LVWATSAN – Mwanza
Environmental and Social Impact Assessment Report for Rehabilitation and Expansion of Water Supply Infrastructure in Misungwi Town, Misungwi District, Mwanza Region – Tanzania (Final Report)

Prepared for:
Mwanza Urban Water Supply and Sanitation Authority (MWAUWASA)
P.O. Box 317
Makongoro Road, Mwanza

Prepared by:
Wandert Benthem - (Registered Environmental Expert)
On behalf of Mott MacDonald in association with UWP Consulting
P.O. Box 1195 Mwanza
Tel.: 0763011180
Email: wandert.benthem@mottmac.com

Submitted to:
NEMC Lake Zone
P.O. Box 11045
Maji Igogo, Mwanza
Tel.: 0282502684
Email: nemcmza@gmail.com

March 2017

MOTT MACDONALD

LVWATSAN – Mwanza

Environmental and Social Impact Assessment Report for Rehabilitation and Expansion of Water Supply Infrastructure in Misungwi Town, Misungwi District, Mwanza Region – Tanzania (Final Report)

March 2017

Mwanza Urban Water Supply and Sanitation Authority (MWAUWASA)

OPS/ASD/Technical Assistance Unit (TAU), 100 boulevard Konrad Adenauer, L-2950 Luxembourg

The technical assistance operation is financed by the European Union under the Cotonou Agreement, through the European Development Fund (EDF). The EDF is the main instrument funded by the EU Member States for providing Community aid for development cooperation in the African, Caribbean and Pacific States and the Overseas Countries and Territories.

Mott MacDonald, Demeter House, Station Road, Cambridge CB1 2RS, United Kingdom
T +44 (0)1223 463500 F +44 (0)1223 461007 W www.mottmac.com

Green corner – Save a tree today!

Mott MacDonald is committed to integrating sustainability into our operational practices and culture. As a world leading consultancy business we are always seeking to improve our own performance and reduce the environmental impact of our business. Meanwhile, many of our staff are committed to living sustainably in their personal lives – as an employee-owned company Mott MacDonald shares their concerns. We feel an ethical obligation to reduce our emissions and resource use and have committed to reducing our per capita carbon footprint by a minimum of 5% year on year.

We print our reports and client submissions using recycled, double-sided paper. Compared to printing single sided on A4 virgin paper, double sided printing on recycled paper saves the equivalent of two trees, over a ton of CO2 and a cubic metre of landfill space for every 100 reams. By choosing the greener path we have been able to achieve efficiencies benefiting both Mott MacDonald and our customers.

We would like to share some of the principles of our own ‘Going Green’ initiative:

- When possible we scan rather than print and consider what really needs to be on paper
- We use electronic faxing when practicable
- We work on e-forms
- We use recycled paper when possible and print on both sides
- Reducing paper in the office creates a better working environment for our staff and our clients

We believe that you, as one of our esteemed clients, will share our concern to conserve precious resources for the benefit of our planet and its inhabitants.

Issue and revision record

Revision	Date	Originator	Checker	Approver	Description
01	29 January 2016	MMD / UWP			Draft ESMP for internal review
02	10 February 2016	MMD / UWP Salim			Draft ESMP for internal review
03	18 February 2016	MMD / UWP Salim	Benthem	Rogers	Final ESMP – for submission to NEMC for approval, cc-ed to Lender's Supervisor
04	1 August 2016	MMD / UWP Salim	Benthem		Initial draft ESIA for internal review.
05	19 August 2016	MMD / UWP Salim	Benthem	Waterkeyn	ESIA for submission to NEMC for review and approval.
06	29 March 2017	MMD / UWP Benthem Nshange	Nshange	Waterkeyn	Final Report, incorporating NEMC's Review Committee's comments received on 10/3/2017.

Signed on behalf of the ESIA Study Team:

Wandert Benthem, E&S Lead Consultant, Project Management Consultant, LVWATSAN – Mwanza Project

Contents

Appendices

Tables

Figures

List of Abbreviations

AFD	French Development Agency
DED	Detailed Engineering Design
DoE	Department of Environment
EA	Environmental Assessment
EIA	Environmental Impact Assessment
EIB	European Investment Bank
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
E&S	Environmental and Social
ESA	Environmental and Social Assessment
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management/Monitoring Plan
EU	European Union
EUR	Euro
GoT	Government of Tanzania
HIV/AIDS	Human Immunodeficiency Virus / Acquired Immune Deficiency Syndrome
IIP	Immediate Investment Plan (for LVWATSAN)
LS	Lender's Supervisor
LVWATSAN	Lake Victoria Water and Sanitation (Project)
MCC	Mwanza City Council
MDG	Millennium Development Goals
MIUWASA	Misungwi Urban Water Supply and Sanitation Authority
MoWI	Ministry of Water and Irrigation
MSF	Multi-Stakeholder Forum
MWAUWASA	Mwanza Urban Water Supply and Sanitation Authority
NEMC	National Environment Management Council
NGO	Non-governmental Organization
PFR	Project Formulation Report (for LVWATSAN)
PMC	Project Management Consultant (for LVWATSAN)
PMU	Project Management Unit (for LVWATSAN)
PPE	Personal Protective Equipment
RPF	Resettlement Policy/Planning Framework (for LVWATSAN)
SEP	Stakeholder Engagement Plan (for LVWATSAN)
SER	Supplementary Engineering Report (for LVWATSAN)
STP	Sexually Transmitted Diseases
STIP	Short-term Investment Plan (for LVWATSAN)
TANROADS	Tanzania National Roads Agency
TBS	Tanzania Bureau of Standards
USD	United States Dollar
WSDP	Water Sector Development Project

Acknowledgement

The Mwanza Urban Water Supply and Sanitation Authority (MWAUWASA) would like to acknowledge the assistance and guidance received from various stakeholders for compiling this Environmental and Social Impact Assessment for proposed water development project at Misungwi town in Misungwi district in Mwanza region.

Special thanks are expressed to the Misungwi District Executive Director and MWAUWASA's technical managers, Environmental experts who carried this study and NEMC's Lake Zone staff for their vital contributions and their assistance during various project's consultations.

The team of experts that carried out the Environmental and Social Impact Assessment Study for Misungwi Water Supply Project is presented below.

Name	Title	Qualification & Experiences
Ally Salim	Registered EIA Expert and Lead Consultant (Team Leader)	Bsc. Env. Mgt, Msc. NARAM Cert. in Sustainability Economics & Mgt
Salvatory S. John	Registered EIA Expert	Bsc. Geog & and Env/ Sociologist
Naomi Kiwia	EIA Assistant	Environmental Science
Wandert Benthem	Registered EIA Expert	MSc Biology, Free University, Amsterdam

Note 1: As Mott MacDonald, the lead consultancy firm contracted by the EIB as the Project Management Consultant, is not a registered firm in Tanzania, it subcontracted the ESIA study to Mr Ally Salim, who is a NEMC-registered EIA expert. As Mr Salim was not available for further inputs to the study since August 2016, incorporation of the comments of the NEMC Review Committee and finalization of the present report was done and signed-off by Mott MacDonald's employee Mr Wandert Benthem, who is a NEMC-registered EIA expert as well.

Note 2: Simultaneously to this ESIA study, an Abbreviated Resettlement Action Plan (ARAP, March 2017) has been produced by the project promoter which provides further detail on land ownership of the key project locations (raw water intake area, water storage reservoirs, faecal sludge treatment plant) as well as on the Project Affected People (PAP) that have been identified thus far. The ARAP is considered as being an integral but separate part of the present ESIA report.

Executive Summary

Title of the Project

Environmental and Social Impact Assessment Study (ESIA) for Rehabilitation and Expansion of Water Supply Infrastructure in Misungwi town.

Name of the proponent and contact

Developer: Mwanza Urban Water Supply and Sanitation Authority (MWAUWASA)
Contact Address: P.O. Box 317, Mwanza- Tanzania
Tel.: (255) 282500547
Fax: (255) 282503231
Email: mwauwasa@yahoo.com

Names and address of the experts that conducted the ESIA

Mott McDonald: Cambridge, UK
Tel: +44 (0)1223 463500, Fax +44 (0)1223 461007, www.mottmac.com
UWP Consultants: Dar es Salaam, Tanzania
Ally Salim (Team Leader): Local Registered Environmental Expert
P.O. Box 175 Sengerema, Mwanza
Phone: +255 754 432 400, +255 784 998202

Introduction

The proposed works for Misungwi town are part of the ongoing LVWATSAN – Mwanza Project (2014-2020). The Project aims at protecting the Lake Victoria environment and wellbeing of the population in the Lake Basin. The Project has several components, one of these being the preparation and implementation of plans for the rehabilitation and expansion of existing water supply infrastructure and the construction of a faecal sludge treatment plant in three satellite towns of Mwanza City, i.e. in Misungwi, Magu and Lamadi, and the implementation of these plans. The present ESIA is for the rehabilitation and extension of the water supply system in Misungwi town only. A separate ESIA has been prepared for the faecal sludge treatment plant.

With exception of some components in the existing water distribution network in the town, many parts of the system are in poor condition and need to be replaced. The proposed rehabilitation and extension of the water infrastructure works are described in COWI's Study Report (Final, December 2015). Construction works are currently expected to start in March 2017, to last for 24 months, followed by a defect period of 12 months.

The proposed water supply development in Misungwi involves the rehabilitation and expansion of water supply infrastructure and construction which consist of eight (8) components, i.e. (i) building a raw water intake; (ii) power supplies to the water treatment plant and high lift pumping station; (iii) building or upgrading the water treatment plant; (iv) building a high-lift pumping station; (v) replacing 3.6 km of main water supply transmission pipes; (vi) building two above ground water storage reservoirs; (vii) replacing existing and expanding some 40 km of water supply distribution networks; (viii) replacing more than 2,000 existing house connections and customer water meters, and constructing 13 communal water collection points. Total costs of these interventions are estimated at EUR 3.17 million including the budget for construct the faecal sludge treatment plant within Misungwi.

Baseline Environmental Conditions

Misungwi is an administrative town within Misungwi District close to Mwanza Gulf, one of the southern branches of Lake Victoria. Administratively, the town comprises 21 villages: Misungwi A, Misungwi B, Misungwi C, Misungwi D, Kanisani, Bariadi, Majengo, Masawe A, Masawe B, Masawe C, Bukwaya, Muungano, Mbela A, Mbela B, Mbela C, Mbela D, Misri, Sekondari, Mitindo A, Mitindo B and Polisi.

It is located about 40 km from Mwanza City along the Mwanza – Shinyanga Highway. It is growing at a fast rate towards Mwanza City rather than in the other direction along the Shinyanga highway; the reason being the closeness to Mwanza City and the businesses along the highway including rice mills.

Misungwi town lies at latitude 2º 48’ to 2º 51' South and longitude 33º 05' East. It is the District Headquarters of Misungwi District. The altitude varies from about 1,165 to 1,250 m above sea level. The area is also partly influenced by the existing water service coverage as well as the intended development expansion of the town.

Misungwi experiences a tropical climate. The average annual temperature ranges from 18ºC to 30ºC with annual rainfall ranging between 700 to 1000 mm per annum. The main rain season lasts for about 5 to 6 months attaining its peak in April. The drought season is between June and August. A large part of the town lies on terrain consisting of arable land and some sections have natural scattered forests, which are a factor for attracting rainfall. There are also few hills to the south.

