DAR ES SALAAM WATER AND SEWERAGE AUTHORITY (DAWASA)

FINAL ESIA REPORT

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) REPORT FOR THE PROPOSED CONSTRUCTION & EXTENSION OF THE DISTRIBUTION NETWORKS FROM UNIVERSITY TERMINAL RESERVOIRS TO BAGAMOYO (PACKAGE 2B&2F)

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25 October, 2016
ACKNOWLEDGEMENT

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**STUDY TEAM**

<table>
<thead>
<tr>
<th>NAME</th>
<th>POSITION</th>
<th>SIGNATURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ako, Akonaay. M.L</td>
<td>Environment Specialist/Team Leader</td>
<td></td>
</tr>
<tr>
<td>HurumaKissaka</td>
<td>Sociologist</td>
<td></td>
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</table>
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</thead>
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<tr>
<td>ADEM</td>
<td>Agency for the Development of Education Management</td>
</tr>
<tr>
<td>BOQ</td>
<td>Bill of Quantities</td>
</tr>
<tr>
<td>DAWASA</td>
<td>Dar es Salaam Water and Sewerage Authority</td>
</tr>
<tr>
<td>DAWASCO</td>
<td>Dar es Salaam Water and Sewerage Corporation</td>
</tr>
<tr>
<td>DPs</td>
<td>Domestic Points</td>
</tr>
<tr>
<td>EMA</td>
<td>Environmental Management Act</td>
</tr>
<tr>
<td>EPZA</td>
<td>Export Processing Zones Authority</td>
</tr>
<tr>
<td>ESIA</td>
<td>Environmental and Social Impact Assessment</td>
</tr>
<tr>
<td>ESMP</td>
<td>Environmental and Social Management Plan</td>
</tr>
<tr>
<td>ESMP</td>
<td>Environmental and Social Monitoring Plan</td>
</tr>
<tr>
<td>HDD</td>
<td>Horizontal Direction Drilling</td>
</tr>
<tr>
<td>HIV/AIDS</td>
<td>Human Immune Deficiency Virus / Acquired Immune Deficiency Syndrome</td>
</tr>
<tr>
<td>HSE</td>
<td>Health Safety and Environment</td>
</tr>
<tr>
<td>LGA</td>
<td>Local Government Authority</td>
</tr>
<tr>
<td>MEMO</td>
<td>Municipal Environmental Management Officer</td>
</tr>
<tr>
<td>MOWI</td>
<td>Ministry of Water and Irrigation</td>
</tr>
<tr>
<td>NEMC</td>
<td>National Environment Management Council</td>
</tr>
<tr>
<td>NEP</td>
<td>National Environmental Policy</td>
</tr>
</tbody>
</table>
PCP    Pre-stressed Concrete Pipe
PVC    Polyvinyl Chloride
SHE    Safety Health and Environment
SLADS  School of Library Archives and Documentation Studies
STDs   Sexual Transmitted Diseases
STIs   Sexual Transmission Infections
TANESCO Tanzania Electric Supply Company
TANROADS Tanzania National Roads Agency
TTCL   Tanzania Telecommunication Company Ltd
uPVC   Unplasticized Polyvinyl Chloride
VODACOM Vodacom Tanzania Limited
WAPCOS Water and Power Consultancy Services
WHO    World Health Organization
WTP    Water Treatment Plant
ZANTEL Zanzibar Telecoms Ltd
EXECUTIVE SUMMARY

This report constitutes the Environmental and Social Impact Assessment (ESIA) for the proposed construction of an extension of the distribution mains from Ardhi University Terminal Reservoirs to Bagamoyo. The project will involve construction of water distribution networks (secondary mains to individual household consumers and water kiosks for public water supply and consumption. It is a component of the proposed "Expansion of the Lower Ruvu Treatment Plant and Construction of the New Transmission Mains" project, which is itself part of a broader project entitled “Augmentation of the Dar es Salaam Water System”. The project will be developed in two main packages, 2B and 2F. They will be supplied by the Lower Ruvu water system and cover the following areas: Salasala, Wazo, Bunju, Bagamoyo town, Tegeta A, Mabwepande and Changanyikeni.

A proposed total of 35.9km and 1425.6km for distribution or secondary mains for the project components 2B and 2F respectively are proposed to be constructed to distribute water from the off-takes and storage reservoirs to the tertiary pipes in the proposed project areas. The distribution networks, consisting of secondary distribution networks and distribution mains covering both 2B and 2F, will total 1461.5km. These pipelines will follow the existing street access roads or feeder roads. The siting of water kiosks will not involve acquisition of land properties, and location of the sites for installation of kiosks will be determined in a consensus between byproject beneficiaries.

Environmental and social impacts for the proposed project have been identified for the different phases of its implementation. Significant positive impacts will mainly include job creation and increased income to local communities and improved sanitation. Identified negative impacts of the proposed project include loss of flora and fauna along the road reserves, noise pollution, loss of scenery, traffic congestions where works is involving road crossing that requires traffic diversion or low speeds, soil erosion, increased spread of HIV/AIDS and increased hazard of diseases due to increased wastewater. Other identified impacts will have minor and moderate positive impacts while others will have minor and moderate negative impacts.

Measures to enhance positive impacts have been proposed while negative impacts will be mitigated by the proposed mitigation measures. The mitigation measures include limiting construction works to proposed sites, ensuring machineries are fitted with appropriate noise silencers, adopting better construction schedules to improve scenery, installation of construction warning signs, timing of construction activities and appropriate planning traffic controls and using excavated soils to refill voids and make proper compaction to minimize chances of sediment removal. The negative social impact on spread of HIV/AIDS will be mitigated through provision of induction course to project workers by the contractor, conducting HIV/AIDS
awareness campaigns and provision of condoms to the workforce and communities surrounding the project construction sites. If these negative impacts are properly mitigated during the implementation of the project, while at the same time enhancing positive impact, the project will have overall minimal and short term environmental and social impacts and the positive impacts will outweigh the negative impacts.

To ensure the mitigation and enhancement of the impacts, an Environmental and Social Management Plan (ESMP) and an environmental and social monitoring plan are proposed in this report. The implementing agency is committed to implementing all the recommendations given in this report and carrying out the environmental auditing and monitoring schedules.
1. INTRODUCTION

The overall goal of this project is to increase water supply coverage to urban areas and thus, contributing to the Government efforts towards improvement of the livelihood and poverty alleviation. The current project to which this ESIA is subject to is executed in two packages, i.e. 2B and 2F. Project components 2B and 2F falls within Kinondoni and Bagamoyo District Council. The details about the geographical coverage of the project packages is discussed in this report.

Further, the focus of this report is on the environmental and social impact of the distribution networks water kiosks in the two project packages. Environmental and social impacts for the proposed project have been identified for the different phases of its implementation. Significant positive impacts will mainly include job creation and increased income to local communities and improved sanitation. Identified significant negative impacts of the proposed project include loss of flora and fauna along the road reserve areas of the street roads, noise pollution, loss of scenery, traffic congestions where works is involving road crossing that requires traffic diversion or low speeds, soil erosion, increased spread of HIV/AIDS and increased hazard of diseases due to increased wastewater. Other identified impacts will have minor and moderate positive impacts while others will have minor and moderate negative impacts.

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2. PROJECT BACKGROUND AND DESCRIPTION

2.1 Project Backgrounds

The project will be implemented in a single phase for a duration of 15 months. Mostly the pipe laying shall be undertaken manually. In addition, equipment/plants like Backhoe excavator, trencher, and crane truck for loading and unloading pipes shall be used where and when needs arises. The all project materials, pipes and fittings shall be kept at DAWASA’s Boko within the project area and this shall act as the construction camp. The pipe road crossing shall be constructed using ‘’Trenchless Method’’ known as Horizontal Direct Drilling (HDD) and this method will be used after obtaining permit from the relevant authorities (Tanzania National Roads Agency-TANROADS). However, the most likely roads to be affected are the street roads. The material shall be from the approved borrow pits (in case of aggregates, sand and hard cores). The project involves local employees and they will be staying at their home.

2.2 Project distribution

2.2.1 Distribution Mains A proposed total of total of 1425.6km and 35.9km km for distribution or secondary mains for the project components 2B and 2F respectively are proposed to be constructed to distribute water from the off-takes and storage reservoirs to the proposed project areas (Table 1). The proposed diameters of the distribution and secondary mains will vary from 75-500mm for both project packages as shown in (Table 2). The pipes will laid along road utility corridors..

Table 1: Details of the Proposed Distribution Mains for the Packages

<table>
<thead>
<tr>
<th>Description</th>
<th>2B &amp; 2F</th>
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<tbody>
<tr>
<td>Proposed Diameter/size of pipe</td>
<td>Vary between 75-500mm</td>
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<tr>
<td>Proposed Total Length of the Distribution/Secondary mains</td>
<td>35.9km and 1425 km for both packages 2F</td>
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<tr>
<td>Pipe materials</td>
<td>Ferrous pipes and uPVC</td>
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Area coverage/route and ownership

<table>
<thead>
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<tr>
<td>Bunju (Bashaya, Boko, Kilungule, Bunju A), Mbweni (Mbweni, Maputo, Mpiji), Goba (Tegeta A, Kulongwa, Kinzudi), Changanyikeni (Makongo, Chuo), Wazo (Salasala, Kilimahewa, Mivumoni, Madale), Mabwepande,</td>
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<tr>
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<tr>
<td>Bagamoyo, A1, Bagamoyo A2, Kerege, EPZA, Buma, Mataya, Magereza, and Kongo</td>
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<td><strong>Bagamoyo District</strong></td>
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<tr>
<td>Yombo (Miswe, Mbwawa, Chasimba)</td>
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</tbody>
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Road crossings (type of roads) | Street roads |

### 2.2.2 Distribution Networks

The distribution networks, consisting of distribution pipes will cover eleven (11) distribution zones under project package 2B. The distribution network is proposed to cover 1461.5km under package 2B and 2F (Table 2). Total distance have been divided to 35.9km and 1425.6km for distribution mains and secondary pipes. The route of the networks in both packages will use existing road reserves and no individual properties will be affected at all. Layout Plan for Water Distribution Areas is appended as Appendix04

#### Table 2: Details of the Distribution Networks for the Packages

<table>
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<tr>
<th>Zone Names Dia (MM)</th>
<th>Salasala, Ocean Bay, Bunju,&amp;Wazo Zones</th>
<th>Vikawe Zone</th>
<th>Change Zone</th>
<th>Bagamoyo Zone</th>
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<td>2000</td>
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<tr>
<td><strong>Total for Secondary Distribution pipes</strong></td>
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<td><strong>154898</strong></td>
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### 2.2.3. Water Kiosks

Water Kiosks are proposed to be constructed in the settlement areas. The capacity of the water kiosks will depend on the demand of the population served per kiosk. It is estimated that 42 kiosks will be constructed for package 2F while 52 and 162 outlet points in project packages 2B and 2F will be constructed. The exact locations for construction of the kiosks will be identified during discussions with the communities and their leaders by consensus in the areas targeted for water distribution.

<table>
<thead>
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<th>Total For Distribution Main</th>
<th>2869</th>
<th>16234</th>
<th>5393</th>
<th>3579.052</th>
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<td>Total</td>
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<td>160291</td>
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</table>
Figure 1: Layout Plan for Water Distribution Areas (package 2B & 2F) (Source: DAWASA, 2014)
3. BASELINE CONDITIONS

3.1 Location of Project area
The proposed project will be implemented in Kinondoni Municipal Council, Bagamoyo Town Council and Bagamoyo District. In Kinondoni Municipality directly affected areas by the project will include Bunju (Basihaya, Boko, Bunju A), Mbweni (Mbweni, Maputo, Mpiji), Goba (Tegeta A, Kulangwa, Kinzudi), Changanyikeni (Makongo, Chuo), Wazo (Salasala, Kilimahewa, Mivumoni, Madale).

3.2 Administrative Boundaries
The wards covered by the project in the respective Municipal/District councils are as listed below:

- Kinondoni Municipal -Bunju, Mbweni, Goba, Makongo, Wazo, Mabwepande,
- Bagamoyo Town Council - Bagamoyo, A1, Bagamoyo A2, Kerege, EPZA, Buma, Mataya, Magereza, and Kongo
- Bagamoyo District -Yombo, Miswe, Mbwawa, Chasimba

3.3 Land Use
The land uses of the project areas consist residential and commercial settlements (especially Kinondoni, and Bagamoyo Town Council), mix of residential, commercial and agriculture and livestock keeping (Bagamoyo District Council).

3.4 Climate
The project areas experiences a modified type of equatorial climate. It is generally hot and humid throughout the year. The hottest season is from October to March while it is relatively cool between May and August (Figure 8). There are two rainy seasons; short rains from October to December and long rains between March and May. The area experiences hot and sunny weather almost throughout the year, with the maximum temperature reaching $30^0\text{C}$ in October while the minimum temperature dropping down to about $25^0\text{C}$ in July.
3.5. Current Population of the Project Areas

According to the 2012 National Census, the project areas (Wards) has a total population of 401,081 (Table 3). Seventy One percent (83%) of this population is located in the project areas that falls within Kinondoni Municipal Council. The remaining population is spread in other project areas which include Bagamoyo Town Council and Bagamoyo District Council.

Table 3: Population in the Proposed Project Areas

<table>
<thead>
<tr>
<th>Kinondoni Municipal Council</th>
<th>Goba</th>
<th>42669</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mbweni</td>
<td>13766</td>
</tr>
<tr>
<td></td>
<td>Bunju</td>
<td>60236</td>
</tr>
<tr>
<td></td>
<td>Makongo</td>
<td>43796</td>
</tr>
<tr>
<td></td>
<td>Mabwepande</td>
<td>25460</td>
</tr>
<tr>
<td></td>
<td>Wazo</td>
<td>90825</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bagamoyo District</th>
<th>Yombo</th>
<th>8262</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Kerege</td>
<td>18008</td>
</tr>
</tbody>
</table>
3.6. Ethnic Groups
The major ethnic groups in the project areas are Zaramo, Ndengereko and Kwere, Zigua, Masai, Doe. However, due to the large influx of people from up country, there is a sizeable multi-cultural mix. Also there are a number of Asiatic and Arabian groups, largely engaged in commercial and industrial activities. Bagamoyo town has a heterogeneous population including different ethnic group and cultures from the parts of Tanzania, although Kwere is the dominant ethnic group in the district.

3.7. Economic Activities
The main economic activities in the project areas include agriculture (crops), Livestock and Poultry, Trade, Industry and Commerce Sectors. A good number of the population in the target areas earn their living through employment in public and private sectors.

3.8. Social Services

3.8.1. Education
There are a number of education institutions in the proposed project areas. Examples of the institutions includes primary and secondary schools and other tertiary institutions. In Kinondoni Municipality there are 198 primary schools, of which 131 are government owned and 67 were private, and 86 secondary schools, of which 16 were government owned and 70 private. The teacher to pupil ratio in the Municipality stands at 1:47. Bagamoyo District Council has a total number of 116 pre-primary schools of which 100 are attached to primary schools and 16 are owned by private institutions. The District has 121 registered primary schools of which 119 are owned by the Government and 2 are Private English Medium Primary Schools. The district has a total number of 56,811 pupils in public schools of whom 29,411 are boys and 27,400 are girls. Moreover, in the public schools, there are 1,301 teachers (533 males and 768 females) and among them 104 are student teachers recruited in January 2007 (31 males and 73 females). Further the district has 26 secondary schools of which, 17 are owned by the Government and 9 are owned by individuals or religious organizations. The district has also tertiary institutions which include the Agency for the Development of Education Management (ADEM), Bagamoyo College of Art, Mbegani Fisheries and School of Library Archives and Documentation Studies (SLADS).
3.8.2. Health Services:

There are about fourteen Health facilities (Hospital, Health Centre and Dispensaries) in the project areas. The distribution of these facilities in the project areas is as indicated in the Table 4. Epidemics have been a major killer hazard in the proposed project areas. The most common killer diseases are HIV/AIDS, pandemic malaria, cholera, dysentery and water borne diseases. The major causes of the outbreak of diseases are poor sanitation and inadequate sewage system, lack of clean drinking water. In urban areas it is also due to poor planning and uncontrolled urban development.

