THE UNITED REPUBLIC OF TANZANIA

DAR ES SALAAM WATER AND SANITATION AUTHORITY

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR THE PROPOSED CONSTRUCTION OF TUNGI WATER SUPPLY PROJECT AT MAGOGONI MTAA, TUNGI WARD, KIGAMBONI MUNICIPALITY IN DAR ES SALAAM REGION

DETAILED PROJECT BRIEF

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ABBREVIATIONS AND ACRONYMS

COWSO	Community Owned Water Supply Organization
DPR	Detailed Project report
DAWASA	Dar es Salaam Water supply and Sanitation Authority
DEMO	District Environment Management Officer
DEMC	District Environment Management Committee
DWST	District Water and Sanitation Team
EAP	Environmental Action Plan
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
ESA	Environmental and Social Assessment
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
EMA	Environmental Management Act
GIS	Geographic Information System
GoT	Government of the United Republic of Tanzania
HIV/AIDS	Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome
LGA	Local Government Authority
Mo HSW	Ministry of Health and Social Welfare
MoLHHSD	Ministry of Land, Housing and Human Settlement Development
MoW	Ministry of Water
NEMC	National Environment Management Council
NGOs	Non-Government Organizations
NSGRP	National Strategy for Growth and reduction of Poverty
PAP	Projected Affected Person
RAP	Resettlement Action Plan
RPF	Resettlement Policy Framework
WC	Water Committee
WSDP	Water Sector Development Program
WSSP	Water Supply and Sanitation Program
WHO	World Health Organization
WAPCOS	WAPCOS Limited
WSSPII	Second Water Sector Support Project

EXECUTIVE SUMMARY

Title of the Project:	Environmental and Social Impact Assessment for the Proposed Construction of Tungi Water Supply Project.
Project Location:	Magogoni Mtaa, Tungi Ward, Kigamboni Municipality in Dar es Salaam Region.
Name of the Proponent:	Dar es Salaam Water Supply and Sanitation Authority
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A BRIEF OUTLINE AND JUSTIFICATION OF THE PROPOSED PROJECT

Project Background

The Government of Tanzania (GoT), in collaboration with Development Partners (DPs) through Dar es Salaam Water Supply and Sanitation Authority (DAWASA) under the Ministry of Water (MoW) has been implementing the Water Sector Development Programme (WSDP 2006-2025) since 2006, which is a sector wide approach of twenty years of implementation. This Programme focuses on prioritized water resources management and service delivery in the water and sanitation sector. The programme consists of four components. Component 1: Integrated Water Resources Management; Component 2: Dar es Salaam water supply improvement; Component 3: Dar es Salaam Sanitation improvement; and Component 4: Project Management and Implementation Support.

The proposed construction of Tungi water supply project falls under Component 2: Dar es Salaam Water Supply Improvement. The project will provide water to un-serviced population areas of Tungi, who are not connected to the formal water supply and sanitation network. The Tungi water supply project is a small piped water supply system, typically involve a source of water i.e., offtake, a community-based distribution system, water points at community and/or household level.

Environmental impacts and audit requirement

The Environmental Management Act Cap 191 and the third Schedule to the Environmental Impact Assessment and Audit Regulation of 2005 as amended in 2018 (Regulation 6 (3) indicate

that the project brief should be prepared by a registered environmental expert. To comply with this requirement proponent as commissioned Ms. Nyinisaeli K. Palangyo (Registered expert) to carry out the Environmental impact assessment for proposed project.

Description of the project

The proposed project is small piped water supply system, typically involve a source of water i.e., offtake of the main pipeline from lower Ruvu pipeline, a community-based distribution system, water points at community and/or household level. The proposed construction of Tungi water supply project shall consist of the construction of; 12 domestic points and distribution pipes (10546m) so as to meet water requirement for Tungi ward.

Project estimated cost

The project costs are estimated at 309,906 USD that will be financed by the government of Tanzania through World Bank.

Description of project environment

The project is located at Magogoni in Tungi ward, Kigamboni Municipality, which is the south east part of the Dar es Salaam City, Tanzania. It is located in a coordinate 535393.5E, 9244835.7N (37S UTM) with estimated population of 16,000 people. The size of project for a borehole and storage facility can estimated to be less 1000m^2 (1/4 acre), the site is bordered by already built residential houses.

Project Stakeholders and their involvement

Stakeholder's involvement was very important for this study. Stakeholder were approached to share their views about a project and how its development, decisions, and resources will affect them. Consulted stakeholders included the Local government official in Magogoni Mtaa, Tungi Ward and Kigamboni Municipal Council. Consulted government institutions include Wami-Ruvu Basin Water Bord (WRBWB) and Tanzania National Roads Agency (TANROADS), Tanzania Rural Roads Agency (TARURA), and Occupation Safety and Health Administration (OSHA). The general community in Kigamboni ward, who are the targeted beneficiaries, was also consulted through a public meeting. The views and comments of stakeholders were integrated in the project design.

Results of stakeholder's consultations

Consulted stakeholders welcomed the project, and explained their expected positive impacts on the socio-economic status of the Tungi community. It was revealed that the existing water sources have unreliable and unsafe quality. It was hoped that DAWASA, through this project would eradicate water supply issues in the area.

Significant identified Impacts

During the implementation of the project various social and environmental impacts may arising from different execution phase of the project starting from the mobilization, implementation and decommissioning phase. Identified significant impacts include:

- Employment opportunities during the construction phase of the project;

- Occupational health and safety risks for construction workers;
- Possible interruption of other utility services and temporary interference to access during construction;
- Temporary loss of vegetation along the pipeline due to site clearance;
- Traffic jam and pedestrian flow disturbance during the construction phase;
- Health and economic impacts associated with the expected availability of clean and safe water for the supplied community;
- Improved health and personal hygiene and wellbeing of the community increased;
- Increased revenue collection by DAWASA;
- Increased generation of wastewater from sanitation facilities, due to increased water supply.

Environmental and social management Plan

The Consultant developed an environmental and social management plan for use during the construction and operation phase of the project. Mitigation measures suggested include good engineering practices, development of and implementation of traffic management plan; adhering to standard design procedures; immediate restoration of disturbed sites and restoration of affected services. The ESMP presented in this report indicates mitigations measures, responsible parties, duration and costs for their implementation.

Environmental monitoring and auditing

Monitoring will involve the continuous or periodic review of mitigation activities to determine their effectiveness. The proposed monitoring plan is aimed to monitor the effective implementation of mitigation measures during the implementation of the project. The study has identified parameters to be monitored and provided a guidelines and costs for their monitoring, depending on their importance for the project.

During the construction phase, the contractor will monitor vegetation, soil erosion, emissions and occupation health and safety. During the operation phase, DAWASA will monitor the quality of water supplied, generation of wastewater and revenue collection among others.

Decommissioning of the Project

After 20 years of the project life, Decommissioning of the Water Supply Scheme may be required. Decommission may involve demolition of structures and site restoration. It is therefore for the installed pipelines, equipment's and the technology used to become obsolete in less than the life span of the project. This will need replacement and upgrading of the systems and associated accessories. If the upgrading is not possible, the infrastructure will be removed and site rehabilitated to their original conditions. However, the extension of pipeline is still seen as a feasible that will be used for many years to come, because of its robustness and reliable water source. At this phase, also there will be review or approval of the decommissioning and post decommissioning plan and its implementation.

CHAPTER ONE

BACKGROUND AND NATURE OF THE UNDERTAKING

1.1Project Background

In 1981, the government established the National Urban Water Authority (NUWA) and charged it with the responsibility to develop and manage urban water supply on Tanzania Mainland. NUWA, which became operational in 1984, set a target to take over and reform water supply services in all urban areas in Dar es Salaam. The government re-organized NUWA in 1997 to form the Dar es Salaam Water and Sanitation Authority by merging the functions of NUWA and the sanitation functions of the Sewerage and Sanitation Department of the City Commission. Under the DAWASA Act of 2001, DAWASA was made responsible for operating and maintaining all water supply and sanitation services in Dar es Salaam and its satellite towns of Bagamoyo and Kibaha. DAWASA is responsible for providing water supply services and sanitation to its customers in its area of operations. Apart from the existing efforts water supply stands as a challenge due the fast-increasing population of the city.

In response to the fast-increasing water supply demand, the Government of Tanzania (GoT), in collaboration with Development Partners (DPs) through Dar es Salaam Water Supply and Sanitation Authority (DAWASA) under the Ministry of Water (MoW) has been implementing the Water Sector Development Programme (WSDP 2006-2025) since 2006, which is a sector wide approach of twenty years of implementation. This Programme focuses on prioritized water resources management and service delivery in the water and sanitation sector.

The programme consists of four components. Component 1: Integrated Water Resources Management; Component 2: Dar es Salaam water supply improvement; Component 3: Dar es Salaam Sanitation improvement; and Component 4: Project Management and Implementation Support.

The proposed construction of Tungi water supply project falls under Component 2: Dar es Salaam water supply improvement. The project will provide water to un-serviced population areas of Tungi, who are not connected to the formal water supply and sanitation network. The Tungi water supply project is a small piped water supply system, typically involve a source of water i.e., offtake, a community-based distribution system, water points at community and/or household level.

The proposed construction of Tungi water supply project shall consist of the construction of; 12 domestic points and distribution pipes (3000m) so as to meet water requirement for Tungi ward, the project costs are estimated at 309,906 USD that will be financed by the government of Tanzania through World Bank.

1.2 Rationale of the project

Tungi is an administrative area in Kigamboni Municipality that faces challenges in accessing clean, safe and reliable water for routine uses. This challenge is in line with the Water Sector Development Programme II (WSDP-II, 2006-2025) that focus on water supply to areas which was not yet reached so far. This project implementation will improve access to clean, safe and reliable water for Tungi residents and boosting economic activities hence contribution economic growth for individuation, community and national at large.

1.3 Project Objective

The overall objective of the project is to improve the health and well-being of the people living in the targeted areas through the provision of clean, safe, reliable, and sustainable water supply service. The availability of water will reduce time spent by vulnerable groups mainly women and children in looking for and collecting water thereby freeing time to carry out the other economic activities.

Specific Objectives

To improve water service by increasing production and distribution of water with good quality to meet the current and future demand for 20 years from 2025 to 2045.

1.4 Rationale of EIA

The principal legislation guiding Environmental and Social Impact Assessment (EIA) undertakings in Tanzania is the Environmental Management Act (EMA), Act No.20 of 2004 (Cap. 191). The EMA is operationalized through the EIA and Audit Regulations of 2005 and its amendment regulations of 2018. The proposed Tungi Water Supply Project falls under Category B2 projects, requiring a Project Brief.

The developer (DAWASA) is applying for an Environmental Certificate from the National Environmental Management Council (NEMC) in order to implement the said project. This Project Brief has been prepared to respond to the National Legislation, as well as the financier requirements (i.e., World Bank Safeguard Policies).

To comply with this requirement proponent as commissioned Ms. Nyinisaeli K. Palangyo (Registered expert) to carry out the Environmental impact assessment for proposed project.

1.5 Methodology

1.5.1 Study Team and Scoping

A multidisciplinary team of experts was involved in the current study in order to properly address the environmental and socio-economic issues. The team consisted of the following experts: Environmentalists, Sociologists, and Environmental Engineers. The team worked hand in hand with resident engineers and environmental experts in Dar es Salaam City.

Stakeholders' consultation was done through consultation and interviews with various relevant stakeholders, reviewing various reports, studies and literature relevant to environment and core urban infrastructure development in Tanzania. Related EIA studies in Tanzania were reviewed in order to draw on existing knowledge and experiences. The information was further complimented by extensive field visits in the project area. The scoping exercise facilitated the identification of key stakeholders for the project.

1.6.2 Field Studies and Public Participation

Broader consultation: The fieldwork for this study was carried out November 2021. The fieldwork involved reconnaissance to all sub-projects making various observations, site visits and interviews with stakeholders as well as meeting relevant Municipal officials. Field visits were essential to fully realize the scope of the project, the biophysical environment specific to the location and the socio-economic conditions in the project area.

1.6.3 Project Impact Assessment

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

CHAPTER TWO

2.1 DESCRIPTION OF PROJECT

The proposed project is a medium sized water supply system that involves an installation of pipe network for water transportation and distribution. Based on the final design, the water to be supplied in the project area will be taped from an existing main pipe i.e., an offtake from the main pipeline from lower Ruvu. Specifically, the proposed construction of Tungi water supply project shall consist of a construction of; 12 domestic points and distribution pipes (3000m) so as to meet water requirement for Tungi ward. Being a linear project pipe laying project, a maximum of one-meter-wide corridor suffices to implement pipe laying activities. In order to avoid land acquisition and excessive compensation the project route will be surveyed along the roads and other existing way leave of public utilities.

As such, during the implementation of this project public properties like roads, rivers and other existing utility infrastructure such as gas pipelines and electrical way leave may be affected by this project. However, permission to use the existing way leaves of other public utility infrastructure is will acquired before the actual implementation of the project begins. In order to describe well the proposed project at Tungi, the project activities have been divided into several phases as described below;

2.2.1 Project location

The project is located at Magogoni Mtaa in Tungi ward, Kigamboni Municipality, which is the south east part of the Dar es Salaam City, Tanzania. It is located in a coordinate 535393.5E, 9244835.7N (37S UTM) with estimated population of 10,018 people (Ward Officials, 2022). Water supply mains and distribution lines will largely pass along the roads and other public utility reserved areas to avoid land acquisition and excessive compensation. However, minor disturbances will often be experienced by the surrounding community as the project area is bordered by an existing built-up residential area. Figure 2.1 shows the location of the proposed site for construction of Tungi water supply project and features around it.

Figure 2.1: KIGAMBONI MUNICIPALITY LOCATING THE SUB WARDS PROJECT AREA

2.3 PROJECT ACTIVITIES

The planned project activities for implementation of the proposed project are classified into three phases mobilization, implementation and decommissioning phase. Details of activities in these phase are presented in the subsequent subtitles bellow.

2.3.1 Mobilization Phase

This phase will commence after procurement of the contractors and acquirement of provision certificate/EIA Certificate from NEMC. The duration of the mobilization phase is estimated to be about one (1) month. The mobilization phase will include the following activities:

- Planning and designing of the project;
- Conducting relevant studies, including EIA study, geology and hydrological studies;
- Establishment of support facilities (i.e., site office and store buildings);

- Mobilization of labour force (skilled and unskilled) and transportation of construction machinery, working tools and equipment to the sites for the take-off of development activities;
- Undertaking the auxiliary and preliminary works such as material investigation, crushing of aggregates, locating sign posts and identifying sites for disposal of wastes and transportation of gravel, sand, steel, timber, preparation of cement, reinforcement bars, casting of pre-cast materials such as concrete, etc.
- Mobilization of Construction materials and storage;
- Site clearance and marking clearly the project site boundaries.

Waste generation: Waste types which are likely to be generated during the mobilization phase include spoil soils, plants including trees and grasses and food remains from the site activities.

Spoil soils will be used to reinstate the site at the end of the project and backfilling of the trenches. Food waste and other non-decomposable domestic wastes shall be collected in the large skip bucket at site and transported to Pugu dumpsite for disposal.

2.3.2 Construction Phase

The nature of the project is essentially civil works and the following are the activities that will take place;

- Construction of 7 domestic points;
- Construction of 12 domestic points
- Construction of distribution pipes (10546m)
- Supply and installation of 1 Fire hydrant
- House connection to approximately 357 houses

Waste generation: Waste types which are likely to be generated during the construction phase include spoil soils, packaging material (i.e., plastic and paper wraps), broken or damaged materials, pipe cuttings and other plastic remains). Non construction wastes expected are the domestic solid and liquid wastes.
Spoil soils will be used to reinstate the site at the end of the project and backfilling of the trenches. Food waste and other non-decomposable domestic wastes shall be collected in the large skip bucket at site and transported to Pugu dumpsite for disposal.

2.3.3 Operational Phase

The actual usage of the system is expected to commence after completion of the construction phase. The system will be directly managed by the DAWASA. The operation phase will typically include activities such as distribution system maintenance *(i.e., pipes replacement)* water supply and sanitation service to all project areas, occupational health and safety management.

Operation Phase Wastes: The project will lead to increased quantity of water supplied to existing customers and even attract new customers. Based on assumptions that 80% of water supplied to local communities resulting into wastewater, the project will definitely result into

increased generation of wastewater. Liquid waste from onsite sanitation facilities will transferred to wastewater treatment facilities for treatment.