The Census 2012 showed that the population of Misungwi District was 43,535. It has been estimated that this population increased to 49,573 in 2015. The population of Misungwi town was 12,127 at the 2002 Census and 21,113 at the 2012 census that gives an average annual growth rate of 5.70%. The population is estimated to have grown to 24,933 in 2015.

Stakeholder Consultation and Public Involvement

Key stakeholders consulted include:

- District Executive Director and technical staff of the Misungwi Urban Water Supply and Sanitation Authority.
- Residents, Neighbouring and other beneficiaries of the project.
- Community with the benefits with the proposed development

Key issues raised during workshops and during communication with the stakeholders that were carried out included (i) concern about land acquisition and compensation; (ii) water provisions for livestock; (iii) provision of water for communities that live near the water intake and along the mains; (iv) employment of unskilled workers during construction of the works; (v) project coverage. To the extent possible these issues have been addressed in the project design.

Assessment of Impacts

Major adverse impacts of the planned interventions are not expected. Positive impacts of the construction works are employment opportunities for local labourers and increased income for local businesses. Potential negative impacts can be expected from all of the construction activities, but these all can be reduced to low to insignificant levels with proper management by the contractor. Obvious positive impacts of operation of the facilities are improved water supply and increased water quality.

Environmental and Social Management Plan

The core of the present report is the Environmental and Social Management Plan (ESMP), provided in Chapter 8 that outlines for each of the identified Project activities for the planned water supply works what the expected negative impacts may be, which mitigation measures are recommended, and who is responsible for the implementation of these measures. This has been done for three distinct phases: construction, operation of the facilities, and decommission (closure). Negative impacts are considered to be of a local nature and small-scale, and can be mitigated through proper management and at limited costs.

Proposed Monitoring and Auditing

By using the ESMP as a base, for each identified Project activity associated with the planned works a monitoring matrix has been designed (Chapter 9), which again for each of the three project phases, indicates who should perform the monitoring, what, and how often. Frequent monitoring of construction, operation and decommissioning of the project facilities will help the users and authorities to learn from actions taken, and to adapt management of the facilities as may be needed.

Decommissioning

The decommissioning plan, outlined in Chapter 10, is specifically designed for the unlikely event that the construction works will need to be terminated prematurely (i.e. prior to operation of the facilities), and for demolition of the facilities at the end of their lifetime. The latter is not expected within the coming 25 years.

Summary and Conclusion

This project for the proposed water supply works at Misungwi town has substantial socio-economic benefits to both project developer, surrounding community, Misungwi District Council and the community at large. The project as such entails minimal adverse environmental impacts of which adequate mitigation measures have been proposed and incorporated in the project design.

It is therefore concluded that the proposed project will entail no significant impacts provided that the recommended mitigation measures are adequately and timely implemented. The identified impacts will be managed through implementation of the proposed mitigation measures as laid down in this ESIA.

The ESIA team recommends to allow the project to go ahead provided that the outlined mitigation measures are adhered to. The key objective should be geared towards minimizing the impacts that have the potential to degrade the environment. The project proponent shall work closely with environmental experts including those of NEMC and the district council; the general public.

Recommendation

The developer and the contractor should implement the proposed mitigation measures in order to minimize and/or avoid the identified adverse environmental and social impacts of the proposed project; the developer should also implement and follow the monitoring plan to track the effectiveness of mitigation measures and hence further improvement of the mitigation plan. Monitoring will be used as a means of ensuring compliance with national or international standards.

1. Introduction

1.1 Background and Justification

The Lake Victoria Water and Sanitation (LVWATSAN) Initiative was launched in 2004 by the ministers responsible for water from Kenya, Tanzania and Uganda with the aim of achieving the Millennium Development Goals (MDG) for water and sanitation in secondary centres within the Lake Victoria Basin. The Water Sector Development Programme (WSDP; 2005-2023) established under the Ministry of Water and Irrigation (MoWI), under which LVWATSAN resorts, is the main financing mechanism for the water sector in Tanzania. Its past five year programme has foreseen almost USD 1 billion of funding for the WSDP. An Environmental and Social Management Framework (ESMF) and a Resettlement Management Framework (RMF) for the programme were prepared and completed in 2006.

Following a request from the ministers in 2009, the European Investment Bank (EIB) launched a project formulation study in 2010 with the aim to develop plans to scale up the UN-HABITAT-promoted LVWATSAN Initiative to the major settlements of Kisumu in Kenya, and Mwanza, Musoma and Bukoba in Tanzania together with three smaller satellite towns around Mwanza, i.e. Misungwi, Magu and Lamadi. This study, concluded by Atkins in August 2012, resulted in a Project Formulation Report (PFR) covering the six fore-mentioned Tanzanian shore towns. Part 6 of the PFR deals with the proposed project interventions in the three satellite towns. Supplementary studies were conducted by R-Solve, the findings of which are reflected in the Supplementary Engineering Report (SER, August 2012). Both the PFR and SER include sections on preliminary perceived environmental and social impacts of the interventions, which were regarded as mostly positive.

EIB's Environmental and Social Datasheet, of 5 February 2013, concluded for the LVWATSAN project that "the majority of the investments will need to be subjected to Environmental and Social Impact Assessments (ESIAs) at town level, with development of Resettlement Action Plans at intervention level tailored in accordance with the spatial footprint as ultimately determined".

The program also adheres with the Tanzania's Development Vision 2025 with the aim to reduce poverty and to attain a high quality of life for all people by 2025. Water Resources Management and Water Supply feature prominently in the Development Vision. Regarding the overall targets, the objectives to be achieved include: equity of access, water management capacity and proper maintenance of water systems. Consequently, use of environmentally friendly technologies suiting affordable water tariffs coupled with billing and revenue collection mechanisms are considered as important for a sustainable water supply system.

The National Strategy for Economic Growth and Reduction of Poverty (MKUKUTA) commits Tanzania in achieving the Millennium Development Goals (MDGs), and subsequently the Sustainable Development Goals (SDG), for access to safe water, sanitation and a sustainable environment. For the SDGs this implies particularly addressing Goal 3: 'good health and well-being' and Goal 6: 'clean water and

sanitation'. To provide the necessary foundation for success, Tanzania has implemented major reforms in the water and sanitation sector, including decentralization of service provision, full cost recovery and allowing an increasing role of the private sector. The MKUKUTA, the National Water Policy (NAWAPO), and the National Water Development Programme call for increased access to clean and safe water for both rural and urban population. The Water Sector Development Programme (WDSP) is now being implemented and will continue until 2025 with a pooled funding mechanism (Basket) that has been established by the MoWI together with funding agencies, and to which water utilities and other WSS implementing entities can apply for funding.

Implementation of the LVWATSAN – Mwanza Project started in October 2014 with the engagement of a Detailed Engineering Design (DED) consultant, COWI, followed by UN-HABITAT being responsible for community liaison and starting in February 2015, and finally, a Project Management Consultant (PMC), Mott MacDonald, commencing in April 2015. Meanwhile, Halcrow had been contracted by EIB to develop a project-specific Resettlement Policy (Planning) Framework (RPF) in late-2014, whereas UN-HABITAT was entrusted with the task to develop a project-specific Stakeholder Engagement Plan (SEP) – the resulting RPF and SEP, meant to guide Project implementation, were endorsed by the MoWI on 8 January 2016.

Key deliverables of the COWI/DED consultant (October 2014 – early-2017) included the following:

1. **Immediate Investment Plan (IIP) –** i.e. a study report and tender documents for planned interventions in Mwanza City for (i) sanitation in selected schools and public places; (ii) water supply extension and rehabilitation of pipelines; (iii) simplified sewerage and sewer rehabilitation and extensions.
2. **Satellites Investment Plan –** study reports and tender documents for rehabilitation and expansion of water supply infrastructure and construction of a faecal sludge treatment plant, i.e. in the Mwanza satellite towns of Misungwi, Magu and Lamadi.
3. **Master Plan for Mwanza City –** a water supply, wastewater and sanitation strategy for Mwanza and satellites covering the period 2015-2040 and including the Short-term Investment Plan (STIP) for proposed (i) funded and (ii) unfunded works.

Presently, the water utilities in Tanzania are categorized as follows:

- **Category A –** meet their annual recurrent expenses on salaries of staff, O&M as well as contribute to their annual development budget.
- **Category B –** meet costs of O&M except the salaries of the staff who are paid by Government.
- **Category C** – meet costs of O&M but receive Government subsidies to cover the salaries of staff, treatment chemicals and power costs.

The proposed works for Misungwi town categorize as belonging to Category C receiving government subsidies.

1.2 Rationale of the Project in the Area

Poor water supply and sanitation has long been regarded as a constraint to inclusive economic growth. Inadequate access to clean and safe water supply and adequate sanitation especially in rural areas is a major contributing factor to poverty. The amount of time and effort spent on daily chores of water collection, and in caring for those suffering from water and sanitation-related diseases, decreases opportunities for engaging in productive activities. With improved water supply and adequate sanitation provision, the reduction of time spent on fetching water and the positive health impact through reduced

morbidity will allow the population in the project areas to increase productive and income generating activities. This will ultimately lead to more inclusive growth outcomes.

The existing water supply in Misungwi does not accommodate the current water demand, and most people do not have access to improved sanitation. There is also a need to better manage the country's water resources in order to improve water allocation and equitability. Similarly, there is a need for investment to improve growth in water dependent economic sectors (the population of the area are also engaged in animal keeping which demands water for daily sustenance).

While investments in the sector have increased over the past years, a further increase is needed to meet the country's goals as articulated in the Tanzania's Development Vision 2025, which stipulates among others increased access to water, increased access to sanitation; and improved institutional capacity for water resources management.

An assessment has been carried out by COWI to determine what is required to improve water supply in Misungwi town. The water supply system was constructed in the 1950s with water being pumped from Mitindo Dam with a capacity of 153,000 m^3. After the failure of the Mitindo Dam in 2007 as a result of inadequate rainfall, a new supply system was constructed using an intake at Lake Victoria in Mwajombo village at Nyahiti sub-village. At the same time, four existing storage reservoirs were rehabilitated.
In 2008, a supply system was constructed. The main elements of this new system are:

- New intake in Lake Victoria at Nyahiti sub-village;
- Disinfection facilities;
- High lift pumping station;
- Transmission main;
- Refurbishment of the Bomani storage reservoir.

The design capacity of this water supply system is not known, but the existing high lift pump is reported to have a capacity of 160 m^3/hour. The electrical power supply to the high lift pumping station is intermittent and so the quantity of water delivered depends on the availability of electric power.

At present, the water distribution network is fed from the Bomani storage reservoir.

It is reported that there are 67 shallow wells in the town but these cannot be used in the dry season due to falling groundwater levels.

The supply system based on Mitindo Dam is no longer used and has been abandoned. Siltation is a problem in the dam due to agricultural activities in the catchment that is actively cultivated. This has reduced the storage capacity of the dam. With the exception of some pipes in the water distribution network, all components of the existing water supply system are in poor condition and need to be replaced.

Currently, water treatment at Misungwi is carried out by dosing with sodium hypochlorite solution, although all components of the existing water supply system are in poor condition and need to be replaced through this program.