Table 4: Existing Health Facilities in the Project Area

<table>
<thead>
<tr>
<th>Facility Name</th>
<th>Common Name</th>
<th>Region</th>
<th>District</th>
<th>Council</th>
<th>Ward</th>
<th>Village/Street</th>
<th>Facility Type</th>
<th>Operating Status</th>
<th>Ownership</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bunju</td>
<td>Bunju</td>
<td>Dar es Salaam</td>
<td>Kinondoni</td>
<td>Kinondoni MC</td>
<td>Bunju</td>
<td>Bunju A</td>
<td>Dispensary</td>
<td>Operating</td>
<td>Public - LGA</td>
</tr>
<tr>
<td>AIF Huduma</td>
<td>AIF Huduma</td>
<td>Dar es Salaam</td>
<td>Kinondoni</td>
<td>Kinondoni MC</td>
<td>Bunju</td>
<td>Basihaya</td>
<td>Dispensary</td>
<td>Operating</td>
<td>Private - For Profit</td>
</tr>
<tr>
<td>Arafavigaeni</td>
<td>Arafavigaeni</td>
<td>Dar es Salaam</td>
<td>Kinondoni</td>
<td>Kinondoni MC</td>
<td>Bunju</td>
<td>Bunju A</td>
<td>Dispensary</td>
<td>Operating</td>
<td>FBO</td>
</tr>
<tr>
<td>Med check</td>
<td>Med-Check</td>
<td>Dar es Salaam</td>
<td>Kinondoni</td>
<td>Kinondoni MC</td>
<td>Bunju</td>
<td>Dovya</td>
<td>Dispensary</td>
<td>Operating</td>
<td>Private - For Profit</td>
</tr>
<tr>
<td>PK</td>
<td>PK</td>
<td>Dar es Salaam</td>
<td>Kinondoni</td>
<td>Kinondoni MC</td>
<td>Wazo</td>
<td>Wazo</td>
<td>Dispensary</td>
<td>Operating</td>
<td>Private - For Profit</td>
</tr>
<tr>
<td>Upendoikunda</td>
<td>Upendoikunda</td>
<td>Dar es Salaam</td>
<td>Kinondoni</td>
<td>Kinondoni MC</td>
<td>Mabwepande</td>
<td>Bunju B</td>
<td>Dispensary</td>
<td>Operating</td>
<td>Private - For Profit</td>
</tr>
<tr>
<td>Diplomat</td>
<td></td>
<td>Dar es Salaam</td>
<td>Kinondoni</td>
<td>Kinondoni MC</td>
<td>Bunju</td>
<td>Basihaya</td>
<td>Dental Clinic</td>
<td>Operating</td>
<td>Private - For Profit</td>
</tr>
<tr>
<td>Mbopo</td>
<td>Mbopo</td>
<td>Dar es Salaam</td>
<td>Kinondoni</td>
<td>Kinondoni MC</td>
<td>Mabwepande</td>
<td>Mbopo</td>
<td>Dispensary</td>
<td>Operating</td>
<td>Public - LGA</td>
</tr>
<tr>
<td>Bagamoyo</td>
<td>Bagamoyo Distr Hospital</td>
<td>Pwani</td>
<td>Bagamoyo</td>
<td>Bagamoyo DC</td>
<td>Dunda</td>
<td>Dunda</td>
<td>Hospital - District Hospital</td>
<td>Operating</td>
<td>Public - LGA</td>
</tr>
<tr>
<td>Baobab</td>
<td>Baobab Disp</td>
<td>Pwani</td>
<td>Bagamoyo</td>
<td>Bagamoyo DC</td>
<td>Kerege</td>
<td>Mapinga</td>
<td>Dispensary</td>
<td>Operating</td>
<td>Private - For Profit</td>
</tr>
<tr>
<td>Kerege</td>
<td>KeregeDisp</td>
<td>Pwani</td>
<td>Bagamoyo</td>
<td>Bagamoyo DC</td>
<td>Kerege</td>
<td>kerege</td>
<td>Dispensary</td>
<td>Operating</td>
<td>Public - LGA</td>
</tr>
<tr>
<td>Kongo</td>
<td>Kongo Disp/Tasafu</td>
<td>Pwani</td>
<td>Bagamoyo</td>
<td>Bagamoyo DC</td>
<td>Yombo</td>
<td>Kongo</td>
<td>Dispensary</td>
<td>Operating</td>
<td>Public - LGA</td>
</tr>
<tr>
<td>Mapinga</td>
<td>MapingaDisp</td>
<td>Pwani</td>
<td>Bagamoyo</td>
<td>Bagamoyo DC</td>
<td>Kerege</td>
<td>Mapinga</td>
<td>Dispensary</td>
<td>Operating</td>
<td>Public - LGA</td>
</tr>
<tr>
<td>Matimbwa Disp</td>
<td>Matimbwa Disp</td>
<td>Pwani</td>
<td>Bagamoyo</td>
<td>Bagamoyo DC</td>
<td>Yombo</td>
<td>Matimbwa</td>
<td>Dispensary</td>
<td>Operating</td>
<td>Public</td>
</tr>
</tbody>
</table>

PFO means Private - Faith based organization
3.8.3. Water Supply.

Majority of the population in the proposed project areas depends on other types of water sources in particular water vendors and water boozers. Although some of the areas have water supply connection from DAWASA they are currently not receiving water due to a number of problems.

For example, Bagamoyo Town Council the water distribution infrastructures are largely not functional because they are worn-out and were designed many years ago to serve a small population as compared to the current demand.

Table 5: Water Sources Currently Used by the Population in the Project Area

<table>
<thead>
<tr>
<th>District</th>
<th>Wards</th>
<th>Percentage of the population depending on different types of water sources in the project areas</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Water tape</td>
</tr>
<tr>
<td>Kinondoni Municipal</td>
<td>Bunju</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>Mbweni</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Goba</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Makongo</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Wazo</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Mabwepande</td>
<td>25</td>
</tr>
<tr>
<td>Bagamoyo Town Council/District</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NB: Other sources includes water vendors and water boozers,

3.8.4. Communications Systems

There are various telecommunication service providers. Existing telecommunication companies includes TTCL, TIGO, VODACOM, ZANTEL, AIRTEL, SMART and HALOTEL.

3.8.5. Source of Energy

The main sources of energy is electricity supplied by Tanzania Electric Supply Company (TANESCO), gas for cooking, solar energy, kerosene, charcoal and firewood. Generally, about 35% of people in the study area use charcoal as a source of cooking at home while 30% use gas
and electricity and 35% they use gas and charcoal and emergency light, candles and touch as a source of light during night.

3.8.6 Liquid Waste Management

Largely, all the project areas are serviced with onsite sanitation systems. Currently it is only 10% of the Dar es Salam City which is connected to DAWASA sewerage sanitation system.

3.9. Water Supply System

The Lower Ruvu transmission main is 58km long from the Water Treatment Plant to University Terminal Reservoirs. The Water Treatment Plant has an installed capacity of 270,000 m$^3$/day while the two reinforced concrete reservoirs at the university have a combined capacity of 45,400 m$^3$. The transmission main consists of a single DN1350mm Pre-stressed Concrete Pipe (PCP) which was laid between 1974 and 1976. The Lower Ruvu transmission main serves a number of villages, Bagamoyo town and some peri-urban areas in Kindondoni District before terminating into the University reservoirs, just behind the University of Dar es Salaam.

Presently, up gradation of the Lower system has being done by constructing additional Water treatment Plant of 90,000 m$^3$/day capacity and laying of 1800mm dia. MS pipe from Lower Ruvu WTP to University Terminal Reservoirs. A number of off- takes have been made on this pipe line also.

This ESIA covers 6 Zones consisting the wards of the Bagamoyo and Kinondoni districts. Bagamoyo Town consisting of one zone, the remaining 6 zones is from Kinondoni, The project zone, districts, wards covered under each zone are presented in Table 6.

Currently these zone does not get enough water since the existing distribution infrastructures do not match with the increase in population influx. DAWASA intend to increase the supply by extending the distribution pipe networks to combat with the shortage of water supply and managing to reach more customers.
# Table 6: Water Supply Distribution Zones

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Zone</th>
<th>District</th>
<th>Wards Covered</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bagamoyo Town</td>
<td>Bagamoyo</td>
<td>Bagamoyo town</td>
</tr>
<tr>
<td>2</td>
<td>Wazo Zone</td>
<td>Kinondoni</td>
<td>Boko 2, Ununio, Tegeta&amp;Wazo</td>
</tr>
<tr>
<td>3</td>
<td>Bunju Zone</td>
<td>Kinondoni</td>
<td>Boko 1, Bunju A, Bunju B, Maputo, Mbweni&amp;Mpiji</td>
</tr>
<tr>
<td>4</td>
<td>Vikawe Zone</td>
<td>Kinondoni</td>
<td>Mabwepande&amp;Vikawe</td>
</tr>
<tr>
<td>5</td>
<td>Salasala Zone</td>
<td>Kinondoni</td>
<td>Salasala, Kilimahewa, Mivumoni, Kinzudi, MbeziJuu&amp;Mdale</td>
</tr>
<tr>
<td>6</td>
<td>Goba Zone</td>
<td>Kinondoni</td>
<td>Goba, Kulongwa, Kinzudi, MbeziJuu&amp;Mdale</td>
</tr>
<tr>
<td>7</td>
<td>Changanyikeni Zone</td>
<td>Kinondoni</td>
<td>Changanyikeni&amp;Makongo</td>
</tr>
</tbody>
</table>
4.0 POLICY, ADMINISTRATIVE AND LEGAL FRAMEWORK

The implementation of the proposed project on the extension of water distribution networks in Dar es Salaam City and Bagamoyo District will be guided by both the National policies, regulations and guidelines and the World Bank's Environmental and Social Safeguard Policies.

4.1 Environmental Management Regulations in Tanzania

Regulations on environmental management in the country are mainly vested on two public institutions, the National Environment Management Council (NEMC) and the Division of Environment (DoE) under the office of the Vice President (VPO). The NEMC undertakes enforcement, compliance, and review of environmental impact statements and environmental audits whereas the DoE provides the policy formulations and technical back-up and execute the overall mandate for environmental management in the country. The EIA certificate is issued by the minister responsible for environment. There is good number of policies and pieces of legislation on environmental management in Tanzania, the relevant ones to this project are briefly discussed below.

4.2 National Policies

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

4.2.1 National Environmental Policy (NEP) of 1997

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

The National Environmental Policy, 1997 stresses that for a framework law to be effective, environmental standards and procedures have to be in place. For example, Chapter 4 of the policy (Instruments for Environmental; Policy), Section 61, states that “As part of the (National Environmental Policy) strategy in the implementation of the National Environmental Guidelines, specific criteria for EIA conduct will be formulated”.

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On addressing the issues of poverty alleviation, the policy recognizes its impact to the environment. The policy focuses on the satisfaction of basic needs of citizens and protecting the environment. This project will ensure that the above policy objectives are met.

The NEP advocates the adoption of Environmental Impact Assessment (EIA) as a tool for screening development projects which are likely to cause adverse environmental impacts. The implementation of a development project will take place subject to issuance of a certificate for the Environmental Impact Statement by the Minister from the Ministry of Environment in the Vice President's Office.

4.2.2 National Water Policy (2002)

The National Water Policy (NAWAPO) prescribes roles for different players in the provision of water supply and sanitation services. The policy guide in NAWAPO is based on the key principles that the Government’s role should be limited to coordination, policy and guideline formulation and overall sector regulation.

The policy stipulates that the implementation management and executive functions will be decentralized to the lowest appropriate level, while balancing consumer representation and participation with economies of scale. According to the policy the responsibility for regulation will be separated from the prioritization and allocation of capital investment funds. The autonomous entities will be established to manage water supply and sewerage services in urban areas; and community organizations will own and manage water supply schemes.

Thus, the shift in policy direction calls for adoption of a more effective institutional framework for the provision of water and sanitation services to urban and rural population. Equally important, the institutional framework for water resources management will be streamlined to meet the challenges of effective integrated water resources management.

The Local Government Authorities (LGAs) will have the responsibility for public service provision including water and sanitation in the future; local authority staff will be de-linked from their respective ministries. During the transition period, sector capacities will be developed and a review of relevant existing legislative provisions will be carried out to remove potential duplications and omissions, and enable effective implementation of the future institutional frameworks. It will also involve strengthening of the regulation and monitoring of service providers, including situations where the private sector is involved in providing water supply and sanitation services; and raising awareness of the institutional framework among stakeholders, including communities.
It is possible under the NAWAPO that the beneficiary local communities can be involved in the management of constructed water supply schemes. The local communities can establish Community Owned Water Supply Organizations (COWOSO). However, there will be a need for capacity building to enable them to effectively manage the water supply systems and the ways of achieving operation and maintenance costs.

4.2.3 Construction Industry Policy (2003)
Among the major objectives of the policy, which supports a sustainable building development sector, 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. This project is in-line with this policy as sustainable construction practices that are environmental friendly shall be adopted during the implementation of the project.

4.2.4 National Land Policy (1995)
The National Land Policy states that, “the overall aim of a National Land Policy is to promote and ensure a secure land tenure system, to encourage the optimal use of land resources, and to facilitate broad - based social and economic development without upsetting or endangering the ecological balance of the environment”. Therefore, this reflects the need of EIA for all projects to be implemented on land including this one where by land use optimization will be done for the proposed distribution pipe networks. Street road reserve in the project areas will be used for laying the water distribution pipes.

4.2.5 National Gender Policy (2002)
The key objective of this policy is to provide guidelines that will ensure that gender sensitive plans and strategies are developed in all sectors and institutions. While the policy aims at establishing strategies to eradicate poverty, it puts emphasis on gender quality and equal opportunity of both men and women to participate in development undertakings and to value the role-played by each member of society.

The implementing agency shall adopt the policy through the provision of equal opportunities to both men and women during mobilization, construction and operation phases of the proposed project.

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

The policy identifies HIV/AIDS as a global disaster, hence requiring concerted and unprecedented initiative at national and global levels. It recognizes HIV/AIDS as an impediment to development in all sectors, in terms of social and economic development with serious and direct 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 policy has also set a number of strategic objectives to deal with specific HIV/AIDS problems:

- Prevention of transmission of HIV/AIDS;
- HIV Testing;
- Care for People Living with HIV/AIDS (PLHAS);
- Enhance Sectoral roles through participation and financial support;
- Promote and participate in research on HIV/AIDS-including dissemination of scientific information and development of HIV vaccine;
- Creating a legal framework through enactment of laws on HIV/AIDS-governing ethical issues and legal status of HIV/AIDS affected families;

Therefore, both contractor and operator of the proposed undertaking shall abide to this policy in particular with respect to policy's strategic objectives on prevention of transmission of HIV/AIDS and HIV testing at work places.

### 4.2.7 The Tanzania Mineral policy, 2009

The National Mineral Policy also addresses that the mining activities should be undertaken in a sustainable manner. Reclamation of lands after mining activities is recommended. As far as this project is concerned, mining activities is directed to quarrying activities by the contractor for aggregates and sand shall be conducted in recommended sites by the relevant authorities.

### 4.3 Legal Framework
4.3.1 Environmental Management Act No. 20 of (2004), Cap. 191

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

Among the major purposes of the EMA are to provide the legal and institutional framework for sustainable management of the environment in Tanzania; to outline principles for management, impact and risk assessment, the prevention and control of pollution, waste management, environmental quality standards, public participation, compliance and enforcement; to provide the basis for implementation of international instruments on the environment; to provide for implementation of the National Environmental Policy; to provide for establishment of the National Environmental Fund and to provide for other related matters.

Part III, Section 15(a) states that in matters pertaining to the environment, the Director of Environment shall coordinate various environment management activities being undertaken by other agencies to promote the integration of environment considerations into development policies, plans, programmes, 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 prior to the commencement or financing of a project or undertaking”, while Section 81(3) states “a permit or license for the carrying out of any project or undertaking in accordance with any written law shall not entitle the proponent or developer to undertake or to cause to be undertaken a project or activity without an environmental impact assessment certificate issued under this Act”.

The proposed construction and extension of the distribution networks in Kinondoni and Bagamoyo will comply with EMA, 2004 requirements. The proponent will adhere to all preventive and mitigation measures addressed in the report. This report is one of the compliance procedures to the requirements of EMA, 2004.
4.3.2 The Water Supply and Sanitation Act No. 12 of 2009

The Water Supply and Sanitation Act provide for sustainable management and adequate operation and transparent regulation of water supply and sanitation services with a view to give effect to the National Water Policy, 2002; to provide for the establishment of water supply and sanitation authorities as well as community water supply organizations; to provide for appointment of service providers, repeal of the Waterworks Act and to provide for related matters.

