIX 10: DRILLING PERMIT



WRBWB
WAMI/RUVU BASIN
WATER BOARD

Wami/Ruvu Basin Water Board
Grant Permit to Sink or Enlarge Well or Borehole

FORM F1

Page 1 of 3

The Water Resources Management Act. 2009

PART VIII

No: 21300241 Basin: WAMI/RUVU Region: Morogoro

1. Name of Holder: WAMI/RUVU BASIN WATER BOARD
2. Address: 826, MOROGORO
3. E-mail: barua@wamiruvubasin.go.tz
4. Telephone No: +2552232614748.
4. Particulars of permits to sink or enlarge well or borehole: public supply purpose.
5. Works: Sinking borehole at Mngazi Village, Mngazi ward, Morogoro District in Morogoro.
6. Whether grant subject to construction of works specified in paragraph 5 and due by which works to be completed: **22 November, 2021 to 22 February, 2022** (The expiry date of the permit shall not exceed three months from the day of such grant).
7. The permit to sink or enlarge well or borehole is granted subject to the provisions of the Water Resources Act, 2009 and the special terms and conditions specified hereunder.

Date: 22.11.2021

Halima S. Faraji
For: Basin Water Director.

Effective Date: 01 July, 2022

Revision No: 00



CONDITIONS:

1. The Borehole drilling activity shall be Inspected by the Basin Water Office (Regulation.pg 407) 10(3).
2. The owner of the Borehole shall keep and submit any relevant data on groundwater including Borehole completion report and borehole number to Basin Water Board (Sec 57).
3. The owner of the Borehole shall apply for water use permit before putting water into any use (Sec 43).

Effective Date: 01 July, 2022

Revision No:00

APPENDIX 11: AIR QUALITY AND NOISE REPORT

**AIRQUALITY AND NOISE REPORT OF PROPOSED FOR CONSTRUCTION
OF WATER SUPPLY SCHEMES MNGAZI VILLAGE, MOROGORO
DISTRICT, MOROGORO REGION**

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INTRODUCTION

Background

Water as a natural resource is a vital commodity used for socio-economic development. Its availability or inadequacy both in quantity and quality has an impact on improving the standard of living of the population. Tanzania is endowed with abundant of water resources in the form of rivers, lakes, groundwater aquifers, ponds, reservoirs, and wetlands. The country is riparian to some of Africa's largest Trans boundary freshwater lakes including Lake Victoria, Lake Tanganyika and Lake Nyasa. Each of these water bodies exhibits unique characteristics and a complex range of water resources management and development issues and challenges. Tanzania's annual renewable water resource is 89 km³ and the annual average of available water per capita was 2000 m³ in 2012 contrary to 2700 m³ in the year 2001 (URT, 2014). This amount is projected to lessen by 30% corresponding to 1400 cubic meters per capita per year in 2025 as a result of diminution of water resources and increase of population.

Moreover, the distribution of water resource in the country is not uniform temporally and spatially causing unpredictable challenges to social and economic development planning in the country. This situation is coupled with climate variability, uncoordinated sectoral development plans, inadequate water security infrastructures, diminishing water resources, population growth with ever increasing socio-economic activities, catchment degradation, and water use conflicts. Also, rowing competition for national water resources threatens growth and plans for transformational development (URT, 2014).

Taking these issues into account, the Government of the United Republic of Tanzania (GoT) recognizes the need to develop institutions and methods capable for rapid expansion of water supply and sanitation services across the country. MHANDISI Consulting Engineers, Project Managers and Environmental consultants have been commissioned by Wami Ruvu Basin Water Board (herein refers as proponent) to register the project titled "Environmental and Social Impact Assessment (ESIA) for Construction of Water Supply Scheme in Mngazi Village, Morogoro District, Morogoro Region.

The purpose of the following analyses is to conclude whether emission levels at the properties (i.e., receivers) near the potential improvements may exceed applicable thresholds due to the project alternatives, according to the EMA act of 2004, Federal Highway Administration (FHWA) or Federal Transit Administration (FTA), IFC and WHO guidelines. This is important because there are many properties along the several study corridors which might be impacted by noise or vibration and air pollution from the various alternatives.

The following document presents an overall analysis that was performed as part of the ESIA to assess potential impacts on properties near the potential improvements from air pollution and noise from Water distribution construction.

Study Objectives

Principle Objective

To establish reliable measurements of ambient parameters and vibration in the project area

Specific objectives

Collection, reporting, and analysis of environmental data

Sharing of the findings and proposing measures for improvements when needed,

To assess whether the parameters are appropriate in relation to occupational health and safety of workers in the workplace and/or complying with local standards and international guidelines prior to the commencement of the project implementation.

Scope of work

The Scope of Work consisted of the following:

Monitoring, Sampling, and analysis of Ambient Air Quality and Noise, Vibration at identified receptor's locations in Mngazi village

Table 0-1:Scope of work

| S/ n | Name of the Village | Type of Data | Time (Days) | Air quality parameter | Noise parameter |
|------|---------------------|-------------------------------------|-------------|--|-----------------|
| 1 | Mngazi village | Noise, vibration on and Air quality | 5 | PM 10, PM 2.5, SO _x , NO _x | LAeq |

Frequency of sampling:

| Parameter | Round of Sampling per sampling location | Time of sampling | Frequency of sampling per each round |
|---------------------------------------|---|------------------|--------------------------------------|
| Ambient Air Quality Monitoring | | | |

| Parameter | Round of Sampling per sampling location | Time of sampling | Frequency of sampling per each round |
|---|---|------------------|--------------------------------------|
| Particulate Matter (size less than 10 µm) or PM10 | 01 | 1 hour | 1 round per station |
| Particulate Matter (size less than 2.5 µm) or PM2.5 | 01 | | 1 round per station |
| Sulphur Dioxide (SO2) | 01 | | 1 round per station |
| Nitrogen Dioxide (NO2) | 01 | | 1 round per station |
| Noise monitoring | | | |
| As mentioned above | 01 | 1 hour | 1 round per station |

BASELINE

Precipitation and temperature

Along the project area, weather averages for the month of September, temperature averages around 29°C and at night it feels like 18°C. In September, Morogoro gets on an average 10.73mm of rain and approximately 2 rainy days in the month. Humidity is close to 65%. The long rains begin in December and end in April, while the short rains begin in May and continue to November. The Project area precipitation is characteristics monthly variations, whereby the minimum precipitation is observed from May to November which ranges from 9.3 mm to 95.6 mm, and the maximum is observed from December to April which ranges from 117.4 mm to 283.6 mm, the region experiences the maximum precipitation on January 283.6 mm as shown in Figure 0-1 . The average maximum temperature and minimum average temperature for the region ranges from 27°C-30°C and 16°C-20°C respectively as shown in Figure 0-2.

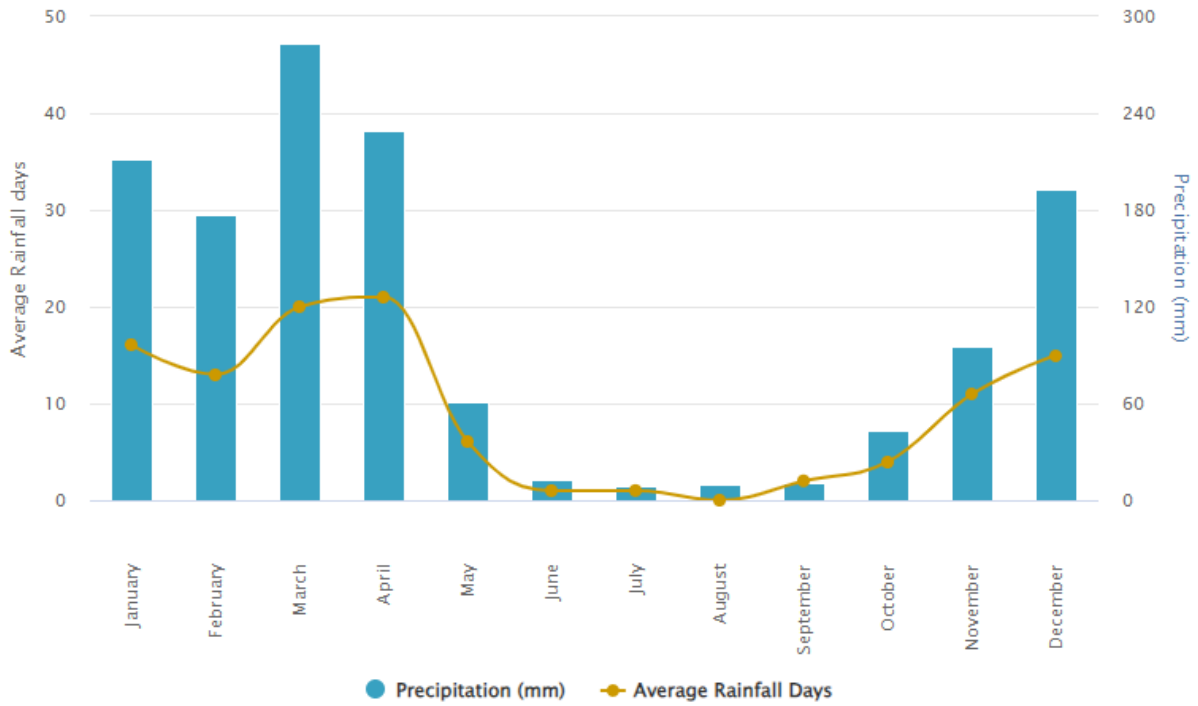


Figure 0-1: Monthly climatology of precipitation from 1991-2020

Source: Worldweatheronline.com (<https://www.worldweatheronline.com/Morogoro-weather-averages/Morogoro/tz.aspx>)