There is therefore need to assist this water development projects in Tanzania to grow through physical interventions by making capital investments in the infrastructure and through capacity building in staffing,

resources and technical knowhow. For MIUWASA it is important that it should endeavour to do the following:

- Supplying of wholesome and potable water;
- Supplying of adequate quantities of piped water;
- Availing water close to the users all the time instead of intermittently;
- Improving the water supply systems based on the current water demand.

In order to enable the authority to fulfil its mandate of providing water supply services effectively and efficiently, institutional improvement should be identified and outlined. With the water sources not adequate, the challenges are therefore great for the authority and the support outlined above is necessary and justified. The authority therefore has to implement an institutional development program gradually but in a structured and planned manner so that when the infrastructure has been constructed and is operational MIUWASA would be able to fulfil its mandate.

1.3 Project Benefits

The project will increase coverage of sustainable and clean water to the population of Misungwi including public primary schools. In addition, the project will create more than 150 jobs including during the construction phase.

1.4 Project Funding and Cost

The overall LVWATSAN – Mwanza Project is financed under the European Union (EU) Africa Infrastructure Trust Fund within the overall context of the EU and Africa Strategic Partnership. The European Investment Bank (EIB) and the Agence Française de Development (AFD) have signed two loan agreements with the Republic of Tanzania for an amount of EUR 45 million each for financing of 86% of the investment costs associated to the extension and upgrading of water supply and sanitation in Mwanza City and satellite towns (Misungwi, Magu, Lamadi), as well as sewerage systems in the towns of Bukoba and Musoma. The total Project cost is estimated at EUR 104.5 million, including EUR 14.5 million provided by the Tanzanian government.

1.5 Rationale of the ESIA Study

The most useful tool for understanding and managing the impacts of a particular site / projects are thorough Environmental and Social Impact Assessment (ESIA). Through scientific analysis and stakeholder involvement, the EIA process helps an organization or individual / Developer identify critical social and environmental issues associated with a project, and ensure that positive impacts are optimized while negative impacts are minimized and mitigated. An effective ESIA process can improve local community understanding of the whole project, increasing the sustainability of the project. It is most cost effective to carry out an ESIA prior to site development, to identify and resolve issues at an early stage by appraising options for development, because of large amount of capital funding involved in developing or altering a site. Environmental Assessments can also be useful for operations phase to identify areas for improvement and thus avoid site closures as a result of non-compliance. The purpose of conducting this ESIA study was to facilitate in depth evaluation of potential impacts and its mitigation associated with the proposed water supply works and to materialize harmony with relevant stakeholders.

Part VI and Third Schedule of the Environmental Management Act (Act No. 20 of 2004) (URT, 2004) provides information on EIA and projects that require EIA. Similarly, according to the First Schedule of the EIA and Audit Regulations, 2005 (URT, 2005), the proposed project falls within the category of projects that requires mandatory EIA. Item 1 (ii) in the First Schedule of the Regulations compels to mandatory

EIA projects that are relevant to the proposed development. The Environmental Management Act (EMA), Act No. 20 of 2004 provides comprehensive laws for environmental management in the country bringing together stakeholders across different sectors. The Act through its EIA and Audit Regulations, 2005 outlines steps to be followed and elaborates clearly procedures to be followed in undertaking EIA study for any development project. Thus, this EIA study corresponds with the EMA, 2004 and its EIA and Audit Regulations of 2005.

1.6 Objectives of the ESIA Study

Mott MacDonald in association with UWP Consulting have been trusted with the responsibility to conduct an Environmental and Social Impact Assessment study for the proposed works. The overall objectives of the ESIA are to:

- Identify key environmental and social issues related to the proposed project, their impacts, and mitigation if negative.
- Compile Environmental and Social Management Plan (ESMP) framework comprising notably environmental and social management measures as well as mechanisms for their implementation and its compliance monitoring in order to minimize the project's negative impacts and enhance the positive aspects.

The general objectives listed in Part IV of the Environment Impact Assessment Regulations of 2005 are as follows, but not limited to:

- Ensure that environmental considerations are explicitly addressed and incorporated into the development decision making process;
- Anticipate and avoid, minimise or offset the adverse significant biophysical, social and relevant effects of developmental proposal;
- Protect the productivity and capacity of natural systems and ecological processes which maintain their functions;
- Promote development that is sustainable and optimises resources use and management opportunities;
- Establish impacts that are likely to affect the environment before a decision is made to authorise the project;
- Enable information exchange, notification and consultations between stakeholders.

1.7 Approach and Methodology

This report has been developed on the basis of procedures set out in Environmental Management Act, 2005 and Environmental Impact Assessment and Audit Regulations No.349 of 2005, related to data collection and review and stakeholders consultation.

- **Screening and Scoping –** The project has been screened as mandatorily requiring EIA. Scoping has been carried out to identify issues and impacts that are likely to be important and their terms of reference have been established for EIA.

- **Baseline Conditions –** The report has been developed on the basis of available information. A review of the current baseline status of the project area and subsequent updating of the anticipated impacts, mitigation measures as well as the environmental management plan is the main focus of this assignment as such as to prepare an ESIA Study Report. In addition to physical environmental assessment, consultation meetings were undertaken by the consultant with a view to appreciating the

design concepts, project components and implementation schedule as well as associated experiences.

- **Consultation Meetings –** The consultation process with the stakeholders was conducted includes meetings with villages and ward leaders, Misungwi District Officers as well as Lake Victoria Basin Water Board (LVBWB) office, etc. A project brief giving project description and anticipated environmental impacts have been highlighted together with the mitigation of negative impacts. The consultation process was taken so that the stakeholders appreciate the project and their recommendations are incorporated in the design and during implementation and operations.

- **Document Review –** Relevant documents were reviewed for an understanding of the assignment and the project setting, environmental status, data on social and economic characteristics of Misungwi town and land use practices, proposed design concepts, development strategies and related development master plans as well as the policy and legal documents.

- **Environmental and Social Assessment –** The site is well identifiable on the ground enabling determination of the exact physical environmental and social features to be directly or indirectly affected. A comprehensive physical evaluation of the project area was undertaken taking into consideration physical and biological environmental status, human settlements and socio-economic activities within and around Misungwi town. Fieldwork sessions established the impact zone and impact parameters in terms of physical environment, social and economic trends, population trends, hydrology and climatic patterns among others.

- **Environmental and Social Management Plan –** has been compiled to ensure mitigation compliance during the project implementation and operation phases, by identifying explicitly the negative impacts, how mitigated, who will be responsible for ensuring mitigation, and how compliance will be monitored.

- **Reporting –** The process of report review involved the Consultant analysing respective data and information obtained in the previous study process and discussions on the design principles that are still evolving. The information so obtained was translated into supplementary findings and potential impacts. It also provided a basis for developing improved mitigation measures and the Environment Management Plan for incorporation into the project implementation and other investigation.

2. Project Description

2.1 Location and Accessibility

Misungwi is an administrative town within Misungwi District close to Mwanza Gulf, one of the southern branches of Lake Victoria, as shown in Figure 2-1 below.

Figure 2-1. Location of Misungwi town
Source: Design Report, December 2015; COWI Design Consultant

Administratively, the town comprises 21 villages: Misungwi A, Misungwi B, Misungwi C, Misungwi D, Kanisani, Bariadi, Majengo, Masawe A, Masawe B, Masawe C, Bukwaya, Muungano, Mbela A, Mbela B, Mbela C, Mbela D, Misri, Sekondari, Mitindo A, Mitindo B and Polisi.

Misungwi town is located about 40 km southeast from Mwanza City along the Mwanza-Shinyanga highway. It is growing at a fast rate towards Mwanza City rather than in the other direction along the Shinyanga highway; the reason being the closeness to Mwanza City and the businesses along the highway including rice mills.

2.2 Current Water Supply in Misungwi

At present, the only piped water supply system in Misungwi District is in Misungwi town which is reported to serve a reported 50% of the population.

The water supply system for Misungwi town was constructed in the 1950s with water being pumped from Mitindo Dam with a capacity of 153,000 m^3. After the failure of the Mitindo Dam in 2007 as a result of inadequate rainfall, a new supply system was constructed using an intake at Lake Victoria in Mwajombo village at Nyahiti sub-village. At the same time, the four existing storage reservoirs were rehabilitated.

In 2008, a supply system was constructed. The main elements of this new system are:

- New intake in Lake Victoria at Nyahiti sub-village;
- Disinfection facilities;
- High lift pumping station;
- Transmission main;
- Refurbishment of the Bomani storage reservoir.

The design capacity of this water supply system is not known, but the existing high lift pump is reported to have a duty of 160 m^3/hour. The electrical power supply to the high lift pumping station is intermittent and so the quantity of water delivered depends on the availability of electric power from TANESCO.

At present, the water distribution network is fed from the Bomani storage reservoir. It is reported that there are 67 shallow wells in the town but these cannot be used in the dry season due to falling groundwater levels. The supply system based on Mitindo Dam is no longer used and has been abandoned. Siltation is a problem in the dam due to agricultural activities in the catchment that is actively cultivated. This has reduced the storage capacity of the dam. With the exception of some pipes in the water distribution network, all components of the existing water supply system are in poor condition and need to be replaced (Figure 2-2).

2.3 Water Supply Assessment

An assessment has been carried out by COWI to determine what is required to improve the water supply and sanitation systems in Misungwi. At present, the only piped water supply system in Misungwi District is in Misungwi town which is reported to serve only 50% of the population. It is clear that with the limited funds available for expansion of the water supply system, it will not be possible to make any investments in water supply systems for other areas within Misungwi District despite the desire for more widespread water service expressed by participants at the Consensus Workshop held on 21 January 2015 (Section 5-2). Therefore, the focus of the investments under this project will be the improvement and expansion of the water supply system for Misungwi town within the available budget.

The approach that has been adopted for determining the investments was to fix the locations and levels of the proposed storage reservoirs in Misungwi town and then to analyses the existing transmission main from the Lake Victoria source to Misungwi town to determine how much water can be transferred through

the existing main to the proposed storage reservoirs. This was followed by an assessment of how this water can be best supplied to the population of Misungwi town.

Figure 2-2. Some of the existing water supply infrastructures
Source: ESIA Study Team, photos taken during site visit in May 2016

Detailed proposals were only developed for the works related to the water supply system based on the achievable capacity of the existing transmission main. The recommendations for areas of land required for the various installations assume that future expansion of the water supply system for Misungwi town will consist of a new system constructed in parallel to the system proposed for this project.

2.4 Objectives and Proposed Project Components

The proposed Project works for Misungwi town are described in COWI's Study Report (Final, December 2015), and in COWI's Tender Documents (July 2016). The long-term (ultimate) water supply service area that was presented by Misungwi Urban Water Supply and Sanitation Authority (MIUWASA) and government officials was discussed and approved at the stakeholder consensus workshop on 21 January 2015. The proposed development will benefit the villages of Mwajombo, Mapilingi, Nange, Iteja, Mwambola, and Misungwi.

The objective of the proposed works is to improve the water supply system in the town.[1]

The proposed works for Misungwi town are divided in eight (8) water supply-related as is outlined below.

(i) Raw Water Intake

- Intake structure at a level of about 1,130 m asl;
- DN400 mm steel intake pipe approximately 350 m long;
- Raw water sump of about 40 m^3 capacity.

This intake will be difficult and costly to construct, so it is planned that it should be suitable for all water needs up to the year 2040.