Part XII Section 42 provides for codes of workmanship for water works. According to the section the Minister shall prescribe code of workmanship in respect of the construction, operation and maintenance of any works for the provision of water supply and sanitation services by water supply and sanitation authorities or community owned water supply organisation under this Act; and by private water supply or sanitation systems.

According to Sub-section 42(2) a code of workmanship without limitations includes:

- Design, construction, alteration, operation and maintenance;
- Type of machinery, materials, fittings or appliances which may be used in;
- Requirements for waterworks and sanitation works to only be executed by or under the direct supervision of a person holding prescribed qualifications;
- The procedures for obtaining approval for the works where necessary; and any other thing connected with it.

Part XIII Section 44(1) provides for establishment of National Water Investment Fund. Sub-section 44(2) states the objective of the Fund is to provide investment support for water service provision, and the management of catchment areas serving water supply abstractions, in areas of Mainland Tanzania which are without adequate water services.

Part XIV Section 47(1) specifies offences and penalties regarding riverages to or interferences with waterworks. The section states any person who willfully or negligently river ages the waterworks, any sewer, sewerage treatment plant, or other asset owned or vested in a water authority or community organization, or unlawfully draws off, diverts or takes water from the waterworks commits an offence.

Sub-section 47(2) states any person who is convicted for an offence under subsection (1) shall be liable to a fine not less than fifty thousand shillings and not more than five million shillings or to imprisonment for a term not less than one month and not more than five years or both, and the court may, in addition issues an order for payment of cost of remediing such riverage or loss.

This is also a legislation that provides for sustainable management and adequate operation and transparent regulation of water supply and sanitation services; provides for establishment of
water supply and sanitation authorities as well as community owned water supply organizations; and provides for appointment for service providers. The main aim of this law is to ensure the right of every Tanzanian to have access to efficient, effective and sustainable water supply and sanitation services for all purposes by taking into account among others protection and conservation of water resources and development and promotion of public health and sanitation; and protection of the interest of customers. Under this law, the Minister responsible for water affairs shall establish water authority and cluster water authorities in order to achieve commercial viabilities. The proposed project will therefore be guided among others by part xii of section 42 (codes of workmanship for water works), xiv, section 47(1&2)-offenses and penalties of this Act.

4.3.4 The Water Resources Management Act, 2009
The Water Resource Management Act No. 11 of 2009 was enacted to provide for institutional and legal framework for sustainable management and development of water resources; to outline principles for water resource management; to provide for the prevention and control of water pollution; to provide for participation of stakeholders and general public in implementation of the National Water Policy, repeal of the Water Utilization (Control and Regulation) Act Cap. 331 of 2002 and to provide for related matters.

The objective of this Act is to ensure that water resources are protected, used, developed, conserved, managed and controlled in ways which take into account fundamental principles. Section 9 requires Environmental Impact Assessment to be carried out for any proposed development in a water resource area or watershed to which this Act applies, whether that development is proposed by or is to be implemented by a person or organization in the public or private sector in accordance with the provisions of the Environmental Management Act Cap 191 of 2004. Discharge of effluents from any commercial, industrial or agricultural source or from any sewerage works etc is through application for a permit to the Basin Water Board in accordance with section 75 of the Act. The owner of a Discharge permit shall comply with the water quality effluent standards formulated under subsection (3) of the Act. However, discharge of effluent into surface and ground water will not be likely given the nature of the project.

4.3.5 The Land Act no 4 and 5 of 1999
These laws declare all land in Tanzania to be “Public land” to be held by the state for public purposes. The Acts empower the President of the United Republic of Tanzania, to revoke the “Right of Occupancy” of any landholder for the “public/national interest” should the need arise. The laws also declare the value attached to land.

The law as amended in 2004 recognizes the role of land in economic and urban development. The law provides for technical procedures for preparing land use plans, detailed schemes and
urban development conditions in conformity with land use plan and schemes. The LGA has the power to impose conditions on the development of any area according to the land-use planning approved by the Minister. This project conforms to this law because it has followed all development conditions provided. However, the project will used existing road reserves in the project areas.

The law requires employers to provide a good working environment to workers in order to safeguard their health. The employers need to perform medical examinations to determine fitness before engaging employees. Employers must also ensure that the equipment used by employees is safe and shall also provide proper working gear as appropriate. The requirements have to be fulfilled by contractor during construction and operator during operational phase of the proposed project. The Occupational Health and Safety shall be implemented by the contractor according to OSHA guidelines including registration of work place for construction activities in Tanzania.

4.3.7 Employment and Labour Relations Act No. 6 of 2004
The Act makes provisions for core labour rights; establishes basic employment standards, provides a framework for collective bargaining; and provides for the prevention and settlement of disputes and provides. The implementing agency through consultant shall see to it that the Contractor adheres to employment standards as provided for by the law.

4.3.8 Engineers Registration Act and its Amendments 1997 and 2007
The Acts regulate the engineering practice in Tanzania by registering engineers and monitoring their conduct. It establishes the Engineering Registration Board (ERB). Laws require any foreign engineer to register with ERB before practicing in the country. Foreign engineers/workers working with this project shall abide to the law requirements.

4.3.9 The Contractors Registration (Amendment) Act, 2008
The Contractors Registration Act requires contractors to be registered by the Contractors Registration Board (CRB) before engaging in practice. It requires foreign contractors to be registered by the Board before gaining contracts in Tanzania. The implementing agency shall comply with the law requirement during the recruitment of contractors for project implementation.

4.3.10 The HIV and AIDS (Prevention and Control) Act of 2008
The law provides for public education and programmes on HIV and AIDS. Section 8(1) of the law states that “The Ministry (Health), health practitioners, workers in the public and private
sectors and NGOs shall for the purpose of providing HIV and AIDS education to the public, disseminate information regarding HIV and AIDS to the public”. Furthermore, Section 9 states that “Every employer in consultation with the Ministry (Health) shall establish and coordinate a workplace programme on HIV and AIDS for employees under his control and such programmes shall include provision of gender responsive HIV and AIDS education….” This project shall abide to HIV/AIDS Act in the fight against the disease during all project phases.

4.3.11 The Local Government Law (Miscellaneous Amendment) Act, 2006
This act established the local governments and urban authorities with mandates to spearhead developments in districts and urban centres (for cities and municipalities) respectively. By this law, the authorities have mandates to formulate bylaws to enhance environmental management within their district/urban authorities. Therefore all environmental management by laws of by the respective urban authorities in the project areas shall be applied.

4.3.12 The Forest Act (2002)
The Forest Act No. 14 of 2002 is an Act to provide for the management of forests, to repeal certain laws relating to forests and for related matters. Section 17.-1 provides for removal of trees in specified circumstances. The Act states “it shall be lawful for an authorized officer, either of his own motion or at the request of an occupier of land and on being satisfied of the facts, to enter on land and cause to be cut down and destroyed or removed any tree, whether a reserved tree or not and whether within a reserve or not which is deceased or which is a result of natural causes or human activity on or near the tree or on land nearby the tree is in condition which is a danger to persons living, working or passing near to the tree or to the property adjacent to it”.

Subsection 17(2) requires the occupier of land to pay fees for any tree removed by an authorized person. The Act states “Where an authorized officer takes action under subsection (1) in respect of a tree on land which is occupied as a place of residence or for commercial or industrial purposes, whether the occupation is by a person or organization in the public or private sector, it shall be lawful for the employer of that authorized officer to charge a reasonable fee to the occupier of that land for the performance of that action”.

Subsection 17(3) provides for penalty to any person who has caused damage to a tree, hence resulting into its removal. The Subsection states “Nothing in this section shall absolve any person who by his actions has contributed to or caused the condition of the tree which necessitates action under subsection (1) from any civil or criminal liability arising out of those actions”.

Sub-section 18(1) of the Act requires Environmental Impact Assessment to be undertaken for any development within a forest reserve, private forest or sensitive forest area, including
watersheds. The Act requires EIA to be carried out for any development to be undertaken in a forest reserve, private forest or sensitive forest area including watersheds.

Sub-section 18(3) requires Environmental Impact Assessment to be carried out in accordance with the Tanzania guidelines or international guidelines in case there are no national guidelines.

4.3.13 The Public Health Act 2009
An Act provide for the promotion, preservation and maintenance of public health with the view to ensuring the provision of comprehensive, functional and sustainable public health services to the general public and to provide for other related matters. Section 66 of the Act state that: (1) A building or premises shall not be erected without first submitting the plans, sections and specifications of the building site for scrutiny on compliance with public health requirements and approval from the Authority. (2) A building or premises or its part or any structure shall not be occupied until a certificate of occupancy has been granted. (3) The provisions of subsections (1) and (2) shall not apply to the dwelling houses in the rural areas or houses erected in urban which have been recognized as such under the Squatter Upgrading Programme. The proposed undertaking will abide to this Act.

4.3.14 Dares Salaam Water and Sewerage (DAWASA) Act, 2001
DAWASA is a public facility responsible for the provision of water and sewerage services in Dar es Salaam. The law establishes and governs DAWASA which is the owner of this project. DAWASA’s goals are to provide reliable, affordable and sustainable water supply and sewerage services to all categories of customers in the DAWASA designated areas; and to provide acceptable sewerage services so that public health and protection of the environment are improved in the DAWASA designated areas. The implementation of the envisaged expansion of the Upper Water Transmission and distribution mains will contribute to DAWASA’s capacity to attain its goals.

4.4 Relevant Regulations and Guidelines

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

- A high quality livelihood characterized by sustainable and shared growth (equity), and freedom from abject poverty in a democratic environment. Specifically the Vision aims at: food self-sufficiency and security, universal primary education and extension of tertiary education, gender equality, universal access to primary health care, 75%
reduction in infant and maternal mortality rates, universal access to safe water, increased life expectancy, absence of abject poverty, a well-educated and learning society.

- Good governance and the rule of law moral and cultural uprightness, adherence to the rule of law, elimination of corruption.
- A strong and competitive economy capable of producing sustainable growth and shared benefits a diversified and semi-industrialized economy, macro-economic stability, a growth rate of 8% per annum, adequate level of physical infrastructure, an active and competitive player in regional and global markets.

Proposed Construction & Extension of the Distribution Networks from University Terminal Reservoirs to Bagamoyo is one of the most important component which will contribute to the GoT to achieve its Development Vision objectives (both social and economic), and contribute to poverty reduction through improved access to portable water to majority of people in Dar es Salaam and Bagamoyo.

4.4.2 Environmental Impact Assessment and Auditing Regulations (2005)

Environmental Impact Assessment and Audit Regulations, (2005) set procedures for conducting EIA and environmental audit in the country. The regulations also require registration of EIA experts or firm to undertake the study. This EIA has been conducted following the above stated regulations.

4.4.3 Environmental Management (Water Quality Standards) Regulation of 2007

The regulation provides for the National Environmental Standards Committee of Tanzania Bureau of Standards with key responsibilities of:

(a) prescribe classifications, criteria and procedure for measuring standards for water quality for approval by the Minister;

(b) establish the minimum quality standards for all waters of Tanzania for approval by the Minister;

(c) establish minimum standards for the treatment of effluent before their final discharge into public sewer systems for approval by the Minister;

(d) prescribe requirements for approval by the Minister for the operator of any effluent treatment plant or work or undertaking to undertake treatment of effluent before that effluent is discharged into any body of water; and

(e) establish minimum quality standards for different uses of water for approval by the Minister, provided that these uses shall include: i) drinking water; ii) water for agricultural purposes; iii) water for recreational purposes; iv) water for fisheries and wildlife purposes; v) water for industrial purposes; vi) water for environment; and vii)
water for any other purposes; viii) effluent from domestic, agricultural, trade or industrial origin.

It protects for water source and ground water by setting permissible limits of effluents including for municipal and industrial effluents, specific tolerances for effluents of chrome tanning industry, specific tolerances for effluents of vegetable tanning industry, specific tolerance for effluents from fertilizer industry, Microbiological requirements and classification of non chlorinated pipe water supplies, and six chemical and physical limits for quality of drinking water supplies.

4.4.4 Environmental Management (Hazardous Waste Control and Management) Regulation of 2009

The regulation provides three principles (the precautionary principle, polluter pays principle and producer extended responsibility) as the guiding principles of environment and sustainable development relevant to hazardous waste management. It promotes adoption of cleaner production principles by owners or controllers of facilities or premises which generates waste. It also emphasizes the role of everyone living in Tanzania to safeguard the environment from adverse effects of solid waste. The regulation provides the administration and institutional arrangement for hazardous waste management under the Environmental Management Act. It gives direction for classification of hazardous waste, packaging of wastes, labeling of wastes, label to comply with the Globally Harmonised System (GHS), handling and storing of hazardous waste and transportation of hazardous waste.

4.4.5 Environmental Management (Fees and Charges) Regulation, 2008

These Regulations prescribe the fees and charges payable for accessing or receiving the services rendered by NEMC under the Act and the regulations made there under. They also stipulates that “annual charges for environmental compliance monitoring and audit”, are payable to the Council by all proponents whose projects have been issued with environmental certificates.

4.4.6 Water Sector ESIA and EA Guidelines (2012)

The aim of these guidelines is to provide practical guidance for Environmental and Social assessment in Water and Water related projects. They also address Sector specific gaps not covered in the National EIA Guidelines regarding water specific projects. These guidelines also aimed at reducing cumbersome procedures to developers and stakeholders as it helps in providing vital information on intended development prior to detailed project development activities.

The guidelines are not an alternative to the National guidelines; rather they are complementary
and indeed can only be practically applied in conjunction with the National - EIA Guidelines. On the key procedural stages of the EIA itself, the guidelines therein draw directly on, or refer directly to, National procedures, and NEMC plays the same central role in screening and reviewing EIA in Water Sector projects as it does. Therefore, these guidelines have been used as complementary for this EIA study.

4.5 The World Bank Safeguard Policies and Guidance

The proposed project activities are not likely to generate adverse and irreversible negative impacts. The project has been rated Environmental Assessment Risk Category B and triggers the following World Bank Environmental and Social Safeguards Policies:

- OP/BP 4.01 Environmental Assessment
- OP/BP 4.11 Physical Cultural Resources
- OP/BP 4.12 Involuntary Resettlement

WBG EHS Guidelines will be applied where the limit values (for example with respect to noise levels) are more stringent than National standards (see Table 12). Contractor shall use the WBG EHS Guidelines in identifying the detailed protection measures and management actions to ensure that the ESIA mitigation is delivered during the construction phase, including with respect to traffic safety, community and worker health and safety for the works.

Table 7: Description of World Bank Safeguard Policies

<table>
<thead>
<tr>
<th>Safeguard Policy</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Assessment</td>
<td>This safeguard is typically triggered in projects where the work will affect, temporary or permanently, the natural environment and/or society, through direct, indirect, or cumulative impacts. The project will develop the environmental and social studies required by national law and the Bank’s guidelines to ensure the social and environmental sustainability of the project, and to obtain the respective environmental permissions.</td>
</tr>
<tr>
<td>OP/BP 4.01</td>
<td></td>
</tr>
<tr>
<td>Natural Habitats</td>
<td>This safeguard is usually triggered for projects located in or affecting largely natural, protected or critical areas from an environmental perspective. Regarding to this project, since it is located in the city, we do not expect the presence of fauna or natural flora of conservation importance along the access roads and thus this safeguard will not be triggered in the process of construction of the distribution network.</td>
</tr>
<tr>
<td>OP/BP 4.04</td>
<td></td>
</tr>
<tr>
<td>Physical Cultural Resources</td>
<td>This safeguard might is triggered during project construction in zones of recognized archaeological/cultural/physical potential. This is not anticipated in the current project. However, if potential to trigger this safeguard is realized, investigations, Rescue, and the Chance Finds Procedures Plan are the most common instruments required.</td>
</tr>
<tr>
<td>OP/BP 4.11</td>
<td></td>
</tr>
<tr>
<td>Involuntary Resettlement</td>
<td>In the context of water supply projects, this policy applies when:</td>
</tr>
<tr>
<td>Safeguard Policy</td>
<td>Description</td>
</tr>
<tr>
<td>------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>OP/BP 4.12</td>
<td>(a) Project activities will involve land take, require relocation of people or compensation.</td>
</tr>
<tr>
<td></td>
<td>(b) If location and construction of Water Kiosks require land take or compensation. However, for the current project land take and thus compensation for properties is not anticipated.</td>
</tr>
</tbody>
</table>

4.6 Institutional Framework for the Management of Environment

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

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

The legal institutions for environmental management in the country include;

- National Environmental Advisory Committee;
- Minister responsible for Environment;
- Director of Environment;
- National Environment Management Council (NEMC);
- Sector Ministries;
- Regional Secretariat;
- Local Government Authorities (City, Municipal, District, Township, Ward, Village, sub-village “Mtaa and Kitongoji”)

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

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

The National Environmental Advisory Committee shall advice the minister pertaining to the issuance of the Environmental Certificate upon the review of this EIA

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

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

Regarding to this project the minister shall review NEMC reports on the approval of this EIA before issuing the certificate.