2.3.4 Demobilization Phase

This phase will involve disestablishment of the sites that includes site clean ups (removal of yard remains and other wastes), waste disposal, removal of construction equipment, and departure of workers. Disposal off any remaining or unwanted material and wastes such as sewage, solid wastes (plastics, wood, metal, papers, etc.) to authorized receiving environments. For workers, termination of temporary employment will also be carried out during the demobilization phase. Specifically, sewage will be carried by authorized wastewater track to a nearby DAWASA wastewater treatment facilities for final disposal, solid waste which cannot be reused will be transported to Pugu Kinyamwezi dumpsite.

After the demobilization, the contractor will hand over the works to the project Proponent for other operations.

2.4 Project Planning

2.4.1 Establishment of the design criteria for the project

This will involve several considerations that shall help construction of the proposed water supply distribution network in Tungi Mtaa to materialize, those activities include;

- Identify weak areas in the existing system and design the required rehabilitation works (if any)
- Design the routes and sizes of new pipelines including Network modelling/ hydraulic analysis
- Produce detailed drawings and specifications showing the locations and depths of pipelines and the locations of meters, kiosks and connections
- Specify Tests and Testing Arrangements

2.4.2 Project Design Consideration

This section presents the design concepts of the proposed project.

Proposed Source of Water Supply
It has been proposed to utilize the existing Navy pipeline that presently supplies water to part of the Tungi Area, as the source of water. This pipeline comes from the Lower Ruvu Treatment Plant. Off- takes at N9244461, E534737 will be installed at the Navy pipeline.

Distribution System Network
The distribution system has been proposed to be laid for a length of 10546m with pipe diameter ranging from 75mm to 250mm of uPVC Pipes from the Offtake at coordinates N9244461, E534737. The pipeline details are shown in Table 2.1:

Table 2-1:Details of Proposed Distribution Pipeline

S/no.	Sizes of Pipes	Unit	Length in m
1	**PIPE - PN 10**		
2	250 mm HDPE pipe	m	2,540
3	200 mm uPVC pipe	m	2,554
4	160 mm uPVC pipe	m	364
5	110 mm uPVC pipe	m	1,616
6	90 mm uPVC pipe	m	732
7	75 mm uPVC pipe	m	3,884
		Total	**11,690**

Proposed Domestic Points

As per the Maji Manual, for Every 250 Persons, one point is to be provided, according to that the Domestic points with 4 taps (1000-person catering from one DP) are proposed in the report. Total Population details for the project areas for the base year (2020), Intermediate (2030), and ultimate (2040) with the number of DPs are as indicated in Table 2-2. However, the presented Tungi population for the year 2020 was obtained from local government:

Table 2-2: Details of Proposed Domestic Points

S/no.	Name of the Mtaa	Present Population 2020	Intermediate Population 2030	Ultimate population 2040	Proposed DPs
1.	Tungi and Magogoni	13,154	17,170	22,412	2

Source (Ward officials)

- **House Service Connections:** 357 number of House service connections have been proposed in the project areas. The house service connections will be identified by DAWASA during execution.

- **Fire Hydrants:** It is proposed to install one (1) fire hydrant at a suitable place in the distribution system as per standard requirement.

2.5 Resource for project implementation

Raw materials requirement during construction phase

The project will require various standard construction and installation materials including gravel, stones, aggregates, sand, steel, water pipes and pumps. Details of types and quantities of construction materials shall be included in the ESIA report.

Raw Materials Requirement during Operations Phase

Raw materials requirement during operation phase includes water, chemicals for water treatments, and lubricants.

2.5.1 Construction materials and labour force

The main construction materials include gravel, aggregates (ballast and sand), reinforcement steel bars, timber, wire mesh, concrete blocks, water, pipes, pipe fittings, scaffolds, marine boards, nails, cement etc. An estimate of the required materials is shown in the Table 2.1.

Table 2-1: Estimate of Required construction Materials

Material	Source	Quantity (Estimate)
Aggregates	Dar es Salaam	50Tons
Cement	Dar es Salaam	50Tons
Water	Dar es Salaam	1,000 m^3
Reinforcement bars	Dar es Salaam	25Tons
Timber	Dar es Salaam	25 Tons
Assorted sizes of PVC and galvanized pipes	Dar es Salaam	27,145 m
Pipe fittings and valves	Dar es Salaam	500 Pcs

Source: (WAPCOS Design report, 2022)

Construction works is generally a labour-intensive undertaking. Both skilled and unskilled labour force will be required during project construction. For this size of project, approximately 20 skilled personnel (foremen, masons, welders, carpenters, plumbers, technicians, surveyors, drivers etc) and 60 unskilled personnel (labourers) will be employed. A further approximately 2,000hrs of skilled and unskilled labour have been provided as provisional labour for dayworks.

2.5.2 Equipment and Machinery Requirement

The project development activities will employ various types of construction equipment and machinery. Table 2.2 provides a list of machinery, equipment and vehicles that will be used during construction phase.

Table 2-2: Equipment requirement for construction works

S/N	Type	Specifications	Function	Source (Hire, Contractor etc.)
1	Excavator	0.5m^3 capacity	Mobilization	Contractor
2	Front end loader	4m^3 capacity	Mobilization	Contractor
3	Crawler dozer with dozer and hydraulic ripper	100 – 135 kW rated flywheel power	Mobilization	Contractor
4	Roller Compactor	5 tonne capacities	Construction	Contractor
5	Towed compressors	Delivery of free air per minute	Construction	Contractor
6	Portable compressors	-	Construction	Contractor
7	Small dumpers	751 kg – 1.2 tonne	Mobilization	Contractor

8	Pumps inclusive of all hoses	50 – 76 mm diameter delivery	Construction	Contractor
9	Concrete mixer	Wet capacity up to 100 litters	Construction	Contractor
10	Concrete vibrator	Poker type	Construction	Contractor
11	Lorry	Ordinary up to 7.5 t gross vehicle weight	Mobilization	Contractor
12	Lorry	Tipper up to 11.0 t gross vehicle weight	Mobilization	Contractor
13	Van / Pick up	Up to 1 t carrying capacity	Mobilization	Contractor
14	Vibrating plate compactor	114 – 200 kg operating weight	Construction	Contractor

(Source: Consultant's Estimates, 2022)

These are indicative necessary equipment's for a project involving construction works. More equipment will be specified in the tender documents.

2.6 Waste generation

2.6.1 Pre-construction and construction wastes

The major wastes generation associated with the Pre-construction and construction phases are spoil soils resulting from earthworks during the trench and foundations excavation. This soil shall be stockpiled onsite along the trench. The soils shall be used to reinstatement of sites at the end of the project construction phase.

Other waste streams will come from the site activities, which will include liquid wastes (domestic), general refuse and air emissions. Both the contactor and the operator shall prepare and implement a waste management plan during the construction and operation phases respectively. Mitigation measures for impacts related to waste management shall be included in the ESMP.

2.6.2 Operation Phase Wastes

Liquid waste; mainly sewage and sullage from the toilets. Liquid wastes may also include contaminated storm water.

2.6.3 Estimates of Waste Generation during the project phases

Estimates of waste generation in the three project phases was done. A summary is presented in Table 2.3. in normal practice, about 80% of the water supplied to the community becomes waste water. Estimates of liquid wastes to be generated during the construction phase is presented in Table 2.5.

Table 2-3: Solid waste generation and management during operation phase

Source/ Process	Waste/ By-Products	Quantity	Treatment/ Disposal
Construction activities	Soil stockpiles, Packaging materials (plastic papers, paper boxes and wraps), cut pipes, plastic bottles	To be established by during construction	Soil stockpiles shall be used in backfilling the trenches and the remaining volumes shall be removed from site by trucks. Depending on the quality of the soil, the contractor shall obtain a disposal permit from the relevant Municipal Authorities. Collected daily and stored (sorted) at the campsite, before transportation to a designated landfill at Pugu Kinyamwezi.

Source: (Consultant Analysis, 2022)

Table 2-4: Liquid waste generation and Management during operation phase

Process	Waste/ By-Products	Quantity	Treatment/ Disposal
Domestic activities	Sewage and sulage (from bathrooms, kitchen etc)	0.8 m^3/day (based on water usage of 80l/person /day, 1,000 people and 80% becomes wastewater)	Collected and directed to the Effluent Treatment Plant within the project area

Source: (Consultant Analysis, 2022)

2.6 Technology to be used

An offtake from a main transmission line from Ruvu water treatment plant will be used a main source of water to affect this project. Both the trunk main and distribution lines will use PVC pipes ranging from 300mm to 75mm in diameter. Hot plat fusion technique will be use to connect the pipes in all the joints. In cases where the pipelines need to cross the existing roads a horizontal direction drilling (HDD)method will be employed.

CHAPTER THREE

BASELINE ENVIRONMENTAL AND SOCIAL CONDITIONS

3.1 Geographical location of the project

Geographically, the project is located at Magogoni Mtaa in Tungi ward, Kigamboni Municipality, which is the south east part of the Dar es Salaam City, Tanzania. It is located in a coordinate 535393.5E, 9244835.7N (37S UTM) with estimated population of 10,018 people (Ward Officials, 2022). Water supply mains and distribution lines will largely pass along the roads and other public utility reserved areas to avoid land acquisition and excessive compensation. However, minor disturbances will often be experienced by the surrounding community as the project area is bordered by an existing built-up residential area. Figure 3.1 shows the location of the proposed site for construction of Tungi water supply project and features around it.

The site is owned by the local Government and ownership documents are attached to this report as Annex I.

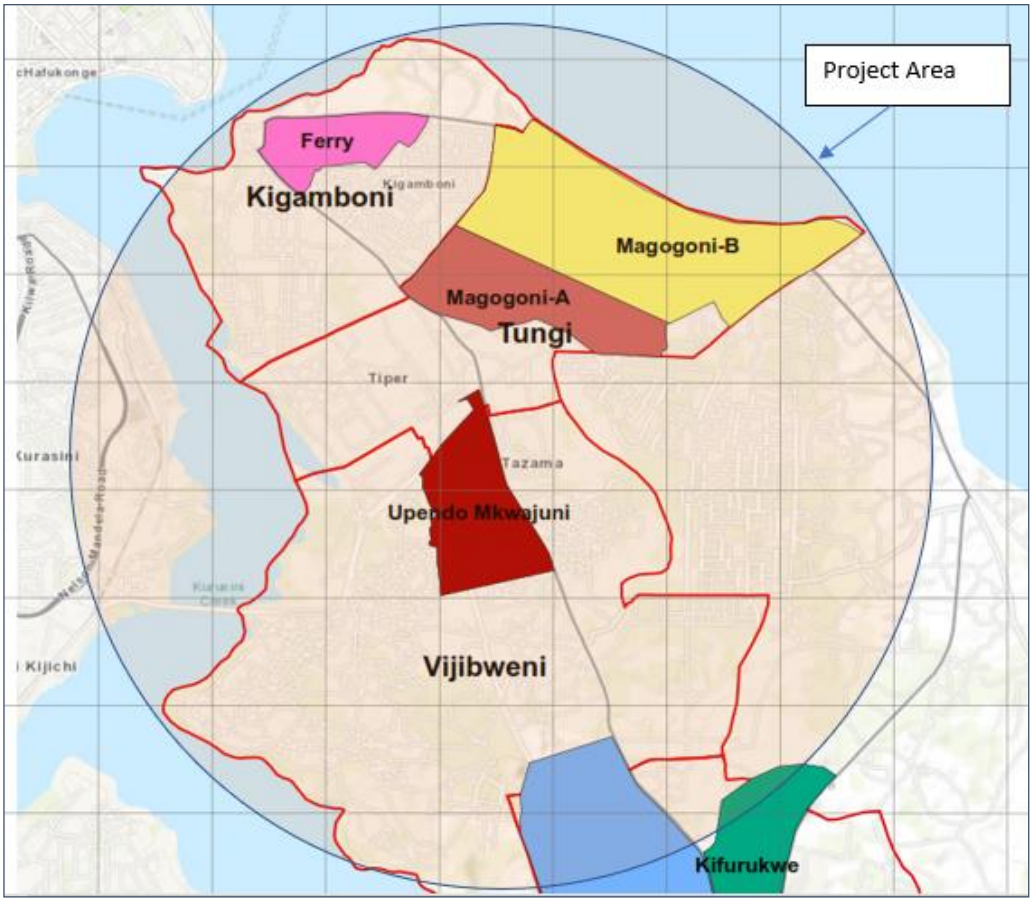


Figure 3.1 Location of the proposed project sites within the municipal boundaries (Source; Consultant, May 2022)

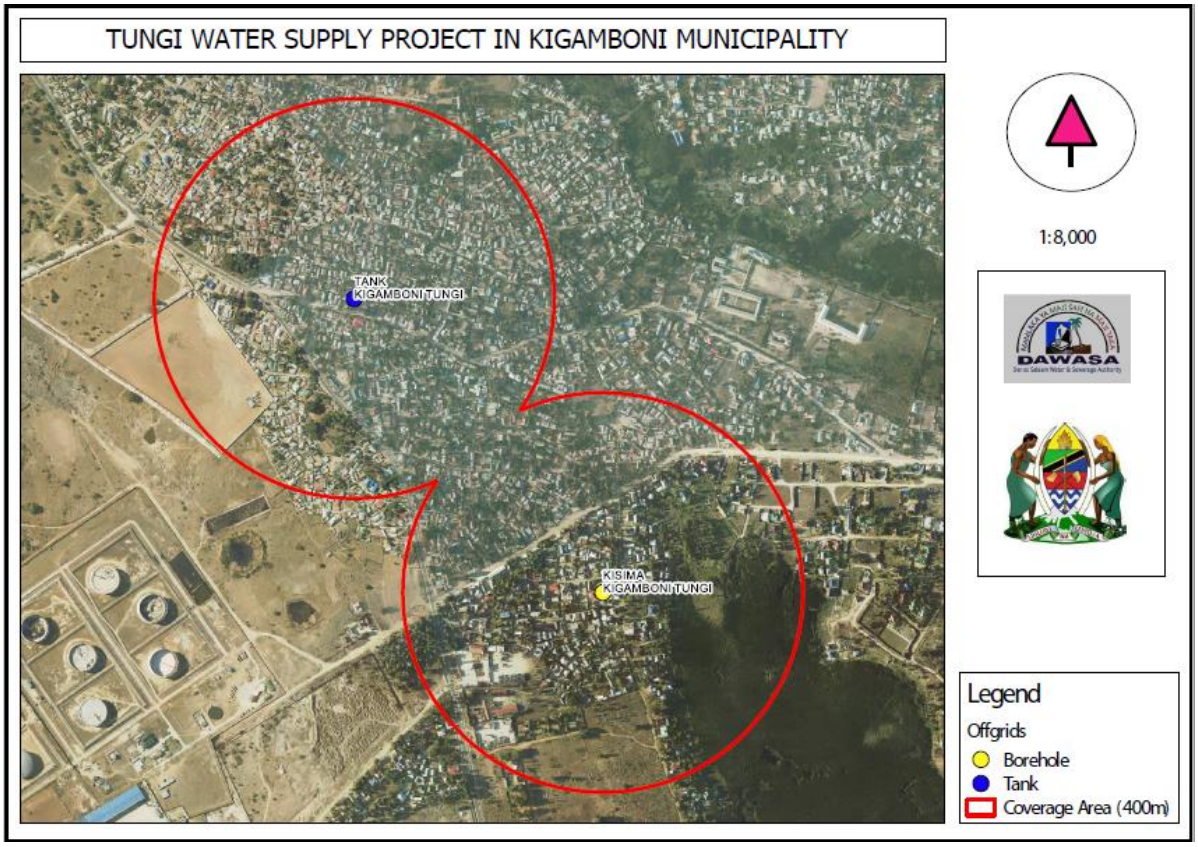


Figure 3.2: Location for the construction of proposed Tungi water supply project (Source; Consultant, May 2022)

3.2 The Physical Environment

3.2.1 Geographical boundaries

The proposed Tungi Water Supply Project is located in Kigamboni Municipality, Dar es Salaam City. Kigamboni Municipal Council borders with Indian Ocean in the East, Mkuranga District in the South. In the Northern part Kigamboni Municipal Council borders with Indian Ocean and Temeke Municipal Council. Kigamboni Municipal Council has an area of 577.86 km² hectares with a coastal line of 65km length. It is one of the largest Municipal Councils in Dar es Salaam City. A Large part of Kigamboni Municipal Council is flat with an elevation ranging from 20m to 50m above sea level, it consists of swampy areas in the central part and nearby Sea shores.