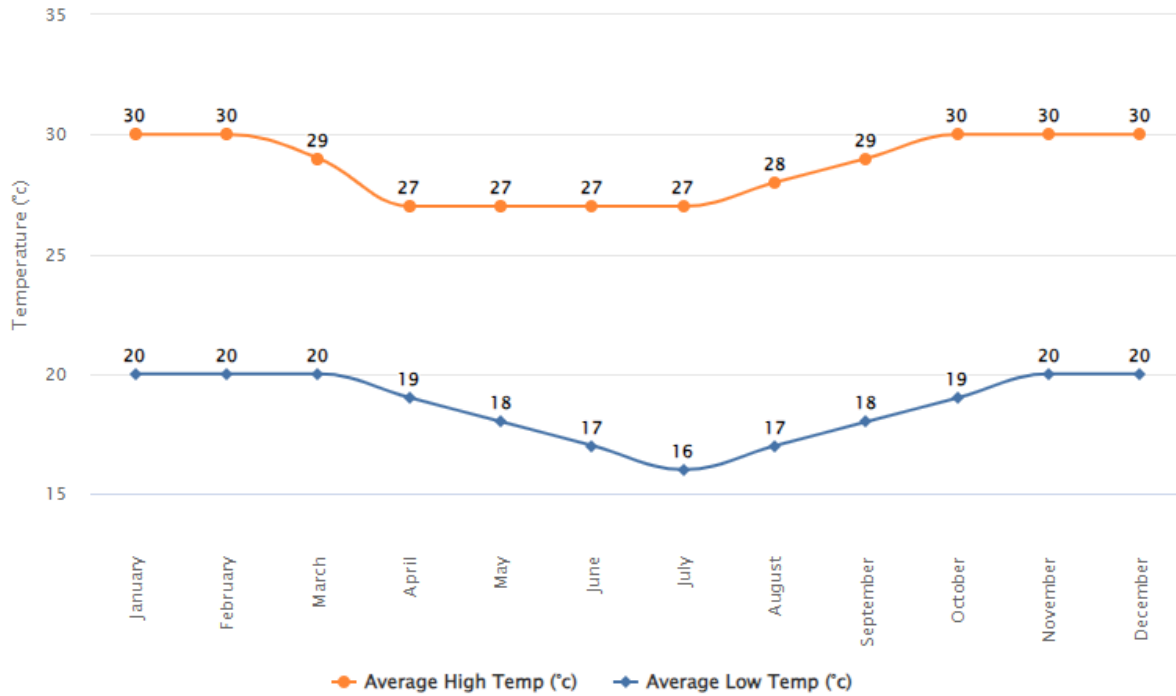


Figure 0-2: Average high and low temperature

Source: Worldweatheronline.com (<https://www.worldweatheronline.com/Morogoro-weather-averages/Morogoro/tz.aspx>)

Wind

The region's climate is temperate due to the proximity of the sea and the constantly flowing sea breezes. However, the area is strongly dominated by winds that show a seasonal character. The average wind speed from January to April ranges from 3.6 kmph to 5.3 kmph; while from May to July, it ranges from 4.4 kmph to 5.6 kmph. Similarly, during the months of August and November, the wind velocity is between 6.3 kmph to 7.8 kmph. This shows that the area has highest the average wind velocity from August to November. The wind velocity of the area for the year 2022 is depicted below in Figure 0-3.

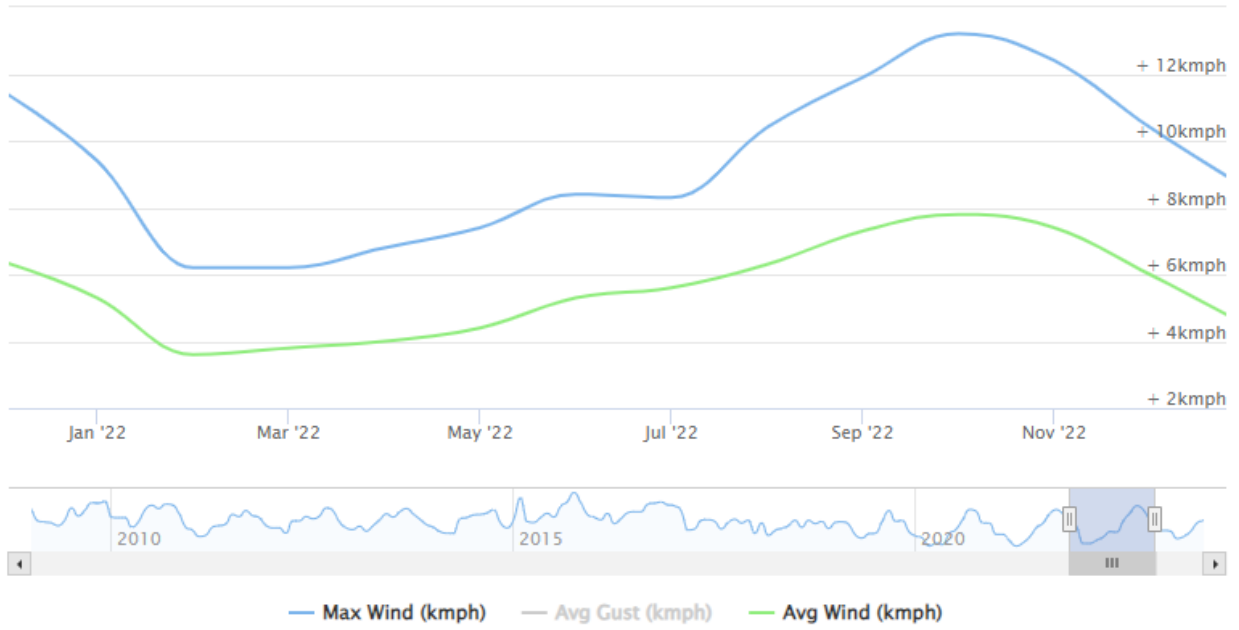


Figure 0-3: Average wind velocity of the project area

Source: Worldweatheronline.com (<https://www.worldweatheronline.com/Morogoro-weather-averages/Morogoro/tz.aspx>)

METHODOLOGY AND RESULTS

Air quality

Introduction

The methodology outlines the procedures and methods used to collect and analyze data for establishing air quality, baseline. A Base line survey was conducted in the project area zone to collect levels of Particulate Matter (PM10 and PM2.5) Sulphur dioxide (SO₂) and Oxides of Nitrogen (NO_x), baseline data on the locations. The sampling station were established along the potential areas within the selected villages and measurement were taken according to TZS 837 and WHO guidelines.

Methodology followed in Sampling and Analysis

Places and locations that have been chosen for the sampling are carefully selected to ensure they are representative of the entire project area (Shown in **Table 0-2**). This is crucial to obtain an accurate understanding of the environmental conditions and potential impacts of the proposed project. The sampling and monitoring activities were conducted at sensitive receptors, which refers to specific locations where the potential for environmental impact is higher or where vulnerable populations reside. In order to capture the overall air quality in the area, one sampling point was taken per village along the proposed project location. This approach helps in obtaining a comprehensive assessment of the air quality across the project area.

The selection of sampling points was guided by the Tanzania Environmental Management (Air Quality Standards) Regulations, 2007, which outline specific guidelines for assessing and managing air quality. Additionally, the World Health Organization (WHO) air quality guidelines were also considered as a benchmark to ensure that the monitoring efforts align with international standards. To determine the optimal locations for monitoring stations, a preliminary analysis of meteorological conditions was conducted. This analysis focused on factors such as predominant and frequent wind directions, as these play a significant role in the dispersion of air pollutants. By strategically placing the monitoring stations in areas that are likely to be influenced by the prevailing wind patterns, a more accurate representation of air quality across the project area can be achieved. Logistic considerations were also taken into account during the finalization of monitoring station locations. Factors such as accessibility and security were evaluated to ensure that the stations can be easily reached by the monitoring team for regular maintenance and data collection. This is important to maintain the reliability and effectiveness of the monitoring process. By adhering to these rigorous selection and placement criteria, the sampling and monitoring activities provide valuable insights into the existing air quality conditions and potential impacts of the proposed project. This information is crucial for effective environmental management and to implement appropriate measures to mitigate any adverse effects on the environment and public health. The locations of the ambient air quality monitoring stations in the project area are given in **Table 0-2**.

Table 0-2: Selected sampling location in project zone

| Noise monitoring location id | Village | Longitude | Latitude | Receptors | Sources of Pollution |
|------------------------------|-----------------------|-----------|----------|----------------------------------|---|
| AM-1 | Mngazi | 37.66942 | -7.4087 | Residential and Commercials | Motorcycle movements, Human activities such as Crop grinding |
| AM-2 | Mngazi village center | 37.67514 | -7.41896 | Commercials | Motorcycle movements, Low vehicle movements |
| AM-3 | Mngazi primary school | 37.67929 | -7.42375 | School | School activities, such as Regular school movements from point to point |
| AM-4 | Dakawa village center | 37.70729 | -7.42466 | Residential and commercials | Commercial activities, Motorcycle movements, Vehicle movements |
| AM-5 | Dete village center | 37.97727 | -6.99537 | Residential commercial area | Commercial activities, Motorcycle movements, |
| AM-6 | Dete primary school | 37.97546 | -6.99652 | School | School activities |
| AM-7 | Tulo | 37.91577 | -7.23581 | Tulo primary school, Tulo clinic | Human activities |