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

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

4.6.5 National Environment Management Council (NEMC)
The National Environmental Management Council (NEMC) purpose and objective is to undertake enforcement, compliance, review and monitoring of EIA’s and to facilitate public participation in environmental decision making. According to the Environmental Management Act (2004) the NEMC has the following responsibility pertaining to EIA in Tanzania:

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

Concerning this project NEMC is responsible to Register this EIA, Determines the scope of the EIA to be conducted, Set-ups cross-sectoral TAC to advise on EIA reviews, Recommends to the Minister to approve, reject, or approve with conditions specific EIS and Controls the implementation of the Environmental Management Plan (EMP) for this project.

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

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

4.6.7 Local Government Authorities

Under the Local Government Act of 1982 (Urban and District Authorities), Local Government Authorities include the City Councils, Municipal Councils, District Councils, Town Councils, Township, Kitongoji, Ward, Mtaa and Village; and have the responsibility to make sure EMA 2004 is implemented.

At all levels, the Environmental Management Committee of each jurisdiction are responsible for the following:

• Initiates inquiries and investigations regarding any allegation related to the environment and implementation of or violation of provisions of the Environmental Management Act;
• Requests any person to provide information or explanation about any matter related to the environment;
• Resolves conflicts among individual persons, companies, agencies non-governmental organizations, government departments or institutions about their respective functions, duties, mandates, obligations or activities;
• Inspects and examines any premises, street, vehicle, aircraft or any other place or article which it believes, or has reasonable cause to believe, that pollutant or other articles or substances believed to be pollutant are kept or transported;
• Requires any person to remove such pollutants at their own cost without causing harm to health and;
• Initiates proceedings of civil or criminal nature against any person, company, agency, department or institution that fails or refuses to comply with any directive issued by any such Committee.
Under the Environmental Management Act (2004), the City, Municipal, District and Town Councils are headed by Environmental Inspectors who are responsible for environmental matters. The functions of the inspectors are to:

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

4.7 Institutional Framework for Management of the Proposed Project

The institution arrangements in place to manage the project is as follows:

- **Ministry of Water and Irrigation (MoWI):** The MoWI will be responsible for overall coordination, monitoring and evaluation of the programme, facilitation of capacity building, and for ensuring policy compliance. MoWI will be the Secretariat of the Sector Working Group and ensure cohesiveness of the sector coordination, monitoring and evaluation framework featured below.

- **Dar es Salaam Water and Sewerage Authority (DAWASA):** is a body corporate managed by a Board of Directors with broad powers regarding the ownership of assets the ability to borrow etc. The Act vests in DAWASA all government land assets and other property including rights of way used for the supply of water and sewerage services in the DAWASA service area.

- **Dar es Salaam Water and Sewerage Corporation (DAWASCO):** is a sole provider of water supply and sewerage Services in Dar es Salaam city and parts of Coast region. The Corporation is responsible for the management, Operation, and maintenance of water supply and waste water disposal services. DAWASCO has put up strategy aimed at improving its services to its implementing agency (DAWASA) in Dar es Salaam, Kibaha and Bagamoyo.
- Energy and Water Utilities Regulatory Authority (EWURA). All utilities will be licensed by EWURA for technical operation and economic regulation purposes. EWURA will also monitor service performance and approve service tariffs.
5. STAKEHOLDER CONSULTATIONS AND PUBLIC INVOLVEMENT

5.1 Stakeholders Identification

Stakeholder’s consultations were conducted between May and August, 2016. Government officers were consulted in their respective offices after arranging and fixing an appointment with them. Community members who are directly affected by the project were informed and consulted about the project at their street/village government offices. Areas of consultation for directly affected community members included Kimahewa, Mabwepande, Mivumoni, Salasala, Tegeta A, in Kinondoni and Bagamoyo District Council. Invitations of the community members to the consultation meetings were made through their local leaders. The main stakeholders identified and consulted include the following:

- DAWASA
- DAWASCO
- Ministry of Water and Irrigation
- Municipal/Town Director of Kinondoni;
- Regional Administrative Secretary of Coast Region
- District Administrative Secretaries of Bagamoyo
- District Executive Directors of Bagamoyo
- MEMO of Kinondoni Municipal Council
- TANROADS Regional Managers for Dar es Salaam
- TANESCO-Kinondoni North Region
- Local Government leaders in the project areas;

The method used to get the views of the stakeholders was through Focused Group Discussions and meetings with the stakeholders.

Typically, the Agenda for these consultations included:

- Presenting the Project
- Obtaining their environmental and socioeconomic concerns and perceptions regarding the proposed project, and
- Professional discussion with key people
5.2 Main Issues raised by Stakeholders

Some of the issues/concerns raised by the stakeholders during the ESIA study for the proposed project are provided in the Table below

Table 8: Stakeholders Concerns

<table>
<thead>
<tr>
<th>NO</th>
<th>NAME OF STAKEHOLDER</th>
<th>CONCERN</th>
<th>RESPONSE</th>
</tr>
</thead>
</table>
| 1  | RAS                  | Dar es Salaam and Coast Regional Administrative Secretariat is the highest Local Government Authority (LGA) at the project level. These LGAs received the proposed project and had the following concerns towards the planned project implementation;  
➢ The proposed project has come late because the problem of water supply to community is very serious and has caused different disease such as Cholera to the local citizen who depend on water from local sources  
➢ Valuation process should be fair, open and promptly                                                                                                                                                                      | The project will not evolve taking of individual land/destruction of properties                                                                                          |
| 2  | Municipal Director   | Municipal Director is the one who oversee all development activities within the Kinondoni Municipal. The Director had the following concerns towards the planned project  
➢ Sensitization should be done to all community in one way or another for those who will be affected by the proposed project including those who will offer land to accommodate water utilities  
➢ Contractor will use Horizontal Direction Drilling (HDD) on road crossing to avoid traffic flow turbulences and the activities will be supervised by TANROADS Dar es Salaam and Kibaha  
➢ Timely completion of the ESIA report                                                                                                                                                                                 | As above                                                                                                                                                               |
| 3  | DAWASA               | Dar es Salaam Water Supply and Sewerage Authority as the implementing agency was happy on how the project is progressing on other hand had the following concerns;  
➢ Sensitization should be done to all community in one way or another for those who will be affected by the proposed project including those who will offer land to accommodate water utilities  
➢ Contractor will use Horizontal Direction Drilling (HDD) on road crossing to avoid traffic flow turbulences and the activities will be supervised by TANROADS Dar es Salaam and Kibaha  
➢ Timely completion of the ESIA report                                                                                                                                                                                | The sensitization of the project has been done effectively as appended in this ESIA report                                                                            |
| 4 | DAWASCO | Dar es Salaam Water and Sewerage Corporation deals with maintenances, collection and payment of water bill and connection of new customers to water networks, DAWASCO had the following concerns;

- Demand has increased from 515,500 to 563,000 people and therefore the project will be able serve a huge number of people who currently are not connected to pipe water supply
- Production capacity has increased from $300,000m^3$ per day to $362,000m^3$ per day
- Due to increase in production almost 90% of DAWASCO’s service area is currently already covered
- Sewerage system in Dar es Salaam cover 10% of the population. This imply that a huge population that is served by DAWASCO use on-site sanitation
- Water loss within DAWASCO coverage is now 47%, this due to physical loses and vandalizing of water utilities |
| 5 | Ministry Of Water and Irrigation (MoWI) | Ministry of Water and Irrigation (MOWI) is the custodian of the proposed project. During the stakeholder consultation the Ministry had the following concern;

- Sensitization should clearly be done to the community and if there will be any commitment between DAWASA and local societies it should be documented
- Relevant administrative set up could be consulted as well
- Local community should know the place where distribution networks shall be located
- Identification of land owners and valuation of their properties should be done promptly to fasten the proposed project if any |
| 6 | MEMO KINONDONI | Municipal Environmental Management Officer oversees all environmental issues within the municipality. During stakeholder consultation MEMO had the following concerns:

- The addition of water shall go together with the construction of new sewerage system as we know 80% of the clean water converted to waste water
- During distribution DAWASA and DAWASCO must use plastic pipe (PVC) to avoid rust.
- The proposed project will add scenic beauty in local areas |
| TANROADS DAR ES SALAAM | The Tanzania National Roads Agency (TANROADS) is an Executive Agency under the Ministry of Works, established in July, 2000. The agency is responsible for the maintenance and development of the trunk and regional roads network in Tanzania Mainland. TANROADS is also responsible for capacity building of other government institutions which undertake road projects within their jurisdiction. TANROADS is therefore regarded as the referencing institution or a principle benchmark for execution of any road project within a country. During stakeholder consultations TANROADS Dar es Salaam Office had the following concerns:

- The contractor who executed the transmission main work did not reinstate the road as requested by the Agency. For example places which were not reinstated as requested include Bunju, Boko, Africana-Tank Bovu streets
- Reinstatement must be done on time to reduce problem of traffic congestion
- Installation of pipes across the road by using the Horizontal Direct Drilling (HDD) which DAWASA conducted has caused roadsettlement
- The soil which was stockpiled and left without being used during excavation of trenches tends to block the drainage systems and cause flooding during rainy season
- Replanting of natural vegetation along the road reserve must be done after excavations
- The proposed project will raise the economic status of locals
- The proposed project will serve the time wasted during fetching water especially for women
- The excavated soil when left for sometimes local people tends to consult TANROADS instead of DAWASA. |

| TANROADS DAR ES SALAAM | DAWASA must ensure the contractor consult TANROADS during undertaking of HDD and during reinstatement

| TANROADS DAR ES SALAAM | DAWASA must ensure the Contractor reinstate all the earthworks along the road in order to avoid clogging of drainage channels
The Manager requested everything should be done on time:

- During reinstatement DAWASA should consult TANROADS to supervise the work
- The HDD method should not be done without any consultation from TANROADS

### TANROADS Coast Region

The Tanzania National Roads Agency (TANROADS) is an Executive Agency under the Ministry of Works, established in July, 2000. The agency is responsible for the maintenance and development of the trunks and regional roads network in Tanzania Mainland. TANROADS is also responsible for capacity building of other government institutions which undertake road projects within their jurisdiction. TANROADS is therefore regarded as the referencing institution or a principle benchmark for execution of any road project within a country. During stakeholder consultations TANROADS Coast Region Office had the following concern:

- Reinstatement was not done at coast regional commissioner office during transmission main
- Reinstatement must be done on immediately to avoid traffic jam
- The HDD which conducted by the DAWASA projects had made the road to undergo settlement every day
- The soil which stockpiled and left without being used during excavation of trenches tends to block the drainage systems and cause flooding during rainy
- Re-plantation of natural vegetation along the road reserve must done excavations
- The proposed project will raise the economic status of locals
- The proposed project will serve the tame wasted during fetching water especially for women
- The excavated soil when left for sometimes local people tends to consult TANROADS instead of DAWASA, Manager requested everything should be done on time
- During reinstatement DAWASA should consult TANROADS to supervise the work

**DAWASA must ensure the contractor consult TANROADS during undertaking of HDD and during reinstatement of road project within a country.**

DAWASA must ensure the Contract reinstates all the earthworks along the road in order to avoid clogging of drainage channels.
<table>
<thead>
<tr>
<th>9</th>
<th>Mitaa/Communities Where The proposed water utilities will be situated (Kinondoni and Bagamoyo District) Kilimahewa, Mabwepande, Mivumoni, Salasala, Wazo, Bunju A, Tegeta ‘A’, The community representative were happy with the project and this was their concerns:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>➢ When will the project start implementation</td>
</tr>
<tr>
<td></td>
<td>➢ Valuation should be open, fair and promptly</td>
</tr>
<tr>
<td></td>
<td>➢ Payment should be done prior to mobilization phase</td>
</tr>
<tr>
<td></td>
<td>➢ The proposed project will enhance hygiene and access to safe water</td>
</tr>
<tr>
<td></td>
<td>➢ The per capital income of the societies will improve</td>
</tr>
<tr>
<td></td>
<td>➢ The water scarcity/shortage within local areas will be solved</td>
</tr>
<tr>
<td></td>
<td>➢ Value of land will increase in local areas</td>
</tr>
<tr>
<td></td>
<td>➢ The cost for accessing water will be lessen from 500/= per bucket of 20 litre</td>
</tr>
<tr>
<td></td>
<td>➢ Scenic beauty of the area will be enhanced</td>
</tr>
<tr>
<td></td>
<td>➢ Employment opportunity to locals will avail during both implementation and operation phases</td>
</tr>
<tr>
<td></td>
<td>➢ Local residents will provide space to lay water supply networks in order to fasten the project</td>
</tr>
<tr>
<td></td>
<td>➢ DAWASA should do whatever possible in order to complete the project in a timely manner</td>
</tr>
<tr>
<td></td>
<td>➢ Contractor should execute the proposed project to a desired quality</td>
</tr>
<tr>
<td></td>
<td>➢ Through implementation of the project contractor should make sure that the local environment is protected</td>
</tr>
<tr>
<td></td>
<td>➢ There is no any local resident who will deny to offer his land if the proposed water utilities selected to be situated at his/her plot and all the procedure to acquire the land will be followed</td>
</tr>
</tbody>
</table>

The mobilization and construction phase of the project will start after completion of the following procedures;

- Submission of ESIA report to NEMC
- Minister of environment to a ward DAWASA certificate
6.0 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.

In this ESIA report, four alternatives have been discussed and considered in the design process. Prior to the start of construction activities, a walkover survey will be undertaken by the Supervising Engineer and the Contractor during which the specific local conditions (including the proximity of schools, hospitals, medical facilities, religious sites, residential properties, trees, shrubs, water features and other environmental and social receptors) will be identified and any minor alterations to the design (for example the side of the street to be affected by works) and any special protection measures (for example the timing and duration of construction activities, the signs, fencing or other additional protection measures needed during works) will be agreed. The Contractor shall prepare an Environment and Social Management Plan (ESMP) which shall indicate how they will mitigate project impact as identified in ESIA report and to incorporate any measures identified and agreed during the walkover survey; the ESMP shall be approved by the (client/Supervising Engineer) prior to the start of construction activities and submitted to the Bank for No Objection. The Client through construction supervising consultant will be monitoring compliance with the ESMP and report on monthly basis along with construction progress reports. A requirement for environmental compliance is included in contractor’s tender documents.

6.1 No Project Alternative
In this study the consultant will make some comparisons between the “No Project Alternative” and Project Alternative. The No Project Alternative means that the proposed Construction & Extension of the Distribution Networks from University Terminal Reservoirs to Bagamoyo should continue to experience water shortage as per current situation, continue to fetch and use untreated water from shallow wells, subsequently continue to be affected with endemic diseases like cholera and other due to presence of pathogen and minerals in varying amount, women and girls continue to waste time to travel longer distances to fetch water, low quality services offered in hospitals due to water deficit and local people to spend a lot of money to purchase water per bucket. Shortage of water resulting fluctuation of land values in some of the areas than others while population influx is highly located towards areas with good access of water and other utilities.

6.2 Project Alternative
The choice of “Project alternative” means the project should be implemented as proposed. As aimed, the proposed Construction & Extension of the Distribution Networks from University Terminal Reservoirs to Bagamoyo will; create temporary employment during mobilization, construction, operation and decommissioning phase of the project, enhance water supply services
to customers, lessen the time consumed by society to find water from far distance, save a lot of money incurred by society to buy water from water vendors for other uses, reduce water related diseases to society from buying water stored in unclean containers/facilities and untreated water from shallow and deep borehole. It will also promote evolution from onsite to offsite sanitation system, enhance aesthetic beauty of the proposed area through local people engaging in horticulture surrounding their residence and increase of profit in industrial sector since cost for buying water will decrease.