3.2.2 Climatic Conditions

The project area lies in the Tropical coastal belt of Tanzania and therefore is influenced by two major climatic seasons, namely rainfall and temperature. Rainfall pattern is that of bimodal type with erratic conventional rains. The monsoon rains occurring between December and February. While the long heavy rains in the period from March to June. The amount of rainfall received ranges from 800–1200mm per annum. Temperature just like rainfall is also influenced by ocean. High temperature prevails throughout the year ranging from 25^0c during the period of

June to August up to 35^0c in the period of January to March. Based on the experience from the residents, it was anticipated that during the dry season (June to November) the proposed project may suffer from scarcity of water due to decrease of water in Ruvu River which is the primary supply source.

3.2.3 Topography, Geology and Soil

Similar to many other parts of Dar es Salaam Region, Kigamboni terrain is undulating. It ranges from flat to gently undulating plains, developed on old alluvial terrace. The terrain rises from the sea level in wards along the shore line to a maximum of 120 m above mean sea level in few areas of Kisarawe II and Kibada wards. The large part of Kigamboni has elevation between 20m to 50m, in areas such as Kimbiji Ward. The low-lying areas range between 1m to 25m in Vijibweni, Kigamboni, Tungi, Mjimwema, Somangira and Pembamnazi wards. The geology of Kigamboni has two major geological units. The underlying substratum of consolidated formations and outcropping rocks consists of Neogene clay-bound sands to hard sandstones. The far less consolidated terrace sands and sandstones of the Quaternary System are more extensive in the central and southern parts of the Municipality. Most of the area is covered by sandy soil. The main natural vegetation is Coastal shrubs, Miombo woodland, Coastal swamps and mangrove trees. In view of the topography and type of soils, the pressure of water in the proposed project may be influenced by the undulating terrain while if not well monitored trench excavation activities may trigger soil erosion in sandy and hilly areas.

3.2.4 Water resources

The major source of water is the water distribution system owned and managed by Dar es Salaam Water supply and Sanitation Authority (DAWASA). The other source of water is boreholes which are managed by institution and private owned boreholes

3.3 Socio-Economic Environment

3.3.1 Demographic Profile

Population: According to the 2012 National Population and Housing census, Kigamobini Municipality is reported to have a total population of 1,205,949 whereas 587,857 were males and 618,092 were female with a total of 307,760 households with average size 4 people per household.

Type and pattern of housing: Most of residential houses and business structures in Kigamboni Municipality are made up of cement blocks with corrugated aluminium roofing. Some are made of burned bricks with corrugated Aluminium roofing.

3.3.2 Ethnicity

The native inhabitants of this area are Ndengereko, Makonde, and Zaramo. Although, Residents at Kigamboni Municipality area are of the different mix of tribes because of its sub-urban settings and people are therefore with different ethnic backgrounds

3.3.3 Gender Aspects

As it is with most of the area in the country, the number of women in Kigamboni Municipality out numbers that of men. According to the 2012 Census women in the municipality constitute 51.2 percent of the municipal's total population. Women development efforts have been made by both women and civil societies to make sure that women are engaged in economic activities to create basis for them to enter the mainstream of economic activities in the future. Regarding to the nature of the proposed project women will be among the beneficiaries.

3.3.4 Economic activities

3.3.5 Fisheries

The fisheries in Kigamboni are categorized into artisanal and commercial fisheries. The artisanal fishery exploits the freshwater bodies and the demarcated territorial waters in the Indian Ocean. The catch comprises a variety of finfish and invertebrates. The commercial fishery is mainly comprised of prawns, octopuses, lobsters, and to small extent sea cucumber fisheries in the territorial sea, while the Exclusive Economic Zone (EEZ) is exclusively exploited by foreign fishing vessels.

3.3.6 Agriculture and livestock

Kigamboni Municipality has an arable land for practicing commercial agriculture by growing crops such as cassava, horticultural (applying green house and drip-irrigation schemes), poultry and dairy farms. A total of 23 acres is reserved for the modern agriculture establishment. Generally, the kind of agriculture practices in the Municipality is subsistence farming usually done by peasants (small holder farmers) who produce various crops namely fruits, vegetables, cereals, root crops and legumes. Other crops are coconut and cashew nuts.

3.3.7 Tourism and Recreational Activities

In Kigamboni, there exists tourist attraction sites such as pristine coastline with a stretch of white sand, a wide coastline with beautiful hotels located along the sea shore of Indian Ocean, Mwalimu Nyerere Bridge, the mangrove forest, the Dar es Salaam Port and Dar es Salaam Zoo where wild animals are kept.

However, the vast beach has not been effectively developed to attract recreational services in developing more hotels, water sport and resorts. Most of the existing recreational centres are congested and have not diversified available recreational services. In either way reliable supply of potable water will incentivise the tourism and recreational activities in the district.

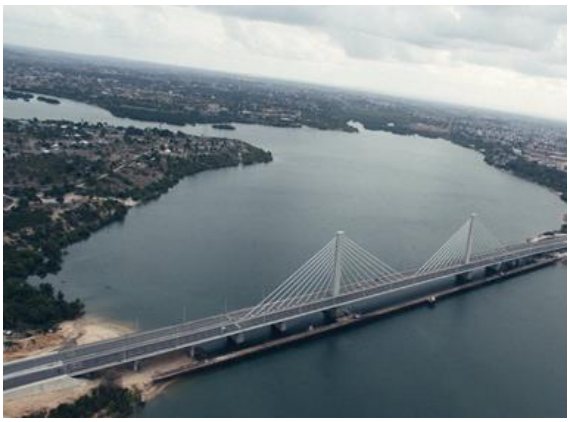


Figure 2.3 View of Kigamboni Bridge Source; Consultant, May 2022

Figure 2.4 Beach in Kigamboni Source; Consultant, May 2022

3.3.8 Mining and quarrying

Mineral resources available include; sand, clay, limestone and gravel. Sector based investments in the area include cement production by Lake Cement Ltd at Kimbiji, and public mining of limestone a gravel at Somangira and Kimbiji wards Quarry sites 64.331 Ha for sand and gravel extraction, providing potentials for availability of building materials and increasing revenue collections to the Municipal

3.3.9 Trade and business

Kigamboni Municipality there are about 4231 registered businessmen/women selling a variety of commodities for home consumption, among them include wholesale shops, retail shops selling goods like rice, beans, maize, sardines, clothes, pharmacy, restaurants, guest house, hardware shops, bars, meal machines, fuel stations and butcheries. The Municipality has four main markets selling home based goods namely Tuamoyo, Kwa Urasa, Tundwisongani, Ferry and one market of Ungindoni that is privately owned which makes five market within Municipality. It is anticipated that provision of reliable potable water sources will also influence positively trade and business development.

3.4 Biological Environment

Biodiversity conservation and management is a crucial aspect of maintenance of ecosystem services that are essential for the life support of plants, human and other animals. Environmental degradation results in reduced supply of crucial environmental resources such as clean water, air, as well as fertile soils. Among others, the objective of Environmental assessment is to ensure that the proposed projects do not degrade the environment. In some areas the proposed project will be crossing rivers and streams where emphasis will be put such that activities to implement the activities of the proposed project brings minimum impacts to lives present in those water environment.

3.4.1 Flora

The project area in Kigamboni Municipality is characterized by planted shade trees, lawns, hedges and garden. Most of the natural vegetation cover has been lost due to urbanization. Different plants species such as palm trees, peacock flowers, Christmas trees, neem (*Azadirachta Indica*), yellow cassia and a variety of grass species are available. Also, bougainvillaea and governor's plum (Mchongoma) are available.

3.4.2 Fauna

As the project is located in an urban area, there are no existing wild animals. On the contrary, the existing animal species include domesticated terrestrial creatures (livestock) such as pigs, cattle, chicken (poultry) and other types of birds. Livestock keeping is done largely in peri-urban areas, and less in urban areas where normally zero grazing are practiced. Presence of domestic animal in the project area suggests that there is a dependence of natural water stream and rivers as a source of drinking water for animals. Prevention of various water sources from pollution resulting from the proposed project is thus very crucial, suggesting also that the implementation of the proposed mitigation measures is indispensable.

3.5 Socio-Economic infrastructure

3.5.1 Road network

Temeke Municipality has road network with a total length of 628 km, where the tarmac road is 98.41 km, the gravel roads are 140.48 km and Earth-road is 389.11 km. Within 628km of the total network, 59km is under the TANROAD supervision which is all paved and 575.7km in which paved-59km, gravel-136.5km & earthroad-379.7 is supervised by TARURA-Temeke. The proposed project will cut across gravel and earth roads. This has impaction on road users as well as the quality of the affected road projects after pipe lying.

3.5.2 Energy Sources

The Kigamboni Municipality is connected to the National Grid with supplied capacity of 17MW against a peak demand of 18 to 20MW. About 56% of surveyed households were connected to TANESCO's electricity network. The remaining 44% are dependent on solar and generators as alternative sources of energy. The major source of energy during the construction and operation phases will come from TANESCO.

3.5.3 Communication Network

Due to its economic attractions, the Municipality is reasonably provided with good communication infrastructure. Notably, communication is mainly provided through mobile network providers which include Mobile companies like Vodacom, Tigo, Zantel, TTCL, Airtel, and Halotel. Construction activities, especially trench excavation could affect communication

network infrastructure. However, utility suppliers were consulted during the design in order to avoid any impacts on their infrastructure

3.5.4 Health Services

Existence of health facility and services improves health quality and reduction of illness and deaths to the people. This subsequently improves the productivity of the urban force and the working population. Moreover, the economy of the municipality depends much on the well-being of the workforce which is well served by improved health facilities and services. The construction force shall obtain health services from these existing facilities as required. The construction of Tungi Water Supply Project will help to improve community health through provision of the clean and safe water.

3.5.5 Environmental conditions in the project areas

The site is composed of few trees and grass which seemed natural. The proposed area does not have any existing water supply infrastructure. No sensitive or critical ecosystems in the influence area

The area is characterized by moderate population density, moderate income families in planned settlements with insufficient water supply services. The risk of waterborne diseases is high.

Figure 3.1 Existing situation of the proposed area (Source: Site visit May 2022)

3.6 Labour force

Construction works is generally a labour-intensive undertaking. Both skilled and unskilled labour force will be required during project construction. For this size of project, approximately 20 skilled personnel (foremen, masons, welders, carpenters, plumbers, technicians, surveyors, drivers etc) and 60 unskilled personnel (labourers) will be employed. A further approximately 2,000hrs of skilled and unskilled labour have been provided as provisional labour for dayworks.

3.7 Land ownership

Since the proposed project shall use road reserves and feeder roads, DAWASA shall apply for roads reserves use permit to TARURA kigamboni and TANROADS so as the contractor can conduct excavation and lay pipes on the road reserve area. The proposed project has No area that needs compensation.

3.8 Technology to be used

Gravity flow methods will be used whereby treated water from offtake pipeline shall be connected to constructed water supply distribution network at Tungi mtaa community. Since the project will involve the use of the main road reserves and feeder roads, excavation will be done manually and in case of road crossing. Contractor is advised to use Horizontal hydraulic drilling method to reduce traffic congestion and road destruction.

CHAPTER FOUR

RELEVANT REGULATIONS, ACTS, POLICIES AND STATUTORY REQUIREMENTS

General overview of legislations

The project (construction and operation) needs to comply with Tanzania legislation, Rules, Regulations, Acts and Policies in all aspects concerning Safety and Environment prevailing in the country. It aims at achieving sustainable development through the rational use of natural resources and incorporating all such necessary measures in any development activities in order to safeguard the environment.

Given the above, relevant legislations pertaining to environmental quality, health and safety, transport, pollution of ground and surface water, pollution of soil, land and land use control, protection of sensitive areas, protection of endangered species among others, were examined in order to ensure that the proposed project meets and abide by the existing regulations. In this chapter, a full analysis of different policies, legal and administrative frameworks and relevant international treaties and conventions as they apply to this project are discussed.

Relevant national Policy and regulations

The following are the relevant policies and regulations which will govern the execution of this water supply project.

The National Environment Policy NEP 2021

The National Environmental Policy (NEP) sets goals committing the country to the sustainable development of its natural resources. The policy gives the framework for the formulation of plans, programs and guidelines to achieve sustainable development. Under paragraph 64 of the Policy, it is stated that it is in the context of the EIA regime that policy guidance on choices to maximize long-term benefits of development and environmental objectives can be revealed and decided upon. The Policy further indicates that EIA being a planning tool, it shall be used to integrate environmental considerations in the decision-making process in order to ensure that unnecessary damage to the environment is indeed avoided. The key objectives of the policy are; Ensure sustainability, security and equity in the use of resources.

Prevent and control degradation of land, water, vegetation and air resources; Conserve and enhance the natural and manmade heritage; and Raise awareness and promote public participation, enhance international cooperation on the environmental agenda the policy advocates use of other relevant approaches in environmental management such as economic instruments, environmental standards, indicators and legislation. The proposed Off-grid water

supply projects in all the three Municipalities of Kigamboni, Temeke and Ilala will touch in almost all spheres described in the policy, which include land, water, vegetation and air resources. DAWASA will ensure that all provisions in the policy are fully observed.

The National Land Policy (Amendment)1997

This policy promotes and ensures a secure land tenure system to encourage the optimal use of land resources, and to facilitate broad-based social and economic development without upsetting or endangering the ecological balance of the environment. The Land Policy provides for "full fair and prompt compensations" when land is involved in terms of using peoples land and clearing their crops and vegetation as is the case in this off-grid project.

The land policy also provides for compensation for land acquired in the public interest to be based on the principle of "opportunity cost" whereby the principle of equivalence or substitution all aimed at obtaining or acquiring an equally desirable alternative leads to the implementation of this project.

The national Environmental action plan (1994)

The plan encompasses all development sectors with the focus on the conservation of the environment and sustainable development. Being implemented in a congested city with high population density and multiple social and environmental problems, the proposed project contractor's and proponent (DAWASA) will ensure that the mitigation measures provided in this ESMP are implemented in order to conserve the environment.

The National Water Policy (2002)

The National Water Policy (NAWAPO 2002) addresses adequately all the relevant issues on integrated water resources management and adopts comprehensive policy framework and the supply of water as both a social and an economically good purpose. The policy issues, particularly in water resources management, underscore the disaster management from accidental pollution of water sources (Clause 4.8.4); The policy states that there are disasters associated with accidental spills of poisonous and hazardous materials into surface and groundwater resources. Such accidents could occur from spillage from vehicles and vessels. This could lead to serious pollution of water sources and thus ecosystems in which the people and animals are disturbed. In order to protect against and mitigate the effect of hazards associated with accidental pollution of water resources a quick and emergency assessment of the extent, and possible impact will be implemented and information made available to concerned authorities.

Transportation of fuel for works that may be regarded as hazardous materials, as specified in the policy, will follow established rules, regulations and guidelines. Similarly, during the implementation of the project, procedures will be put in place to observe the requirements of the National Water Policy in order to mitigate and minimize the pollution of water sources.

The transport policy (2002)

The Transport Policy (2002) aims at enhancing transport safety and environmental protection, through taking steps to review and update national legislation in transport operations and safety requirements. This project is geared towards the main purpose of the policy. The transportation of all tools equipment and associated facilities from storage or other sites to the project area in will observe the requirements of the transport policy.

Construction Industry policy (2003)

Among the major objectives of the policy, which supports sustainable project development, include the promotion and application of cost-effective and innovative technologies and practices to support socio-economic development activities such as buildings, road-works, water supply, sanitation, shelter delivery and income-generating activities and to ensure application of practices, technologies and products which are not harmful to either the environment or human health. The project design team, as well as the project proponent, will see to it that implementation of this project is in line with this policy both during construction and in regular operation.