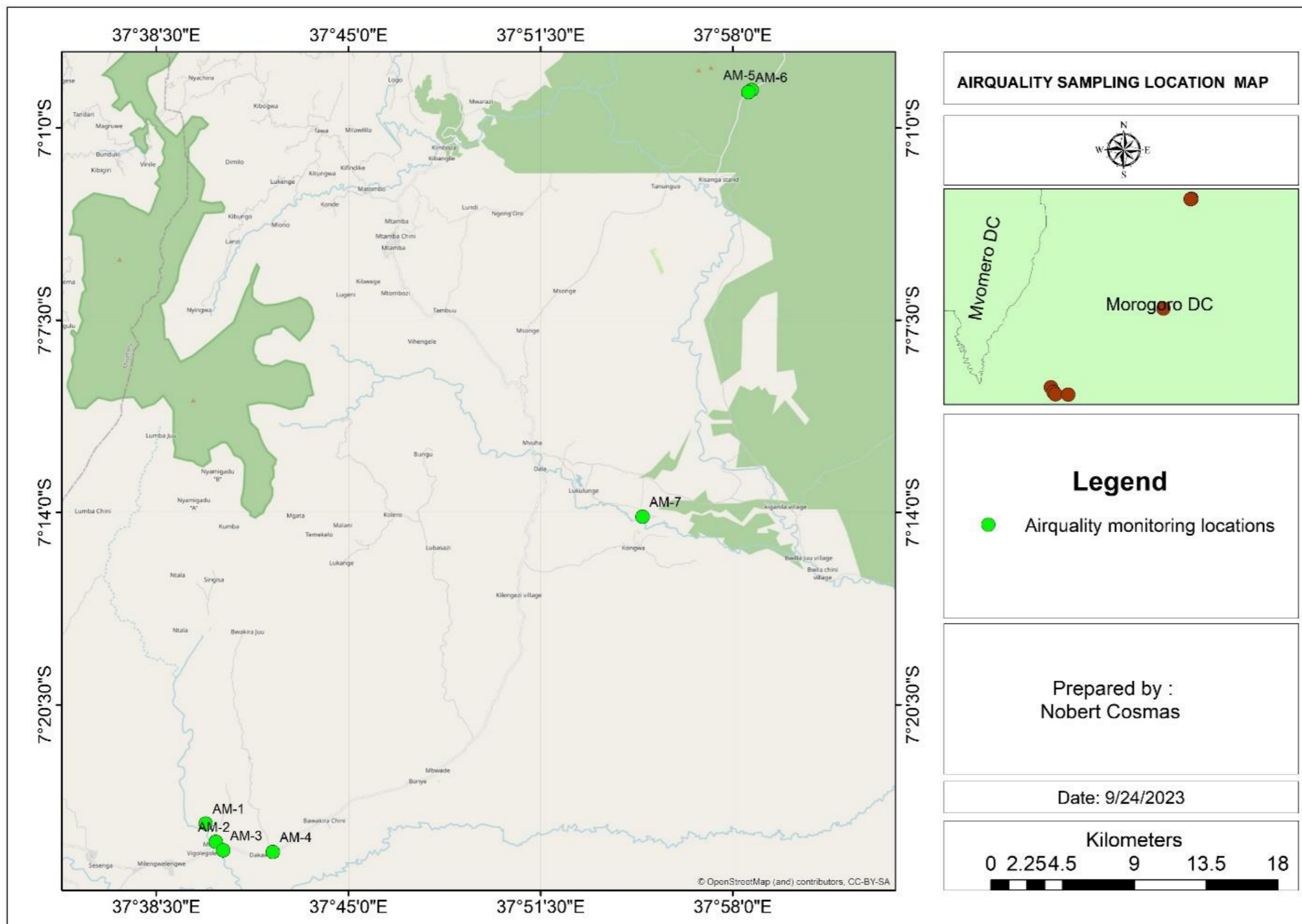


Figure 0-4: Air quality monitoring location

Ambient Air Quality Monitoring Methodology

Monitoring was conducted in respect of the following parameters:

Particulate Matter (PM 10)

Particulate Matter (PM 2.5)

Sulphur Dioxide (SO₂)

Oxides of Nitrogen (NO_x)

Carbon Monoxide (CO)

In the assessment of air quality, particular attention was given to the levels of Particulate Matter (PM10 and PM2.5) Sulphur dioxide (SO₂) and Oxides of Nitrogen (NO_x), as these pollutants have significant impacts on human health and the environment. To measure Sulphur dioxide (SO₂) and Oxides of Nitrogen (NO_x) pollutant levels, an advanced and highly responsive environmental kit instrument, the 3M™ EVM 7 Environmental Monitor Kit and M 2000C, were utilized (Shown in Figure 0-5). These portable air samplers are equipped with cutting-edge technology and adheres to various international and industry-specific standards, ensuring reliable and accurate results. The 3M™ EVM 7 Environmental Monitor Kit and M 2000C meets stringent Electromagnetic Compatibility (EMC) standards, which ensure that the instruments operate effectively without interference from other electronic devices. Additionally, it complies with Generic Emissions Standard for Residential, Commercial, and Light Industry (EN50081-1:1992 and EN 50081-2:1993), ensuring its suitability for a wide range of monitoring scenarios. To determine the mass concentration of particulate matter, the manual method outlined in ISO 9096:2003 was followed. Moreover, the equipment used adhered to the requirements of Air Quality General Considerations TZS 836-part 1:2004 and Manual Determinations of Mass Concentration of Particulate Matter TZS 837 parts 3:2004, further ensuring the accuracy and reliability of the data collected. Detailed information regarding the results obtained from the sampling and monitoring activities can be found in Table 0-5.



Figure 0-5: Air quality monitoring at Dete village

During the sampling process, great care was taken to ensure that the monitoring stations were fixed at a breathing height of approximately 1.5 meters above the ground for both PM10 and PM2.5 measurements. This height is critical as it represents the level at which human exposure to these particles is most relevant. Each monitoring station was meticulously prepared and calibrated before use, in strict accordance with the equipment's manual, to guarantee precise and consistent measurements. To ascertain the variations of gas concentrations over time, a comprehensive gas sampling effort was undertaken. A portable Multi-Gas Monitor, the "MX 6 iBRID," was employed for this purpose. Additionally, detector sensors were utilized for targeted gases in accordance with ISO 8760:1990, ISO 8761:1989, ISO 4219:1979, TZO 837-part 1 to 5:2004, and equipment manufacturer guidelines. The parameters measured included Carbon Monoxide (CO), Carbon Dioxide (CO₂), Nitrogen Dioxide (NO₂), Sulfur Dioxide (SO₂), and Hydrogen Sulphide (H₂S). This comprehensive gas sampling approach allowed for a comprehensive understanding of the air quality in the project area. All monitoring and sampling equipment underwent stringent checks and calibrations before usage to ensure accurate readings and reliable data collection. Furthermore, the equipment was regularly maintained in accordance with the manufacturer's specifications to sustain its optimal performance throughout the monitoring period.

Each monitoring station underwent testing for a minimum period of one hour to ensure adequate data collection and to capture variations in air quality over time. The duration of the sampling allowed for the assessment of short-term fluctuations and provided valuable insights into the potential risks posed by different pollutants. In conclusion, the sampling and monitoring activities followed meticulous protocols, adhered to international and local standards, and utilized state-of-the-art equipment to gather comprehensive data on Particulate Matter (PM10 and PM2.5) levels and ambient gas concentrations. The results obtained from these efforts serve as a crucial foundation for environmental management, ensuring


that appropriate measures are implemented to safeguard public health and the environment in the proposed project area.

Table 0-3: Methodology for Ambient Air Quality Monitoring

| Parameter | Measurement Methods | As Per |
|------------------|---|------------------------------|
| PM ₁₀ | Gravimetric | TZS 837, Part 7: |
| PM 2.5 | Gravimetric | TZS 837, Part 7: |
| SO ₂ | Colorimetric (EPA modified West & Gaeke Method) | TZS 837 Parts (1, 2, and 4). |
| NO _x | Colorimetric (Arsenite modified Jacobs & Hochheiser Method) | TZS 837 Part 1, 2, and 5 |
| CO | Non-Dispersive Infra-Red (NDIR) Spectroscopy Technique | TZS 837 Parts 1,2, and 6 |

Table 0-4: Air quality monitoring tools

| S/n | Name | Tool | Parameters |
|-----|---|---|--|
| 1. | The 3M™ EVM 7 Environmental Monitor Kit |  | Sulphur dioxide (SO ₂) and Oxides of Nitrogen (NO _x) |

| | | | |
|----|---------|---|-------------------------------------|
| 2. | M 2000C |  | Particulate Matter (PM10 and PM2.5) |
|----|---------|---|-------------------------------------|

Existing Sources of Air Pollution

This section focuses on the sources of air pollution in the proposed project area, which involves the rehabilitation of Movements to bitumen standard. The current condition of the Movements is thin and not in good shape. Understanding the existing sources of emissions and ambient pollutant concentrations is crucial for assessing potential cumulative impacts and synergistic effects resulting from the project's operation and associated emissions. We will delve deeper into each source of pollution and its impact.

The proposed project area experiences various sources of air pollution, which can be categorized as follows:

Vehicle Tailpipe Emissions

The primary concern in the area is vehicle tailpipe emissions. The activities along the Movements, such as transportation of people, goods, and agricultural products, contribute significantly to pollution. Vehicle exhaust releases small amounts of nitrogen oxides (NO_x), carbon monoxide (CO), sulfur dioxide (SO₂), carbon dioxide (CO₂), and nitrous oxide (N₂O). These pollutants are directly emitted into the atmosphere.

Vehicle Tailpipe Emissions - Primary and Secondary Pollutants

Motor vehicles emit both primary and secondary pollutants. Primary pollutants are released directly, while secondary pollutants form through chemical reactions in the atmosphere. Key primary pollutants emitted by internal combustion engines include CO₂, CO, carbon (C), SO₂, nitrogen oxides (mainly NO), particulate matter (PM), and lead (Pb). Secondary pollutants include nitrogen dioxide (NO₂), photochemical oxidants like ozone, sulfuric acid, sulfates, nitric acid, and nitrate aerosols (PM). Emission rates are influenced by vehicle characteristics (model-year, fuel delivery system), fuel properties (type, oxygen content), operating conditions (vehicle speed, load), and environmental factors (altitude, humidity).