6.3 Roads Alternative
The proposed project will be implemented along the street roads other than the main and highways roads since it’s the distribution systems which targets to reach the households within the project coverage area.

6.4 Construction Alternative
Design Consultant has proposed the use of HDD Methods in the areas where pipes will cross the road to avoid minor traffic congestions anticipated in street roads. The HDD Method will also avoid destruction of the roads since the places where the road will be excavated to lay the pipes may not be reinstated in a good way to match with the existing road materials. The HDD method is also an environmental friendly since it does not produce air dust to the nearby local residents, though mild vibration at limited period of time might be experience
7 IMPACTS ASSESSMENT AND IDENTIFICATION OF ALTERNATIVES

7.1 Introduction

This section describes the process of impacts identification and their assessment to ensure that all potential significant impacts are identified and taken into account in project design and implementation.

7.2 Impact Identification

Impact identification is a process designed to ensure that all potential significant impacts are identified and taken into account in project design and implementation. Several ‘tools’ are available to assist in impact identification. Often used methods are checklists, matrices, network diagrams and map overlays. In this ESIA study, a matrix method was used. The following issues were identified to be occurring during the project.

Positive Impacts
- Improve personal hygiene through washing and bathing.
- Saving people time especially women who are the main fetchers of water.
- Improved access to social services for the local communities;
- Increased accessibility to safe and clean water
- Job creation and increased income to local communities
- Improved Health and Sanitation status
- Enhance scenic beauty to the served streets and villages during operation phase
- Good image to streets and villages where the project is going to be implemented
- Lessening the cost of accessing water
- Value of land will increase in local areas

Negative Impacts
- Soil erosion and sediments transfer
- Loss of definite materials and land degradation
- Noise, vibration and air pollution during construction phase
- Safety and health risks of workers and nearby streets/villagers
- Scenic quality deterioration during construction phase
- Increased incident of HIV/AIDS and STIs
- Interruption of water services to consumers
- Increased water and soil pollution
- Increased Wastewater generation in the community
- Increased Population Influx
- Failure to businesses that demand water, since everyone will his pipe
These impacts were divided further into different project stages as described below;

7.2.1 **Impacts Associated with Mobilization and Construction Phase**

- Job creation and increased income to local communities
- Noise, vibration and air pollution
- HIV/ AIDS due to interaction between contractor workers and local residents
- Safety and Health of workers and nearby local residents
- Increased Population Influx
- Interruption of water services to consumers
- Soil erosion and sediments transfer
- Land acquisition to provide space for new infrastructures, especially reservoirs and booster stations
- Scenic quality deterioration
- Solid waste generation

7.2.2 **Impacts Associated with Operation Phase**

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

- Improved personal hygiene through washing and bathing as a result of improved water availability.
- Saving people’s time especially women and teenagers who are the main fetchers of water.
- Employment opportunities to locals as watchmen of new water reservoirs, boosters and other appurtenances.
- Increased accessibility to safe and clean water
- Improved Health and Sanitation status of the people in the project areas
- Increased water and soil pollution during operation stage
- Increased Wastewater in project area as a result of improved water supply
- Increased Population Influx
- Increased economic opportunities, especially for businesses that demand water

7.2.3 **Impacts Associated with Demobilization Phase**

According to the nature of the project, demolition is not expected in the near future rather the demolition of old facilities and construction of new ones; in so doing, the following are expected

- Job creation and increased income to local communities
• Production of rubble and associated disposal problems
• Safety and Health of workers and nearby streets/villagers
• Noise, vibration and air pollution during construction phase

### 7.3 Impact Evaluation

Identification of impacts was followed by prediction or estimation of the magnitude, extent and duration of the impact in comparison with the situation without that the project. The matrix method was used (Table 8: Impact Correlation Matrix for the proposed construction of Distribution Networks for Package 2B and 2F). To be able to predict whether impacts are likely to occur as well as their scale, the initial reference or baseline data prior to the project was determined, and the future changes forecasted with or without the proposed project. The impact evaluation was based on experts’ knowledge.

The significance of impacts was tested using the following criteria:

i. The magnitude and likelihood of the impact and its spatial and temporal extent;

ii. The likely degree of recovery of the affected environment;

iii. The value of the affected environment;

iv. The level of public concern; and

v. Are extensive over space and time (magnitude)

vi. Are intensive in concentration or in proportion to assimilative capacity;

vii. Exceed environmental standards or thresholds

viii. Do not comply with environmental policies, land use plans, sustainability strategy;

ix. Adversely and seriously affect ecologically sensitive areas;

x. Adversely and seriously affect heritage resources, other land uses, communities and/or indigenous peoples, traditions and values.

The impacts were further rated at a scale of “–3” to “+3” through “0” in the following manner;

<table>
<thead>
<tr>
<th>Impact Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>+3</td>
<td>High positive impacts</td>
</tr>
<tr>
<td>+2</td>
<td>Moderate positive impacts</td>
</tr>
<tr>
<td>+1</td>
<td>Minor positive impact</td>
</tr>
<tr>
<td>0</td>
<td>No impacts</td>
</tr>
<tr>
<td>-1</td>
<td>Minor negative impact</td>
</tr>
<tr>
<td>-2</td>
<td>Moderate negative impacts</td>
</tr>
<tr>
<td>-3</td>
<td>High negative impacts</td>
</tr>
</tbody>
</table>

The team focused on significant positive impacts, and negative impacts that were rated +3, +2, -2, -3 and proposed mitigation measures.
Table 9: Impact Correlation Matrix for the Proposed Project

<table>
<thead>
<tr>
<th>S/N</th>
<th>Parameter/Activities</th>
<th>Construction Phase</th>
<th>Operation Phase</th>
<th>Demobilization Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Cumulative</td>
<td>Residual Impact</td>
<td>Putting up a site</td>
</tr>
<tr>
<td>1.</td>
<td>Interruption of water services to consumers</td>
<td>√</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2.</td>
<td>Benefits to communities resulting from employment</td>
<td>√</td>
<td>+1</td>
<td>+1</td>
</tr>
<tr>
<td>3.</td>
<td>Waste management problems</td>
<td>√</td>
<td>-1</td>
<td>-1</td>
</tr>
<tr>
<td>4.</td>
<td>Soil erosion and sediments transfer</td>
<td>√</td>
<td>-1</td>
<td>-3</td>
</tr>
<tr>
<td>5.</td>
<td>Noise, vibration and air pollution</td>
<td>√</td>
<td>-1</td>
<td>-2</td>
</tr>
<tr>
<td>6.</td>
<td>Safety and Health of workers and nearby villagers</td>
<td>√</td>
<td>0</td>
<td>-1</td>
</tr>
<tr>
<td>7.</td>
<td>Land acquisition</td>
<td>√</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8.</td>
<td>HIV/ AIDS cases</td>
<td>√</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>9.</td>
<td>Improved personal hygiene and sanitation condition</td>
<td>√</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10.</td>
<td>Population Influx</td>
<td>√</td>
<td>-1</td>
<td>-1</td>
</tr>
<tr>
<td>S/N</td>
<td>Parameter/Activities</td>
<td>Construction Phase</td>
<td>Operation Phase</td>
<td>Demobilization Phase</td>
</tr>
<tr>
<td>-----</td>
<td>-----------------------------------------------</td>
<td>--------------------</td>
<td>-----------------</td>
<td>----------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cumulative</td>
<td>Residual Impact</td>
<td>Putting up a site</td>
</tr>
<tr>
<td>11.</td>
<td>Increased accessibility to safe and clean water</td>
<td>√</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>12.</td>
<td>Improved social services</td>
<td>√</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>13.</td>
<td>Increased wastewater production</td>
<td>√</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>14.</td>
<td>Saving people time especially women who are the main fetcher of water.</td>
<td>√</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>15.</td>
<td>Loss of definite materials and land degradation</td>
<td>√</td>
<td>-1</td>
<td>-1</td>
</tr>
<tr>
<td>16.</td>
<td>Scenic quality deterioration</td>
<td>√</td>
<td>-1</td>
<td>-1</td>
</tr>
<tr>
<td>18.</td>
<td>Increased economic opportunities, especially for businesses that demand water</td>
<td>√</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
7.4 Potential Environmental and Social Impacts during Mobilization and Construction Phase

Positive Impacts

7.4.1 Benefits to communities resulting from employment and other business opportunities

The proposed project development will benefit nearby communities in all project areas in terms of employment and creating linkages with local economy by the supply of goods and services during construction. The local people either shall be employed directly by the contractor or indirectly by other businesses linked to it (i.e. selling of food and drinks to workers). It is estimated that more than 200 people will be employed during this phase. Most of local residents will buy land to build houses from local people where the project is going to be implemented through this business local people will raise their economy.

Negative Impacts

7.4.2 Dust and noise pollution

Construction activities including transportation of materials normally generate a lot of noise while the earthworks may cause a lot of dust. Noise will also arise from construction machinery at site. Regarding the nature of the project, dust and noise pollution will be significant in streets/village centers due to existence of human settlements. However, the impact will be short term during construction phase only.

7.4.3 Waste Management Problems

Material and equipment mobilization will create residual wastes while sites clearance will create a mixture of top soil and vegetation as waste. The waste generated need adequate haulage facilities and at the right time. Inadequate management of the waste shall create unpleasant condition on site. The wastes such as top soils in rural project areas can easily be applied on open areas where as in urban areas the contractor will identify sites for safe waste disposal.

7.4.4 Safety and Health Risks

Construction of the proposed project will expose the labourers and surrounding villagers to bronchial and other respiratory tract diseases. Also poor use (or not using at all) of the safety gears during construction phase will result into loss of lives or injuries for workers during construction. The incidence rate of water borne diseases such as cholera and diarrhea will increase if there will be no proper sanitation practices at the camp sites due to the fact that some streets/villages who some will be employees of the project are still using ponds and shallow wells as source of water which are prone to pollution.
In addition, throughout mobilization and construction phases the safety of the local communities might be affected in terms of risk of falling into open trenches, temporarily closure of footways, temporary disruption to accesses and road crossing points, nuisance from construction noise nuisance from dust and risks of construction debris will be deployed. An assessment of the risks as a result of the project activities and practical mitigation measures (e.g., signage/warning posts/fencing etc.) will be needed to manage the risks.

7.4.5 Population Influx

The construction of the proposed project shall definitely be accompanied by in-migration of job seekers and opportunistic businesses and speculators. People from surrounding areas may move in the project areas to seek employments and business opportunities. This would also lead to an increased pressure and demand on social services.

7.4.6 Impacts due to Vibration

Construction activities have the potential to produce vibration levels that may be annoying or disturbing to humans and may cause damage to nearby structures/residences. Architectural and even structural damage to existing structures/residences surrounding the sites could occur if appropriate precautions are not taken. The effects of ground-borne vibration include discernible movement of building floors, rattling of windows, shaking of items on shelves or hanging on walls, and rumbling sounds. However, it is anticipated that this section of distribution majority of works like excavations will be done by humans and therefore reduces the impact of vibration especial excavation of trenches for distribution networks pipes. Therefore, there will be no heavy duty machines and trucks to be used within built up areas than mobilization building materials.

7.4.7 Possible intensification of HIV/AIDS and other STD

The serious harm of HIV/AIDS in Tanzania population is well recognized. The construction phase workers are going to earn money probably the amount they have never earn in their entire lifetime which may attract them to involves in drinking irresponsibly subsequently to practice unprotected sex.

7.4.8 Interruption of Water Supply

During construction phase, it is anticipated that water supply services will be interrupted as a result of improvement works for linkage of newly constructed works (this will merely happen during construction off-take points) to the existing system. However the interruption will only be temporary.
7.4.9 Land Acquisition

During construction phase, there will be no land acquisition because the route of the distribution networks in both packages will use existing street road reserves in order to avoid loss of individual properties. This will reduce project cost and will fasten the implementation of the project that will solve water problem experienced in the areas.

7.4.10 Soil Erosion

Water supply project is associated with a lot of excavation works and therefore expose soil to wind or water erosion. The erosion will cause sediments deposits to existing water sources including the adjacent rivers and streams.

7.4.11 Scenic Quality Deterioration

Scenic quality deterioration will occur due to stock piling of construction materials in the vicinity of the project site. Clearance, Excavation work as well as presence of construction vehicles, plant and equipment will also add to scenic quality deterioration. Scenic quality deterioration can destroy the economic and aesthetic value of public and/or private property including land. Scenic quality degradation effects will be significant and is categorized under type three impacts (residual impacts) which can be long term, even after the completion of construction in some areas.

7.4.12 Disruption of Traffic

Since the project will involves the use of the street or feeder roads, excavation will be done manually and in road crossing contactor advised to use HDD method due the mentioned facts the disruption of traffic is not anticipated in this project.

7.5 Significant Impacts during Operational phase

Positive impacts

7.5.1 Improved Personal Hygiene and Sanitation Condition

The personal hygiene and sanitation condition is expected to improve during operation of the project as the per capita water demand that is acceptable according to Tanzania and/or WHO standards will be available for consumption. The water will enhance washing, bathing and sanitary facilities cleaning. Automatically the society which will be served will change from tradition pit latrine to improved/flush onsite sanitation like having septic tank and soak away pit.
7.5.2 Increased Accessibility of Safe and Clean Water

The water is expected to be available in the community at a regular basis, the water is also expected to be safe and clean during operation of the system. Addition and installation of new Distribution pipes would eradicate leakages and other related problems which would lead into water contamination. Increased accessibility of safe and clean water on the other side will serve peoples time especially women who are the main fetcher of water and increase economic opportunities including that which demand water.

7.5.3 Improved Social Services

Water provision in the project area is expected to improve the social services; social services such as schools and hospitals having adequate water supply would be improved in terms of hygiene and sanitation. The improvement would also enhance the effectiveness of other activities within that demand water.

7.5.4 Benefits to Communities Resulting from Employment

The proposed project development will benefit the Kinondoni and Bagamoyo District Council community in terms of temporarily employment in various sections including excavation of trenches, building and guarding newly constructed water facilities. The local people shall be employed directly to cover for newly created jobs during operation phase.

Negative Impacts

7.5.5 Increase Wastewater Generation

One of the direct impacts of improved water supply is generation of more wastewater as it is estimated that about 80% of water consumed per day turns to wastewater. If generated wastewater will not be properly managed will lead to environmental pollution and cause health risks to the communities within the project area. However, the impact can easily be mitigated by provision of proper offsite and onsite sanitation facilities in urban and rural areas respectively.

7.5.6 Population Influx

The proposed project will eventually open doors for more investments as a result of improved social services and availability of clean and safe water. More people will come in project areas or streets where this project will be implemented as suitable areas to live and invest and therefore will cause population influx. The influx will cause pressure on existing socio services and introduce new culture aspects within native communities.
8. CUMULATIVE IMPACT ASSESSMENT

The proposed project location exhibit urban and peri-urban and rural characteristics. Areas that include Bunju, Goba, changanyikeni, Wazo, Makongo and Bagamoyo Town have urban characteristics because the density of urban settlement and activities are comparably high. Other areas such as Mivumoni, Madale, Mabwepande, Bagamoyo (EPZA, Buma, Mataya) have peri-urban characteristics which acts as an interface between these area and urban areas. The settlement densities are comparably lower compared to the urban setting. However, their spatial distribution is extensive. The Yombo, Miswe, Mbwawa and Chasimba in Bagamoyo District have village characteristics where the main economic activities is agriculture.

Most of the project areas which have urban and peri-urban characteristics have existing water supply systems at varying degrees. However, the supply was largely non functional because of inadequate supply of water from the Lower Ruvu transmission system and damaged water supply pipes. These areas relies on onsite sanitation system and completely lack any centralized waste water management systems. Under this existing situation, extension of water supply in the project areas is expected to have the following cumulative impacts.

- Increased access to water in the proposed project areas will act as pull for development in terms of settlement expansion both for commercial and residential purposes. Further more businesses will be attracted to the proposed project areas. This will have implication in terms of increased requirement of social services demanded by the population in the project area. This impact will be mitigated by the Municipal Authorities through planning for social service provision commensurate to the demanded services by the population.