National policy on HIV/AIDS (2001)

The National Policy on HIV/AIDS (2001) was formulated by the Government of Tanzania (GOT) under technical support from the World Health Organization Global Program on AIDS (WHO-GPA) that led to the establishment of National HIV/AIDS Control Program (NACP) under the Ministry of Health. However, due to its multi-sectoral nature, there was a need to involve all sectors and community participation was found to be crucial. One of the government strategic initiatives was to establish the Tanzania Commission for AIDS (TACAIDS) under the Prime Minister's Office. The Commission provides leadership and coordination of national multi-sectoral response to the HIV/AIDS epidemic. The management functions, institutional and organizational arrangement of TACAIDS is outlined in the National Policy. The policy identifies HIV/AIDS as a global disaster, hence requiring concerted and unprecedented initiative at national and global levels. It recognizes HIV/AIDS as an impediment to development in all sectors, in terms of social and economic development with serious and direct implication on social services and welfare. Thus, the policy recognizes the linkage between poverty and HIV/AIDS, as the poor section of the society are the most vulnerable.

The main policy objective is reflected well in the establishment of TACAIDS. However, the policy has also set several strategic objectives to deal with specific HIV/AIDS problems:

- Prevention of transmission of HIV/AIDS;
- HIV Testing;
- Care for People Living with HIV/AIDS (PLHAS);
- Enhance Sectorial roles through participation and financial support;
- Promote and participate in research on HIV/AIDS-including dissemination of scientific information and development of HIV vaccine;

- Creating a legal framework through the enactment of laws on HIV/AIDS-governing ethical issues and legal status of HIV/AIDS-affected families;

Issues of HIV/AIDS have been considered in this project during various phases of its implementation. Measures for its prevention particularly during mobilization and construction phases are discussed and provided in ESMP.

The National Health Policy, 1990

One of the main objectives of the policy is to ensure that health services are available and accessible to all people wherever they are in the country, whether in urban or rural areas. The policy encourages safe basic hygiene practices in the workplace, promotes sound use of water, promotes the construction of latrines and their use, and encourages the maintenance of clean environment as well as working environments which are conducive to satisfactory work performance. In the course of implementation of the project, the proponent shall observe this policy.

The National Employment Policy 1997

The major aim of this policy is to promote employment mainly for Tanzanian Nationals. Relevant sections of this policy are: (i) 10, which lays down strategies for promoting employment and section 10.1 is particularly focusing on industry and trade sectors (ii) 10.6 which deals with the employment of special groups i.e., women, youths, a person with disabilities and (iii) 10.8 which deals with the tendency of private industries to employ expatriates even where there are equally competent nationals. As can be noted this policy is quite relevant to this project. The contractor and the proponent will abide by it by ensuring that local residences especially the youths, women and other vulnerable groups are given priority in the employment.

National Human Settlements Development Policy, 2000

The overall goal of the Policy 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. Among the Policy, objectives are the protection of the natural ecosystem against pollution, degradation and destruction to attain sustainable development. The major issues relevant to this project that the Policy addresses include:

a) Poor management of solid and liquid waste, leading to environmental deterioration and degradation;
b) Emission of noxious gases from vehicles and industrial activities as a major cause of air pollution in urban areas;
c) Encroachment into fragile and hazardous lands (river valleys, steep slopes and marshlands leading into land degradation, pollution of water sources;
d) Unauthorized sand mining in river valleys leading into environmental hazards as can be noted the Policy is relevant to the proposed project because of the environmental issues that it addresses. The project proponent will follow up and ensure that issues raised in this policy are adhered to during various project implementation phases.

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

The objectives of the regulations are to establish a system for registration of environmental experts ; provide for a system of nurturing competence , knowledge, professional conduct, consistency, integrity and ethics in the carrying out of environmental impacts studies and environmental audits; ensure that the conduct of environmental impact assessment or environmental audits is carried out in an independent , professional, objective and impartial manners ;and provide for a core of practice of the experts for which the Environmental experts for this project subscribe.

Proponent has commissioned registered environmental Expert to conduct this Environmental Impact Assessment for the proposed project undertaking as the requirement of regulation need registered experts.

The Environmental Management (Fee and Charges) Regulations, 2021

This new regulation shows fees and charges supposed to be paid accordingly. The fees and charges which are supposed to be known by DAWASA are fees and charges for review of Environmental Impact Assessment, Annual Charges for Environmental monitoring and audits, fees for environmental quality standards. The proponent should be aware of these fees and charges and be ready to pay when needed.

The Environmental Management (Hazardous Waste Control and Management) Regulations, 2021

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

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

Construction of water supply distribution pipeline infrastructures is not associated with generation of hazardous wastes. However, if it happens that hazardous wastes are produced the proponent shall adhere to these regulations in handling them

The Environmental Management (Water Quality Standards) Regulations, 2007

The objective of this standard is to enforce minimum water quality standards prescribed by the NEMC. it ensures all discharges of pollutants take account the ability of the receiving waters to

accommodate contaminants without detriment to the uses specified for the waters concerned, so as to protect human health and conservation of the environment. The project will take into account all acceptable practices and regulations thereof.

Legal Framework

The following are the list of legal frameworks or the Acts governing this project sites:

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

The Environmental Management Act Cap 191 (EMA) is a piece of legislation that forms an umbrella law on environmental management in Tanzania. Its enactment has repealed the National Environment Management Council Act. 19 of (1983) while providing for the continued existence of the National Environment Management Council (NEMC).

Among the major purposes of the EMA are to provide the legal and institutional framework for sustainable management of the environment in Tanzania; to outline principles for management, impact and risk assessment, the prevention and control of pollution, waste management, environmental quality standards, public participation, compliance and enforcement; to provide the basis for the implementation of international instruments on the environment; to provide for the implementation of the National Environmental Policy; to provide for the establishment of the National Environmental Fund and to provide for other related matters. Part III, Section 15(a) states that in matters pertaining to the environment, the Director of Environment shall coordinate various environmental management activities being undertaken by other agencies to promote the integration of environmental considerations into development policies, plans, programs, strategies projects and undertake strategic environmental assessments with a view to ensuring the proper management and rational utilization of environmental resources on a sustainable basis for the improvement of the quality of human life in Tanzania. Part VI of the EMA deals with Environmental Impact Assessments (EIA) and other Assessments and directs that an EIA is mandatory for all development projects. Section 81(2) states that "An Environmental Impact Assessment study shall be carried out before the commencement or financing of a project or undertaking", while Section 81(3) states "a permit or license for the carrying out of any project or undertaking in accordance with any written law shall not entitle the proponent or developer to undertake or to cause to be undertaken a project or activity without an environmental impact assessment certificate issued under this Act". The ESIA Was study carried out in order to fulfil the requirements stipulated above.

The Land Acquisition Act, Cap.118 R.E.2002

The land acquisition act requires the minister responsible for land to pay compensation as may be agreed upon or determined in accordance with the provisions of the act. The act stipulates that no compensation shall be awarded in respect of land, which is vacant ground or to be limited to the value of the un-exhausted improvement of the land, in case the development of the land is deemed inadequate.

The acquisition of the land for public use as well as for the resettlement sites is within the provision of this Act. It further defines the requirements for and restrictions on compensation. The project proponent has observed the requirements of the Act.

Energy and Water Utilities Regulatory Authority Act, 2001

The Energy, Water Utilities Regulation Authority (EWURA) was established under the EWURA Act, 2001, with responsibility inter alia for the regulation of the water and sewerage services. Section 28 of the Water Supply and Sanitation Act confers EWURA among others powers to exercise licensing and regulatory functions in respect of water supply and sanitation services; establishment of guidelines on tariffs chargeable for the provision of water and sanitation services; monitoring water quality and standards of performance for provision of water supply and sanitation services. This Act is relevant to this project in that provision of the above-named services (electricity, water supply and sanitation services) during all the project phases will have to be done in accordance with the provisions in Energy and Water Utilities Regulatory Authority Act, 2001.

The Occupational Health and Safety Act No.5 Of 2003

The Act sets provisions for the safety, health and welfare of persons at work in factories and other places of work. It is also meant to provide for the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with activities of persons at work and to provide for connected matters. The project will eventually be a place of work to be registered and comply with OSHA regulations that govern the places of work and observe all safety and health practices at worksites by its consultants, contractors and sub-contractors.

The Urban Planning Act (2007)

The law provides for the orderly and sustainable development of land in urban areas, to preserve and improve amenities; to provide for the grant of consent to develop land and powers of control over the use of land and to provide for other related matters. Under Section 3, among others, the law seeks to improve the level of the provision of infrastructure and social services for sustainable human settlement development. This project has abided by the entire necessary urban planning requirement. The necessary approvals will have to be sought before implementation. In this respect, the project implementation is in line with the requirements by this Act.

Employment and Labor Relations Act No. 6 of 2004

The Act makes provisions for core labor rights; establishes basic employment standards, provides a framework for collective bargaining; and provides for the prevention and settlement of disputes. DAWASA, as well as the project execution supervision staff, shall see to it that the contractor adheres to employment standards as provided for by this Act.

Engineers Registration Act (2007)

The Act regulates the engineering practice in Tanzania by registering engineers and monitoring their conduct. It establishes the Engineering Registration Board (ERB). The law requires any local and foreign-based engineers to register with ERB before practicing in the country. In this respect, therefore, the project proponent shall ensure all engineers working with this project shall abide by the law requirements

The Contractor's Registration Act (1997)

The Contractor's Registration Act requires contractors to be registered by the Contractors Registration Board (CRB) before engaging in any contracting practice in Tanzania. It requires foreign contractors to be registered by the Board before gaining contracts in Tanzania. DAWASA shall comply with the law requirement during the recruitment and engagement of contractors for the implementation of this project.

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

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

The Workers Compensation Act, 2008

This Act provides for compensation to workers for injuries suffered in the course of their employment, which result in disablement or death. This Act needs to be complied with by the project proponent and the contractor. This is because project staff including casual will be exposed to various harmful and hazardous environments during various project implementation phases.

The Land Act No. 4 of 1999

This law declares all land in Tanzania to be "Public land" to be held by the state for public purposes. The Acts empower the President of the United Republic of Tanzania, to revoke the "Right of Occupancy" of any landholder for the "public/national interest" should the need arise. The law also declares the value attached to the land. As has been discussed in this report, the project proponent has obtained all the necessary approvals and requirements as directed and in line with this policy.

Use Planning Act (2007)

Under the provisions of the Town and Country Planning Ordinance also the President is empowered to acquire any land for a project of public interest. The 1956 ordinance after its revision in 1961, states:

Section 45 (1): Where it appeals to the President that it is necessary to acquire any land within a planning area for the scheme applicable thereto and agreement for the acquisition thereof between the Local Authority and the owner of such land cannot be reached, the President may acquire such land under any law relating to the compulsory acquisition of land.

Section 45 (3) Without prejudice to the provisions of any law relating to the compulsory acquisition of land, the purposes for which land may be acquired under the provisions of this ordinance shall be deemed to be the public purposes.

The standards Act of 2009

The Standards Act has established National Environmental Standards Compendium (NESC) which is a collection of various standards prepared at different times and recognized by EMA 2004. NESC comprises of standards that require compulsory compliance. Compulsory standards are categorized as generic or specific. Specific standards cover those industries with peculiar effects to the environment while other industries without a specific standard for Tolerance Limits of Emissions discharge including water quality, discharge of effluent into water, air quality, control of noise and vibration pollution, sub-sonic vibrations, soil quality, control of noxious smells, light pollution, and electromagnetic waves and microwaves. It also has the requisite test methods that should be followed when testing for compliance. The test methods included are referred to in at least one of the specification standards appearing under Part 1. The proposed water supply project will be adhered to this Act requirement, during the implementation.

World bank environmental safeguard policies

As per the World Bank Environmental Safeguard Policies, the proposed projects are required to include measures for environmental and social sustainability comprising of assessment for potential negative impacts. Certain activities during the construction and operation phase of the project may have environmental and social impacts. These can be resolved through adequate mitigation measures. The WB's Safeguard Policies are designed to ensure that the proposed project is environmentally and socially sustainable. For the approval of bank financing, it is essential to ensure that all WB's safeguard policies have complied.

OP 4.01: Environmental Assessment

This operational policy requires Environmental Assessment (EA) for proposed projects to ensure that they are environmentally sound and sustainable. Under OP 4.01, the project will be screened and assigned any of the four categories:

- **Category A:** A proposed project is classified in Category A if it is likely to have significant adverse environmental impacts

- **Category B**: A proposed project is classified in Category B if it has potentially adverse environmental impacts on the human population or environmentally important areas. These impacts are site-specific, few of them are irreversible, and in most cases, mitigation measures can be designed more readily than for "Category A" projects.
- **Category C**: A proposed project is classified in Category C if it is likely to have minimal or no adverse environmental impact.
- **Category FI**: A proposed project is classified as Category FI, if it involves an investment of Bank funds through a financial intermediary, in sub-projects that may result in adverse environmental impacts.

OP 4.04: Natural Habitats

The conservation of natural habitats through specific measures to enhance the environment is essential for long-term sustainable development. This operational policy aims at promoting natural habitat conservation and avoiding unjustified or excessive damage to natural habitats. It is triggered when there is a possibility of significant loss or degradation of natural habitats due to any project activity. The policy also aims at benefitting the natural habitat.

OP 4.11 Physical Cultural Resources

Physical Cultural Resources (or PCR) as per World Bank Principles are defined as resources of archaeological, paleontological, historical, architectural, religious (including graveyards and burial sites), aesthetical, or other cultural significance. The Operational Policy intends to preserve such structures and avoid their destruction or damage. It is important to identify the PCRs and prevent or minimize the adverse impacts. If possible, compensate for these adverse impacts and enhance the positive impacts on PCRS through proper site selection and design.

CHAPTER FIVE

STAKEHOLDER CONSULTATIONS AND PUBLICINVOLVEMENT

5.1 Objectives of Stakeholders Consultation

The overall goal of the consultation process was to disseminate project information and to incorporate the views of stakeholders in the planning of the proposed project. Consultation was undertaken to ensure that the views, interests, and concerns of project stakeholders are taken into account in the assessment of the potential impacts of the project as well as in project decisions, particularly in the design of mitigation measures. In addition, the public consultation aimed to improve communication between the project and impacted or interested groups. The consultation was of critical importance in gaining insights into the key environmental and social issues, concerns of communities and other stakeholders, and in aiding the development of potential strategies for addressing these impacts.

Effective consultation with stakeholders was:

- Key to understanding the concerns and requirements of affected communities and ensure their participation in the formulation and refinement of the project design.
- A prerequisite for sustainable development of the project.

Effective disclosure through the release of timely accurate and comprehensive information to stakeholders is essential to ensure that the likely impacts (both positive and negative) are understood by stakeholders and allow the stakeholders to provide feedback to the project. In the stakeholder's consultation process, different categories of Interested and Affected Parties (IAPs) were identified and consulted. Simple methods such as networks and interviews were used in the process of stakeholder identification. From one stakeholder, the team was connected to another and another stakeholder, in a chain like manner.

5.2 Approach to Stakeholders Consultation

The following are among the methods that were used during field studies to ensure effective public involvement;

- Meetings with stakeholders: Brief meetings were held with heads of various departments of Kigamboni Municipality, ward leaders and beneficiaries of the subprojects. Meetings with government authorities were held in their offices and involved few technical people.
- Direct observations: Some facts were observed directly by the EIA team. The information obtained from this technique assisted the study team to have the starting point during subsequent one-to-one interviews with stakeholders.

5.3 Stakeholder Identification

The stakeholder identification process was based on the consultant's experience in carrying out a similar assignment, review of the literature and discussions with representatives of several institutions within the energy sector. The main criteria in the stakeholder identification were:

- Identifying those involved in the project preparation;
- Identifying those whose administrative boundaries cover the project area;
- Identifying those whose activities coincide or overlap with those proposed by the project; and
- Identifying those who may be directly or indirectly affected by the project.

The key stakeholders identified for this project are presented in the Table 5.1. The list is not exhaustive because stakeholder identification and consultation is a continuous process.