Domestic Fuel Combustion

Domestic households can significantly contribute to poor air quality in residential areas. While individual households emit low volumes of pollutants, their cumulative impact is substantial. Some households in

the local communities likely use paraffin and/or wood for cooking and space heating, especially during winter. The combustion of wood emits harmful pollutants such as fine particulates, CO, SO₂, and trace amounts of carcinogenic polycyclic aromatic hydrocarbons (PAHs), like benzo(a)pyrene and formaldehyde. Paraffin combustion results in emissions of NO₂, particulate matter, carbon monoxide, and polycyclic aromatic hydrocarbons.

Biomass Burning

Biomass burning includes the burning of grasslands and agricultural lands. Within the project vicinity, crop residue burning and wild fires, locally known as veld fires, are significant sources of combustion-related emissions. Biomass burning is an incomplete combustion process, leading to the emission of carbon monoxide, and nitrogen dioxide gases. About 40% of the nitrogen in biomass is emitted as nitrogen gas, with 10% remaining in the ashes, and roughly 20% being emitted as higher molecular weight nitrogen compounds. The visibility of smoke plumes is attributed to the aerosol (particulate matter) content. Apart from local impacts, long-range transported emissions from biomass burning can affect air quality between August and October. While controlling this source is challenging, it must be considered as part of the background or baseline condition when evaluating the impacts of other local sources.

Wind Erosion of Open Areas

Emissions from wind erosion depend on the frequency of disturbance of erodible surfaces. Whenever a surface is disturbed, its erosion potential is restored. Emissions from wind erosion are influenced by agricultural and grazing activities, leading to further erodible surfaces in the project area.

Air quality result and discussion

Dete, Tulo, Mngazi and Dakawa water distribution project, Seven-sampling location where selected and the result of measurement for air quality, noise and vibration are describe as follow

Ambient Air Quality Results

PM10 (Particulate Matter 10): PM10 refers to inhalable particles with a diameter of 10 micrometers or less. According to the WHO, the 24-hour average guideline value for PM10 is 50-150 µg/m³. Looking at the data provided, all the stations have PM10 levels below the WHO guideline. While AM-1, AM-2 and AM-5 exceed the guideline on some occasions, overall, the PM10 levels are relatively within acceptable limits.

PM2.5 (Particulate Matter 2.5): PM2.5 represents fine particles with a diameter of 2.5 micrometers or less. The WHO 24-hour average guideline for PM2.5 is 25-50 µg/m³. Comparing the data, the PM2.5 levels across all stations are generally below the WHO guideline. AM-1, AM-2 and AM-5 occasionally exceeds the guideline, but the rest of the stations maintain lower PM2.5 levels.

NO_x (Nitrogen Oxides): All AQMS stations have recorded NO_x levels of 0 µg/m³, indicating no detectable presence of nitrogen oxides. This indicates that the levels of NO_x pollution in these areas are within the WHO standard of 40 µg/m³ for nitrogen dioxide (NO₂).

SO₂ (Sulfur Dioxide): SO₂ is a gas released by burning fossil fuels, primarily from industrial processes. The WHO 24-hour average guideline for SO₂ is 20 µg/m³. According to the data, all the stations have

negligible SO₂ levels, with most readings at or close to zero. Hence, the SO₂ levels are well below the WHO guideline.

CO₂ (Carbon Dioxide): CO₂ is a greenhouse gas emitted through various combustion processes. However, it is important to note that CO₂ is not typically considered a direct air pollutant that poses immediate health risks. Instead, it is a contributor to climate change. The provided CO₂ levels range from 356 ppm to 572 ppm. While there are no specific WHO guidelines for CO₂ in outdoor air, efforts are made globally to reduce CO₂ emissions to mitigate climate change.

In summary, the data from the AQMS stations indicate generally acceptable levels of PM₁₀, PM_{2.5}, and SO₂ compared to WHO guidelines. Unfortunately, the data does not include NO_x levels, and CO₂ levels, although mentioned, are not typically assessed against WHO standards for outdoor air quality.

The detailed results for air quality see tables below

Table 0-5: Detailed Ambient Air Quality Monitoring Results

| Noise monitoring location id | PM _{2.5} (µg/m ³) | PM ₁₀ (µg/m ³) | CO ₂ (PPM) | Temp(°C) | Humidity (%) |
|------------------------------|--|---------------------------------------|-----------------------|----------|--------------|
| AM-1 | 15.5 | 24.8 | 540 | 31 | 54 |
| | 11.3 | 18.2 | 504 | 31 | 54 |
| | 11.9 | 18.7 | 497 | 33 | 50 |
| | 15.3 | 24.3 | 490 | 33 | 49 |
| | 11.3 | 18.4 | 452 | 34 | 46 |
| | 10.7 | 16.9 | 456 | 34 | 45 |
| | 11.3 | 17.6 | 444 | 35 | 44 |
| | 10.9 | 17 | 445 | 35 | 44 |
| | 8.8 | 14.7 | 448 | 34 | 41 |
| | 81.2 | 132.5 | 448 | 34 | 42 |
| | 10.8 | 15.8 | 430 | 35 | 44 |
| | 9.4 | 14.5 | 447 | 36 | 44 |
| Average | 17.4 | 27.8 | 466.8 | 33.8 | 46.4 |
| AM-2 | 33 | 50.5 | 452 | 36 | 40 |

| Noise monitoring location id | PM2.5($\mu\text{g}/\text{m}^3$) | PM10($\mu\text{g}/\text{m}^3$) | CO2(PPM) | Temp($^{\circ}\text{C}$) | Humidity (%) |
|------------------------------|-----------------------------------|----------------------------------|----------|----------------------------|--------------|
| | 6.5 | 12.4 | 437 | 36 | 42 |
| | 7.4 | 11.3 | 572 | 37 | 38 |
| | 38.7 | 58.2 | 232 | 37 | 36 |
| | 10.2 | 17.6 | 453 | 32 | 31 |
| | 8 | 16.5 | 459 | 32 | 28 |
| | 8.1 | 12.5 | 425 | 32 | 31 |
| Average | 16 | 25.6 | 432.9 | 34.6 | 35.1 |
| AM-3 | 19.1 | 34.0 | 493 | 33 | 37 |
| | 12.1 | 19.6 | 485 | 33 | 39 |
| | 10.7 | 16.7 | 479 | 33 | 38 |
| | 12.2 | 18.7 | 478 | 33 | 39 |
| | 7.9 | 12.2 | 513 | 33 | 39 |
| | 10.8 | 17.5 | 481 | 33 | 40 |
| | 10.1 | 15 | 475 | 33 | 40 |
| Average | 11.8 | 19.1 | 486.3 | 33 | 38.9 |
| AM-4 | 40.1 | 50.1 | 476 | 33 | 49 |
| | 16.2 | 24.5 | 487 | 34 | 39 |
| | 11.8 | 19.3 | 483 | 34 | 39 |
| | 18 | 28.9 | 485 | 34 | 38 |
| | 14.4 | 23.2 | 496 | 34 | 38 |
| | 16.4 | 24 | 514 | 34 | 37 |
| | 18.1 | 24.8 | 472 | 34 | 35 |

| Noise monitoring location id | PM2.5($\mu\text{g}/\text{m}^3$) | PM10($\mu\text{g}/\text{m}^3$) | CO2(PPM) | Temp($^{\circ}\text{C}$) | Humidity (%) |
|------------------------------|-----------------------------------|----------------------------------|----------|----------------------------|--------------|
| | 16 | 28.4 | 458 | 34 | 35 |
| | 11.7 | 18.4 | 443 | 34 | 34 |
| | 23 | 37.1 | 443 | 33 | 34 |
| Average | 18.6 | 27.9 | 475.7 | 33.8 | 37.8 |
| AM-5 | 22.3 | 37.8 | 572 | 26 | 71 |
| | 69.9 | 116.9 | 569 | 29 | 67 |
| | 54 | 81 | 562 | 29 | 67 |
| | 42 | 56.3 | 546 | 31 | 60 |
| | 36 | 60.2 | 489 | 31 | 59 |
| | 89.1 | 161 | 476 | 31 | 56 |
| | 19.3 | 31 | 482 | 32 | 56 |
| | 17.7 | 28.3 | 483 | 30 | 57 |
| | 13.7 | 22 | 372 | 30 | 58 |
| | 14 | 23.6 | 467 | 30 | 60 |
| Average | 37.8 | 61.8 | 501.8 | 29.9 | 61.1 |
| AM-6 | 7 | 14 | 500 | 29 | 61 |
| | 7 | 16 | 510 | 30 | 60 |
| | 10 | 13 | 502 | 31 | 58 |
| | 7 | 10 | 491 | 34 | 53 |
| | 7 | 8 | 511 | 34 | 49 |
| | 7 | 16 | 494 | 33 | 49 |
| | 7 | 6 | 491 | 33 | 47 |

| Noise monitoring location id | PM2.5($\mu\text{g}/\text{m}^3$) | PM10($\mu\text{g}/\text{m}^3$) | CO2(PPM) | Temp($^{\circ}\text{C}$) | Humidity (%) |
|------------------------------|-----------------------------------|----------------------------------|-----------|----------------------------|--------------|
| Average | 7.4 | 11.9 | 499.9 | 32 | 53.9 |
| AM-7 | 7 | 21 | 356 | 28 | 5958 |
| | 3 | 5 | 546 | 30 | 50 |
| | 3 | 4 | 564 | 32 | 50 |
| | 3 | 5 | 551 | 32 | 50 |
| | 3 | 15 | 544 | 32 | 50 |
| | 3 | 6 | 508 | 32 | 50 |
| | 6 | 16 | 517 | 32 | 50 |
| | 13 | 23 | 493 | 32 | 50 |
| | 3 | 5 | 485 | 32 | 50 |
| | 25 | 46 | 479 | 32 | 49 |
| Average | 6.9 | 14.6 | 504.3 | 31.4 | 640.7 |
| TBS standard | 25-50 | 60-90 | Na | Na | Na |
| WHO standards | 25-75 | 50-150 | Na | Na | Na |

*Na-Not available

Discussion on Ambient Air Quality and vibration in the Study Area

The rehabilitation project of the Project area Movements section, spanning 104 km, is expected to have significant impacts on the air quality parameters discussed above.