- The fact that the proposed project areas lack any centralized and modern waste water management systems, generation of waste water will increase as result of increased availability of water. Increase waste water if not properly managed will provide good ground for water related diseases such as malaria and diarrhea. This impact should be mitigated by DAWASA through planning and development of waste water management system for the proposed project areas. In the process of developing the plans, detailed analysis of existing land uses should be undertaken in order to inform future land uses in the project area. The planned should allow for the development of land uses to support infrastructures for waste water management (conveyance, storage, treatment).

Water supply pipes will be laid along the street road reserves. These road reserves are also used to serve other infrastructures such as gas pipe lines, telecommunication cables, and probably in future electric power lines. As such, the project will contribute to increased loading in terms of increased number of service infrastructures of the reserve roads.
9. IMPACTS MITIGATION MEASURES

This chapter describes the measures or interventions that shall be implemented so as to minimize the potential negative impacts and enhance positive impacts as identified in the preceding chapter. The mitigation measures put forward are more of good engineering practice that shall be adhered to during all the project phases.

9.1 Enhancement Measures for Positive Impacts during Construction Phase

9.1.1 Benefits to Communities Resulting from Employment

During construction phase there will be benefits to communities resulting from employment which includes the following amongst others:

- The contractor shall be encouraged to employ local unemployed yet willing to work hard, manpower to the extent viable subject to a maximum of 50% unskilled labour. This will ensure that local people derive some benefits out of the project.
- Employment opportunities should consider gender equality
- Contractor shall provide on job training
- Local communities shall be encouraged to produce quality goods and services

9.2 Mitigation Measures for Impacts during Construction Phase

9.2.1 Land Acquisition

Construction of the distribution mains/networks will not have major impact on land acquisition due to the fact that pipe laying will follow road reserves within the proposed sites.

9.2.2 Noise, Vibration and Air Pollution

To the large extent the nuisance of noise, vibration and dust will be mitigated adhering to the following measures as required by Standard Specification for Road Works 2000 and Special Specifications:

- Use good work practices;
- Use machinery with noise reducers;
- No working at night especially in areas with settlements;
- Use water to suppress dust must be practiced on all working sections including areas of in the borrow pit areas and quarries, and any sections of existing street roads traveled by construction equipments or trucks;
- No quarry or borrow pit within 500m of settlements;
- Workers should use working gears like ear and nose masks, helmets or hardhats, and goggles or safety glasses should be made available for workers.
- Contractor should consider good selection of machinery and vehicles, lubricants regular service and lubrication to reduce fumes from construction machinery and vehicles.

9.2.3 Increased Dust

- Trucks transporting construction materials shall be covered on top if the load is dry and prone to dust emissions.
- The construction areas closer to the residential areas shall be fenced by iron sheets; this will prevent the dust at the ground to be picked up by the wind.
- Dust masks shall be provided to workers by the contractor to address the problem.

9.2.4 Waste Management Problems

During mobilization and construction, contractor should ensure the following:-

- Disposal of wastes during mobilization and construction shall be done in accordance to clause 1713 of the Standard Specifications for Road Works 2000. The Special Specifications should be worded to incorporate these measures:
  - Damaged materials such as pipes and packaging materials shall be sold to recyclers.
  - Non recyclables and non-decomposable shall be transported to a legal disposal site in Pugu area, Dar es Salaam region and other recognized place in Coast Region.
  - Sullage shall be disposed of in a pit latrine
  - Food waste shall be buried on site.
  - The contractor shall have HSE department lead by an Environmental Officer who shall supervise the day to day activities related to health, safety and environment (including waste management) at sites.
  - The contractor shall have adequate facilities for handling the construction waste and others as may be generated at site.
  - Topsoil shall be stockpiled and used for reclamation or re-vegetation practice at the sites during landscaping. Detailed mitigation measures for both mobilization and construction phases are presented in the ESMP (Table 12).

9.2.5 Safety and health risks

- The contractor shall have HSE department lead by an Environmental Officer who shall supervise the day to day activities related to health, safety and environment at sites.
- Health and safety issues shall be undertaken according to Occupation Safety and Health Safety Act 2003.
- Appropriate working gear (such as nose, ear mask and clothing) and good construction site management shall be provided.
• A well-stocked First Aid kit (administered by medical personnel) shall be maintained at each construction site. The medical personnel shall also be responsible for primary treatment of ailments and other minor medical cases as well as providing some health education to the workforce.
• The Contractor shall temporarily fence off work sites, clearly mark diversion routes and provide signage to pedestrian and traffic for diversion routes;
• The Contractor shall undertake hoarding to minimize noise in sensitive areas and dampen to minimize dust in dust prone construction sites,
• The contractor shall prepare a Health and Safety Plan for the approval of the supervising engineer prior to starting construction works that will set out the detailed measures that the contractor will take
• The contractor shall provide facilities (such as dust bins) for waste management in the work sites.

9.2.6 Population Influx

• The contractor shall deploy locally available labour
• Maintain good security in the area with signage like “No employment at the moment”, to keep away job seekers from other villages

9.2.7 Possible intensification of HIV/AIDS and other STD

• Contractor shall abide to national policy of 2001 for controlling HIV/AIDS and follow The HIV and AIDS (Prevention and Control) Act of 2008
• The contractor shall conduct HIV/AIDS and related health education workshops to the workforce
• The contractor shall deploy locally available labour to reduce risk of spreading of communicable diseases (especially STD).

9.2.9 Interruption of water supply

Water supply interruption will only be a short term problem especially during construction. This will only happen when connections of off-takes to transmission main is applied during construction phase. The affected people on the other side will be advised to fetch water from other sources mainly groundwater sources (boreholes) and buying water from water vendors. DAWASA will also arrange to supply water through bowsers to alleviate water shortage due to interruptions resulting during project execution.

9.2.10 Soil erosion

• The contractor shall supervise site clearance in such a way that unnecessary clearance of natural vegetation and trees will be avoided.
• After the completion of construction works, replanting of trees or grasses should be emphasized.
• All cuts in the sloping grounds shall be refurbished firmly and provided with the vegetation cover to reduce the effect of soil erosion.

9.2.11 Scenic quality deterioration

• The contractor shall enforce a code of conduct in the camp to maintain neatness of the camp at all times.
• The contractor shall prepare a working site plan, indicating sites for placement of every construction materials, and vehicle routes, in a manner that ensures easy site restoration after the construction phase is completed.
• Deterioration of scenic quality off-site is difficult to mitigate, since the project will be purchasing material from various unmonitored sources. However, since construction materials such as sand, stones and aggregates will be sourced from Dar es Salaam City and/or Coast Region the responsible authorities shall be accountable for the impacts mitigation.

NOTE: Contracts for civil works involving excavations should normally incorporate procedures for dealing with situations in which buried Physical and Cultural Resources (PCR) are found unexpectedly. In case these happen chance finds procedures will be met as stipulated in Section 6.2 in ESMF

9.3 Enhancement Measures for Positive Impacts during Operational Phase

9.3.1 Benefits to communities resulting from employment

• The implementing agency should consider using local people for security purposes of the facilities and equipment
• The implementing agency should engage local people for maintenance and cleanliness of the facilities during operations merely in reservoirs
• There should be registered water user associations in the project areas especially when public water points (DPs) are used, so that water bills are timely paid to the respective Authority. Water use permits should also be issued according to Water Resources Management Act 2009 without unnecessary delays to giant water users who use water for business purposes to enhance rapid growth of their businesses and hence increased employments.

9.3.2 Improved accessibility to clean and safe water

1 ESMF-Environmental and Social Management Framework
• The implementing agency has to enhance operation and maintenance to make sure that water is available and down time is reduced
• There should be proper awareness campaign within the communities to avoid vandalism of water supply infrastructures
• There should be a provision of cattle troughs in strategic areas to serve during dry periods of the year

9.3.3 Improved personal hygiene and sanitation condition

Provision of water to the community shall consider the standard per capita demand according to Tanzania Standards. The quantity of water provided shall enhance the hygiene and sanitation conditions of the people in the project area due to the fact that, there will be adequate water for personal hygiene and for cleaning the sanitation facilities. Water borne and water washed diseases will severely be reduced as good quality and adequate water respectively shall be supplied.

9.3.4 Improved Social Services

Provision of water will prioritize social services like schools and health centers so that as many people as possible will be immediately benefited by the project. Water provision will also improve the hygiene and sanitation conditions and other activities that demand water.

9.4 Mitigation Measures for Negative Impacts during Operation Phase

Increase Wastewater Generation

ESIA team considers increased wastewater generation described in previous sections to be significant since 80% of water supplied will be expected to come out as wastewater. However, improvement or expansion of the wastewater management facilities is not under the scope of this project. This project shall support the development of wastewater management options by making the increased water supply information available to the appropriate entities.

The ESIA team advises DAWASA to collaborate 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.
10. ENVIRONMENTAL AND SOCIAL IMPACT MANAGEMENT PLAN

10.1 Impact Management Plan

The Environmental and Social Management Plan (ESMP) (Table 10) 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 and extension of distribution networks as part of Expansion of Lower Ruvu Water Supply System, the ESMP is given in Table 10. 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.

10.2 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. He/She shall liaise with NEMC, DAWASA and the Ministry of Water and Irrigation for efficacy of his/her job.

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 9 summarizes the institutions responsibilities for the implementation of the ESMP.
### Table 10: Institutional Arrangement for the Implementation of ESMP

<table>
<thead>
<tr>
<th>Institution</th>
<th>Department/ Responsible Person</th>
<th>Role/ Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contractor</td>
<td>Resident Engineer</td>
<td>To implement the ESMP during Construction</td>
</tr>
</tbody>
</table>
| 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 (Kinondoni and Bagamoyo District 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 Eng. and District Eng. |
| NEMC        | General Director               | • Deal with Environmental Management in Tanzania  
• To conduct annual Environmental review |

### 8.3. Environmental and Social Cost

The principal environmental and social costs include the cost for implementing the mitigation measures for proposed construction and extension of distribution networks and water kiosks for Package 2B and 2F as a part of Expansion of Lower Ruvu Water Supply System. These costs are indicated in Table 10. The implementing agency shall cover all the costs proposed in the ESMP.
# Table 11: Environmental and Social Management Plan (ESMP)

<table>
<thead>
<tr>
<th>Identified Impact</th>
<th>Mitigation Measure</th>
<th>Responsible Institution</th>
<th>Time of mitigation</th>
<th>Estimated cost (TZS)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mobilization phase</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Waste generation and management | Disposal of wastes shall be done in accordance to clause 1713 of the Standard Specifications for Road Works 2000. The Special Specifications should be worded to incorporate these measures  
  - Damaged materials such as pipes and packaging materials shall be sold to recyclers.  
  - Non recyclables and non-decomposable shall be transported to a legal disposal site in Pugu area, Dar es Salaam region.  
  - Topsoil shall be stockpiled and used for reinstating flora around the facilities.  
  - Sullage shall be disposed off in a pit latrine  
  - Food waste shall be buried on site. | Contractor/ Env. Supervisor/ | Mobilization phase& Construction phase | 30,000,000 |
| **Construction Phase** | | | | |
| Increased Noise Levels |  
  - Sound construction equipment, with noise sinks, shall be used  
  - Vehicles carrying construction materials shall be restricted during peak hours of the day.  
  - Machine operators and other workers in various sections with significant noise levels shall be provided with noise protective gear (e.g. Ear plugs).  
  - Construction equipment shall be selected, operated and maintained to minimize noise. | Contractor/the implementing agency / Environmental Supervisor | Construction phase | 20,000,000 |
| Increased Dust |  
  - The workforce shall be educated on the issue of maintaining tranquility | | | |
| Safety and Health of workers | • Trucks transporting construction materials shall be covered on top if the load is dry and prone to dust emissions.  
• Dust masks shall be provided to workers by the contractor to address the problem  
• The construction areas closer to the residential areas shall be fenced by iron sheets; this will prevent the dust at the ground to be picked up by the wind.  
• In case earthwork is done on gravel roads sprinkling to road should apply to reduce dust | Contractor/implementing agency/Environmental Supervisor | Construction phase | 30,000,000 |
|———|———|———|———|———|
| | • The contractor shall have HSE department led by an Environmental Officer who shall supervise the day to day activities related to health, safety and environment at sites. Health and safety issues shall be undertaken according to Occupation Safety and Health Safety Act 2003  
• Appropriate working gear (such as nose mask, ear plug and clothing) and good construction site management shall be provided. During construction the contractor shall ensure that the construction site is hygienically kept with adequate provision of facilities including waste disposal receptacles, sewage, and firefighting and clean and safe water supply.  
• Apply Guidelines on Good Environmental and Social Practices (GGESP), which were approved by MOWI in November 2015 and which deals with environmental and social management of the water sector.  
• Fencing of sites;  
• Clearly marked diversion routes;  
• Advanced notice of pedestrian and traffic diversion routes;  
• Hoarding to minimize noise in sensitive areas;  
• Dampening to minimize dust,  
• contractor to prepare a Health and Safety Plan for the approval of the supervising engineer prior to starting construction works that will set out the detailed measures that the contractor will take  
• Waste management measures etc. | Contractor/implementing agency /Safeguard Coordinator | Construction phase | 150,000,000 |
| Waste management problems | • The contractor shall have adequate facilities for handling the construction waste at site  
• Topsoil shall be stockpiled and used for reclamation or re-vegetation at the site during landscaping. | Contractor/street/Village leaders/implementing agency/Environmental Supervisor | Construction phase | 40,000,000 |
|---------------------------|--------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|-------------------|----------|
| Deterioration             | • Prepare a working site plan, indicating sites for placement of every construction materials, and vehicle routes, in a manner that ensures easy site restoration after the construction phase is completed.  
• Since construction materials such as sand, stones and aggregates will be sourced from Dar es Salaam City and Bagamoyo District, the responsible authorities shall be accountable for the impacts mitigation. | Safeguard Coordinator | Construction phase | - |
| Possible intensification of HIV/AIDS and other STD | • Abiding to national policy of 2001 for controlling HIV/AIDS and follow The HIV and AIDS (Prevention and Control) Act of 2008  
• Conduct HIV/AIDS and related health education workshops to the workforce  
• Deploy locally available labour to reduce risk of spreading of communicable diseases (especially STD). | Contractor/Implementing Agency/Local community leader | Construction phase | 15,000,000 |
| Interruption of water supply | □ DAWASCO should organise a mobile water distribution system using water bowserS | DAWASA/DAWASCO/Local community leader | Construction phase | N/A |
| Impacts of vibration      | • The nuisance of noise and vibration will be transient and good work practice can minimize them.  
• The impacts can be further be minimized by proper choice of plant and machinery (i.e. fitted with noise silencers and vibration dumpers). In that regard, the contractor shall use light equipment that do not result into severe vibrations while working in built environments to avoid damage to houses.  
• Proper choice of equipment which offer environmental advantages.  
• Proper location of quarry sites | Contractor/Implementing Agency/Environmental Supervisor | Construction phase | 10,000,000 |
### Scenic quality

- Enforce a code of conduct in the camp to maintain tidiness of the camp at all times.

<table>
<thead>
<tr>
<th>Contractor/Implementing Agency/Environmental Supervisor</th>
<th>Construction phase</th>
<th>Cost (TZS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contractor/Local community leaders</td>
<td>Construction phase</td>
<td>10,000,000</td>
</tr>
</tbody>
</table>

### Population Influx

- The contractor shall deploy locally available labour
- Maintain good security in the area with signage like “No employment at the moment”, to keep away job seeker from other villages

<table>
<thead>
<tr>
<th>Contractor/Implementing Agency/Environmental Supervisor</th>
<th>Construction phase</th>
<th>Cost (TZS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contractor/Local community leaders</td>
<td>Construction phase</td>
<td>30,000,000</td>
</tr>
</tbody>
</table>

### Soil erosion

- Supervise site clearance in such a way that unnecessary clearance of natural vegetation and trees will be avoided. After the completion of
- construction works, replanting of trees should be emphasized
- All cuts in the sloping grounds to be refurbished firmly and provided with the vegetation cover to reduce the effect of soil erosion
- Provision of adequate and well-designed drainage channels
- Installation of silt fences around the working areas to prevent storm water run-offs from flowing into the river especially at the intake. The silt fences or other mechanism used to control erosion must be inspected and maintained throughout the construction period

<table>
<thead>
<tr>
<th>Contractor/Implementing Agency/Environmental Supervisor</th>
<th>Construction phase</th>
<th>Cost (TZS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contractor/Implementing Agency/Environmental Supervisor</td>
<td>Construction phase</td>
<td>100,000,000</td>
</tr>
</tbody>
</table>

### Operational Phase

### 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/financiers 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.