(ii) Power Supplies to Water Treatment Plant and High-lift Pumping Station

The existing power transmission line and transformer are adequate for the water treatment plant and high-lift pumping station. Note: this suggests that no activities will be implemented under this component.

(iii) Water Treatment Plant

The Water Treatment Plant (WTP) will have a capacity of 3,000 m^3/day and will comprise:

- Submersible raw water pumps in the raw water sump to lift the raw water from lake level to the treatment plant inlet;
- Raw water transmission main from the raw water pumps to the treatment plant inlet;
- Inlet works with coagulant preparation, dosing and mixing facilities;
- Sedimentation tanks with sludge removal facilities;
- Rapid gravity filters with backwashing facilities;
- Disinfection preparation and dosing equipment;
- Disinfection contact / treated water storage.

(iv) High-lift Pumping Station

The proposed high lift pumping station, with a capacity of 3,000 m^3/day, will comprise:

- Pumping station structure;
- One duty and one standby variable speed pump sets with a design duty of 143 m^3/hour against a head of 225 m at maximum efficiency;
- Pump suction and delivery pipework;
- Electrical and control installations;
- Surge pressure suppression equipment.

(v) Transmission Main

[1] A separate ESIA study focusses on improving the sanitation situation for the town.

The first 2.5 km of the existing transmission main is in poor condition and will be replaced with DN300 mm steel pipes. At the upper end of the existing transmission main, the following branches will be constructed to connect to the proposed service reservoirs:

- To Low Level Reservoir DN200 mm steel pipe, 900 m long; and
- To High Level Reservoir DN200 mm steel pipe, 200 m long.

(vi) Storage Reservoirs

It is recommended that the High Level reservoir should have a capacity of 300 m^3 and the Low Level reservoir should have a capacity of 600 m^3.

The proposed volumes of the reservoirs do not include any storage to cover demands in the event of an electrical power outage that results in the water treatment plant and high lift pumping station being out of operation. The investment includes no on-site power generation facilities.

(vii) Distribution Networks

It is proposed to replace some of the existing distribution mains that are in poor condition. In addition, the networks will be extended. The total length of new distribution mains is:

- High Level zone 19,612 m; and
- Low Level zone 20,150 m.

The pipes shall be buried along the road reserve, during the activity TANROADS will be informed

(viii) House Connections and Customer Water Meters

At present, there are 1,229 metered customer connections on the existing water distribution network that serves an estimated 50% of the population of Misungwi town, or 12,467 persons. It is estimated that the planned immediate improvements to the water supply system under this project will serve a total of 21,315 persons who will be supplied through 2,100 metered customer connections.
Leak detection and repair campaigns carried out in situations similar to Misungwi town have shown that up to 95% of all identified leaks are in the customer connections. Therefore, it is recommended that all existing customer connections be replaced. All new connections should include a water meter.
The numbers of customer connections required in Misungwi is based on the following parameters:

- 5 persons for each customer connection for high and medium income consumers, and
- 800 persons for each domestic point with four outlets for low income consumers.

A total of 2,145 new metered customer connections are proposed in the Phase I project i.e.:

- High income consumers 853 connections,
- Medium income consumers 1,279 connections, and
- Low income consumers 13 domestic points.

2.5 Project Activities

Major project activities are categorised by pre-construction, construction, operation and decommissioning phases as follows.

Pre-construction Activities

- Activities to be undertaken during pre-construction phase include:
- Demarcation of any access/service roads;

- Mobilization of construction materials, equipment and machinery;
- Identification and movement of the construction materials and equipment at the project site
- Secure of all permits and consult all related stakeholders for further actions
- Secure the professional contractor who to conduct the activity

Construction Activities

Activities anticipated during construction phase include but not limited with:

- Clearing of the site areas required, levelling, excavation, etc;
- Rehabilitation and Expansion of Water Supply Infrastructure
- Demarcation of any access / service roads
- Construction of water supply infrastructures
- Construction of water storage tanks
- Proper location / distribution of water channels
- Construction of water kiosks
- Construct additional water related facilities to enhance proper water supply

Construction activities were planned in December 2016 to start in March 2017 and to end in March 2019, after which there will be a defects period of 12 months (Figure 2-6).

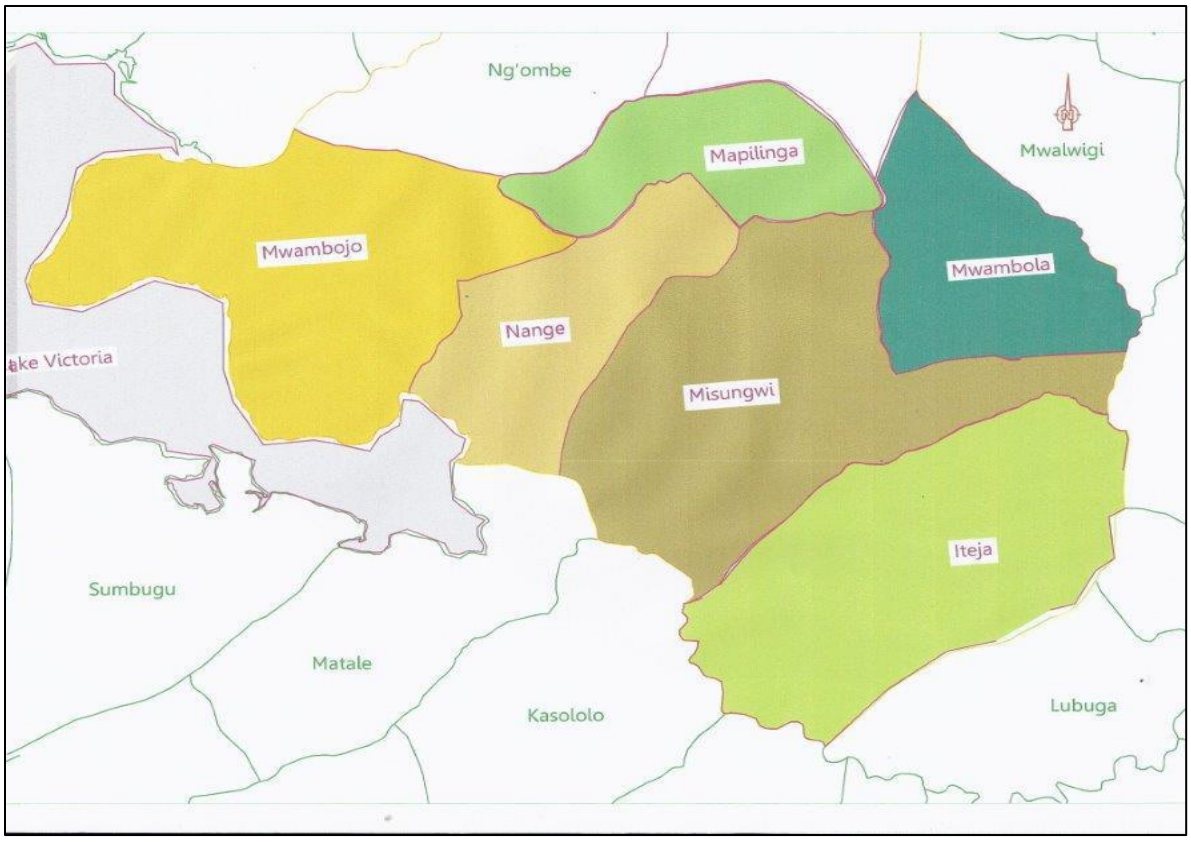


Figure 2-3. Misungwi water supply service area
Source: Misungwi UWASA, Consultant, December 2015

Figure 2-4. Locations of new storage reservoirs
Source: Tender Documents, July 2016 (COWI Design Consultant)

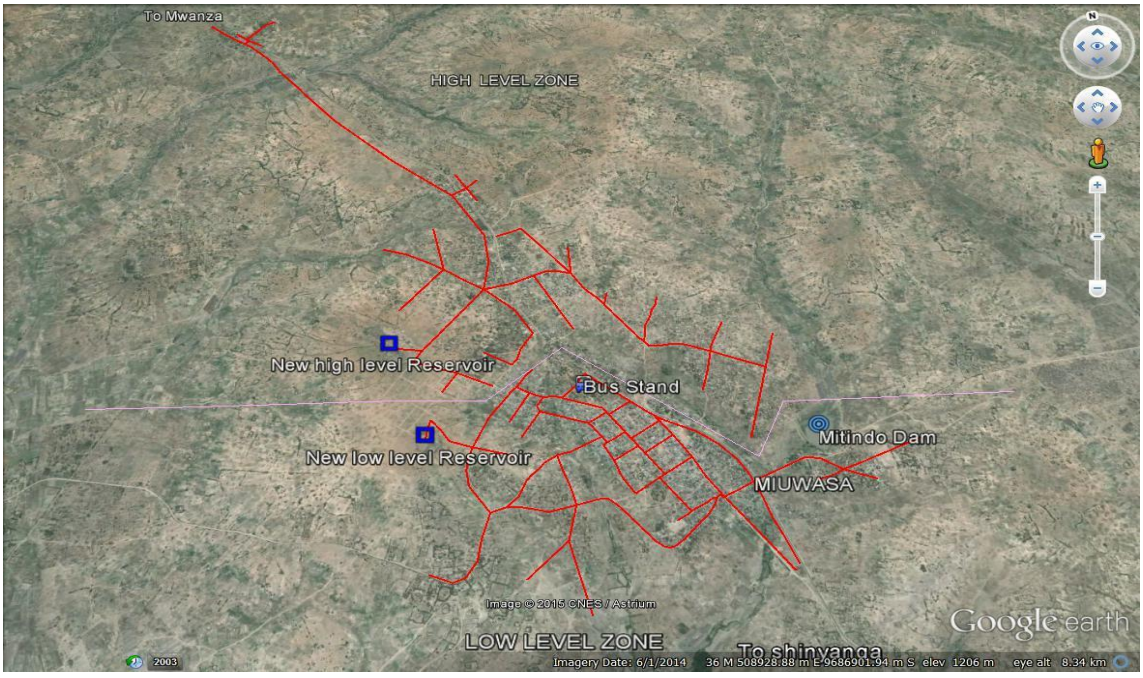


Figure 2-5. Location of the proposed distribution network pipelines
Source: Tender Documents, July 2016, (COWO Design Consultant)