PM10 and PM2.5 (Particulate Matter):

Particulate matter, specifically PM10 and PM2.5, refers to tiny solid or liquid particles suspended in the air. These particles can be emitted directly from various sources, including construction activities, traffic emissions, industrial processes, and natural sources. They can also be formed through chemical reactions in the atmosphere. PM10 represents particles with a diameter of 10 micrometers or less, while PM2.5 represents even finer particles with a diameter of 2.5 micrometers or less.

Construction Activities:

During the Water distribution construction process, various construction activities can contribute to increased particulate matter emissions. Excavation, earthwork, and the movement of construction materials can generate dust, leading to temporary spikes in PM10 and PM2.5 concentrations in the project area. Unpaved or poorly managed construction sites are particularly prone to generating high levels of dust particles.

Mitigation measures such as the use of water sprays, dust screens, and dust suppressants can be employed to minimize the release of particulate matter during construction. Proper site management practices, including regular cleaning, covering of stockpiles, and wetting of exposed surfaces, can also help reduce dust emissions.

Weather Conditions and Natural Sources:

It's important to note that weather conditions, such as wind speed and direction, can influence the dispersion and transport of particulate matter. Strong winds can disperse particles over a wider area, potentially reducing local concentrations. However, stagnant weather conditions can lead to the accumulation of pollutants, including particulate matter, in specific locations, exacerbating air quality issues. Furthermore, natural sources such as dust storms, wildfires, and vegetation can also contribute to particulate matter levels in the atmosphere. These sources can be influenced by seasonal variations, climate patterns, and geographical factors.

To address the impact of weather conditions and natural sources on particulate matter, continuous monitoring of air quality and timely communication of high pollution events or natural occurrences is crucial. This enables appropriate measures to be taken, such as issuing health advisories, implementing emergency response plans, and coordinating with relevant authorities to mitigate the impact on air quality.

NOx (Nitrogen Oxides):

Nitrogen oxides (NOx) are a group of highly reactive gases, primarily consisting of nitrogen dioxide (NO₂) and nitric oxide (NO). They are produced during combustion processes, including those occurring in vehicle engines, power plants, and industrial processes. The Water distribution construction project can potentially impact NOx levels along the respective villages through construction activities and increased traffic emissions from the site vehicles.

Construction Activities:

Certain construction machinery and equipment, such as diesel-powered generators and heavy machinery, can emit nitrogen oxides during operation. Therefore, construction activities associated with the Water distribution construction project may temporarily increase NOx levels in the vicinity. However, it's important to note that the impact of construction-related NOx emissions is generally localized and limited in duration.

To minimize NOx emissions during construction, it is crucial to promote the use of cleaner construction equipment, such as those compliant with emission standards. This can include the adoption of newer technologies, improved engine efficiency, and the use of low-emission fuels. Additionally, implementing proper maintenance practices and ensuring optimal engine tuning can help reduce NOx emissions from construction machinery.

Weather Conditions and Atmospheric Chemistry:

Similar to particulate matter, weather conditions play a role in the dispersion and transport of nitrogen oxides. Factors such as wind patterns and atmospheric stability can influence the spread of pollutants emitted along the water distribution construct corridor. Favorable weather conditions, such as strong winds or atmospheric mixing, can help disperse pollutants over a wider area, reducing local concentrations. Conversely, stagnant weather conditions can lead to the accumulation of pollutants in specific locations, resulting in higher local concentrations of nitrogen oxides.

In addition to weather conditions, atmospheric chemistry also plays a role in the fate of nitrogen oxides. Chemical reactions in the atmosphere can lead to the formation of secondary pollutants, such as ozone (O₃) and particulate matter. These reactions are influenced by factors like sunlight, temperature, and the presence of other pollutants.

To account for the influence of weather conditions and atmospheric chemistry on NO_x levels, it is crucial to monitor and assess air quality continuously. This includes gathering data on meteorological parameters, conducting air quality modeling studies, and establishing air quality monitoring stations along the project zone. By understanding the dynamic nature of air pollution, authorities can take appropriate actions, such as issuing pollution alerts, implementing control measures, and developing long-term air quality management plans.

SO₂ (Sulfur Dioxide) and CO₂ (Carbon Dioxide):

Sulfur dioxide (SO₂) and carbon dioxide (CO₂) are two additional air pollutants that can be influenced by the Water distribution construction project.

Construction Activities:

Sulfur dioxide emissions primarily result from the burning of fossil fuels containing sulfur compounds. During construction, certain activities may involve the use of fuels, such as diesel, that can emit sulfur dioxide. However, the impact of construction-related SO₂ emissions is generally minimal compared to other industries or power generation activities. Construction-related sources are typically localized and have a temporary impact on air quality.

To mitigate SO₂ emissions during construction, it is important to promote the use of low-sulfur fuels and ensure proper maintenance of construction machinery to minimize emissions. Additionally, adherence to emission control regulations and the implementation of best practices, such as proper ventilation and dust suppression measures, can help reduce the release of sulfur dioxide during construction activities.

Carbon dioxide (CO₂) is a greenhouse gas primarily associated with the combustion of fossil fuels, including gasoline and diesel used in vehicles. The Water distribution construction project may indirectly contribute to increased CO₂ emissions due to the potential increase in traffic volume and the associated fuel consumption. However, it's important to note that CO₂ emissions from water distribution construction activities themselves are relatively small compared to the emissions resulting from vehicle operation.

To address the impact of increased CO₂ emissions from water distribution construction, sustainable transportation practices is crucial. This can include the development of public transportation systems, encouraging the use of fuel-efficient vehicles, and promoting alternative modes of transportation such as cycling and walking. Additionally, initiatives to promote renewable energy sources and reduce dependency on fossil fuels can help mitigate the long-term impact of CO₂ emissions on climate change.

Monitoring and Compliance:

To ensure that the air quality along the project zone meets the WHO and TBS (Tanzania Bureau of Standards) standards, continuous monitoring of the air quality parameters mentioned above is essential. This includes the establishment of air quality monitoring stations strategically placed along the Movements corridor to assess the levels of particulate matter, nitrogen oxides, sulfur dioxide, and carbon dioxide.

Monitoring data should be regularly analyzed, and any exceedances of the air quality standards should be addressed promptly. This can involve implementing measures to reduce emissions, improving traffic management strategies, promoting the use of cleaner technologies and fuels, and enforcing emission standards for vehicles operating along the Movements.

Additionally, public awareness campaigns can be conducted to educate the local communities about the potential impacts of air pollution and the importance of adopting sustainable practices. These efforts can encourage individuals to make conscious choices regarding transportation, energy consumption, and overall environmental conservation.

In conclusion, the water distribution construction can have both direct and indirect impacts on air quality parameters such as PM₁₀, PM_{2.5}, NO_x, SO₂, and CO₂. Construction activities associated with the project, including the use of machinery and equipment, can temporarily increase pollutant emissions, including particulate matter and nitrogen oxides. Additionally, the increased traffic volume resulting from improved Movements conditions can contribute to higher emissions of nitrogen oxides and carbon dioxide.

To mitigate the impacts on air quality, it is important to implement measures that promote cleaner construction practices, such as using low-emission equipment and adhering to emission control regulations. Promoting the use of low-emission vehicles, adopting cleaner fuel options, and implementing traffic management strategies can help reduce the emissions from increased traffic. It is also crucial to consider the influence of weather conditions and atmospheric chemistry on pollutant dispersion and accumulation. Continuous monitoring of air quality parameters, such as PM₁₀, PM_{2.5}, NO_x, SO₂, and CO₂, is necessary to assess the level of pollution and ensure compliance with WHO and TBS standards. Monitoring stations should be strategically located along the Movements corridor to provide accurate data for evaluation. Any exceedances of air quality standards should be promptly addressed through the implementation of appropriate mitigation measures and the enforcement of emission standards.

Public awareness campaigns can play a significant role in educating local communities about the potential impacts of air pollution and encouraging sustainable practices. By promoting sustainable transportation options, renewable energy sources, and individual responsibility, the Water distribution construction project can contribute to improving air quality and creating a healthier environment for the residents in the respective village. It is essential to view the Water distribution construction project not only as an infrastructure development initiative but also as an opportunity to integrate environmental considerations and promote sustainable practices. By addressing the potential impacts on air quality and implementing

effective mitigation measures, the project can contribute to the overall well-being and sustainability of the region.

Noise monitoring

Introduction

The methodology outlines the procedures and methods used to collect and analyze data for establishing noise and vibration baseline. A Base line survey was conducted in the project area zone to collect levels of noise and vibrations baseline data on the locations. The sampling station were established along the potential areas within the selected villages and measurement were taken according to Tanzania Environmental Noise and vibration regulations, 2015 and IFC guidelines.

Noise Level guidelines

International Finance Cooperation (IFC) Guidelines

Noise impacts should not exceed the levels presented in Table 0-6 or result in a maximum increase in background levels of 3 dB at the nearest receptor location off-site.