<table>
<thead>
<tr>
<th>Contractor/Implementing Agency/Local communities</th>
<th>Operation phase</th>
<th>Cost (TZS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAWASA/DAWASCO/Local communities</td>
<td>Operation phase</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Total Cost for Mitigation Measure (TZS)**: 435,000,000
11. ENVIRONMENTAL AND SOCIAL MONITORING PLAN

11.1 Environmental and Social Monitoring

Monitoring refers to the systematic collection of data through a series of repetitive measurements over a long period of time to provide information on characteristics and functioning of environmental and social variables in specific areas over time. Monitoring of the anticipated environmental and social impacts in the receiving environments is important to check the effectiveness of the mitigation measures. It also helps to verify the accuracy of impacts prediction as well as checking compliance with the regulatory measures in place. Through monitoring understanding of the degree of implementation of ESMP and its effectiveness can be realized. The monitoring results are also used in subsequent environmental audits.

There are four types of monitoring that are also relevant to this ESIA

- **Baseline monitoring** – the measurement of environmental parameters during a pre-project period and operation period to determine the nature and ranges of natural variations and where possible establish the process of change.

- **Impact/effect monitoring**: involves the measurement of parameters (performance indicators) during establishment, operation and decommissioning phase in order to detect and quantify environmental and social change, which may have occurred as a result of the project. This monitoring provides experience for future projects and lessons that can be used to improve methods and techniques.

- **Compliance monitoring**: takes the form of periodic sampling and continuous measurement of levels of compliance with standards and thresholds – e.g. for waste discharge, air pollution.
Mitigation monitoring aims to determine the suitability and effectiveness of mitigation programs designed to diminish or compensate for adverse effects of the project.

To ensure that mitigation measures are properly done, monitoring is essential. Table 11 provides details of the attributes to be monitored, frequency, and institutional responsibility and estimated costs. These costs are only approximations and therefore indicative. Costs that are to be covered by the implementing agency should be included in the project cost.

9.2 Environmental Audit
DAWASA shall undertake environmental audits as required by EMA (2004) i.e. three years’ cycles. The audits shall be part of the long-term environmental management plan for the project. The audits will unveil the actual performance of mitigation measures on a long-term.

9.3 Monitoring Parameters
Monitoring parameters have been selected considering the impacts identified and predictions. The parameters shall expose the effectiveness of the mitigation measures and general environmental performance of the project. Monitoring of the parameters will be done in various stages of the project as follows;

Mobilization stage– Monitoring of the parameters at this stage is meant to establish the baseline information of the target parameters in the project area.

Construction stage - Monitoring at this stage is meant to establish the pollution levels that arise from the construction activities.

Operation stage - Monitoring at this stage is meant to check on the impacts that might arise as the result of normal use of the infrastructure.
Decommissioning – is not anticipated in the foreseeable future. However, if this will happen, may entail change of use (functional changes) or demolition triggered by change of land use
### Table 12: Environmental and Social Monitoring Plan

<table>
<thead>
<tr>
<th>Environmental Aspect</th>
<th>Parameters</th>
<th>Monitoring frequency</th>
<th>Sampling Area</th>
<th>Measurement Units</th>
<th>Method</th>
<th>Target level/Standard&lt;sup&gt;2&lt;/sup&gt;</th>
<th>Responsibility for monitoring</th>
<th>Estimated costs (Tsh)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NEMC</td>
<td>WB EHS</td>
</tr>
<tr>
<td><strong>Pre-Construction Phase</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NEMC</td>
<td>WB EHS</td>
</tr>
<tr>
<td>Air Quality</td>
<td>Dust (PM&lt;sub&gt;10&lt;/sub&gt;)</td>
<td>Once</td>
<td>Project sites</td>
<td>ppm</td>
<td>Detector tubes</td>
<td>0.01</td>
<td>0.03-0.05/0.01-0.02&lt;sup&gt;3&lt;/sup&gt;</td>
<td>Implementing Agency / Safeguard Coordinator</td>
</tr>
<tr>
<td>Noise Baseline</td>
<td>Noise level</td>
<td>Once</td>
<td>Project sites</td>
<td>dBA</td>
<td>Noise Level Meter</td>
<td>80</td>
<td>55/45&lt;sup&gt;4&lt;/sup&gt;</td>
<td>Implementing Agency / Safeguard Coordinator</td>
</tr>
<tr>
<td><strong>Construction Phase</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NEMC</td>
<td>WB EHS</td>
</tr>
<tr>
<td>Air Quality</td>
<td>Dust (PM&lt;sub&gt;10&lt;/sub&gt;)</td>
<td>Once in three months</td>
<td>Project sites</td>
<td>ppm</td>
<td>Detector tubes</td>
<td>0.01</td>
<td>0.03-0.05/0.01-0.02</td>
<td>Implementing Agency / Contractor/Consultant</td>
</tr>
<tr>
<td>Noise pollution</td>
<td>Noise level</td>
<td>Once a week</td>
<td>Project sites</td>
<td>dBA</td>
<td>Noise Level Meter</td>
<td>80</td>
<td>55/45</td>
<td>Implementing Agency / Contractor/Consultant</td>
</tr>
</tbody>
</table>

<sup>2</sup>WB EHS guide for particulate matter vary from 0.03-0.05 for 24hours average at PM<sub>10</sub> and from 0.01-0.02 for one year average at PM<sub>2.5</sub>.

<sup>3</sup>The indicated noise levels according to WB EHS are during day/night time in areas with residential, institutional and education facilities. For areas with industrial/commercial allowable limits according to WB EHS is 70dBA, both during day and night times.
### Employment opportunity

<table>
<thead>
<tr>
<th>Percentage of local construction labourers</th>
<th>Three times a year</th>
<th>Project sites</th>
<th>Number of local people employed in the project</th>
<th>Records, inquiries and observation</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Contractor/ Consultant/ Local community councils</td>
<td>5,000,000</td>
</tr>
</tbody>
</table>

### Safety and health risks

<table>
<thead>
<tr>
<th>Number and type of safety equipment such as mask, helmet gloves and ear plugs.</th>
<th>Twice a year</th>
<th>Project sites</th>
<th>Number of safety measures provided</th>
<th>Records, injuries and inspection</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Contractor/ ERB/ OSHA</td>
<td>30,000,000</td>
</tr>
</tbody>
</table>

### Waste Management

<table>
<thead>
<tr>
<th>Solid and Liquid waste</th>
<th>Once a week</th>
<th>Project sites</th>
<th>Kg for Solid waste, Litres for Liquid waste</th>
<th>Observations and Measurements</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Contractor/ Supervising firm/Local community councils</td>
<td>100,000,000</td>
</tr>
</tbody>
</table>

### Environmental Aspect

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Monitoring frequency</th>
<th>Sampling Area</th>
<th>Measurement Units</th>
<th>Method</th>
<th>Target level/Standard</th>
<th>Responsibility for monitoring</th>
<th>Estimated costs (Tsh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wastewater Management</td>
<td>Conventional sewerage system</td>
<td>Twice a year</td>
<td>Project sites</td>
<td>Nos</td>
<td>Site Inspection</td>
<td>1 per house</td>
<td>Local community leaders/ Councils</td>
</tr>
</tbody>
</table>

### Operation phase

| Total Monitoring Costs | 207,000,000 |

**Note:** The National Standard will be applied for dust and the WBG EHS Guidelines will be applied for noise during the construction phase.
12. SUMMARY AND CONCLUSION

The proposed extension of water distribution network project will be implemented within specific project locations in Kinondoni and Bagamoyo District Council as part of the project “Augmentation of Dar es Water Supply Scheme”. The project will address existing shortfalls of present water supply system to many dwellers in Dar es Salaam and Coast regions. The project has very limited negative environmental impacts most of them being of short term while offering a wide range of long term positive socioeconomic benefits. The positive benefits of the proposed project are long term and multiplier originating from improved health, hygiene and sanitation conditions of the communities to economic growth of project areas and its surrounding areas. 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 ESIA. The implementing agency is committed to implement all the recommendations given in this report, carrying out the environmental audit and monitoring of the project.

When finalized, copies of this ESIA will be submitted to local government authorities within project area (Kinondoni and Bagamoyo District Council). 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

3. URT, 2012; Water Sector Environmental and Social Impact Assessment and Environmental Audit Guidelines
4. URT, 2012; Population Census Preliminary Report,
5. URT, 2005; The Environmental Impact Assessment and Audit Regulations,
6. URT, 2004; The Environmental Management Act,
7. URT, 2004; The Environmental Management Act,
8. URT, 2000; The National Human Settlements Development Policy,
9. URT, 1999; The Land Act (1999) and The Village Land Act,
11. URT, 2002; Construction Industry Policy,
12. URT, 1997; The National Environmental Policy,
14. URT, 2001; Dar es Salaam Water and Sewerage (DAWASA) Act
15. DAWASA 2011; FINAL REPORT, Environmental Impact Statement Construction of New Lower Ruvu Water Pipeline
### APPENDICES:

#### APPENDIX 1: LIST OF STAKEHOLDERS CONSULTED DURING THE ESIA STUDY

<table>
<thead>
<tr>
<th>SN</th>
<th>NAME</th>
<th>ORGANIZATION</th>
<th>POSITION</th>
<th>DATE</th>
<th>CONTACT DETAILS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Erika E. Sefol</td>
<td>District Officer</td>
<td>MOSI</td>
<td>23/05/2016</td>
<td>0754 23 6554</td>
</tr>
<tr>
<td>2</td>
<td>Othaniel E. Kwa</td>
<td>MOSI</td>
<td>MOSI</td>
<td>23/05/2016</td>
<td>0754 23 6554</td>
</tr>
<tr>
<td>3</td>
<td>Robert A. Malinga</td>
<td>District Officer</td>
<td>MOSI</td>
<td>23/05/2016</td>
<td>0754 23 6554</td>
</tr>
<tr>
<td>SN</td>
<td>NAME</td>
<td>ORGANIZATION</td>
<td>POSITION</td>
<td>DATE</td>
<td>CONTACT DETAILS</td>
</tr>
<tr>
<td>----</td>
<td>-------------</td>
<td>--------------------</td>
<td>----------------</td>
<td>------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>34</td>
<td>Joseph Mwanaume</td>
<td>KEDCO</td>
<td>Engineer</td>
<td>13/7/2016</td>
<td>0774403084</td>
</tr>
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<td>35</td>
<td>Thomas Mwanaume</td>
<td>KEDCO</td>
<td>Engineer</td>
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<td>Nancy J. Smith</td>
<td>KEDCO</td>
<td>Engineer</td>
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<td>37</td>
<td>Alice J. Njoroge</td>
<td>KEDCO</td>
<td>Engineer</td>
<td>13/7/2016</td>
<td>0774403084</td>
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</tbody>
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APPENDIX 2: MINUTES OF THE CONSULTATION MEETINGS

MTAHT WA KILI MAFUNDA 12/07/2020
NHTKUTASARI WA KIKAO WASIKENI
KUTOKA: DAWASARI MANISHA NTAJAMADA

Wageni Kutoka Darasa Nani upate na Darasa
Wameka Kikika na mae na Kili maelea kwa ajili ya kutoshi. Ufainiwea ni Achungu to
wa hudia ya mae ni yate kajio tawakina
wa mfuli wa maji salama kiti maelea.
Mwenye yake ya twakina yate kumika kujenga
limtu, klumatii la huki faidi maji,

WTEKELEZAJI WA MRADU HUHAMA20

1. Sitaelie na Manispasa Amagaye alianga
Njia na ma nje kikikijii vitamania pungundu wakati ndogo ya maene moja.
Kwenda ni Mlango yake ndogo ya yale
Rusijwe enso amagaye pindi zinapo kubaki
Zoezi la kutoshi wale basi Tatinnini
Ya eneo lake Inafanyika. Pesa nduguza
Nindizo kuwesha Ambhi mufika, Kama vale
Masae ya kufanikwa nyunda mwa Ambhi yamwe

2. Mlingwa ni kazi na asani form iliku
Kuu ngwehe Kesambo Cemekukali
Zoezi la mweni Puchutiki eneo lake.
Pesa ya kabo mlingwa ate sabine majubu ya
Ya Tatinnini. Ya mwa kiwokoko Ambhi mufika
Pesi midh akapexa munda mwa Kujianaka
Kide sitimu 30-60

3. Fidha iita bale na mwekaji ya Ambhi nyunda
Pia 300 na Usafiri na Tabaka
Mambo mungu ya mwekaji kufanya ili kuondoa
Mamungu kwa kuendeleza

4. Kufungunika: Kwa ajili ya Ambhi, nyunda
Pia 300 na Usafiri ni mugizo.

5. Kufungunika Tatinnini ni mwili
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KIVAO - SACA-SACA KILIMA HWE
12/7/2016

MAUII DHURID:

1. ADAMU RUME - DAMASCO
2. CHARLES GAICOELE - WAPOS LTD.
3. MERARI JAMES - MJUMBE
4. FREDDIE J. JAMES - MJUMBE
5. FREDY MUSTAP - DAMASCO
6. SAMUEL NANDYA - NIMETA CONSULT
7. ESTHER MZAVU - NIMETA CONSULT
8. NICOLY MALIKU - DAMASCA - KAFLAKY
9. SIMON NYANGI - KMC
10. SIMON NIBASINE - DAMASCA
11. FINN F. MAVAZI - MJUMBE SIMBA FUSI
12. JOHN KERECHA - DAMASCA
13. MUSSA MOHAMEDI MPAKATIKI
14. RICHARD NJELA MKTS/MITA
15. HAWA SAIDI, MJUMBE S MITA
16. MCH JEREMI MWAH
17. ROBERT II WIPEMBE
18. SAULU J. RATAIYU
MUHTASARIA WA KIKAO MAALUMU BAINA YA DAWASA NA MMILIKI WA KIWANJA NDUGU DEO MREMA KILICHOPO KATIKA MTAAN WA SALASALA KILICHOFANYIKA TAREHE 14/7/2016 KUANZIA SAA 10:39 JIONI HADI SAA 11:25 JIONI KATIKA ENEO LA KIWANJA

MAHUDHURIYA YA WALENGWA
1. KEDMON S. NHEMBO - MJUMBE WA SERIKALI YA MTAAN
2. ESTHER MAZAVA - NIMERA CONSULT
3. SAMWEL MAGUYA - NIUMERA CONSULT
4. CHARLES GANZISELLE - WAPERETA
5. CHRISTINA ABRAHAM - UTHAMINI
6. SIMON NYANGI - UTHAMINI
7. ADAM H. RUME - DAWASA
8. SIMON AGUSTINE - DAWASA
9. FRANCISCA FRANK - DAWASA
10. FREDY MUSHI - DAWASA
11. JOHN KINCHE - DAWASA
12. MELKIARD KILASARA - MJUMBE

AGENDA ZA KIKAO
1. Kufungua kika
2. Mazungumzo ya kutwaa kwanja kwa mradi wa Dawasa
3. Kufunga kika

AGENDA NAMBA 1: KUFUNGA KIKAO
Kikao kilifunguliwa saa 10:39 jioni na mjumbe wa serikali aliekuwepo katika kikao.

AGENDA NAMBA 2: MAZUNGUMZO YA KUTWAA KIWANJA KWA MRADI WA DAWASA
Mjumbe wa serikali aliekuwepo nkati kikao, alinkaribisha mtaalamu toka Dawasa, ili azungumzle madhumuni ya kukutana hapo.

MAELEZO TOKA KWA MTAALAMU WA DAWASA.
Mtaalamu toka Dawasa, alieleza kwamba, dhumuni la mkutan hua, ni kuzunguzia na Ndugu Deo Mrema, ambae ni mniliki wa kwanja ambacho Dawasa wanakilitaji kwa shughuli za uendelezaji wa mradi wa magi.

Alieleza kwamba, utaratibu wa kutwaani kwanja na malipo utaelezwa na mtaalamu wa umhamin kutokea manispaa ya kinondoni.