Table 5.1: Identified Stakeholders

Identified Stakeholder	Role And Responsibilities
Vice President's Office - (Division of Environment, DoE)	• Coordinates Environmental Management Policy, Act and EIA guidelines, Approval and signing of EIA certificate
National Environnement Management Council (NEMC)	• Approval of ToR, review of EIA report, Issuing of Environmental Certificate, Environmental Monitoring and Compliance Auditing, Advise Government on all environmental matters
Ministry of Water	• Coordinator of the water sector and spearheads the implementation of the sector strategies
Wami Ruvu Water Basin	• Ensure that water resources are managed sustainably through water governance and integrated water resources management principles, collect water re-sources data and monitor flows, use and quality, Processing of water use permits, Pollution monitoring and control etc
Ministry of Natural Resources and Tourism	• Responsible for sustainable conservation of natural and cultural resources and tourism
Ministry of Labour and Employment	• Responsible organ for labour management issues including occupational health and safety
Ministry of Lands, Housing and Human Settlements Development	• Responsible for land use planning, surveying and demarcating land/parcel/ farms, and provision of land ownership
Department of Antiquities	• Responsible for preservation of cultural heritage resources
Energy and Water Utilities Authority (EWURA)	• Regulator of the electricity, petroleum, natural gas and water sectors
DAWASA	• Owner and operator of the proposed project

Identified Stakeholder	Role And Responsibilities
	• Overall responsibility for the environmental performance of the project Management, implementation, monitoring, and compliance of the ESMP, ESIA, and all approval conditions, including construction supervision and performance of all project staff, contractors, and subcontractors
Tanzania National Roads Agency (TANROADS)	• Provide road reserves use permits for construction of water supply distribution network that shall pass in their area.
Tanzania Rural Roads Agency (TARURA),	• Provide road reserves use permits for construction of water supply distribution network that shall pass in their area.
Occupation Safety And Health Administration (OSHA)	• Advice on things relating to occupational safety and health, policy, principle and guidelines for health and safety supervision to the proposed project
Contractor(s)	• Implement the ESMP based on the framework described by the client in the contract
Supervising Engineer	• Supervision of contractor performance of the implementation of the ESMP • Reporting any incidents of non-compliance with the ESMP to DAWASA
Dar Es Salaam Regional Office	• Provide technical advice and capacity building to Local Government Authorities (LGA) in the region, ensure that social and economic activities are harmonized and aligned to the national development policies and strategies, ensure peace and tranquillity prevail in the region by creating enabling environment for LGAs to perform their functions
Kigamboni Municipal Council	• Oversee and advise on the implementation of national policies at a municipal level, oversee enforcement of laws and regulations, advise on the implementation of development projects and activities at the district level and Monitoring of project activities
Tungi Ward Office	• Oversee general development plans for ward level, • Provide information on local conditions and extension services, Project monitoring in their area of jurisdiction
Tungi Mtaa Office	• Oversee general development plans for Mtaa level, • Provide information on local conditions and extension services, Project monitoring in their area of jurisdiction
Tungi primary School	• Oversee and advice on proposed project.

5.4 Stakeholder Involvement

Stakeholder participation is a process through which different stakeholders are enhanced to influence and share their views about a project and how its development, decisions, and resources will affect them. Comprehensive planning is required to ensure that DAWASA, local government, project staff and affected people interact regularly and purposefully during all stages of the project. The overall goal of the consultation process was to disseminate Project information and to incorporate the views of stakeholders in the design of the Environmental and Social mitigation measures, management plan and Monitoring Plan. The specific aims of the consultation process are to:

- To ensure potential stakeholders support the EIA process of the proposed project from the very beginning;
- To introduce the project to the potential stakeholders;
- To provide information about the project and its potential impacts to those interested in or affected by the project, and solicit their opinion in this regard;
- To identify additional impacts/issues and possible mitigation measures;
- To better understand the stakeholder's practices, perceptions and conditions in the project area; and
- To provide stakeholders with an opportunity to contribute towards the identification of mitigation measures and the Environmental and Social Management Plan (ESMP).

5.4.1 Identification of Issues and Concern

A summary of issues and concerns raised by various stakeholders is presented in Table 6.2 below

Table 6.2: Stakeholders concern

No	Name Of Stakeholder	Concern
1	Managing Director Kigamboni Municipal Council	• Partly water supply in the Kigamboni Municipality is managed by DAWASA and the remaining area rely on the community owned wells for distribution to the people and the users of this service are responsible for the managing the facilities. So for the coming project, all other water distributors will be absorbed by DAWASA • Kigamboni has advantage of having high water table, thus people take this advantage to abstract water for distribution to people. • Formerly the ward water committee was responsible for water management but not anymore, the case after DAWASA became active and responsible for water development and distribution to people.

No	Name Of Stakeholder	Concern
		• Despite the fact that Kigamboni has a high-water table, there is no sufficient water for the peoples' use, the 7 water projects schemes were identified by the district administration and handed them to DAWASA. • In case of any community decision making the community, members should be involved so as to feel part and parcel of the development activities as well as being the overseers of community development decision. That means that during water supply projects implementation the community members and extension officer have to be involved fully in all steps of implementation of water projects for them to feel part and parcel of the water project. • Land for water tank construction was provided by the DED – meaning nobody no one will have to let go his/her piece of land. • During construction of the water tank it is important to ensure quality of the water reserve tank during construction • During construction locally available building materials available in the area should be used as long as the quality is same as the one advised by engineers • Non skilled jobs have to be sourced out to local people within the area of the project. • Involvement of the ward leaders during construction to avoid doubts of quality construction
2	Ms. Halima Abdallah (hydrologist)- WRBWB	• It is the responsibility of the WRBWB under hydrologist department to ensure care to the ground water quantity and quality, monitoring the fluctuations of water in rivers and wells. i.e. withdrawal of water above the quantity allowed and to supervise sources available and functioning and identify new sources • Degradation of sources due to encroachment to sources leading to erosion, siltation, and turbidity. This causes costs to DAWASA in cleaning water and quality. • Tree cutting leading to climate change and water fluctuation.
3	Mr Peter Mdalangwila (Manager) - DDCA	• Most of the areas identified for water supply by DAWASA, they use water from unreliable and unsafe sources, as well as salty water sources. This situation is expected to be eradicated by DAWASA • Quality of work is supposed to be verified during construction so as to avoid disaster. • Most areas are sandy and curving in of wells is possible- this should be taken very seriously • Pollution of water is very possible due to closeness of settlements

No	Name Of Stakeholder	Concern
		• Construction of houses close to water sources leads to water pollution leading to sickness of those using the contaminated water. • For those areas that are encroached by buildings, the depth of the wells should be deep to 100 mts or more so as to be sure of the water safety for users • The water supply sources, the areas should be demarcated and fence to ensure no encroachment of buildings take place.
4	Mwajabu Bura (Environmental Expert) and Emmyelda Mcharo (Social Expert) - MoW	• People need clean and safe water for health safety thus reducing water borne diseases. • Availability of reliable safe water will reduce time invested in searching water, and allocate the saved time to family matters. Work load to women will be reduce allowing more time for economic activities to improve household income. • During project implementation, it is important to note that there will be short term disturbance to the residents where the project is being implemented. • During project implementation, it is important to raise awareness to the communities few days before commencement of project implementation so as to control or reduce complaints from the project implementers. Awareness raising to solicit the support of the community members during project implementation. • During and after project implementation there will be more water waste leading to formation of water ponds – leading to increase in mosquitoes and malaria. To control the situation the water ponds should be filled to eliminate ponds and control diseases like malaria. • Involvement and participation of the beneficiaries to bring about harmony in the society. • Make sure there is provision of services for those who don't connect their house/compound with water in order to avoid illegal obstruction. • According to the project locations there are community settlements – this must be dealt with maximum care to avoid any conflict with them. This is possible through consultations with their leaders at the very start of project implementation. • During well execution there will be destructive activities i.e. formation of heaps of soil- after project completion; these heaps of soils should be distributed and leave the areas as was before the project implementation. - According to HSE • During project implementation, it is important to follow environmental management and World Bank laws and regulations

No	Name Of Stakeholder	Concern
		• Environment effects should be properly identified during implementation and should include costs of the project defects.
5	The general Community (Tungi ward)	• At the beginning of the project, DAWASA called a meeting for people to discuss about the upcoming water project for some areas in the ward. The discussion involved informing the people that nobody will need to let go of his/piece of land to give way for pipeline or space for water tank construction. This is because DAWASA will purchase places for constructing water tanks. As for piping system it will be laid along the road and not in any ones piece of land. • DAWASA should conduct meetings frequently to communicate with customers and have dialogue with water users • In-case of any problems the community/ward members will present the problems to the right authorities- district offices or DAWASA offices in behalf of the community members. • The meeting participants requested that the youths and abled people should be given short employment during project construction of tanks and pipe laying, as well as construction of reserve tanks. • Water scarcity is the critical problem in dry months of the year, life becomes very burdensome especially to women and children • The meeting members requested that DAWASA should carry out awareness before and during project implementation for security and people to understanding what is happening in their surroundings.
6	Tungi Mtaa Office Sylvester Mombo	• To introduce all mtaa security guard team to contractor so as to improve community security • To employ local people whenever necessary during project implementation
7	Tungi primary school Mr. Twidike A Ntwima	• The proposed project has been accepted and shall hinder socio-economic development • They ask for construction of fence and increased security in the reservoir tank area. • Consultation of local government authorities during project implementation.
8	OSHA Esther Salum	• DAWASA should register the project in our online system(wins) • There should be trained first aider and safety representatives • There should be a complete first aid kit • Contractor should provide clean and safe portable water to workers • Conduct safety induction to all new workers

No	Name Of Stakeholder	Concern
		• There should be OSHA policy written in both English and Kiswahili language • There should be emergency preparedness plan
9	TARURA Eng. Anita Katiyuhagira	• During project implementation DAWASA/Contractor should communicate with TARURA so that to offer supervision to avoid destruction of infrastructures • Pipelines has to transverse along the road reserve and in case the pipeline has to cross road TARURA should be informed • Contractor must to do levelling immediately after laying pipelines • Cleanliness of areas where pipelines have passed through should be adhered • Maximum depth to dig for laying pipes is 1 metre
10	TANESCO Deck Mayunga	• During implementation phase DAWASA/contractor should consult TANESCO because sometimes it might need cut off electricity • Pipes must be laying at least 1 foot away from electricity pole • Pipelines trenches close to poles must be backfilled immediately

CHAPTER SIX

PROJECT ALTERNATIVES AND IDENTIFICATION OF POTENTIAL IMPACTS

6.1 Introduction

During the implementation of the project various social and environmental impacts may arise from different execution phase of the project starting from the mobilization, implementation and decommissioning phase. Details of environmental and social impacts of the project based on the project phases are presented in the subsequent subsections.

6.2 Mobilization phase impacts

6.2.1 Potential Positive Impacts

Employment Opportunities: During the mobilization phase there will be possibilities for temporary employment in such jobs like clearing of pipe routes and securing of field equipment. Temporary employment will also be possible for food vendors found along the project route meant to feed the project labour.

6.2.2 Potential Negative impacts

a) **Loss of vegetation due to site clearance:** Mobilization is meant for preliminary works proceeding pipe installation works. Such works includes marking of the project routes and site clearance. Loss of vegetation is the most significant impact expected during this phase. Grasses, shrubs, small trees of different trees will be uprooted.

b) **Increased traffic jam during the haulage of pipes to the site**

During the mobilization the contractor will deliver the pipes to the sites. During this process the tracks may intensify traffic jam along the roads that will used for the transportation of pipes. Similar impacts might happen during the transportation of heavy equipment (generators, excavators, and pipe fusing machine) that will be needed in the field.

c) **Interruption of public utility services:** Transportation of field equipment at some point will be along the public service lines along which water, electricity and gas pipeline are laid. Such activities might interfere with the delivery of the existing utility lines.

6.3 Construction phase

6.3.1 Potential Negative impacts

a) Increased waste generation: During construction phase waste generation may increase along the project corridor. The generated waste will be a problem only if there will be a poor waste management plan at site. Increased wastes may come from such activities as excavation of trenches, pipe fusion and from temporary campsites.

b) Increased traffic jam: During the installation of pipes, traffic jam and inconveniencies to pedestrian will be among the major impacts of the project especially in areas where the pipeline Road Cutting will take place. These areas may also become hotspots for social and environmental hazards.

c) Generation of Noise, Dust and Air Emissions: Currently, the soil cover onsite is well covered, thus there is minimal dust emissions from the site. During the construction phase, dust and air emissions are expected from open soils, material handling and general earth works and from vehicles and machinery exhausts.

d) Risks of Accelerated Spread of HIV/AIDS: Interactions of people (Job seekers) during construction phase is inevitable. Unhealthy social interaction might result in an increase in the incidence of diseases including STI and HIV/AIDS.

7.3.2 Potential Positive impacts

a) **Improved Health and Personal Hygiene**: The proposed project will decrease health risks of the people. This will be achieved through washing and bathing as a result of improved water availability

b) **Improvement to the Wellbeing of the Community:** This will be achieved through the availability of water service. It will save people's time especially women and teenagers who are the main fetcher of water.

c) **Increased Revenue Collection:** DAWASA will have new sources for revenue collection

6.4 Operation phase impacts

6.4.1 Potential Positive impacts

During operation phase of the proposed project, the following environmental and socio-economic positive impacts are expected to be occurring:

i) Increased accessibility to safe and clean water
ii) Improved personal hygiene through washing and bathing as a result of improved water availability.
iii) Saving people's time especial women and teenagers who are the main fetchers of water.
iv) Employment opportunities to locals as watchmen of new water reservoirs and other appurtenances
v) Improved Health and Sanitation status of the people in the project areas
vi) Increased economic opportunities, especially for businesses that demand water

vii) Increase revenue to DAWASA

6.4.2 Potential Negative Impacts

i) **Increase wastewater generation:** Increased water supply in the project area will lead to the increase of wastewater in Tungi Mtaa served with the project. Technical estimation indicates that 80% of supplied water will turn to wastewater.

ii) **Impacts on downstream users:** The proposed project will affect downstream users who may include rural communities, farmers and commercial enterprises that abstract water from Ruvu River downstream to the proposed water supply project intakes.

iii) **Impact on water vendors:** Whilst most households will receive real tangible benefits from the operation of the improved infrastructure, there is one social group, the water vendors, who are likely to have their livelihoods seriously undermined following project implementation. The water vendors are the men (very rarely are women) who currently collect water and sell it on to individual users.

iv) **Increase of criminal offences:** Project implementation will have an influence on the demographic characteristics of the area. During the operation, skilled personnel will add on to the local population labour force. There is also a possibility that the community will receive an influx of labourers looking for employment as well as people migrating from other wards looking for suitable areas to live and invest. Therefore, there will be high possibility of incidence of crime as the outcome.

6.5 Decommissioning phase impacts

6.5.1 Potential Negative Impacts

Demobilization will involve the removal of construction equipment from site after successful construction phase, while decommissioning for this project is not considered to be in a near future, although considerations to the impacts that might occur have been considered in case of any unforeseen catastrophe or natural calamities such as drought or floods, a project can be decommissioned.

i) **Loss of Jobs:** The demobilization of contractor on site is likely to affect employment opportunities to the local community. Civil construction works will be terminated at this phase; no construction work will be required.

ii) **Waste disposal:** Demobilization of contractor's workshop and campsite is closely associated with chemical spills and disposal of used furniture e.g. Kitchen utensils, broken tables, broken chairs, used car parts/scrapes and other solid wastes that may cause health hazard to humans and soils.

iii) **Abandoned infrastructures:** At the end of the operation, the project will be decommissioned and thus bring all the operations to a complete stop. The infrastructure facilities erected in the area..

iv) **Loss of Vegetation:** During the decommissioning phase different routes for demobilization of field equipment may result into further loss of vegetation if defferent routes will be opted. Loss of vegetation may also happen if backfilling of the trenches is not properly done using the dug soils

6.6 Project alternatives

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

6.6.1 No Project Alternative

The no project alternative entails leaving the status of the water supply at Tungi as it is right now. The available water in the boreholes is inadequate to meet the current demand of the people. Therefore, there is a need for improving water supply in Tungi by construction of water storage capacity and expansion of water distribution system. Adopting the proposed construction of the Water Supply system would mean avoiding most of the negative effects associated with the presence of the Water Supply and missing all the positive benefits such as benefits to communities resulting from adequate and portable water for drinking after construction. The improved water supply will improve public health and well-being of the societies in Tungi ward as well as enhancing economic growth.

6.6.2 Alternative sources of water

The option of using an offtake from the existing water supply mains from Ruvu apart from the earlier proposed boreholes was considered. However, the option to use an offtake was observed to have the following advantages:

i) The source has over enough quantity and portable water required for supply
ii) Water extraction technology is cheaper as compared

Comparing the proposed source with the existing ground water source option, it shows that there is no enough hydrogeological data to assure the quantity and quality of the underground water to meet water supply demand of Tungi ward.