Table 0-6: Standards as per International Finance Cooperation (IFC) Guidelines

| Noise Control zone | One Hour LAeq (dBA) | |
|--|----------------------------|-------------------------|
| | Daytime 07:00 - 22:00 | Nighttime 22:00 - 07:00 |
| Receptor | | |
| Residential; institutional; educational | 55 | 45 |
| Industrial; commercial | 70 | 70 |

Source (WORLD BANK GROUP, 2007)

Tanzania Environmental Management noise standards

According to the Environmental Management (Standards for the Control of Noise and Vibrations Pollution) the maximum permissible noise levels for entertainment are shown in Table 0-7 below.

Table 0-7: Maximum Permissible Noise Levels for General Environment

| COLUMN 1 | COLUMN 2 | |
|---|-------------------------|-------|
| FACILITY | NOISE LIMITS dBA (LAeq) | |
| | DAY | NIGHT |
| A. Any building used as hospital, convalescence home, home for the aged, sanatorium and institutes of higher learning, conference rooms, public library, environmental or recreational sites. | 45 | 35 |
| B. Residential building | 50 | 35 |
| C. Mixed residential (with some commercial and entertainment) | 55 | 45 |
| D. Residential and industry small-scale production and commerce | 60 | 50 |
| E. Industrial area | 70 | 60 |

Source: (Standards for the Control of Noise and Vibrations Pollution, 2015)

Time Frame:

Day – 06.00a.m. 10.00p.m.

Night – 10.00p.m. 06.00a.m.

The time frame takes into consideration human activity.

Noise sampling methodologies

Selection of noise sampling stations criteria

The noise sampling locations were established based on the norms prescribed by local standards (TBS and/or Tanzania Environmental Noise and vibration regulations, 2015) and international guidelines. The norms include:

Topography of the project influence area.

Densely populated areas within the Region.

Wind speed and Direction,

Air temperature,

Avoidance of construction activity or any other activity which may be temporary in nature.

Others scenarios considered area

workers'/operators' positions and nearest local communities as possible receptors,

The areas where pollution was expected, as well as areas that pollutants from the project activities are likely to disperse to.

Other criteria include areas that are easily definable and with easy future access in case of need for comparison measurements or another monitoring study,

Neighboring activities that may also produce pollution similar to the project area

Sampling size

Considering the factors governing the selection of sampling location in Figure 0-6 were selected and measurements were performed and used to calculate the average levels of Noise in the respective sampling station as shown in Table 0-8. The recorded average values were compared with prescribed available limit to check their compliance with TBS-NEMC standards, US OSHA and WHO/IFC guidelines listed in Table 0-6 and Table 0-7.

Table 0-8: Selected Noise monitoring location along project location

| Noise monitoring location id | Village | Longitude | Latitude | Receptors | Sources of Noise |
|------------------------------|-----------------------|-----------|----------|-----------------------------|--|
| NM-1 | Mngazi | 37.66942 | -7.4087 | Residential and Commercials | Motorcycle Movements, Birds, Human activities and wind Movements |
| NM-2 | Mngazi village center | 37.67514 | -7.41896 | Commercials | Motorcycle Movements, Birds, Human activities and wind Movements |
| NM-3 | Mngazi primary school | 37.67929 | -7.42375 | School | School activities, Wind Movements and birds sounds |

| Noise monitoring location id | Village | Longitude | Latitude | Receptors | Sources of Noise |
|------------------------------|-----------------------|-----------|----------|----------------------------------|--|
| NM-4 | Dakawa village center | 37.70729 | -7.42466 | Residential and commercial | Commercial activities, Motorcycle movements, Wind movements and other human activities |
| NM-5 | Dete village center | 37.97727 | -6.99537 | Residential commercial area | Commercial activities, Motorcycle movements, Wind movements and other human activities |
| NM-6 | Dete primary school | 37.97546 | -6.99652 | School | School activities |
| NM-7 | Tulo | 37.91577 | -7.23581 | Tulo primary school, Tulo clinic | Human activities, wind, Birds |

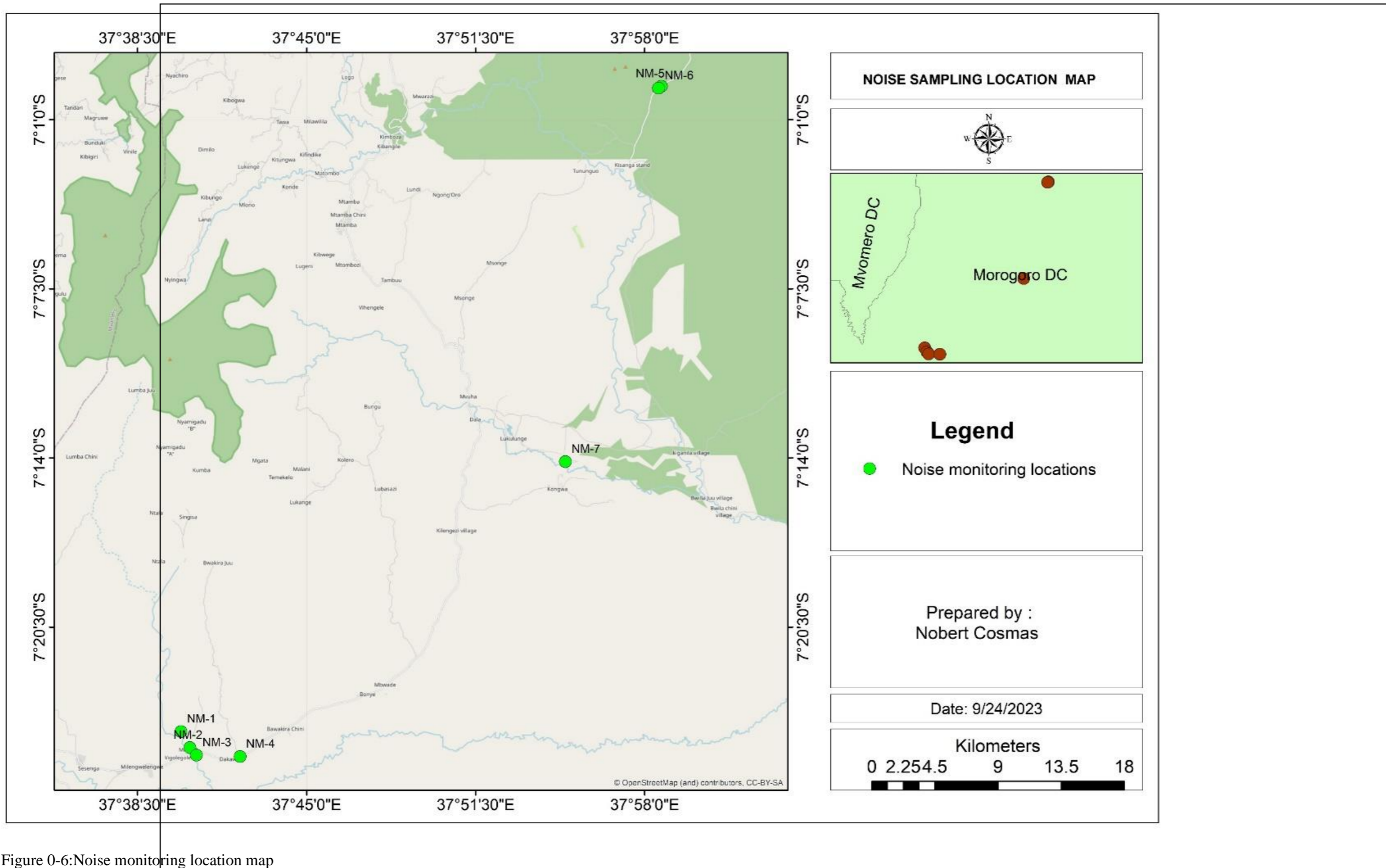


Figure 0-6: Noise monitoring location map

noise measurement methodology

The measurements and assessment of environmental noise levels were determined in accordance to ISO standards using SLM-25 sound level meter. On taking measurements, the device-meter scale was set to the “A” weighed measurement scale which enables the devices to respond in the same manner as the human ear. Data were recorded at the interval of 5 seconds at representative 1 hour period at night time and day time and Equivalent noise levels were computed. where the sound level meter was at a distance of 3.5 m from reflecting walls and set. Measurement made according to ISO 1996-1 and BS 7445-1. The device was stationed approximately 1.5 m above the surface and at least 3.5 m away from hard-reflecting surfaces as shown in Figure 0-7. The Instrument was checked and calibrated prior to use.



Figure 0-7: Noise monitoring along project area in Dakawa village

The noise survey was performed in accordance with the recommended method for evaluating the environmental noise impact on surrounding communities, with respect to annoyance: “The measurement and rating of environmental noise with respect to land use, health, annoyance and speech communication”. Each individual measurement was taken over a representative period of time to ensure that all possible variations in noise generation in the area, i.e., all possible noise sources was included in the measurement. Care was taken to take enough measurements, over long enough periods and in normal working conditions as to evaluate noise levels as near as possible to represent potential exposure levels.

The general principles employed for measuring sound pressure levels at the site are briefly described below:

All microphone measuring points were at least 1.5 m above ground level and 3.5m away from reflecting surfaces;

A suitable windshield will used on the microphone for all measurements in order to minimize wind interference;

The sound level meter will set to A-weighting for all measurements;

The measurement time intervals were, as far as reasonably practicable, chosen to be representative of the reference time intervals (Considerable care will therefore be taken to ensure that variations in noise propagation & representative cycles were adequately covered by the selected time intervals). The sound level meter was checked immediately before and after each series of sound level measurements using the acoustic calibrator.