MAELEZO TOKA KWA MTAALAMU WA UTHAMINI
Mtaalamu wa umhamin, alieleza utaratibu wa kwanja ni wa kulipa fidia, kwa kufuta sheria na taratibu husika na kwa kuzingatia mambo yafuatayo:-

1. Thamani ya Ardhi kwa wakati husika
2. Thamani ya jengo/Nyumba kwa kuzingatia bei ya soko.
3. Thamani ya mazao ya una zote, yaani mazao ya asili nay a kupolandwa.
4. Gharama za usumbufu
5. Gharama ya makazi mapya kwa kupungu kwa kuanza maisha katika eneo jipya.

Baada ya maelezo haya, mdogo wa mniliki wa kiwanja aliomba kujua mambo yafuatayo:-

1: Kwa nini wanatumiia utaratibu wa uhamini badala ya kufanya makubaliano kwa kuizingatia ya eneo na soko kwa wakati uliopo?

Alijibiwa kwamba, maradi huu ni wa serikali, hivyo kila jambo linalofanyika linafuta taratibu za kiserikali.

Baada ya maelezo haya, mniliki wa kiwanja Ndugu Deo Mrema, alieleza kwamba, utaratibu unaotaka kutumika yeye akubaliani nao.

Hivyo, aliomba maradi uhamishwe toka katika kiwanja chake na kwenda katika eneo lingine ambalo Dawasa walitafuta kama waqilivyofanya kwake.

Pia, alieleza kwamba, kiwanja hiki hati zake ameziweka reheni.

Baada ya maelezo yake, alijibiwa kwamba, maradi hauwezi kuhamishwa toka katika kiwanja hicho, kwa kuelezwa kwamba, maradi upo nyuma kwa miszi minne.

Hivyo, ameshauriwa afike ofisi za Dawasa kwa makubaliano zaidi.

AZIMIO
Ndugu Deo Mrema, alikubali ushauri wa kikao wa kuafiki ofisi za Dawasa kwa makubaliano zaidi.

AGENDA NAMBA 3 KUFUNGA KIKAO
Kikao kimefungwa saa 11:25 jioni.

Kedmon S. Mrema
Kwa niaba ya Mtendaji Mtaz wa Sasaala
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MUIJASARI. MAKIKAO CHA DAWASA NA DAWASCO PAMOSA NA EHMED MUBARAKA NA UMONGOZI WA SIMTAA YA MIVUMONI NA SIMTAA YA WAZO 14/07/2016

AGENDA
(1) KUFUNGA MAKIKAO
(2) UTAMBULISHO
(3) MAOMBI YA EREO LA MZEE EHMED MUBARAKA ILI DAWASA WAJENGE TANK LA MASI SAFI

AGENDA NO: 1 Kikao kilitunguwa na mkiti waa simtaa ya mivumoni maamo muda wa sera 13:45 ya mchana.

AGENDA NO: 2: Mkiti alianza kuwaitambulisha viongozi wa simtaa. Baada ya hapo alintambulisha kauli mkiti waa simtaa ya uazo na pia ni mjunbe waa simtaa.
Baada ya hapo mkiti alimkaribisha viongozi wa kusafiri ili auwaitambuli sio. Waageni amboco aliongozana na. Na baada ya hapo auwaitambulisha waageni kutoka manispea.

AGENDA NO: 3
Maombi ya ereo la Mzee Ehmed Mubarak
ili Dawasa waJenge Tank la Masi Safi

Mkiti alimkaribisha afisa wa manispea, kuta ni mchanga wao wa malipo ya kuanza ambacho Dawasa wa akikitaji.
AFISA: Alianza kusema kwa utaratibu wa kuanza umeshupita kina ujuzi kapa ni lasimini tu ambayo ukuwanywa kisheria ni kitu gani ambacho kina uweza —
Au kinatakuwa kulipwa.

Kinachotakwa kulipwa ni vitu ambavyo tune vikuta ktk eneo usika hakini ktk eneo lile tunekuta hakuna kitu chochote amacho kituweza kulipwa pale tutalipa Ardhi kulingana na bei iliypo mganu Sokoni kwa thamani ya sasa hivi. Endapo – muhusika tutuka na haye na kufika nae muhapa na alizika basi tutapeleka eneo husika tutuanzia nakuda bacakta ya hape tutapeleka kwa mkuu wa wu – uilaya na muunisho tutapeleka kuwamke na mkao. Bacakta ya hape mmlaki atapewa rotisi ktk eneo lile atata vuchinwa waliohitaji eneo kwa ajili ya kwenda zego la ujengaji wa tanx.

Swali Eneo ambalo nimepimua

Muhusika amegezaliana gharana zake za upimaji hadi akapata ofa je malipo yatutumiaje?

Jibu Kwanza tutukeni kama eneo limepimua na mana raniani yapale hita saitika kwanza pale na kuhusu malipo ni yale yale ayata ongeza kwa nayinga kuweza miktaka.

Ehmed MUBARAKA! Eneo ninalo sauti ya miele 30. mmeleika na kuna vipande – totaaua tutaaua mimi Nina kisehemu tu je inakwanje ktk vile vipande vingine ambavyo navypo vitupa ena inakwanje? Hii eneo langa Nina chukua maddai usteu (2)
Nya kazi ya jamii na yule mnae mtu pale mta mpleka wapi au ye ye siyo jamii?

Mkiti: Watatamani wapaopoingia sehemu kuna wanaanza savi hata ni sijafaa-
ma kama nipale na waliuhitaji wewe ni nipe ni kwa bahati,
mbaya ulikuwa uwanawada nliwa fikishia takaifia kuna uwanawada,
dhuni ni kubwa la kutaisha nini,
kama mkiti nijue pale kuna vipa-
nde vingapi? Kutini sisi kama seleka-
ti tunajua pale ni kuwako.

EHMED MUBARAKA: Maongezi ayako sekani mme-
uneshafika tatizo kiongozi wa
manispea amesha sema uwe uwe
pina ajapimia matipo ni yale yale
basi tujue utubua wa eneo alafulu,
twingie ubia.

DAWASA: Sisi ni waniliku wa mivuto mbini
na sisi siyo wataanya biashara
utwaraibu ni kuli pima pesa ili
ukamunua sehemu nyajingine
na siyo kimungia ubia.

SIRRA WARE: Aliotoa taharifa kuna lite
eneo ambalo waliuhitaji kutu-
nga pumuka tina ngogo na amb
kipa ni hakani kwa hiyo
yuletambaye tana mtahama ni
mumili ameze kudaini
au kutoa uhirikiano uoivete
hadi mahakama itakapo toa
lukumia.

(3)
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HALMASHAURI YA MANISPA YA KINONDONI

OFISI YA SERIKALI YA MTAA
MTAA WA MABWE Pande
KATA YA MABWE Pande
(W) KINONDONI
DAR ES SALAAM
14/07/2016

YAH: KIKAO CHA PAMOJA KATI YA VIONGOZI WA DAWASA,
DAWASCO, TUMATUMISHI KINONDONI MAZINGIRA VIONGOZI
WA SERIKALI YA MTAA NA MWENYE ENEO
PANAPOTAKIWA KIJENGWA TANK.

ORODHA YA WAJUMBE WARIOUDHURIA ITAAMBATANISHWA HAPO
NYUMA YA MUHTASARI HUU.

AGENDA
(1) KUTAMBULISHANA
(2) KUFUNGU KIKAO
(3) MAKUBALIANO YA KUTWAA ENEO LA NDUGU ALBERT SILVESTER
   LYIMO KWA AJILI YA KIJENGA TANK LA MAJI UKO MALOLO
   (MABWE Pande)
(4) KUFUNGA KIKAO

(1A) KUTAMBULISHANA:
Mwenyekiti wa kikao kwanza aliwashukuru wajumbe wote
 waliotumia muda wao wa kuachakufanya kazi zao binafi badala
 yake kuja kwenye kikao kwa jithada zao hizo Mungu atatusimamia
 kikao kiende vizuri kabla ya kufungua kikao Mwenyekiti aliwaomba
 wajumbe wajitambulishe wajumbe walliitambulishe mmoja baada
 ya mwinoine kwa nafasi zao.
(2.B) KUFUNGWA KIKAO:
Baada ya wajumbe kujitambulisha Mwenyekiti wa kikao alifungwa kikao saa 5 Asubuhi kwa kumuomba mto mada atoe mada.

(3.C) MAKUBALIANO YA KUTWAA ENEO LA NDUGU ALBERT SILVESTER LYIMO KWA AJILI YA KUJENGA TANK LA MAJI UKO MALOLO – MABWE PANDE.

Mto mada ambae ni Engenea alicesa kwamba madhumuni ya kuku tana ni kwa ajili ya eneo la ndugu Albert Silvester Lyimo ambalo linakusudiwa kujingwa Tank kwa ajili ya mradi wa maji aliendelea Engerea kwamba Serikali inapohitaji eneo kwa ajili ya maendeleo ya jamii kama kuna mmiliki wa eneo hilo lazima alipwe fidia katika eneo linalotwaliwa. Mwisho alicesa kwamba ni jinsi gani atavyolipwa namkaribisha mthamini kutoka Manispaa ya Kinondoni atafanue.

Kabla ya mthamini kufafanua: Kabla ya ufafanuzi wa mthamini ndugu Albert Silvester Lyimo alicesa eneo lake alilichukuwa muda mrefu kuna gharama nyangi ametumia katika kulitunza eneo hilo ameng’oa visiki na lilikuwa pori hivyo hatokubali kulipwa fidia ndogo japo anafahamu linatakiwa kwa maendeleo ya jamii baada ya maelezo ya ndugu Albert Silvester Lyimo mthamini alimwambia ndugu Albert kwamba Serikali inapohitaji eneo fidia zake hakuna tofauti uwa zinalipwa kwa eka au kwa SQurer mita alitoa mfano kwa uthamini uliofanyika Mabwe Pande ni kwa heka Tshs. 12,000,000/= Milioni kumi na mbili ardhi tupu kwa heka inaweza ikalipwa zaidi ya hivyo itaangaliwa na maendeleo katika eneo hilo kwa kupanda mazao na miti inayostahili kulipwa baada ya maelezo hayo, mthamini alimuhamikishia ndugu Albert kuwa eneo lake linalochukuliwa ni lenye ukubwa wa mita 60 x 60 m = Squire mita 3600. Hivyo atalipwa kwa SQurer mita na SQurer mita moja Tshs. 30,000/= thelathini elfu tu. Baada maelezo mthamini ndugu Albert alikubali malipo hayo bali aliomba twende kwenye eneo likawekwe mipaka na kuangalia ndani ya eneo kulikutwa nini.
Baada ya kufika kwenye eneo likapimwa na kuweka mipaka na kilicho ndani ya eneo kilorodheshwa na kuungizwa kwenye gharama ya malipo mwisho ndugu Albert alikubali kufanyiwa tathimini ili alipwe kupisha mradi.

(4.) KUFUNGA KIKAO:
Mwenyekiti alifunga kikao 6 ½ mchana kwa kuwashukuru wajumbe walioudhuria kutoka sekta mbalimbali na alimshukuru ndugu Albert kwa kukubali amefanya kikao kuwa chepesi.

Abdallah Omari Kunja  
Mwenyekiti wa kikao/ Katiibo wa kikao

NAKALA KWA:-
(1) Afisa Mtendaji - Kata Mabwe Pande  
Taarifa

(2) Ofisi ya Serekali ya Mtaa Mabwe Pande  
Kumbukumbu
NCL

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Mathuroro KUKU MABUEPANDO
14/7/2016

1. Esther Minawa - Scientist NMKHT consult.
2. Samuel Maguta - Environmentalist NMKHT
3. Albert Silvester Lyimo - Muhimbule Mabuepando
4. Eng. John Kirecha - DAWASCO
5. Chelimo Abrahams - utramini Kirondoni
6. Meriam Melato - DAWASCO
7. Francesca Frank - DAWASCO
8. Adam H. Rwek - DAWASCO
9. Charles Gakire - WAPRO Ltd.
10. Simon Mpya - Muhimbule Kirondoni
11. Abdallah Omar Kungo - Mkti wa Sahrata/Mkti wa Kilimo
MUHTASARI WA KIKAO CHA KAMATI YA MAENDELEO YA MTA WA TEGETA "A" KILICHOKETI TAREHE 5/8/2016

WALIOHUDHURIA
1. MARCO B. VAGINGA
2. FISHURE I. MANYEREZI
3. CELINA D. MLONGOZA
4. SAUDA S. MNDEME
5. DAUDI S. MASANJA

WADHIFA
1. MKT
2. MJUMBE
3. MJUMBE
4. MJUMBE
5. MJUMBE

SAHIJI

UDHURU:
1. PILLY R. MTOY-LIKIZO
2. AISHA A. MAKAVA-TAARIFA

AJENDA
1. KUFUNGUA KIKAO.
2. MRADI WA MAJU TOKA DAWASCO.
3. ULIZI NA USALAMA
4. KUFUNGUA KIKAO

AJENDA NO 1 KUFUNGUA KIKAO
Mwenyekiti alifungua kikao mnamo saa 7:30 mchana kwa kumshakuru mwenyezu nungu na wojumbe kwa kuduhurua kwenye kikao.

AJENDA NO 2 MRADI WA MAJU TOKA DAWASCO
Katika ajenda hii Mwenyekiti aliwaeliza wojumbe jina ya ujio wa Mradi huu na kwamba Mradi huu unafadhiliwa na Bank ya Dunia (WB) na kuimaniwa na Serikali ya India (consultants).

Ukaguzi wa awali wa kujenga Tank ambalo linamaliwa na kanali Diiwani Ally Mjumbu, alisema mazungumzo boma ya mlimamizi wa Mradi na mwenezo eneo yamekamilika na mihanini ameshafanishia mali zilizo mdadi ya eneo hukuza ambalo lima ukuwa wa mtaa 63x60. Kinacho sabiriwa sasa ni mchakato wa fidia.
Mwenyekiti aliwaeloa wajumbe kwu chaangamoto zilizopo ambazo zinaweza kutiwaamishia
mradhi ni sisi viongozi, wamalisa, na wanaresha wa kujitegemeu.

Katika kuchangia wajumbe wafombu mehoroz uhaliko onechukia nji za bomba la mradhi ili wathusika wapewe elimu mapema.

Mwenyekiti alisema, mambo yote hayo yapewe muda hani mchakato wa fida utakapo kamiliki na zaidi alitoka wajumbe kutokea wamenaji wa mradhi kwa kwanza kwaweza kuwapotsha wananchi.

AJENDA NO.3 UULIZI NA USALAMA

Katika ajenda hili, Mwenyekiti aliwaeliza wajumbe swali jepezi kwamba, je wananchi wetu wote waume katala kulinda? Katika kujibu hili, mjumbe wa kanda namba mibili (2) Sadaa.
Mademe alisema, katika mene lake chanzo ni Diwani kwanza aliwataka wananchi waache zoezi ku kulinda hani hapo atakapo walia polisi kwa kutoa elimu, wakati tulishafanya vikao vya kanda vya ulizwi shirkisho tekishirikiana na Afande Mramu aktiwaamishia wananchi kuhusu ulizwi shirkisho Kwa hiyo wananchi wameguma kulinda katika kanda namba mibili (2).

Kwa ajili tayari aliwaeliza kwenzi kwa maelezo ya kama na maelezo ya kata (WDC).

AJENDA NO.4 KUFUNGA KIKAO

Mwenyekiti aliwaeliza kikao mmoja saa 8:20 mchanwa kwa kumshikura mwasaa zimungu na kwashikura wajumbe kwa mishango yao mizuri.

MARCO B. VAGINGA

MWKT

FISHURU, MANYERENZI

KAIMU, KABHU
APPENDIX 3: PHOTOS TAKEN DURING THE UNDERTAKING OF ESIA STUDY

Photo 1: Consultation meeting between Implementing Agency, ESIA team and community leaders at Tegeta “A” Mtaa, Goba Ward in Kinondoni Municipal Council
Photo 2: Consultation meeting between Implementing Agency, Project Consultant, Community Leaders and ESIA team at Mabwepande Ward in Kinondoni Municipal Council
Photo 3: Some of the vegetation which will be affected during implementation of the project are as shown in the plate
APPENDIX 04: LAYOUT PLAN FOR WATER DISTRIBUTION AREAS