6.6.3 Alternative water flows

In water supply projects, there are two systems which can be adopted in transmission and distribution of water in pipelines, this includes pumping and gravity system. The selection of the two systems depends on the nature of the topography in the project area, selected location of borehole and the pipeline route. This project will have pumping system only because of the nature of area and pump has the power for pumping water to all proposed site. Water from borehole will be pumped to the treatment unit and then pumped to the clear water tanks at Tungi, after that water will distributed to the end user. The gravity system from an offtake will reduce use of energy storage tanks, hence the cost of operations and maintenance are minimized. Gravity system was generally the lowest-cost means of conveying water compared to pumping systems.

6.6.4 Alternative sites

Intake structure: Selection of sites for location of intake structure depended on available of quantity and quality water from such source. Another important factor to consider is the possibility of transmitting water by gravity to the treatment plant and later to consumers.

Treatment unit: The location of the treatment unit was selected based on several criteria, including: (i) location close to the intake point, to minimize pumping costs (ii) availability of space (iii) elevation of the points, to allow gravity flow from the plant to the distribution lines.

Two sites were evaluated. The proposed site was selected after fulfilling two criteria. It is close to the target community and it has adequate space to accommodate all the required facilities. The third criteria will be taken care after monitoring the water quality from this project.

Pumping stations: the location of the pumping station was selected due to the purpose of increase water pressure to reach the maximum head which will allow water to enter into the tank. Using an offtake as a feasible option to be used for this project was the best option as there will be no need to build a new intake, treatment unit and a pumping station.

6.6.5 Water storage reservoir

During selecting location site for reservoirs, site inspection was done thoroughly to find the best site. Site selection for reservoir construction was based on the following criteria:

i. Physical suitability of the reservoir site;
ii. Topography of the area to allows water flow by gravity to all respective area of Tungi ward.
iii. A land space that can allow a relatively large volume of reservoirs with low construction costs (avoid unnecessary cost of levelling of the hills to establish foundation structures).

After the analysis, the selected site was found to be most suitable alternative for location of storage reservoir. However, the availability of land was limiting and therefore the inclusion of storage reservoir was discouraged over an offtake alternative.

6.6.6 Alternative designs of the supply system

Water supply service is a challenge in the Tungi ward. The available groundwater sources are inadequate to meet the current demand of the people living in that area with capacity of 63.2 m^3/hr. The designed system is highly recommended to make the system running at its full capacity. Main principle considered in the design is that water has to flow by pumping to provide sufficient pressure for the water to reach the target areas. An attempt was made to adopt the standard designs of the components and structures used in the construction of the pumping house, borehole drilling and distributions system. The design criteria adopted can be seen to be the appropriate design for particular system because it meets the standards requirement as per Maji Design Manuals prepared by the Ministry of Water. This is the appropriate design given the nature of number and nature of economic activities use and the available technology.

6.6.7 Construction Technology Alternatives

The project construction technology considered the alternative constructions method statement according to the agreed design (design and built). The technology to be used in operating the system involves automatic and manual devices in distribution network, isolating valves, air relief valves and pressure reducing valves shall be provided wherever they are required in the distribution network and in the gravity mains to facilitate smooth operations of the system. The project will cover areas of Tungi.

6.6.8 Alternative Water treatment technology

The design team considered Conventional Vs Mechanical water treatment technologies. The use of alternate's technologies of the design of water treatment of Conventional and Mechanical water treatment the criteria considered is as followed. Construction and operation and maintenance is friendly (material, technology, cost). Mechanical treatment plant uses a lot of energy to run the equipment and operations and maintenance will be hard as unavailability of spare in the local market hence convention use of chlorine for treating water will be more appropriate.

CHAPTER SEVEN

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

7.1 Impact management Plan

The Environmental and Social Management Plan (ESMP) (Table 7.2) presents the implementation schedule of the proposed mitigation measures for both environmental and social impacts as well as planning for long-term monitoring activities. For the construction of borehole, treatment unit, storage tank and distribution networks. The ESMP for this project also includes the associated environmental costs needed to implement the recommended mitigation measures. The proposed costs are only indicative, should the proposed development proceed with the suggested changes, the developer will work out on actual costs and include them in the overall cost of the project. The ESMP also provides key players for the implementation of the mitigation measures like the contractor, the Resident Engineer, DAWASA/DAWASCO, and water users and the local communities at large.

7.2 Implementation of the management plan

The environmental and social mitigation measures incorporated in the detailed engineering design shall be handed over to the contractor during construction period. The Contractor shall take stock of the contents of the Environmental and Social Management Plan of the Project. The contractor shall implement the ESMP during the construction period under close supervision of consultant management. During the Operation Phase, the implementing agency and operation team will implement the ESMP.

A safeguard coordinator who shall be holder of at least bachelor's degree in Environmental studies shall be appointed to assist the Resident Engineer, in order to make sure that the environmental and social measures recommended in ESMP of this report are effectively complied with and timely adjusted whenever necessary.

The project shall set a budget for trainings where an Environmental expert of the supervision team will conduct on-job training including counterpart staffs as assigned by DAWASA for learning purposes. DAWASA shall provide the Ministry and NEMC with reports on environmental compliance during implementation as part of their annual progress reports and annual environmental monitoring reports. NEMC shall perform annual environmental reviews based on project ESMP. Table 7.1 summarizes the institutions responsibilities for the implementation of the ESMP.

Table 7.1 Roles and responsibilities in implementing ESMP

Institution	**Department**	**Roles/responsibilities**
Contractor	Resident Engineer	To implement the ESMP during

Institution	Department	Roles/responsibilities
		Construction
Supervision firm (WAPCOS)	Environmental Supervisor	• To supervise the Implementation of ESMP by the contractor during Construction • Oversee the inter-institutional coordination for environmental mitigation, monitoring and supervision. • Liaise with NEMC, DAWASA/ DAWASCO and the Ministry of Water and Irrigation.
DAWASA	Technical Department/ Counterpart Staff	• To assist the Contractor and Safeguard Coordinator in ESMP Implementation during construction • To implement ESMP and Monitoring programme during operation phase
Municipal (Tungi and Kigamboni Municipal Council)	Town Planning, Works and Environmentalist	• The Environmental Section: To oversee the environmental management of the Municipal, Town and the District including the project area • The Water Section: Deals with water supply issues in the municipality such as Municipal Engineer
NEMC	General Director	• Deal with Environmental Management in Tanzania • To conduct annual Environmental review

Table 7. 2: Environmental and Social Management Plan

Identified impacts	Mitigation and enhancement measure	Responsible institution	Time frame	Indicative budget (Tsh)
PRE-CONSTRUCTION AND MOBILIZATION PHASE				
Increased access to temporary employment	• Giving employment priority to members of the project sounding community to enhance a sense of project togetherness	Contractor	Mobilization phase	None
Loss of Vegetation due to site clearance	• Do not cut any tree unless it is critically necessary • Selection of route to avoid forested areas and biodiversity hotspots	Contractor,	During Mobilization	1,000,000
Increased Traffic jam during haulage of pipe to site	• Take all precautions during the haulage of pipe to site including traffic control to prevent accident.	Contractor	During Construction	1,000,000
Interruption of utility services	• Haulage of equipment to the site should be well planned ahead of transportation schedule	Contractor	Mobilization	500,000
CONSTRUCTION PHASE				
Increased waste Generation	• Prepare a Plan for a good handling of waste at site • Ensure all the workers are aware of waste management procedures designed in Waste management plan	Contractor	During construction	1,000,000

Identified impacts	Mitigation and enhancement measure	Responsible institution	Time frame	Indicative budget (Tsh)
Traffic jam and pedestrian flow disturbance	• Provide all safety access measures to control traffic jam • Limit the working hours of machines and Cars used at site • Carry out the Constructions work during the day time to prevent accidents and incidents that may happen • Provide temporary access to pedestrians when necessary • Installation and maintain appropriate sign	Contractor	During Construction	5,000,000
Generation of noise, dust and air emission	• The developer shall avoid, or minimize, heavy truck or noisy material processing facilities through or near residential areas. • High noisy activities shall be done during day time and thus reduce the level of disturbance at night • The developer shall reduce dust emissions by regularly spreading water on working surfaces and unpaved roads.	Constrcator	Construction phase	3,000,000
Acceleration spread of HIV/AIDS	• Health awareness education to all involved in the project including community who are proving services around the site. • The contractor should have bylaws that restricts the workers to move unnecessarily so that to avoid social impacts • Construction workers to undergo health check-ups according to the National HIV/AIDs Policy	Contractor	Construction phase and mobilization phase	6,000,000
Improved health and personal hygiene of the community	• The proponent shall ensure reliability and sustainability of the project through the design project	DAWASA	Operation phase	8,000,000/year
Increased revenue collection by DAWASA	• The proponent shall ensure reliability of the project through the through extension of water supply service to a wider community around and along the project route	DAWASA	Decommissioning and operation phase	3,000,000

Identified impacts	Mitigation and enhancement measure	Responsible institution	Time frame	Indicative budget (Tsh)
OPERATION PHASE				
Increased accessibility to safe and clean water	• DAWASA to conduct regular monitoring of the water supply systems, and to conduct scheduled and emergency maintenance of the systems. • DAWASA to conduct regular water quality and quantity monitoring, to ensure there is no cross contamination along the transmission line.	DAWASA	Operation phase	Cost to be included in DAWASA Annual budget
Increase wastewater generation	• Support the development of wastewater management options by making the increased water supply information available to the appropriate entities. • Collaboration with other stakeholders/financers so as to find ways to enable the expansion of the wastewater collection and treatment facilities, especially in Dar es Salaam City. In addition, efforts should be made to support water dependent on site sanitation system by increasing cesspit emptier services.	DAWASA/DAWASCO/ Local communities	Operation phase	NA
Risk of cross contamination along the transportation lines in case of leakages.	○ DAWASA to conduct regular monitoring of the water supply systems, and to conduct scheduled and emergency maintenance of the systems.	DAWASA	Operation Phase	Costs to be include in DAWASA annual budget
DECOMMISSIONING PHASE				
Loss of vegetation	• Replenish vegetation by planting trees in all possible areas • Do not cut any tree unless it is critically necessary • Selection of route to avoid forested areas and biodiversity	Contractor DAWASA	During Mobilization	1,000,000

Identified impacts	Mitigation and enhancement measure	Responsible institution	Time frame	Indicative budget (Tsh)
	• hotspots			
Soil erosion	• Ensure thorough compaction of trenches and replenishment of vegetation should be emphasized	Contractor		1,000,000
Decrease revenue collection by DAWASA	• The proponent shall ensure reliability of the project through extension of water supply service to a wider community around and along the project route	DAWASA	Decommissioning	3,000,000

CHAPTER EIGHT

ENVIRONMENTAL MONITORING PLAN

8.1 Introduction

Monitoring will involve the continuous or periodic review of mitigation activities to determine their effectiveness. The objective of monitoring plan is;

- To monitor the effective implementation of mitigation measures during the construction phase
- To confirm compliance with environmental, social and safety legislation/regulations during construction;
- To control the risks and ecological/social impacts;
- To ensure best practices management as a commitment for continuous improvement in Environmental and social performance;
- To provide environmental information to community/stakeholders;
- To provide early warning signals on potential environmental degradation for appropriate actions to be taken to prevent or minimize environmental consequences.

Thus, in monitoring process the contractor shall ensure that all addressed issues on the ESMP are well implemented based on the action plan, responsibility and response time, as shown in the Table 8.1.

Table 8:1 Environmental and Social monitoring Plan

Environmental /Social aspect	Parameter to be Monitored	Monitoring Frequency	Sampling area	Measurement Unit/	Method/ Instrument	Target level /Standard	Responsibility	Estimated annual cost
MOBILIZATION PHASE								
Increased access to temporary employment	Number of employments	Monthly	Among the employees	Employment	Recruitment reports	Local employment to the locals	Contractor,	
Loss of Vegetation due to site clearance	Trees, Shrubs	Monthly	Along the project route	Number of trees and shrubs	Observation	No loss of vegetation	Contractor,	1,000,000
Increased Traffic jam during haulage of pipe to site	All road Users	Daily	Constructio n area	NA	NA	No traffic jam	Safety officer, Site Engineer	1,000,000
Interruption of utility services	Service availability	Weekly	Population along the haulage route		Interview	Immediate restoration of services	Contractor	500,000
CONSTRUCTION PHASE								
Increased waste Generation	Amount of Solid waste generated	Once per Week	Constructio n area	Kg	Waste collection bin	All waste Collected and Disposed	Contractor Environmentalist, Site Engineer	200,000

						Properly		
Traffic jam and pedestrian flow disturbance	All road Users	Daily	Construction area	NA	NA	No traffic jam	Safety officer, Site Engineer	1,000,000
Generation of noise, dust and air emission	Particulate matter, PM2.5, PM10, NOx, CO, CO2 and SOx)–Daily average of hourly values 0.1mg/kg or 0.5mg/Nmfor10 minutes CO–the maximum exposure of 100mg/Nm for a period not exceeding 15 minutes.	Every month of the entire project period	Construction area	$\mu g/m^3$	PCE Instrument	Dust; Air Quality as per TZS4: 1979 i.e., 20 $\mu g/m^3$	Environmentalist, Safety	2,000,0000
Acceleration spread of HIV/AIDS	Cases of HIV/AIDS	Monthly	Community around the project area	Number of cases	Testing	No case	Contractor Sociologist, Environmentalist Site Engineer	1,500,000
Soil erosion	Gullies formation	Monthly	Project corridor	Number of gullies	Observation	No erosion	Contractor	
DECOMMISSIONING PHASE								

Particulate matter and air emissions	Particulate matter (PM10 and PM 2.5), NOx, SOx, CO and CO2	Monthly	Project corridor	Parts per million (ppt)	Standard method	Dust; Air Quality as per TZS4: 1979 i.e., 20micro grams	Environmentalist	5,000,000
Improved health and personal hygiene and wellbeing of the community	Water borne diseases cases	Monthly	Community around the project area	Cases of water borne diseases	Review of hospital records	No cases	DAWASA	2,000,000/ Year
Increased revenue collection by DAWASA	Number of new customers	Monthly	Along the Project corridor	Number of new connections	Observation	No erosion	Contractor	

Source: Consultant's analysis, 2022

CHAPTER NINE

9.1 Emergency preparedness

The project implementation is associated with several environmental and social Risks. These are identified in this section together with its preparedness plan. The possible environment and human health and safety risks in the construction phase related to the excavation of the pipeline and installation mostly occur during the construction works. Construction related accidents could be fatal, leaving the injured person unable to perform their work in future. The impacts could have permanent effects on the affected persons, however construction related injuries are rare thus are classified as a having a low significance for the proposed project phase. A number of occupation risks can be predicted including but not limited to:

9.2 Dangerous Activities Related to Human Health and Environment

In the construction phase of the pipeline project, the risky activities that could relate to human health and safety are mostly related to the accidents that might happen to the workers. In this case the contractor company carrying out the construction shall take measures to ensure the safety rules are put in place to avoid such risks.

There shall be minimum use of dangerous chemicals during the construction phase, but if available, the contractor company shall make sure protective measures are put in place to minimize potential environmental pollution.

9.3 Pipeline Route Risks

Construction works shall be carried along the pipeline route (30 km), with pipe thickness of 16” which will be used to transport the gas. The pipeline shall be installed in a depth of approximately 2.0 m in normal conditions, but expected to be deeper in areas along special crossings. Risks of damage to the pipelines caused by human mistakes might occur.

There is also a risk of workers who will be constructing the pipelines under high tension power lines along the pipeline route.

Other risks that might occur during this phase include:

i. Risks of conduction deep excavation adjacent major water supply pipelines
ii. Risks associated with working with heavy machines (risks of accidents and injuries)
iii. Risks of falling into deep trenches
iv. Exposure to fumes from exhausts of heavy equipment, and dust
v. Exposure to noise and vibration produced by heavy equipment
vi. Exposure to sunrays and they work during the day time

CHAPTER TEN

DECOMMISSIONING PLAN

10.1 Introduction

As decommissioning will take place in the remote future, the specific conditions for mitigation are generally inherently uncertain. In view of this, specific mitigation measures pertaining to environmental impacts of decommissioning works cannot be proposed at the moment with a reasonable degree of certainty.

A detailed decommissioning plan that takes environmental issues into consideration shall be prepared by the proponent prior to the decommissioning works. Should it occur, decommissioning may entail change of use (functional changes) or demolition triggered by change of land use. Therefore what is presented here is just a Preliminary Deccommissioning Plan which merely sheds some light on what shall be done if the need for decommissioning arise.