Equivalent Noise level computational method

The equivalent Night time Noise levels were computed as follows,

$$LA_{eq, T} = 10 \text{ Log} \left(\frac{1}{N} \sum_{i=1}^N 10^{L_{pAi}} \right)$$

Where:

$LA_{eq, T}$ is equivalent noise levels at a representative time period, T

N=Total number of samples

L_{pAi} =Sampled values of pressure levels

Where T, was chosen to be 1 hour time period, which gives enough representation measurement for entertainment spots noise at time from 8:00pm to 12:00pm

Area category:

A -- Any building used as hospital, convalescence home, home for the aged, sanatorium or institute of higher learning etc.,

B -- Residential building,

C -- Mixed Residential (with some commercial and used for entertainment purposes),

D -- Residential and industrial (small-scale production and commercial activities),

E -- Industrial area.

Cumulative Effects

Accumulated levels of sound pressures calculated combining the sound contribution generated during the operation phase and the conditions of existing background noise. The decibels have a logarithmic value. In order to calculate the contribution of several sound sources, it is necessary to use the following formula:

$$LeqPi = 10 \text{ Log} \sum_{i=1}^n 10^{\frac{L_{pi}}{10}}$$

Where:

L_{pt} = Total sound pressure

L_{pi} = Partial sound pressure

n = Number of sources of sound

An example that illustrates the cumulative effect of adding one sound source B to another sound source A provided in **Table 0-9**. Based on the calculation above, the effective contribution of a second sound source is dependent on its value relative to the original sound source.

Table 0-9: Cumulative Effect of Adding Two Sound Sources

| Source A dB(A) | Source B dB(A) | Contribution from Source B dB(A) | Cumulative Effect dB(A) |
|----------------|----------------|----------------------------------|-------------------------|
| 50 | 50 | 3.01 | 53.01 |
| 51 | 50 | 2.54 | 53.54 |
| 56 | 50 | 0.97 | 56.97 |
| 65 | 50 | 0.14 | 65.14 |

The addition of two sound sources of equal sound power produces an increase of 3 dB(A) in the sound pressure generated on the receptor. If the difference between two sound sources is 1 dB(A), an increase of approximately 2.5 dB(A) is produced. If the difference between two sound sources is 6 dB(A), an increase of 0.97 dB(A) is produced. When there is a difference of more than 15 dB(A) between the two sources, a cumulative effect is almost negligible, with the result being equivalent to the sound pressure (SPL) of the greater of the two.

Noise monitoring Tools/equipment

SLM

SLM-25 sound level meter is a noise sound measuring device for measuring noise level over a period of time and have the ability to save the data measured (shown in the Table 0-10). The tools were used to measure the data from sensitive receptors locations across the selected villages for period of 1 hour data recording which were enough to give the equivalent noise levels propagation from the source. The sound level meter is plugged in the computer and the data for the recording period can be viewed

Hand GPS

Hand GPS was used to collect coordinate data of every location, for noise sampling and measurement

Table 0-10: Tools used for Noise measurements

| S/n | Tool | |
|-----|---|--------------------|
| 1 |  | SLM-25 noise meter |
| 3 |  | Hand GPS |

Results and discussion

The noise monitoring conducted along the project area in Water distribution construction route provides valuable insights into the current noise levels in different areas. These measurements were taken during both the day and night, allowing for a comprehensive analysis of the noise pollution scenario as shown in

Location NM-1:

Daytime LAeq (1 hour) is 51 dB(A), exceeding the IFC/WHO standards of 38.4 dB(A).

Nighttime LAeq (1 hour) is 55 dB(A), exceeding the IFC/WHO standards of 45 dB(A).

Location NM-2:

Daytime LAeq (1 hour) is 65.6 dB(A), exceeding the IFC/WHO standards.

Nighttime LAeq (1 hour) is 42.3 dB(A), which appears to meet the IFC/WHO standards.

Locations NM-3 to NM-7 also have varying levels of noise measurements during the day and night, with some exceeding and some meeting the IFC/WHO standards.

Overall, the data indicates that there are locations in Tanzania where noise levels, particularly during the daytime, exceed the recommended environmental standards, potentially warranting noise management or mitigation measures.

In summary, the noise monitoring results show varying noise levels across different NM locations. NM-3 to NM-7 exhibits relatively low noise levels during both the day and night. NM-1 and NM-2 has a moderately higher noise level during the day surpassing the specified limits of both the Tanzania environmental management noise standards and the IFC/WHO standards, this is due to the fact that

NM-1 and NM-2 were monitored close to Movements. These findings highlight the need for targeted noise management strategies in locations where noise levels exceed the established standards.

Table 0-11.

Noise monitoring results

Location NM-1:

Daytime LAeq (1 hour) is 51 dB(A), exceeding the IFC/WHO standards of 38.4 dB(A).

Nighttime LAeq (1 hour) is 55 dB(A), exceeding the IFC/WHO standards of 45 dB(A).

Location NM-2:

Daytime LAeq (1 hour) is 65.6 dB(A), exceeding the IFC/WHO standards.

Nighttime LAeq (1 hour) is 42.3 dB(A), which appears to meet the IFC/WHO standards.

Locations NM-3 to NM-7 also have varying levels of noise measurements during the day and night, with some exceeding and some meeting the IFC/WHO standards.

Overall, the data indicates that there are locations in Tanzania where noise levels, particularly during the daytime, exceed the recommended environmental standards, potentially warranting noise management or mitigation measures.

In summary, the noise monitoring results show varying noise levels across different NM locations. NM-3 to NM-7 exhibits relatively low noise levels during both the day and night. NM-1 and NM-2 has a moderately higher noise level during the day surpassing the specified limits of both the Tanzania environmental management noise standards and the IFC/WHO standards, this is due to the fact that NM-1 and NM-2 were monitored close to Movements. These findings highlight the need for targeted noise management strategies in locations where noise levels exceed the established standards.

Table 0-11:Noise measurement along the project zone

| Noise monitoring location | Measured LAeq,1hr dB(A) | Measured LAeq,1hr dB(A) | Tanzania environmental management noise standards | | IFC/WHO standards | |
|---------------------------|-------------------------|-------------------------|---|----|-------------------|----|
| | Day | Night | LAeq, dB(A) | | LAeq, dB(A) | |
| NM-1 | 51 | 38.4 | 55 | 45 | 55 | 45 |
| NM-2 | 65.6 | 42.3 | | | | |
| NM-3 | 54.5 | 42.7 | | | | |
| NM-4 | 70.9 | 44.6 | | | | |
| NM-5 | 56.6 | 35.6 | | | | |
| NM-6 | 44.7 | 34.3 | | | | |

| Noise monitoring location | Measured LAeq,1hr dB(A) | Measured LAeq,1hr dB(A) | Tanzania environmental management noise standards | | IFC/WHO standards | |
|---------------------------|-------------------------|-------------------------|---|--|-------------------|--|
| | Day | Night | LAeq, dB(A) | | LAeq, dB(A) | |
| NM-7 | 43.9 | 37.2 | | | | |

In conclusion, the results of the noise monitoring along the Dete, Tulo, Mngazi and Dakawa Water distribution construction route indicate that the current noise levels exceed both the Tanzania environmental management noise standards and the more stringent IFC/WHO standards. The comparison between the measured noise levels and the established standards highlights the urgent need for noise mitigation measures to minimize the adverse effects on the local community. The elevated noise levels observed in the monitoring locations can have various detrimental impacts on the well-being and quality of life of residents and workers. Prolonged exposure to high noise levels can lead to sleep disturbances, increased stress levels, reduced concentration, and even long-term health issues. It can also negatively affect the social and economic activities in the area.

Overall, the results of the noise monitoring emphasize the critical need for comprehensive noise reduction and management measures in the Dete, Tulo, Mngazi and Dakawa Water distribution construction project. By addressing the noise pollution issue, the project can not only improve the acoustic environment but also enhance the overall livability and sustainability of the surrounding areas.

Predicting the exact impact of an upcoming Water distribution construction project on noise levels requires a detailed assessment of the project's scope, design, traffic flow, and surrounding environment. However, based on general observations, we can make some predictions and provide insights on potential mitigation measures during both the construction and operation phases of the Movements section.

Predicted Impact of the Water distribution construction Project on Noise Levels:

Construction Phase:

During the construction phase, noise levels are likely to increase in the vicinity of the project site. Heavy machinery, construction vehicles, and equipment can generate significant noise during earthworks, paving, and other construction activities.

Temporary detours and alternative routes may divert traffic through residential areas, leading to additional noise exposure for residents.

Construction activities near monitoring locations NM-1, NM-3, NM-4, NM-6, and NM-7 may result in further noise level exceedances during the day.

Mitigation Measures during Construction and Operation:

Construction Phase:

Noise Barriers and Buffers:

Install temporary noise barriers made of materials such as wood, concrete, or sound-absorbing panels around construction sites to block and absorb noise.

Work Scheduling:

Plan construction activities to minimize noisy works, such as drilling, blasting, and heavy machinery operation, during nighttime and early morning hours when residents are most likely to be affected.

Coordinate with local authorities to ensure compliance with noise restrictions and regulations during construction hours.

Equipment Selection:

Option for construction equipment and machinery that meets noise emission standards or is equipped with noise-reducing features.

Encourage the use of electric or hybrid-powered machinery, which tend to produce lower noise levels compared to traditional diesel-powered equipment.

Public Awareness:

Conduct community outreach programs and public meetings to inform residents and businesses about the construction schedule, potential noise impacts, and measures being taken to mitigate noise.

Provide contact information for residents to report any excessive noise concerns during the construction phase.

Enforcement of Noise Limits:

Establish strict noise control regulations and ensure contractors adhere to these limits.

Conduct regular inspections and monitoring to enforce compliance, and impose penalties for contractors not meeting the prescribed noise standards.

Regular Monitoring:

Establish a comprehensive noise monitoring program during the operation phase to assess noise levels at key locations and identify areas where noise reduction measures may be necessary.

Regularly evaluate the effectiveness of implemented noise mitigation strategies and make adjustments as needed.

Noise Reduction Campaigns:

Conduct public awareness campaigns to educate Movements users and businesses about the detrimental effects of noise pollution and encourage responsible behavior.