Figure 2-6. Implementation of the proposed works

4 #02: (ICB) IIP Satellite Towns	1076 da	Fri 26/02/16	Thu 26/03/20	
4.1 #02 Draft Tender Docs frm COWI	70 days	Fri 26/02/16	Thu 26/05/16	
4.2 #02 PMU Document Review	10 days	Fri 27/05/16	Thu 09/06/16	
4.3 #02 COWI Final Edits to T Docs	25 days	Mon 13/06/16	Fri 15/07/16	
4.4 #02 Tender Period	47 days	Fri 22/07/16	Fri 23/09/16	
4.5 #02 Tender Evaluation	53 days	Fri 23/09/16	Wed 07/12/16	
4.6 #02 Negotiations and Mobilisation	50 days	Wed 04/01/17	Thu 09/03/17	
4.6.1 Contract Negotiatiations	0 days	Wed 04/01/17	Wed 04/01/17	NCB Contractor
4.6.2 Attorney General Approval	0 days	Wed 04/01/17	Wed 04/01/17	AGoT
4.6.3 Contract Signing	0 days	Fri 27/01/17	Fri 27/01/17	NCB Contractor
4.6.4 Contracts Awarded & Announced	0 days	Fri 27/01/17	Fri 27/01/17	MWAUWASA
4.6.5 Prepare Plan of Works	2 wks	Fri 27/01/17	Wed 08/02/17	NCB Contractor
4.6.6 #02 Construction Programme Agreed	0 days	Wed 08/02/17	Wed 08/02/17	NCB Contractor
4.6.7 Contractor Mobilisation	1 mon	Thu 09/02/17	Thu 09/03/17	NCB Contractor
4.7 #02 IIP Satellites RAP & Valuation	67 days	Fri 27/01/17	Thu 27/04/17	
4.7.1 Pipe route marking	7 days	Fri 27/01/17	Sat 04/02/17	PMC
4.7.2 PAPs identification	14 days	Mon 06/02/17	Wed 22/02/17	PMC
4.7.3 Draft A/RAP preparation	10 days	Thu 23/02/17	Wed 08/03/17	PMC
4.7.4 PAPs Census & Valuataion of affected assest by LGAs	14 days	Thu 23/02/17	Tue 14/03/17	LGAs
4.7.5 A/RAP Revew & Approval by MoWI	12 days	Wed 15/03/17	Thu 30/03/17	MoWI
4.7.6 Release of fund and compensation process	7 days	Fri 31/03/17	Mon 10/04/17	MoWI
4.7.7 Monitoring & reporting of the A/RAP implementation	13 days	Tue 11/04/17	Thu 27/04/17	PMC/SC
4.8 #02 IIP Satellites ESIA	595 day	Thu 15/12/16	Fri 22/03/19	
4.8.1 Review of ESIA by NEMC and revision by PMC	24 days	Thu 15/12/16	Mon 16/01/17	NEMC/PMC
4.8.2 Approval of Final ESIA by NEMC	7 days	Tue 17/01/17	Wed 25/01/17	NEMC
4.8.3 Monitoring of & reporting on ESMP implementation	24 mon	Wed 15/03/17	Fri 22/03/19	PMU/PMC
4.9 #02: (ICB) 24m Construction & 12m Defects	792 day	Wed 15/03/17	Thu 26/03/20	
4.9.1 Construction Period (24m)	528 day	Wed 15/03/17	Fri 22/03/19	
4.9.1.1 Non PAP affected areas (duration assumed)	18 mon	Wed 15/03/17	Wed 19/09/18	ICB Contractor
4.9.1.2 PAP affected areas (duration assumed)	6 mons	Thu 20/09/18	Fri 22/03/19	ICB Contractor
4.9.2 Defects period (12m)	12 mon	Mon 25/03/19	Thu 26/03/20	ICB Contractor

Source: Joint Implementation Plan (PMC, December 2016)

Operation Phase

The operation phase refers to the use of the facilities to be constructed such as pipes, pump stations, treatment plants, etc. During the operation phase the main activities will include but not limited with the following mentioned:

- Routine maintenance in order to maintain the efficiency and quality of the facilities, which over time will experience wear and tear.
- General environmental and safety management of the proposed development infrastructures.
- Insure proper supply of clean and safe water to the Misungwi people under the supervision of the Misungwi Urban Water Supply and Sanitation Authority (MIUWASA).

Decommissioning Phase

The anticipation design for the structure will be cost effective, it is planned that it should be suitable for all water needs up to the year 2040. During the time regular maintenance and repairs during this periods is important to ensure good performance of the facilities.

2.6 Construction Materials

The proposed development will require a variety of materials. All the materials will be sourced from designated area / certified area / registered & certified product suppliers. Details on the required construction materials are provided in the design consultant's tender documents, particularly its Volume IV: Bill of Quantities of July 2016. Pipework consists mostly of HDPE pipes and some lengths of steel pipes, the latter especially for the large diameter pipes (300 mm).

2.7 Waste Generation

During Construction – Waste likely to be generated during construction activities includes:

- Spoil soils resulting from earthworks;
- Wood and metal scraps;
- Packaging such as plastics, oil containers, cans, boxes;
- Liquid waste (domestic);
- General refuse such as food scraps.

All wastes shall be disposed by adhering to the Environmental Management Act of 2004, as well as in accordance with the town's waste collection and disposal standards and procedures.

During Operation – Waste produced during operation of the works will mainly be of an organic nature (wastewater from kitchens, toilets and wash rooms), or be scrap metal and plastic waste from repair, replacement and maintenance of the works. Contents of latrines and septic tanks / soakaway pits will be collected and transported to the faecal sludge treatment plant that will be built by the project outside town (being subject to a separate ESIA study). Waste oil generated from machine and equipment repair and maintenance, is to be collected in waste oil drums and when full is to be taken by waste oil recyclers.

2.8 Land Ownership

Most of the lands where the main project facilities will be located are legally owned by the Misungwi District Council. The land where the storage tanks will be located on two rocky hilltops is part of a conservation area under the Land Act. The municipality has the mandate to manage as well as to utilize these for the public interest. The allocated land by Misungwi District Council for tank construction shall be legally transferred from Misungwi District Council to MIUWASA. This shall include the title deed of the said land. The pipeline will be buried in the road reserves from the intake at the lake to the main storage tanks as well as from the main tanks to the water kiosks. Project beneficiaries agreed during consultations that that the water pipes may cross their farms or plots as may be required.

2.9 Fire Safety

Fire storage is allowed for in urban areas as per Design Manual – 2 simultaneous fires requiring fire flow of 10 l/s for 2 hours, resulting in 72 m^3 of fire storage. Where industrial activities are predominant in urban areas, industrial fire flow of 15 l/s for 4 hrs (216 m^3) has been allowed. For urban areas therefore 'fire' storage and fire hydrants requirements will be allowed to protect strategic assets only. To allow "fire hydrants' in all streets and all over town will result in a distribution system of minimum diameter 100mm and this makes not only the distribution system exorbitantly costly but also increases unaccounted for water (losses) through wastage due high flows and pressures allowed in the mains for fire flow. In rural areas, there is need to protect some strategic assets such as grain storage facilities and social facilities.

2.10 Project Costs

The estimated costs of the water supply and sanitation works in Misungwi are summarized in Table 2-1 below. The costs are shown in Tanzanian Shillings (TZS) and Euro (EUR) using an exchange rate of EUR 1.00 = TZS 2,400. Note that the budget includes the cost for the construction of a faecal sludge treatment plant in Misungwi, which is the focus of a separate ESIA study.

Table 2-1. Summary of investment costs

	Description	Cost (TZS)	Cost (EUR)
1	Raw water intake	306,750,000	127,813
2	Water treatment plant	1,817,472,000	757,280
3	High lift pumping station	471,174,000	196,323
4	Transmission main	669,700,000	279,042
5	Storage reservoirs	460,000,000	191,667
6	Distribution networks	1,574,983,600	656,243
7	House connections and customer meters	497,640,000	207,350
8	Faecal sludge treatment plant	184,168,000	76,737
9	Domestic points	57,900,000	31,625
10	Water supply to Nyahiti sub-village	135,675,000	56,531
Subtotal		*6,340,832,600*	*2,642,014*
11	Physical contingencies (10%)	634,083,260	264,201
12	Price contingencies (10%)	634,083,260	264,201
Total cost		***7,608,999,120***	***3,170,416***

Source: Technical Assistance for Preparation of Master plan, Detailed Designs & Tender documents (COWI, 2016)

3. Administration, Policy and Legal Framework

This Chapter presents the policies, legal framework and institutions that are or may be relevant to the preparation of the ESIA as well as an outline of the applicable legal ESIA process.

3.1 Environmental Management in Tanzania

A clean, safe and healthy environment is the constitutional right of every person living in Tanzania. The regulation on environmental management is mainly vested on two public institutions, the Division of Environment (DoE) in the Vice President's Office and the National Environment Management Council (NEMC). The DoE among others coordinates various environment management activities undertaken by other agencies and promotes the integration of environmental considerations into development policies, plans, programs, strategies, projects and undertakes strategic environmental assessment with the view to ensuring proper management and rational utilization of environmental resources on a sustainable basis for the improvement of human life. The NEMC undertakes among others enforcement, compliance, review and monitoring of environment impact assessment.

3.2 National Policies

Environmental awareness in the country has significantly increased in recent years. The government has been developing and reviewing national policies to address environmental management in various sectors. National environmental policies and regulations are based on the need to take an integrated approach to environmental management and the need to work towards the goals of sustainable development. The objectives of these policies are among others to regulate development so that this is not undertaken at the expense of the environment. National policies that address environmental management relevant to this project include the following.

3.2.1 National Environmental Policy of 1997

Chapter 4 of the National Environmental Policy elaborates on the importance of EIA in the implementation of the NEP. Paragraph 64 states that "it is a context of an EIA regime that policy guidance on choice to maximize long term benefits of the development and environmental objectives can be revealed and decided upon''. On public consultation the policy on Paragraph 66 states that: "One of the cornerstones of the EIA process will be the institutions of public consultations and public hearing in EIA procedures". In this context, the project proponent has observed the requirements of this policy: stakeholder' consultative meetings have been conducted concerning the proposed works during project awareness and sensitization done by UN-Habitat as well as consultation done by ESIA team.

3.2.2 National Water Policy of 2002

The National Water Policy (NAWAPO) directs adoption of a holistic basin approach that integrates multi-sectoral and multi-objective planning and management that minimizes negative impacts on water resources development so as to ensure sustainability and protection of the resource and its environment. The policy underscores the importance of a holistic approach by stating that "all water abstractions and effluents discharges into water bodies shall be subjected to a water use permit or discharge permit to be issued only for a determined beneficial use and for a specified period of time. On policy issues in urban water supply and sewerage, the policy has a goal of having wastewater treatment systems which are environmentally friendly. To ensure that domestic and industrial wastewater is not haphazardly discharged to contaminate water sources, the project in each town entails:

- Wastewater sludge disposals / treatment facilities will be constructed to accommodates the wastewater produced in the area
- Cesspit emptying services will be established and/or contracted to the private operators

3.2.3 National Land Policy of 1995, revised in 1997

This policy advocates the equitable distribution and access to land by all citizens. It aims to ensure that existing rights in land especially customary right of the smallholders (i.e. peasants and herdsman who form a majority of the country's population) are recognized and clarified to promote rapid social and economic development of the country among other objectives and secured by the law. The National Land Policy recognizes the need of protecting environmentally sensitive areas. The policy emphasizes on protecting of the environment and natural ecosystems from pollution, degradation and physical destruction. In addition, the policy recognizes the importance of social services such as water, road, energy and solid waste management for environmental protection. Finally, the policy identifies the need for conservation and preservation of prehistoric/historic sites and buildings. The proposed development shall ensure all requirements of this policy.

3.2.4 Community Development Policy of 1996

One of the objectives of this policy is to educate communities on the importance of environmental conservation in pursuing social and economic development. Some of the areas of emphasis of the policy include public health and sanitation in rural and urban areas, water and environmental sanitation, appropriate technology for domestic energy use, in particular improved cook stoves, and improving rural and urban environment through programs such as planting trees and forests in households, villages and wards. In fulfilment of these policy goals, the proposed development will support a clean and healthy environment in each town.