Decommission may involve demolition of structures and site restoration. It is therefore for the installed pipelines, equipment's and the technology used to become obsolete in less than the life span of the project. This will need replacement and upgrading of the systems and associated accessories. If the upgrading is not possible the infrastructure will be removed and site rehabilitated to their original conditions.

10.2 Preliminary Decommissioning Plan

This Section provides a brief outline of the works required to demolish the proposed project components on the site incase it happens. This Plan will be used as a reference document that provides the framework to ensure that demolition activities on the site do not adversely affect the health, safety or the environment of the public and neighbouring commu nities in access to water.

The Contractor will be required to prepare a detailed Demolition Plan and Construction Management Plan to the satisfaction of the proponent and relevant Authorities prior to the commencement of works on site.

10.2.1 Components to be Demolished

The project components to be demolished shall generally be the infrastructures used for pumping and distribution of water to end user.

10.2.2 Demolition Methods

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

- The digging and removal of non-structural elements will be undertaken utilising manual labour and small plant including – bobcats, 3-5t excavators and dingo type loaders.
- The materials will be removed from site using small to medium sized trucks.
- The engineer will be engaged to provide further engineering advice in relation to temporary support or backpropping of the structure during the remove.
- During the demolition process erosion control measures will be established. These will include treatment of dust and potential discharge into stormwater systems.

10. 2.3 Materials Handling

Materials handling will be done by mechanical plant (including excavators and wheel loaders) loaded into trucks (bogie tippers and semi trailers). The debris will be hauled offsite to an approved waste facility or recycling centre as DAWASA will see feasible.

The contractor shall submit a Demolition Waste Management Plan to DAWASA, which outlines the objectives of:

- Maximisation, reuse and recycling of demolition materials
- Minimisation of waste disposal
- Evidence of implementation for specified arrangements of waste management

Reusable materials will be reused for improving other releted infrastructures. Recycling and disposal containers will also be accommodated at this location for collection vehicles. In case of any Hazardous materials will be handled separately. A hazardous materials inspection will be undertaken by an accredited consultant and a report issued. Hazardous materials will be removed in accordance with EMA, 2004. A final clearance report will be provided by the hygienist which will include the provision of tip dockets from waste centres.

10.2.4 Proposed Sequence

The Contractor will be required to prepare the following documentation prior to the commencement of demolition of infrastructures:

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

In principle, the demolition process is undertaken in the reverse sequence as construction. Essentially, Service amenities will then be removed including pipework. The facades will be removed where necessary and the structure will then be demolished using the larger equipment. It is estimated that it will take 3 months to demolish and clear the site.

10.2.5 Protective Measures

During the demolition, dust control measures will be used to minimise the spread of dust from the site and workers having appropriate PPEs. The Contractor will have a senior representative on site at all times to ensure compliance with the safety guidelines and agreed work methods.

10.2.6 Occupational Health and Safety

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

10.2.7 Impacts and mitigation measures

The expected impacts during the decommissioning phase are similar to the impacts identified during construction phase and the same mitingation measures will be applied.

CHAPTER ELEVEN

SUMMARY AND CONCLUSION

The proposed project with an off-take from Ruvu transmission main will be implemented in specific project locations within Ferry ward. The project will address existing and future water supply related challenges to many dwellers in Kigamboni and Dar es salaam at large. The project has few negative environmental and social impacts most of which are short term while offering a wide range of long term positive socioeconomic benefits. The positive benefits of the proposed project have ripple impacts to the wider community within and around the project areas. Such benefits include but not limited to improved sanitation and hygiene conditions of the communities which are important for sustainable community development. The project as such, entails minimal and short term adverse environmental impacts of which adequate mitigation measures have been proposed and incorporated in the project implementation.

Therefore, it is concluded that the project will entail no significant negative impacts provided that the recommended mitigation measures are adequately and timely implemented. The identified impacts will be managed through the proposed mitigation measures and implementation arrangements proposed in this submission. The implementing agency is committed to implement all the recommendations given in this report by carrying out the environmental audit and monitoring of the project is essential. When finalized, copies of this work will be submitted to local government authorities within project area (Ferry ward). This will create awareness of the local government authorities on the proposed project and the mitigation measures. Awareness creation will also enable the authorities to effectively participate in the implementation and monitoring of the project.

REFERENCES

1) Socio-Economic Profile for Kigamboni Municipal Council (Draft, 2021)
2) Dar es Salaam City Council Environmental Profile 2009
3) Long Range Strategic Plan 2005/6 – 2009/10
4) United Republic of Tanzania (2005), EIA and Audit Regulations
5) United Republic of Tanzania (2007), EIA Guidelines (Draft)
6) World Bank Operational Policy 4.01

ANNEXURE I: STAKEHOLDER CONSULTATION - MINUTES OF THE MEETINGS

01. MAHUDHURIO

1. RAMADHANI KAYUNGA — M/KITI
2. VITUS DEZIDERI — KATIBU
3. KHATIBU H. KITWANA — MJUMBE
4. ABDALLAH BAKARI — MJUMBE
5. FARIDA MTOTO — MJUMBE
6. MARK STANLEY — DAWASA
7. ROBERT CHENGE — DAWASA
8. Nyamsaeli Palangyo ~~MRS TAIANJO~~ - CONSULTANCY (WAPCOS)
9. ZACHARIA KALIMBI - DAWASA

02. AGENDA

1: KUFUNGUA KIKAO
2: UTAMBULISHO WA WASHIRIKI
3: MAELEZO YA WATOA MADA KWA WASHIRIKI
4: MAJADILIANO JUU YA ESMP
5: KUFUNGA KIKAO.

03. KUFUNGUA KIKAO.

Mwenyekiti wa mtaa alifungua kikao mnamo saa 10:30 kwa kuwakaribisha washiriki katika kikao.

04. UTAMBULISHO WA WASHIRIKI

Mwenyekiti aliwakaribisha wajumbe wote pamoja na wageni waliohudhuria (kuwa ni pamoja na kuwatambulisha wajumbe wa serikali ya mtaa na wajumbe (wageni) kutoka DAWASA).

05. MAELEZO YA WATOA MADA KWA WASHIRIKI

Mwenyekiti wa mtaa alitoa nafasi ya watoa mada kuongea na washiriki baada ya utangulizi hapo nyuma kwa kuwa kumtambulisha mwakilishi wa mtaa mada kutoka kwa mkandarasi Mshauri wa mradi (WAPCOS).
Wawakilishi toka Dawasa walipata nafasi ya ushiriki kikao hiki walipata nafasi ya kueleza wajumbe maendeleo ya mchakato kwa ujenzi wa miradi hii uliyo chini ya ufadhili wa Benki ya Dunia kwa ujumla kwa mtaa wa Tungi. Pia waliwasihi wajumbe wa kikao kuipokea miradi hii kwa mikono miwili ili ije kuwa mkombozi wa kweli kwa kuwapatia maji safi na salama.

Baada ya wawakilishi kutoka DAWASA mwenyekiti alimkaribisha mwakilishi kutoka Kampuni ya Mkandarasi mshauri. Ili aweze kueleza dhumuni la kikao hiki ambaye alianza kwa kuwaelekeza juu ya uwepo wa kamati yoyote ya mradi wa maji na kuwamba namna mavyoshiriki shwa kwenye utekelezaji wa miradi kwa kuainisha maeneo ya ujenzi wa matanki, uchimbaji wa visima na ujenzi wa vitu vya kuchotea maji. Pia alitaka kujua kama shida kwenye fidia ya maeneo ambayo mradi utapita.

06 MAJADILIANO JUU YA ESMP

- Jamii ilitoa malalamiko juu ya gharama za maji kwa kubwa walilinganisha na zile huduma za miradi ya Jamii hapo awali na maji kukatika katika kila mara kutoka mechefu (yenye tope).
- Pia baada ya kuingia dawasa mabomba yamekuwa yanapasuka hiyo ni kwa sababu ya pressure kuwa kubwa.

07. KUFUNGA KIKAO

Mwenyekiti alifunga kikao mnamo saa 12:30 mchana. Mwenyekiti alishukuru Wajumbe na Wajumbe kwa kushiriki vyema katika kikao hicho.

RAMADHANI KAYUNGI
MWENYEKITI

MWENYEKITI BARAZA LA MADIWANI
TUNGI

VITUS DEZDELI
KATIBU
AFISA MTENDAJI WA MTAA
TUNGI

MUHTASARI WA KIKAO CHA WADAU WA MAZINGIRA (ESMP) NA WATENDAJI WA MITAA, WENYEVITI NA WAJUMBE KILICHOFANYIKA UWANJA WA SHULE YA MSINGI UFUKONI - MANISPAA YA KIGAMBONI. 22/12/2020

MTAA MAGOGONI

AGENDA:

- ⇒ KUFUNGUA KIKAO.
- ⇒ UTAMBULISHO WA WASHIRIKI.
- ⇒ MAELEZO YA WATOA MADA KWA WASHIRIKI.
- ⇒ MAJADILIANO
- ⇒ KUFUNGA KIKAO.

1. KUFUNGUA KIKAO.

Kikao kilifanyika katika mtaa wa TUAMOYO Kata ya KIGAMBONI tarehe 21/12/2020 katika uwanja wa shule ya msingi UFUKONI. ambapo Mtendaji wa Kata alifungua rasmi saa 04:20 asubuhi kwa kuwakaribisha wajumbe wote na wageni waliohudhuria.
Baada ya ufunguzi wa kikao, Mtendaji aliwakaribisha viongozi wa mitaa yote waliohudhuria kikao kujitambulisha pamoja na wajumbe wao.
Kisha mwendeshaji wa kikao, aliwakaribisha viongozi wote katika kikao.

2. MAELEZO YA WATOA MADA KWA WASHIRIKI.

Mtendaji Kata alitoa nafasi ya watoa mada kuongea na washiriki ambao ni wajumbe katika kikao hiki baada ya utambulisho. Mtendaji alimkaribisha mtoa mada ili amkaribishe Mtandarasi Mshauri wa Mradi (WAPCOS), wawasilishi toka Dawasa ambapo walieleza nia na dhumuni la kikao na mradi huu na jinsi watu watakavyonufaika kwa kupata maji safi na salama.

Watoa mada hao walipata nafasi ya kueleza wajumbe wa kikao hiki juu ya maendeleo ya mchakato kwa mwelekeo wa ujenzi wa miradi hii iliyo chini ya ufadhili wa Benki ya Dunia kwa ujumla.

Kwa mtaa wa Magogoni ambao ni mtaa wetu, watoa mada waliwasihi wajumbe wa kikao kupokea miradi hii kwa mikono miwili ili iwe ukombozi wa kweli kwa wananchi kwa kuwapatia maji safi na salama.

Baada ya wawakilishi toka Dawasa, Mtendaji alimkaribisha mwakilishi toka kampuni ya Mkandarasi mshauri ili aweze kueleza dhumuni la kikao husika, ambapo alianza kwa kuwauliza wajumbe kama kuna uwepo wowote wa kamati ya mradi wa maji, na kama zipo je ni kwa namna gani inavyoshirikishwa kwenye utekelezaji wa miradi kwa kuainisha maeneo ya ujenzi wa matanki ya maji, uchimbaji wa visima na ujenzi wa vituo vya kuchotea maji.

Pia mkandarasi alitaka kujua kama kutakuwa na maeneo ambayo yatahitaji fidia kwa maeneo yatakapitiwa na mradi huu, alitaka maeneo hayo yaainishwe ili yaweze kufidiwa fidia zao.

3. MAJADILIANO.

Wajumbe wa kikao pamoja na watoa mada walikaribishwa kufika majadiliano ambapo jamii ilitoa malalamiko juu ya gharama za maji kuwa kubwa, wakilinganisha na zile huduma za miradi ya jamii hapo awali.

Pia wajumbe walitoa malalamiko juu ya upasuaji wa mabomba, hivyo mabomba ya zamani yabadilishwe na kuwekwa mapya.

Mwisho, wajumbe wote walikubali kupokea mradi huu wa maji safi na salama wa Dawasa.

4. KUFUNGA KIKAO

Kikao kilifungwa majira ya saa 05:30 asubuhi.

DEOGRATIUS C. MAYALLA
MWENYEKITI S/MTAA

ANNEX III: SCREENING FORM

ESSF ENVIRONMENTAL AND SOCIAL SCREENING FORM

1. General Information				
Name of the project:	Ferry Water Supply Project			
Implementing Agency:	Dar es Salaam Water Supply and Sanitation Authority (DAWASA)			
Component of WSSP:	☐ Integrated Water Resources Management ☐ Dar es Salaam water supply improvement ☐ Dar es Salaam sanitation improvement ☐ Project management and implementation			
Location:	– **Region:**	Dar es Salaam		
	– **District:**	Kigamboni		
	– **City/Village:**	Ferry		
Evaluator name:	Meclina Ivo Haule	**Date of field visit:**	25.09.2019	

2. Project	
Description and general purpose of the project: To provide water to un-serviced population areas of Dar, who are not connected to the formal water supply and sanitation network. Mainly (40-50) % are from outside of the water supply network. In this particular project it is expected to meet the projected water demand from population 16,387 living in the area.	**Specific works and activities to be undertaken** • Construction of storage tank of 100m^3 • Construction of raiser tank • Construction of distribution pipes (2000m)

3. Stakeholders	
Direct: • Ferry communities	**Indirect:** • Kigamboni Municipality • DAWASA

4. Potential impacts and measures			
	Impacts		**Measures**
Positive:	**Direct:** • Improvement of access to water supply services in Ferry communities • Diversification of economic activities • Population influx due to water availability		• Strengthen O&M of water supply network in Ferry service area • Enhance involvement of relevant stakeholder during project implementation • Land use plan should be in place to manage population
	Indirect: • Improved health and hygiene		• Continuous awareness creation to the communities on the importance of personal hygiene
Negative:	**Direct:** • Noise to the nearby communities during construction activities and operations • Increase in wastewater generation		• Use of proper machine and appropriate gadget to minimize noise • Install proper facilities for handling of generated wastewater
	Indirect: • Generation of Potential smells • Increased in cost of living and crimes		• Apply proper sanitation technology • Awareness creation to the communities and promote alternative livelihood

5. First Preliminary Classification: Type of project		
Water Supply System		
Components: (Apply Figure 1) ☐ Intake (spring or river) ☐ Intake (dam + reservoir) ☐ Intake (borehole) ☐ Main Transmission Pipeline ☐ Treatment Plant ☐ Treated Water Pipeline ☐ Storage Tank (100m^3) ☐ Distribution network (2000m)	**Magnitude: (Apply Table 5.1)** ☐ Large ☐ Medium ☐ Small **Scope: (Apply Table No. 5.4)** ☐ New Construction ☐ Improvement ☐ Rehabilitation ☐ Maintenance	Applying **Table 5.6** the classification in function of the type of project is: ☐ a ☐ b ☐ c ☐ d
Sewerage System		
Components: (Apply Figure 2) N/A ☐ Sewerage Network ☐ Pump Station ☐ Wastewater Pipeline ☐ Sewerage Treatment Plant ☐ Effluent pipeline	**Magnitude: (Apply Table No. 5.2)** ☐ Large ☐ Medium ☐ Small **Scope: (Apply Table No. 5.4)** ☐ New Construction ☐ Improvement ☐ Rehabilitation ☐ Maintenance	Applying **Table 5.7** the classification in function of the type of project is: ☐ a ☐ b ☐ c ☐ d
Buildings		
Components: N/A ☐ Civil construction ☐ Equipment ☐ Others	**Magnitude: (Apply Table No. 5.3)** ☐ Large ☐ Medium ☐ Small **Scope: (Apply Table No. 5.4)** ☐ New Construction ☐ Improvement ☐ Rehabilitation ☐ Maintenance	Applying **Table 5.8** the classification in function of the type of project is: ☐ a ☐ b ☐ c ☐ d