Provide information on noise reduction practices, such as avoiding unnecessary honking, maintaining vehicles in good working condition, and using sound-dampening measures for commercial activities

By implementing these mitigation measures, the upcoming Water distribution construction project can effectively address and mitigate the potential increase in noise levels. These measures not only focus on reducing noise at its source but also aim to create a more harmonious and sustainable environment for the local community. It is important to note that the specific selection and implementation of these measures should be tailored to the unique characteristics and needs of the project area. Additionally, stakeholder engagement and collaboration are crucial throughout the entire process. Involving residents, local authorities, contractors, and relevant organizations in decision-making and implementation can help ensure the effectiveness and acceptance of the mitigation measures. Regular

communication, feedback mechanisms, and community involvement will contribute to a more successful noise management strategy. By proactively addressing noise pollution during the Water distribution construction project, the negative impacts on the well-being, health, and quality of life of the residents can be minimized. The project will not only result in improved Movements infrastructure but also contribute to a quieter and more livable environment for the community.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The baseline level measurement at the project corridor was evaluated by taking in to account of the current background during measurement, the result shows that the contribution of pollution due to ongoing activities is minimum as mostly of measurement are within the standard and expecting to rise during construction. The mitigation measures for ambient air quality and noise level pollution on this report should be considered much to minimize the effect of pollution to the worker and community or to protect the human health to people along Dete, Tulo, Mngazi and Dakawa project area

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APPENDICES

Appendix 1: Air quality raw data

| Noise monitoring location id | PM2.5 | PM10 | CO2 | Noise | Temp | Humidity | Village | Longitude | Latitude | Receptors | Sources of Noise |
|------------------------------|-------|------|-----|-------|------|----------|---------|-----------|----------|-----------|------------------|
|------------------------------|-------|------|-----|-------|------|----------|---------|-----------|----------|-----------|------------------|

| | | | | | | | | | | | |
|-------------|------|-----------|-----------|------|------|------|---|--------------|------------------|--|---|
| NM-1 | 15.5 | 24.8 | 540 | 52.1 | 31 | 54 | Mng azi | 37.66 942 | - 7.40 87 | Reside ntials and Comme rcials | Motorcycle Movements , Birds, Human activities and wind Movements |
| | 11.3 | 18.2 | 504 | 45 | 31 | 54 | | | | | |
| | 11.9 | 18.7 | 497 | 62.3 | 33 | 50 | | | | | |
| | 15.3 | 24.3 | 490 | 36.2 | 33 | 49 | | | | | |
| | 11.3 | 18.4 | 452 | 47.6 | 34 | 46 | | | | | |
| | 10.7 | 16.9 | 456 | 66.2 | 34 | 45 | | | | | |
| | 11.3 | 17.6 | 444 | 41.2 | 35 | 44 | | | | | |
| | 10.9 | 17 | 445 | 44.8 | 35 | 44 | | | | | |
| | 8.8 | 14.7 | 448 | 50.3 | 34 | 41 | | | | | |
| | 81.2 | 132. 5 | 448 | 56.6 | 34 | 42 | | | | | |
| | 10.8 | 15.8 | 430 | 62.5 | 35 | 44 | | | | | |
| | 9.4 | 14.5 | 447 | 47.2 | 36 | 44 | | | | | |
| Avera ge | 17.4 | 27.8 | 466. 8 | 51 | 33.8 | 46.4 | | | | | |
| NM-2 | 33 | 50.5 | 452 | 70.2 | 36 | 40 | Mng azi villa ge cent er | 37.67 514 | - 7.41 896 | Comme rcials | Motorcycle Movements , Birds, Human activities and wind Movements |
| | 6.5 | 12.4 | 437 | 67.6 | 36 | 42 | | | | | |
| | 7.4 | 11.3 | 572 | 69.4 | 37 | 38 | | | | | |
| | 38.7 | 58.2 | 432 | 66.5 | 37 | 36 | | | | | |
| | 10.2 | 17.6 | 453 | 58 | 32 | 31 | | | | | |
| | 8 | 16.5 | 459 | 67.1 | 32 | 28 | | | | | |
| | 8.1 | 12.5 | 425 | 60.5 | 32 | 31 | | | | | |
| Avera ge | 16 | 25.6 | 461. 4 | 65.6 | 34.6 | 35.1 | | | | | |
| NM-3 | 19.1 | 34 | 493 | 55.3 | 33 | 37 | Mng azi prim | 37.67 929 | - 7.42 375 | School | School activities, Wind |

| | | | | | | | | | | | |
|-------------|------|-----------|-----------|------|------|------|---|--------------|------------------|---|--|
| | 12.1 | 19.6 | 485 | 43.3 | 33 | 39 | ary scho ol | | | | Movements ad birds sounds |
| | 10.7 | 16.7 | 479 | 63.3 | 33 | 38 | | | | | |
| | 12.2 | 18.7 | 478 | 62.1 | 33 | 39 | | | | | |
| | 7.9 | 12.2 | 513 | 66.1 | 33 | 39 | | | | | |
| | 10.8 | 17.5 | 481 | 48.2 | 33 | 40 | | | | | |
| | 10.1 | 15 | 475 | 45.2 | 33 | 40 | | | | | |
| Avera ge | 11.8 | 19.1 | 486. 3 | 54.8 | 33 | 38.9 | | | | | |
| NM-4 | 40.1 | 50.1 | 476 | 67.2 | 33 | 49 | Dak awa villa ge cent er | 37.70 729 | - 7.42 466 | Reside ntial and comme rcias | Commercia l activities,M otorcycle movents, Wind movements and other human activities |
| | 16.2 | 24.5 | 487 | 69.5 | 34 | 39 | | | | | |
| | 11.8 | 19.3 | 483 | 74.7 | 34 | 39 | | | | | |
| | 18 | 28.9 | 485 | 69.8 | 34 | 38 | | | | | |
| | 14.4 | 23.2 | 496 | 76 | 34 | 38 | | | | | |
| | 16.4 | 24 | 514 | 69.8 | 34 | 37 | | | | | |
| | 18.1 | 24.8 | 472 | 70.4 | 34 | 35 | | | | | |
| | 16 | 28.4 | 458 | 72.1 | 34 | 35 | | | | | |
| | 11.7 | 18.4 | 443 | 72.1 | 34 | 34 | | | | | |
| | 23 | 37.1 | 443 | 67.2 | 33 | 34 | | | | | |
| Avera ge | 18.6 | 27.9 | 475. 7 | 70.9 | 33.8 | 37.8 | | | | | |
| NM-5 | 22.3 | 37.8 | 572 | 66.7 | 26 | 71 | Dete villa ge cent er | 37.97 727 | - 6.99 537 | Reside ntial comme rcial area | Commercia l activities,M otorcycle movents, Wind movements and other human activities |
| | 69.9 | 116. 9 | 569 | 51.5 | 29 | 67 | | | | | |
| | 54 | 81 | 562 | 65.2 | 29 | 67 | | | | | |
| | 42 | 56.3 | 546 | 60.5 | 31 | 60 | | | | | |
| | 36 | 60.2 | 489 | 56.4 | 31 | 59 | | | | | |

| | | | | | | | | | | | |
|---------|------|------|-------|-----------|------|------|-----------------------------------|--------------|------------------|--|------------------------------------|
| | 89.1 | 161 | 476 | 55.3 | 31 | 56 | | | | | |
| | 19.3 | 31 | 482 | 54.3 | 32 | 56 | | | | | |
| | 17.7 | 28.3 | 483 | 60.3 | 30 | 57 | | | | | |
| | 13.7 | 22 | 372 | 45.8 | 30 | 58 | | | | | |
| | 14 | 23.6 | 467 | 49.8 | 30 | 60 | | | | | |
| Average | 37.8 | 61.8 | 501.8 | 56.6 | 29.9 | 61.1 | | | | | |
| NM-6 | 7 | 14 | 500 | 42.9 | 29 | 61 | Dete prim ary scho ol | 37.97 546 | - 6.99 652 | School | School activities |
| | 7 | 16 | 510 | 48.5 | 30 | 60 | | | | | |
| | 10 | 13 | 502 | 43.2 | 31 | 58 | | | | | |
| | 7 | 10 | 491 | 54 | 34 | 53 | | | | | |
| | 7 | 8 | 511 | 42.1 | 34 | 49 | | | | | |
| | 7 | 16 | 494 | 42.1 | 33 | 49 | | | | | |
| | 7 | 6 | 491 | 39.8 | 33 | 47 | | | | | |
| Average | 7.4 | 11.9 | 499.9 | 44.7 | 32 | 53.9 | | | | | |
| NM-7 | 7 | 21 | 356 | 54 | 28 | 5958 | Tulo | 37.91 577 | - 7.23 581 | Tulo primary school, Tulo clinic | Human activities,wi nd,Birds |
| | 3 | 5 | 546 | 60.2 | 30 | 50 | | | | | |
| | 3 | 4 | 564 | 55.0 8 | 32 | 50 | | | | | |
| | 3 | 5 | 551 | 57.5 | 32 | 50 | | | | | |
| | 3 | 15 | 544 | 35 | 32 | 50 | | | | | |
| | 3 | 6 | 508 | 33 | 32 | 50 | | | | | |
| | 6 | 16 | 517 | 30 | 32 | 50 | | | | | |
| | 13 | 23 | 493 | 32 | 32 | 50 | | | | | |
| | 3 | 5 | 485 | 39 | 32 | 50 | | | | | |

| | | | | | | | | | | | |
|---------|-----|------|-------|------|------|-------|--|--|--|--|--|
| | 25 | 46 | 479 | 43.5 | 32 | 49 | | | | | |
| Average | 6.9 | 14.6 | 504.3 | 43.9 | 31.4 | 640.7 | | | | | |