3.2.5 Women and Gender Development Policy of 2000

This policy's overall objective is to promote gender equality and equal participation of men and women in economic, cultural and political matters. It also focuses on fairer opportunities for women and men and access to education, child care, employment and decision-making. During project implementation the proponent is to give fair opportunities for both women and men.

3.2.6 National Gender Policy of 2002

The key objective of this policy is to provide directives and guidelines that will ensure that gender sensitive plans and strategies are developed in all sectors and institutions. While the policy aims at establishing the 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 roles played by each

member of the society. This project will respond to the policy by ensuring equal employment opportunities during the project cycle. The proponent is to adopt the policy through the provision of gender balanced employment opportunities in construction and related activities.

3.2.7 National Policy on HIV/AIDS of 2001

This policy identifies HIV/AIDS as a global disaster, hence requiring concerted and unprecedented initiatives 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. Being a social, cultural and economic problem, prevention and disaster control will depend on effective community-based prevention, care and support interventions. The local government council will be the focal point for involving and coordinating public and private sectors, NGOs and faith groups in planning and implementing of HIV/AIDs work, particularly community-based interventions. Best experiences in community-based approaches in some districts in the country will be shared with local councils. The Project proponent is to link its effort with other stakeholders in HIV/AIDS sensitization during different project phases.

3.2.8 National Employment Policy of 1997

In view of the Government efforts in development of this policy, the contractor in collaboration with the District Council intends to supplement these efforts by providing employment to local residents during project implementation. Transfer of skills and technology can be attained among those who will be employed and after their contract terms they can engage in self-employment activities in the informal sector. It is envisaged that some people will be engaged by the project proponent in during operation of the works.

3.2.9 Cultural Policy of 1997

This policy covers a wide range of topics relating to both living cultural heritage and historical and archaeological remains ("cultural property"). The policy requires that "all land development shall be preceded by Cultural Resource Impact Studies". The District Council and the contractor are to follow the requirements of this policy and in case such historical or cultural sites are discovered, appropriate measures are to be taken to involve local and national authorities in their conservation. However, this far no cultural or historical sites of relevance are known to be present in any of the proposed project intervention sites.

3.2.10 Other Policies

Other policies relevant to the project works include:

- **Tanzania Development Vision of 2005**, which aims to attain high quality of life.
- **Forestry Policy of 1998.**
- **National Health Policy of 2003** – Public Healthy Act. No. 1 of 2009 stipulated on Pg. 20.

3.3 Legal Framework

3.3.1 Environmental Management Act No. 20 of 2004

This act provides both a legal and institutional framework for the sustainable management of the environment, prevention and control of pollution, waste management, environmental quality standards, public participation, environmental compliance and enforcement. It also requires the undertaking of the EIA for investment projects. It further recognizes the need for research, public participation in

environmental decision making, environmental awareness raising, and dissemination of environmental information. The act gives Local Government Authorities the mandate to ensure environmental compliance in their areas of jurisdiction.

3.3.2 Land Act No. 4 of 1999

This act contains provisions of critical environmental importance. One of the important fundamental principles of the act is to ensure that land is used productively and that any such use complies with the principles of sustainable development. Among others, the act prohibits any development activities within 60 m of the high tide water mark of the shoreline as well in environmentally sensitive areas such as wetlands and swamps. Proposed developments shall be located at least 60 m from the lakeshore, unless on technical or other grounds permission is granted do otherwise.

3.3.3 Village Land Act, Cap 114 – No. 5 of 1999

The Village Land Act, Cap 114 (No.5 of 1999) confers the management and administration of village lands to Village Councils, under the approval of Village Assemblies, although the Minister of Lands is entitled to decide on the size of land which can be owned by a single person or commercial entity. Objectives of the Village Land Act, Cap 114 are geared towards:

- Ensuring that existing rights and recognized long standing occupation or use of land are clarified and secured by the law;
- Ensuring that land is used productively and that any such use complies with the principles of sustainable development;
- Interest in land has value and that value is taken into consideration in any transaction affecting that interest.

To pay full, fair and prompt compensation to any person whose right of occupancy or recognized long-standing occupation or customary use of land is revoked or otherwise interfered with to their detriment by the State under this Act or is acquired under the Land Acquisition Act, Cap 118 of 2002.

3.3.4 Land Acquisition Act, Cap 118 R.E. of 2002

This act requires the minister responsible for land to pay compensation as may be agreed upon or determined in accordance with the provisions of the act. The act stipulates that no compensation shall be awarded in respect of land, which is vacant ground, or to be limited to the value of the un-exhausted improvement of the land, in case the development of the land is deemed inadequate. The act defines the circumstances in which public interest could be invoked, e.g., for exclusive government use, public use, for or in connection with sanitary improvement of any kind or in connection with laying out any new city, municipality, township or minor settlement or extension or improvement of any existing city. Other purposes are in connection with development of any airfield, port or harbour; mining for minerals or oils; for use by the community or corporation within community; for use by any person or group of persons as the President may decide to grant them such land. The acquisition of the land for public use as well as for the resettlement sites is within the provision of this act. Furthermore the act specifies other requirements prior to the acquisition of the land such as investigation for the land to be taken, issuing notice of intention to take land and mode in which notices will be served. It further defines the requirements for and restrictions on compensation.

3.3.5 Land Use Planning Act – No. 6 of 2007

This act repeals the National Land Use Planning Commission Act No. 3 of 1948 that established a National Land Use Commission (NLUC) as the principal advisory organ of the government on all matters

related to land use. Among others, it recommends measures to ensure that government policies, including those for development and conservation of land, take adequate account of their effects on land use, seek the advancement of scientific knowledge of changes in land use and encourage development of technology to prevent, or minimize adverse effects that endanger human's health and welfare. The act also specifies standards, norms and criteria for the protection of beneficial uses and the maintenance of the quality of the land.

3.3.6 Water Supply and Sanitation Act No. 12 of 2009

This act aims at ensuring the quality of water by protecting water works and storage facilities against pollution. The act also provides power to Local Government Authorities to mobilize community water supply organizations to take over water supply schemes and get technical and financial support. The act further gives mandate to Local Government Authorities to make by-laws in relation to water supply and sanitation for the efficient and sustainable provision of these services in their areas of jurisdiction by water authorities or community organizations.

3.3.7 Urban Planning Act No. 8 of 2007

This act provides procedures for the preparation, administration and enforcement of land use plans. One of the fundamental principles of land use includes protection of the environment, human settlement and ecosystems from pollution, degradation and destruction in order to attain sustainable development. The act also seeks to improve level of the provision of infrastructure and social services for sustainable human settlement development. The act furthermore provides for the protection of buildings or groups of buildings of special architectural or historic interest.

3.3.8 Occupational Health and Safety Act No. 5 of 2003

This act gives provisions for the protection of human health from occupational hazards. It provides for the protection of persons other than those at work against hazard to health and safety arising out of or in connection with activities of persons at work. The act further requires companies or institutions to provide safety gears to those working at risk area. Relevant sections of the ordinance to the project activities include Part IV Section 43 (1) Safe means of access and safe working place; Prevention of fire; and Part V on health and welfare provisions, which includes provision of supply of clean and safe to workers, sanitary convenience, washing facilities and first aid facility, Section 50, deals with fire prevention issues. The act allows adequate enforcement.

3.3.9 Workers Compensation Act No. 20 of 2008

This act covers the establishment of a Workers Compensation Fund, its board of trustees, and lays out provisions for right to compensation for occupational injury and disease. The act covers claims, determination of compensation, disputes settlement and other regulatory provisions for the Fund.

3.3.10 Public Health Act No. 1 of 2009

This act provides for the promotion, conservation and maintenance of public health with a view of ensuring sustainable public health services. The act also prohibits discharges into a sewer or into drains that may cause malfunctioning of drainage systems. The developer is to ensure that the project does not negatively impact the environment and that wastes produced during different project phases are properly managed.

3.3.11 Employment and Labour Relations Act No. 6 of 2004

This act gives provisions for core labour rights; establishes basic employment standards; provides a framework for collective bargaining; and provides for the prevention and settlement of disputes. The developer is to see that the contractor adheres to employment standards as provided for by the law.

3.3.12 Engineers Registration Act No. 15 of 1997 and Amendment Act No. 24 of 2007

These acts regulate the engineering practice in Tanzania by registering engineers and monitoring their conduct. It establishes the Engineering Registration Board (ERB). Laws require any foreigners engineer to register with ERB before practicing in the country. Engineers both local and foreign engineers that will be engaged in this project shall abide to the requirements of the law.

3.3.13 Contractors Registration Act No. 17 of 1997

This act requires contractors to be registered by the Contractor Board (CRB) before engaging in practice. It requires foreign contractors to be registered by the board before gaining contracts in Tanzania. The developer is to comply with the law requirement during the recruitment of contractors for project implementation by ensuring engaging registered contractors.

3.3.14 Architects and Quantity Surveyors (Registration) Act No. 16 of 1997

This act requires architects and quantity surveyors (QS) to be registered with the board before practicing. Foreign architects and Quantity Surveyors should abide with the law. The construction work is to be contracted to registered Architects and Quantity Surveyors.

3.3.15 Local Government (District) Authorities Act – No. 7 of 1982

This act provides for the protection and management of the environment on the part of the District Council. This is deduced from Section 111 of the act, which promotes social welfare and economic well-being of all residents within its area of jurisdiction. Protection and management of the environment is further provided for under Section 118 of Act number 7 of 1982. District Councils are required to take the necessary measures to control soil erosion and desertification; to regulate the use of poisonous and noxious plants, drugs or poison; regulate and control the number of livestock; maintain forests; manage wildlife; ensure public health; provide effective solid and liquid waste management protect open spaces and parks etc. The Act also has provisions for a scheduled timetable and management of the environment. Since the project will be touching the areas where the local government authorities have roles to play, the village will work hand in hand with District Council and other local government structures for the success of the project.

3.3.16 Energy and Water Utilities Regulatory Authority (EWURA) Act, Cap 414 of 2006

This act spells out EWURA's duties and functions, and covers the electricity, petroleum, natural gas and water sectors. Role and functions are further specified in various regulator tools, e.g. legislation, regulations, rules, licenses, contracts etc. In addition to technical and economic regulation, powers include promoting/monitoring competition in the sectors.

3.3.17 Water Resources Management Act No.11 of 2011

This act provides for sustainable management and development of water resources; outlines principles for water resources management; provides for the prevention and control of water pollution; provides for

participation of stakeholders and the general public in implementation of the National Water Policy, repeal of the Water Utilization (Control and Regulation) Act and provides for related matters.

3.3.18 Forest Act – No. 14 of 2002

This act deals with the protection of forests and forest products in forest reserves and the restrictions and prohibitions in forest reserves. Any contravention of the restrictions and prohibition is considered an offence under this ordinance and subject to enforcement. The law was repealed in 2002 to meet the new requirements under the Forest Policy. The act requires that for any development including mining development, construction of dams, power stations, electrical or telecommunication and construction of building within a Forest Reserve, Private Forest or Sensitive Forest, the proponent must prepare an Environmental Impact Assessment for submission to the Director of Forestry. The law also requires licenses or permits for certain activities undertaken within the national or local forest reserves, such as, among others, felling or removing trees, harvesting forest produce, entering a forest reserve for the purpose of tourism or camping, mining activities, occupation or residence within the reserve, cultivation, erecting any structures.