N/A: Not Applicable

6. Second Preliminary Classification: Environmental Site Sensitivity		
HIGH	**MODERATE**	**LOW**
☐ Protected Areas in the DIA (National Parks, Forest Reserve, etc.)	☐ Protected Areas in the IIA or in Buffer Zones (National Parks, etc)	☐ Intervened areas out of Protected Areas (national parks, etc.)
☐ High danger of environmental degradation (deforestation, hunt, etc.)	☐ Moderate danger of environmental degradation (deforestation, others)	☐ Low danger of environmental degradation (deforestation, etc.)
☐ Sensitive or critical ecosystem in the DIA (wetlands, mangrove swamps, forests, and others)	☐ Sensitive or critical ecosystems in the IIA (wetlands, mangrove swamps, forests, and others)	☐ No sensitive or critical ecosystems in the influence area (wetlands, mangrove swamps, forests, others)
☐ Mountainous topography (>35% of slope) when the project expects construction of road, pipelines, etc.	☐ Wavy topography (15–35% of slope) when the project expects the construction of road, pipelines,	☐ Flat topography (<15% of slope), when expects the construction of access road, pipelines, etc.
☐ High risk to natural disasters (floods, earthquake, others)	☐ Moderate risk to natural disasters (floods, earthquake, others)	☐ Low risk to natural disasters (floods, earthquake, others)
☐ Presence of places of significant cultural/historical interest in the DIA	☐ Presence of places of cultural and historical significance in the IIA	☐ Absence of places with cultural and historical significance
Environmental Site Sensitivity: LOW		

DIA: Direct Influence Area; **IIA:** Indirect Influence Area

7. Environmental Risk Level: Category	
Category A: Projects with high environmental risk level **Category B:** Projects with moderate environmental risk level **Category C:** Projects with low environmental risk level	**Matrix 1. Environmental and Social Category**

Preliminary classification	Site sensitivity		
	High	Moderate	Low
a	A	A	B
b	A	B	B
c	B	B	C
d	B	C	C

8. Social Risk Level		Social Risk Level
☐ Potential **Vulnerable Group** (affect/ benefit) is expected in the project: OP/BP 4.10 **If is High, apply next section VGSF**	☐ In the Direct Influence Area	**HIGH**
	☐ In the Indirect Influence Area	**MODERATE**
	☐ No presence of Vulnerable Groups	**LOW**
☐ Potential **Resettlement/Compensation** is expected in the project: **If is High or Moderate, apply next section RSF**	☐ More than 200 PAPs	**HIGH**
	☐ More than 10 PAPs less than 200 PAPs	**MODERATE**
	☐ Less than 10 PAPs	**LOW**

9. Environmental and Social studies required by National Law and Safeguard Policies		
☐ **OP/BP 4.01**	☐ Cat. A ☐ Cat. B (new proj.) ☐ Cat. B (existing proj.) ☐ Cat. C	☐ Environmental and Social Impact Assessment (ESIA) ☐ Preliminary Environmental and Social Impact Assessment (PESIA) ☐ Environmental and Social Audit Report (ESAR) ☐ Guidelines of Good Environmental and Social Practices
☐ **OP/BP 4.10**	☐ HIGH **N/A**	☐ Vulnerable Group Plan (VGP)
☐ **OP/BP 4.12** ☐ **OP/BP 4.12**	☐ HIGH **N/A** ☐ MODERATE	☐ Resettlement Action Plan (RAP) ☐ Abbreviated Resettlement Action Plan (ARAP)
☐ **OP/BP 4.11**	☐ HIGH **N/A**	☐ Chance Find Procedures Plan (CFPP) to be include as part of the ESIA or PESIA
☐ **OP/BP 4.37**	☐ HIGH **N/A**	☐ Dam Safety Measures Report (DSMR) – High risk Dams according with the OP/BP 4.37
		☐ Others: _____

10. Environmental Budget for the ESMP implementation

- Estimated budget of the project: TZS **522,200,000**
- Estimated budget for the ESMP or GGESP implementation TZS **15,666,000**

TOTAL estimated budget of the project: **TZS 537,866,000**

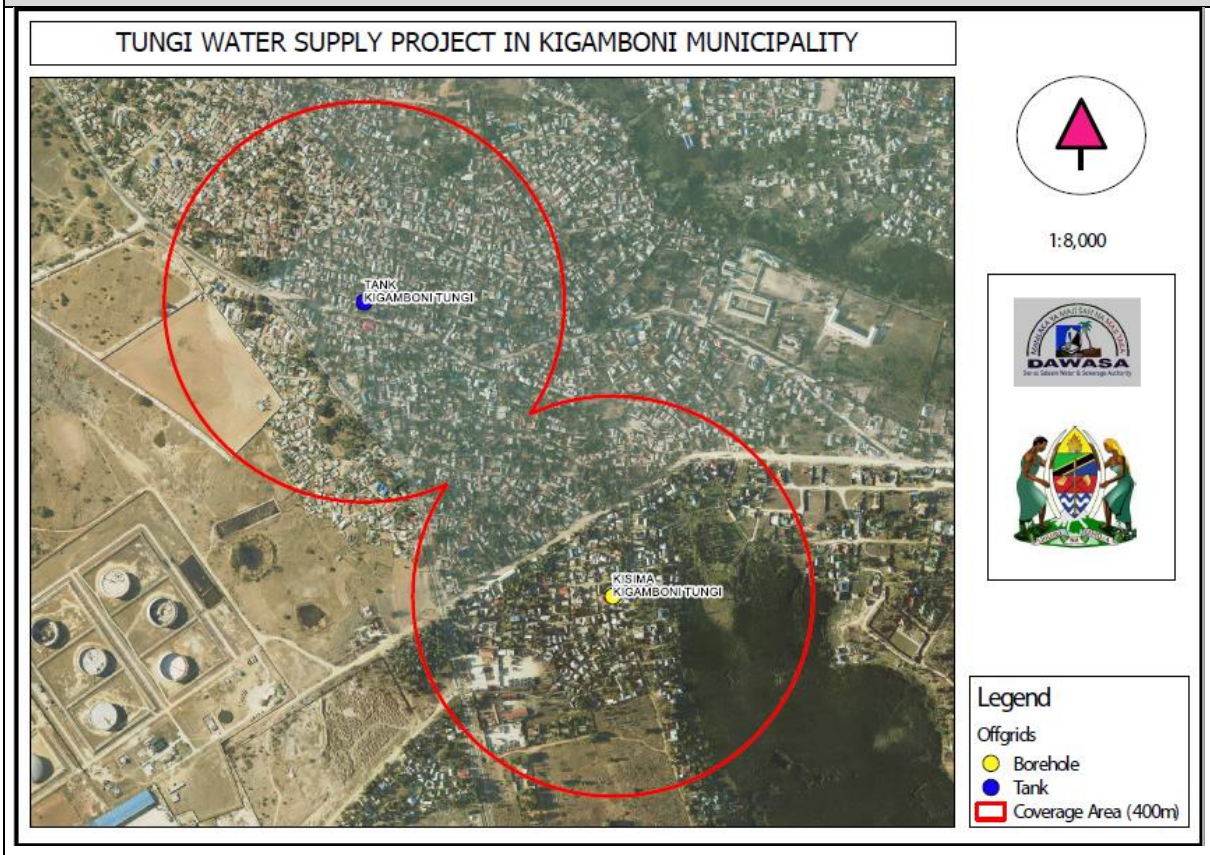
Note: This budget doesn't include the resettlement and vulnerable group plans implementations)

Matrix 2. Environmental Budget for the ESMP or GGESP implementation

Preliminary classification	Site sensitivity		
	High	Moderate	Low
a	6%	5%	4%
b	5%	4%	3%
c	4%	3%	2%
d	3%	2%	1%

TUNGI -KIGAMBONI STAKEHOLDER CONSULTATION

11. Map, Design, and/or Other Supporting Drawing and Layout

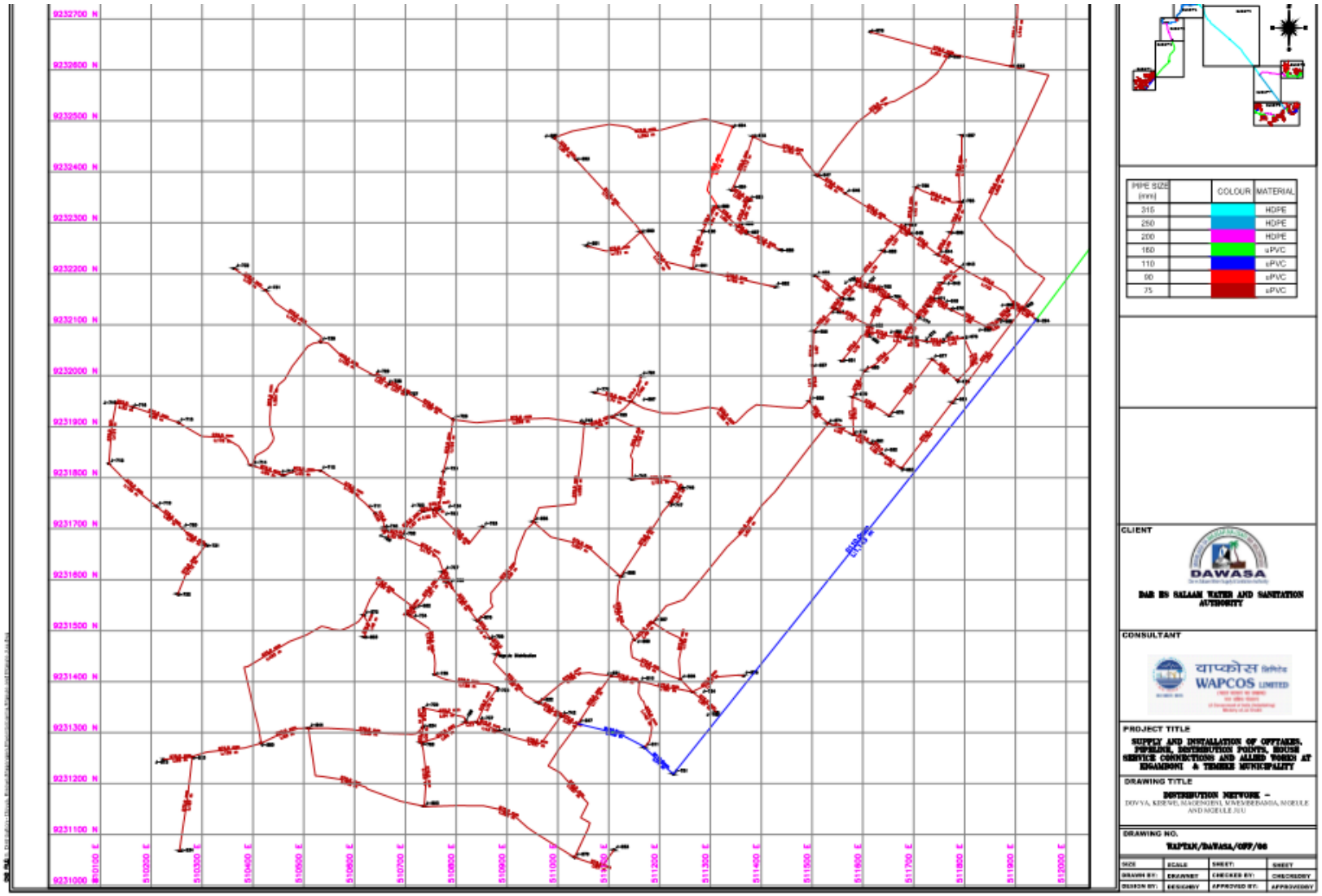


12. Observations

Comments: The Proposed Tungi Water Supply Project is categorized to **Category "B"** after Preliminary Environmental and Social Screening, having Domestic Point 7, Distribution Pipes 3000m. Therefore, A Preliminary Environmental Assessment is required to decide whether the project can proceed without a Full Environmental Impact Assessment and fulfil requirements of Type B1 Projects as stipulated in the Environmental Management (EIA and Audit) (amendment) Regulations, 2018 under Category B1.

Officer: Nyinisaeli K. Palangyo EIA Expert	Signature:	Date: 25.11.2019

ANNEX IV: LAYOUT OF THE WATER SUPPLY DISTRIBUTION NETWORK



ANNEX V: APPROVAL OF ToR OF THE PROPOSED PROJECT

Received 30/8/21

THE UNITED REPUBLIC OF TANZANIA

VICE PRESIDENT'S OFFICE
UNION AND ENVIRONMENT

NATIONAL ENVIRONMENT MANAGEMENT COUNCIL
(NEMC)

In reply please quote:
Ref: CB. 145/208/336/16

Date: 19/08/2021

Director General,
Dar es Salaam Water Supply and Sanitation Authority,
P.O. Box 1573,
DAR ES SALAAM.

Re: **APPROVAL OF TERMS OF REFERENCE (TOR) THE PROPOSED ESTABLISHMENT OF TUNGI WATER SUPPLY PROJECT IN KIGAMBONI MUNICIPALITY, DAR ES SALAAM REGION**

Reference is made to the above subject.

2. We acknowledge receipt of your letter dated 14th July, 2021 attached with the Environmental Impact Assessment (EIA) registration forms, scoping report and draft Terms of Reference (ToR) for undertaking an EIA study of the aforementioned project.

3. The project has been registered and allotted Application Reference Number (ARN) **13252**. We advise you to refer to this ARN as well as the file reference number (**CB.145/208/336**) whenever you communicate with the Council concerning this project.

4. The Council reviewed the submitted ToR and found that, the following information should be included in the ToR before endorsement to guide the EIA study;

i. Remove information of Temeke Municipal project;
ii. Include brief description of the project components, phases;
iii. Rationale of the project;
iv. Methodology to be used;
v. Scope of the project;
vi. Study team should include water resources Engineer, Hydrologist; and
vii. Time frame for each activity expected to be done during the study.

Headquarters, 35 Regent Street, P.O Box63154, 11404 Dar es Salaam, Phone: +255 22 2774852; +255 22 2774889: 0713 608930/0735 608930Fax: +255 22 2774901 Email Address: dg@nemc.or.tz Website: www.nemc.or.tz

You will be required to submit two separate copies of improved ToR for endorsement before starting to conduct an EIA study. Upon submission of the Environmental Impact Assessment report, the Council will arrange for a site verification visit as per law requirement.

5. After improving the TOR you will also be required to conduct EIA study and submit to the Council (NEMC) 15 copies of the Environmental Impact Statement (EIS) for review. The EIS should contain information and styled as per Regulation 18 (1) (2) (3), among other the following information should be included in the EIS:

i. The cover must have the exact location where project will take place, physical address and email of the proponent;
ii. The surface right over the project area (Offtake and domestic points, area where distribution pipes will pass) should also be discussed in the EIA report (Append the land ownership document with compatible land use);
iii. Consultation to other Authorities (TARURA, TANROAD) if the distribution line will utilize road reserves;
iv. The current baseline data for hydrology, soil, air quality and noise level are provided as baseline data in baseline chapter;
v. Provide detailed project description, including all project components supported by the well-designed site layout plan;
    a) Project design and mode of operations should be detailed discussed in the report this must include all project components, distribution pipes, pressure reduction station;
vi. Consultation of Relevant stakeholders;
vii. Clearly provide management of both noise levels, fumes, leakages, emissions, hazardous, liquid and solid wastes during project implementation;
viii. All experts involved in the study should sign the EIA Report with their original signatures (not scanned signatures or forged signatures) and indicate whether he/she is a registered or non-registered environmental expert, Failure to observe this requirement, it will constitute to an offense as per EMA, 2004 Cap 191.

6. In this regard, you are required to submit 15 copies of the EIA report and pay **Tshs. 4,000,000/=** to the Council charges for the review and approval processes as indicated in the attached **Proforma Invoice No. 05970 of 15th January, 2021**.

7. You will also be required to **incur transportation costs** for the site verification team to and from the site. Note that, the funds can be paid through **Government electronic Payment Gateway system (GePG)** using control number obtained at NEMC office. Once you are ready to pay, please contact us through cellphone **No. 0677 069 967** so that you can be issued an invoice with a **Control number** to effect your payments. For further information or clarification on this matter please do not hesitate to contact us through Tel. No. +255 713056892 Monday – Friday around 8:00am to 16:00pm.

Headquarters, 35 Regent Street, P.O Box63154, 11404 Dar es Salaam, Phone: +255 22 2774852; +255 22 2774889: 0713 608930/0735 608930Fax: +255 22 2774901 Email Address: dg@nemc.or.tz Website: www.nemc.or.tz

8. Thank you for your continuing cooperation.

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

Cc: Ms. Nyinisaeli K. Palangyo,
P.O. Box 33165,
Dar es Salaam.

Headquarters, 35 Regent Street, P.O Box63154, 11404 Dar es Salaam, Phone: +255 22 2774852; +255 22 2774889: 0713 608930/0735 608930Fax: +255 22 2774901 Email Address: dg@nemc.or.tz Website: www.nemc.or.tz