3.4 Relevant Regulations and Guidelines

3.4.1 Tanzania 2025 Development Vision

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

- 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 healthcare; 75% reduction in infant and maternal mortality rates; universal access to safe water; increased life expectancy; absence of abject poverty; and a well-educated and learned-society.
- Good governance and the rule of law, moral and cultural uprightness, adherence to the rule of law, and elimination of corruption.
- A strong and competitive economy capable of producing sustainable growth and shared benefits of a diversified and semi-industrialized economy, macro-economic stability, growth rate of 8% per annum, adequate level of physical infrastructure, an active and player in regional and global markets.

The proposed project works support achieving the Development Vision objectives.

3.4.2 Environmental Impact Assessment and Auditing Regulations of 2005 GN 349/2005

The Regulations encompass all matters pertaining to the environment and set standards, procedures, duties and limits with obligations for all stakeholders to benefit human needs and govern sustainable resources. They provide composition and responsibilities of environmental authorities that is the minister responsible for environment, the Division of Environment (DOE) and NEMC. They cut across all sectors that in one way or another are affected or impact the environment and recommend the use of sectoral legislation for specific issues. The EIA as a tool for better planning is undertaken to enable compliance with environmental requirements in order to ensure risks associated with any upcoming project are exposed corrected accordingly.

The Regulations further provide information for periodic reviews and alterations of environmental management plans as necessary, ensuring that environmental management is optimized at all stages of projects through best practices. Policies and laws that relate to EIA aim at promoting sound environmental management. The Regulations also require registration of EIA experts. In addition to the Act, the Regulations provide the corner stone for any EIA for projects in Tanzania. The Regulations apply to all projects, undertakings and activities referred to in Part VI and the Third Schedule to the Act and the First Schedule to the Regulations. The First Schedule to the Regulations contains a list of projects for which EIA is mandatory and projects for which EIA may or may not be required. Any project in the water sector cannot be undertaken without an EIA. In short, the Regulations encompass the whole process of EIA and the prescribed forms under the law.

3.4.3 Environmental (Registration of Environmental Experts) Regulations of 2005 GN 348/2005

The primary objective of these Regulations is to establish a system for registration of environmental experts; provide for a system of nurturing competence, knowledge, professional conduct, consistency, integrity and ethics in the carrying out of environmental impact studies and environmental audits; ensure that the conduct of environmental impact assessment or environmental audit is carried out in an independent, professional, objective and impartial manner's and to provide for a code of conduct, discipline and control of environmental experts. The Regulations establish the Environmental Experts Advisory Committee to, among others, advice NEMC on matters regarding registration, practice and conduct of environmental impact assessors.

3.4.4 NEMC and TBS National Environmental Standards

NEMC's website includes a Compendium and covers: discharge and effluent standards for municipal and industrial wastewater, potable water standards, air quality standards and various emissions tolerance, limits of radiations and tolerance limits for acoustics - noise pollution. Also a draft for solid waste management is provided. The website includes among others information on the following:

- National Environmental Standards Compendium - Tanzania Bureau of Standards
- Environmental Management Act CAP 191 - Environmental Management (Water Quality Standards) Regulations 2007
- Revised Draft Environmental Management (Solid Waste Management) Regulations 2009
- Environmental Management (Soil Quality Standards) Regulations 2007
- Revised Draft Environmental Management (Hazardous Waste Control and Management) Regulations 2008
- Environmental Management (Air Quality Standards) Regulations 2007
- Other Air Quality related TBS standards include: TZS 845: 2005 – Air Quality Specification (Environmental Quality Standard
- TZS 846: 2005 – Tolerance Limits of Emissions Discharged to the Air by Cement Factories Emission Standard
- EMDC 2 1758: 2005 Air Quality: Vehicular exhaust emission limits (Product standard)
- TZS 845: 2006 Air Quality Specification
- TZS 846: 2004 Air Quality: Tolerance limits of emission discharged to the air by cement factories
- TZS 847: 2004 Air Quality: Guidelines of emissions discharged to the air by cement factories
- EMDC 2 1817: 2006 Air Quality: Stationary source emission - Guidelines for online gas analyser
- TZS 932:2006 General Tolerance Limits for Environmental Noise.

3.4.5 Land (Forms) Regulation of 2001

The Land Regulations were made under section 179 of the Land Act 1999, and provide all specific forms required for Management and Administration, Granted Right of Occupancy, Mortgage, Lease, Easement, Co-occupancy and others including compensation forms (Forms 69 and 70). Some land acquisition such as land for the waste stabilization ponds was done by the municipality (government) hence no any kind of compensation will be required, but in case there are areas that belong the private people, appropriate measures of land acquisition and corresponding compensation will be undertaken as provided for in the said regulations.

3.5 Institutional Framework for Management of the Environment

3.5.1 Central Government Agencies

At the national level, the institutional and legal framework for sustainable management and development of water resources and sludge treatment falls under the Ministry of Water and Irrigation. The ministry issues policy guidance and provides legal frameworks, water licenses, certificate of compliance and project monitoring. Under the legal framework, the Water Resources Management Act No. 11 of 2009, assigns the following mandates:

- The Minister is responsible for management of water resources through national policy and strategy formulation and ensuring the execution of the functions connected with the implementation of the Water Resources Act No. 11 of 2009
- The Minister is assisted in the discharge of his duties by the Director of Water Resources.
  - The overall structure of Water Resources Management includes:
  - Minister of Water
  - Director of Water Resources
  - National Water Board
  - Basin Water Boards
  - Catchment and Sub-catchment Water Committees

When it comes to fulfilment of connected legal frameworks, the act states that. “Any proposed development in a water resource area or watershed to which the act applies, whether that development is proposed by or is to be implemented by a person or organization in the public or private sector shall carry out an Environmental Impact Assessment in accordance with the provisions of the Environmental Management Act cap 191”. In this respect, then comes the Vice President’s office with the following institutions:

- Division of Environment who coordinate environmental management activities like coordination of environmental policy and issuing environmental clearance or EIA approvals.
- National Environment Management Council (NEMC), coordinating the Environmental Impact Assessments, Monitoring and Auditing.

The Minister responsible for Environment (VP Office) is the overall responsible for all matters relating to environment, responsible for all policy matters, necessary for the promotion, protection, and sustainable management of Environment in Tanzania. The Director of Environment coordinates various environmental management activities being undertaken by other agencies and promotes the integration of environment consideration into policies, plans and programmes, strategies and projects. EMA Cap 191 gives NEMC the overall responsibility of undertaking enforcement, compliance, review and monitoring of Environmental Impact Assessment.

3.5.2 Regional and District Administrative Structures

The Regional Administration Act No. 9 of 1997 provides for Regional Commissioners to oversee Regional Secretariats, with District Commissioners directly supervising the District Councils. Local authorities oversee the local planning processes, including establishing local environmental policies.

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

Under EMA Cap 191, the Regional Secretariat is responsible for coordination for all advice on environmental management in their respective region and in liaison with the Director of Environment. At Local Government level, an Environmental Management Officer should be designated or appointed by each City, Municipal, District or Town Council. In each City or Municipality or District, Environmental Committees should be established to promote and enhance sustainable management of the Environment.

3.6 European Investment Bank

Environmental protection and improvement, and benefits to people's welfare form key operational priorities for the European Investment Bank, the European Union's long-term lending institution. The EIB's environmental and social safeguard policies are based on the EU approach to environmental sustainability. The principles, practices and standards derived from these policies are highlighted in the Declaration on the European Principles for the Environment (EPE), agreed to by the EIB and four other European multilateral financing institutions in May 2006. The general approach of the Bank is described in a number of public documents (Table 3-1).

Table 3-1. EIB documents presenting the general approach to environmental and social safeguards

Document	Date
Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment	2014
Environmental and Social Handbook	2013
The EIB Statement of Environmental and Social Principles and Standards	2009
European Principles for the Environment	2006
Environmental Statement	2004
The EIB and its Contribution to Sustainable Development	2002
The EIB Project Cycle	2001

The EIB aims to maximize the environmental benefits and to minimize the environmental costs of the projects that it finances through appropriate screening, mitigation and compensation measures. Environmental considerations are taken into account at all stages of the project cycle. In the case of co-financing with other institutions, the EIB may agree to apply the environmental standards of the co-financing institution, where these are comparable to EU standards, in the light of local conditions. However, the EIB will always carry out its own independent assessment.

The EIB's environmental safeguard measures include that:

- the Bank's approach to financing projects is based on the precautionary principle, preventative action rather than curative treatment should be taken, environmental damage should be rectified at source and the polluter should pay, according to the Treaty Establishing the European Community;
- all projects financed by the Bank are the subject of an Environmental Assessment (EA), normally carried out by its own staff, but if by others according to the requirements of the Bank.

For this purpose, projects are screened into four categories, based on the guidelines of the EU Environmental Impact Assessment (EIA) Directive:

Category A	Those for which an EIA is mandatory (Annex 1 of the Directive);
Category B	Those for which the competent authority determines the need for an EIA according to specified criteria (Annex II of the Directive, with ref. to Annex III);
Category C	For which a limited environmental assessment, if any, is required according to any likely adverse environmental impacts of the project (projects outside the scope of the Directive);
Category D	No environmental assessment required.

All projects financed by the EIB are also screened according to their potential impacts on sites of nature conservation. Where the impacts are expected to be significant, a special biodiversity assessment is carried out, according to the principles and practices of the EU Habitats Directive (ref. Art. 6 of the Directive).

The main responsibility for scrutinizing the environmental aspects of projects lies with the Bank's Projects Directorate, which has about 80 engineers and economists, all with adequate environmental skills, who undertake the environmental assessment of projects at the EIB. The project teams, made up of engineers, economists, financial experts and lawyers, have front-line responsibility for managing environmental issues. They bring together significant cross-sectoral and cross-regional resources, experience and professional knowledge. However, environmental management is further reinforced by a number of dedicated support units to provide direction and advice on the Bank's environmental policy, ensure a consistently high quality of assessment, improve awareness and create stronger capacity for external dialogue with relevant third parties.

EIB’s Environmental and Social Handbook (2013) provides generic guidance on performing EIA, and specific information on, among others, involuntary resettlement (in its Chapter 6), stakeholder engagement (in its Chapter 10 and Annex 6), and objectives and structure of an Environmental and Social Management Plan (ESMP) in its Annex 11. It states that the latter “can follow a decision on scoping or after a full EIA”.

4. Baseline / Existing Conditions

This Chapter provides some baseline information on environmental characteristics of the project area including on the physical, biological, socio-economic and cultural environment. The compilation is based on a literature review supplemented by field observations of the ESIA team.

4.1 Physical Environment

4.1.1 Climate

The average annual rainfall of area is about 700 to 1000 mm. Under normal conditions the rainfall is distributed mainly during two periods, namely the short rains in October-December and the long rains from March to May. There is a dry spell from January to March and frequently these rains are of an erratic pattern. Farmers respond to this situation by staggered planting of crops over a period of many weeks. The rain tends to fall in localized storms rather than in a generalized downpour and so may be unevenly distributed in quite a small area. Water erosion tends to increase with the length of the dry season and the weaker vegetation cover

4.1.2 Soil and Topography

The district where project will be located areas are generally on sloping terrain, and have sandy loamy soils that are well-drained; other areas have red loams derived from limestone and block clay soils. The first group has moderate natural fertility and steadily deteriorates under conditions of continuous cultivation. The second and the third groups of soils are very much higher agricultural potential but tend to be found in areas of low rainfall

4.1.3 Hydrology and Hydrogeology

Groundwater in Mwanza Region is generally found at a varying level beneath the surface, depending on local topography and time of the year (dry/wet season); during geotechnical surveys conducted for the proposed project works in the area, groundwater was not found within drill-depth (4 m).

Lake Victoria is the main nearby surface water body for Mwanza City and Misungwi district in general, in which all surface drains discharge. The lake is considered as one of the most important shared natural resources by the East African Community (EAC) partner states and is a major source of water and fisheries in the region. The ecosystem around the lake is comprised of savannah, forests and wetlands. Water quality measurement results for Misungwi town for the period 2012 to 2016 are indicated in Appendix 10; measured parameters are within permissible TBS and WHO standards (Table 4-1).

Figure 4-1. PMC field verification trip to proposed intervention sites in Misungwi on 28/1/2016

1. Mwanza-Shinyanga highway near Misungwi town centre

2. Intake sump with $Ca(ClO)_2$ water treatment unit at intake pump house; Lake Victoria in the distance

3. Existing manhole/valve container (flooded due to leaks) in mains near intake pump house, amidst rice fields

4. Landscape around Misungwi town near existing mains alignment

5. Existing Bomani tank (225 m^3)

6. Proposed site for High-Level reservoir (300 m^3 capacity)

Source: PMC archive

Figure 4-1 (continued)

7. Proposed site for Low-Level reservoir (900 m³ capacity) with existing access path

8. Example road below LL reservoir along which distribution pipeline will be installed

9. (Same location) new houses that will be connected to WS network

10. Abandoned Mitindo Dam – standby for emergencies

Source: PMC archive

Table 4-1. Water quality measurement

	Dec 2015	TBS	WHO (1993)	Comment
Turbidity (NTU)	*1.8*	<25	No guideline	Within limit
Ph	*7.54*	6.5-9.2	No guideline	Within limit
E. Coli	*0*	0	0	Within limit
TDS (mg/l)	*93.3*	No guideline	No guideline	
Iron (mg/l)	*0.25*	<1.0	No guideline	Within limit
Manganese (mg/l)	*0.18*	<0.5	0.5	Within limit
Calcium hardness (mg/l)	*13.5*	500-600	No guideline	Within limit
Chlorine (mg/l)	*0.41*	200-800	250	Within limit, but very low
Nitrates (mg/l)	*3.5*	10-75	50	Within limit
Sulphate (mg/l)	*2*	200-600	500	Within limit

Source: see Appendix 10.

4.1.4 Air Quality

Until now, no measurement was made with regard to the air quality, nevertheless taking into consideration that this area is close to commercial and residential facilities, and considering the flow of traffic on the nearby Mwanza-Shinyanga road, it is concluded that the air in this area can be polluted mainly from dust and gaseous emission, but it's not expected to surpass limit values of the TBS and WHO air quality standards.

4.1.5 Noise Emission

Noise in the area mainly results from the traffic, and commercial and residential households, and due to generally rural low-intensity nature of these it is concluded that these are generally well within TBS and WHO standards for noise emission.

4.2 Biological Environment

Misungwi is located in the area covered with savannah terrain, occupied by scattered plots of cultivation (rice, maize, beans, sweet potato, etc.), pockets of low shrub and isolated trees (fruit, utility). Land is used for keeping livestock (cattle, sheep, and goat). Little remains in terms of undisturbed natural habitat and therefore the area is believed to have little biodiversity value. Nevertheless small groups or individuals were noted of heron, egret, stork and ibis species, mainly feeding along and in rice fields and other cultivated areas. The project area is not covered with dense vegetation; there are few acacia plant species.

4.3 Socio-economic Environment

4.3.1 Employment and Economic Activities

Most people are employed in the private sector, then followed by self-employed while the rest are employed in the public sector. The majority of the residents are street vendors, service and shop sales workers, craftsmen fisheries, livestock keepers and farmers. Only about 5% of the working force is estimated to be engaged in subsistence agriculture in the peri-urban areas. There are no big farms but small plots ranging from 2.5 to 6 acres. Others have small gardens around their houses in which various vegetables and root crops are grown for family food and the surplus for income generating.

4.3.2 Energy and Power Supply

Major sources of commercial energy in Misungwi district are petroleum, hydropower and about 90% of population use traditional solid fuels in residential sector. Power cuts are common due to low water levels in the hydro-electric dams since the region still depend on the power supply from the National Grid. All districts in Mwanza including Misungwi district are connected to National Grid Power. The major towns and minor towns and settlements where electricity line passes are connected. Although electricity line passes near many communities but the level of connection to the power is minimal due to poverty.

4.3.3 Water Supply

The existing intake cannot be operated at times of low lake water levels. One of the two existing high lift pump sets is not operational and the other is not suitable for the assessed future duties. Power is available for only 10 hours per day on average. The first 2.5 km of the existing transmission main is in poor condition. The existing Bomani ground level storage reservoir is not at the correct elevation for the proposed rezoning of the distribution network. It is too high for the proposed low level zone and too low for the proposed high level zone. The existing distribution network covers only part of the urban area of

Misungwi town. Some of the pipes are in poor condition. Current metered customer connections serve about 50% of the urban population of Misungwi. The connections are reported to be in poor condition.

At present, the only piped water supply system in Misungwi District is in Misungwi town which is reported to serve a reported 50% of the population. It is clear that with the limited funds available for expansion of the water supply system, it will not be possible to make any investments in water supply systems for other areas within Misungwi District despite the desire for more widespread water service expressed by participants at the Consensus Workshop held on 21 January 2015. Therefore, the focus of the investments under this project will be the improvement and expansion of the water supply system for Misungwi town within the available budget.

4.3.4 Waste Management

Principally, waste management in Tanzania is liable directly to the local authority's responsibility. The local Government (Urban authorities) Act 1982 imposes under urban authorities the responsibility "to remove refuse and filth from any public or private place" (sect. 55 g) and to provide and maintain public refuse containers for the temporary deposit and collection of rubbish. The Misungwi District Council plays an important role in the financing, planning and providing waste collection and disposal services. Under the District Council, waste management belongs to the structure of the Waste management Department, but other departments such as Works, Health and urban planning carry out part of its operation.

5. Stakeholder Consultation and Public Participation

5.1 Overview and Legal Requirement

The process of stakeholder consultation and disclosure of information is an ongoing overarching requirement that applies to the ESIA process. Consultation is of critical importance in gaining insights into the key environmental and social issues, concerns of communities and other stakeholders, and in aiding the development of potential strategies for addressing these impacts.

Effective consultation with stakeholders is (i) key to understanding the concerns and requirements of affected communities and ensuring their participation in the formulation and refinement of the project design; and (ii) a prerequisite for sustainable development and operation of the planned works. Effective disclosure through the release of timely accurate and comprehensive information to stakeholders is essential to ensure that the likely impacts (both positive and negative) are understood by stakeholders and allow the stakeholders to provide feedback to the project. It also enables the consultant in:

- Determining the scope of the ESIA / ESMP;
- Deriving specialist knowledge about the site;
- Evaluating relative significance of the likely impacts;
- Improve project design and, thereby, minimize conflicts and delays in implementation;
- Proposing mitigation measures;
- Ensuring that the ESIA / ESMP report is objective, truthful and compete;
- Facilitate the development of appropriate and acceptable entitlement options;
- Increase long term project sustainability and ownership;
- Reduce problems of institutional coordination;
- Make the resettlement process transparent (if any);
- Increase the effectiveness and sustainability of the facility, and improve coping mechanisms;
- Monitoring any conditions of the development agreement.

The Environmental Management Act of 2004 requires that all ESIA Studies undertake public consultation as part of the study. The aim of public consultation and disclosure is to ensure that all stakeholders interested in a proposed project (including project beneficiaries and the general public in the vicinity of the proposed project) be identified and their opinions considered during project planning, design, construction, and operation and decommission phases.

5.2 Consultations Conducted

COWI's Misungwi Study Report (December 2015) lists the stakeholder consultations that were undertaken as part of the project development process. These included several onsite meetings and inspections and workshops to discuss and gain consensus on the design and implementation strategy:

- October 2014: initial meeting with the District Executive Director and technical staff of the District Urban Water Supply and Sanitation Authority.
- November-December 2014: onsite inspections and discussions for assets inventory;
- 21 January 2015: stakeholder consensus workshop on service area and population progression;
- 9 July 2015: stakeholder workshop on design development;
- 15 August 2015: confirmation site inspections and discussions;
- 22 September 2015: stakeholder workshop on design development.
- Community consultations in May 2016.

UN-HABITAT followed up on these consultations by organizing in Misungwii town in end-November 2015 a one-day stakeholders' orientation workshop during which a Multi-Stakeholder Forum (MSF) was established. The main objective of the workshop was to bring together project stakeholders from across the public, private and the community to agree on the mechanism that will allow them to fully participate and involve in project implementation to ensure ownership, accountability and sustainability. Specific objectives were to (i) present and discuss the scope of the planned infrastructure interventions to be implemented; (ii) discuss and provide clarifications and better the understanding of the MSFs specific roles and responsibilities in the project; and (iii) set up the MSF in Misungwi town.

The planned Project interventions in Misungwi town were presented and thereafter the participants raised a number of issues, and these were then addressed and agreed as outlined below.

- **Land acquisition and compensation –** Communities will provide land for the construction of project infrastructure as part of their contribution to the project. If there is a need to relocate people from their land to pave way for the project, then the relocation will be done in accordance with the Resettlement Planning Framework of the project as established by the Ministry of Water and Irrigation (endorsed in January 2016). The right of way (10 m wide) for the existing and the proposed new transmission main pipe line from Nyahiti intake to water storage tanks at Bomani shall be owned by MIUWASA. All properties along the proposed pipeline route of the transmission main falling within the right of way shall be compensated or otherwise and legally be transferred to MIUWASA.
- **Water provisions for livestock –** If there are troughs for livestock to drink from in the communities, pastoralists will have to organise themselves and apply to respective water utilities to supply water to the troughs. Water supplied will be metered and users will be billed for the water consumed.
- **Water provision for communities living around water intakes and along the main water pipe –** Provisions for communities that live along the main water pipe and those living around the intake are being considered.
- **Employment of unskilled labour –** Contractors will be advised to hire local unskilled and skilled persons from the local communities during implementing of physical works.
- **Project coverage –** Through the MSF, communities will be involved in the identification and allocation of water and sanitation facilities based on the size and location (scattered settings) of the town.

Participants split into groups based on the villages/suburbs they came from and elected the members from their communities that represent them in the MSF. They came up with a list that was agreed upon by the majority (Appendix 8). An account of consultation meetings that were conducted by the ESIA team in January-March 2017 is provided in Appendix 9. In general, consulted stakeholders were happy with the proposed development, and they expressed thanks to the Tanzania government, project financers and all other stakeholders who promote the project in their area, since currently the major constraints hindering Misungwi Town is shortage of water.

6. Identification and Assessment of Impacts and Alternatives

6.1 Introduction

ESIA involves the investigation to identify any positive or negative environmental and social impacts that may arise from a development, whereas it also aims at identifying alternatives that would result in less adverse impacts. Rehabilitation and expansion of an existing water supply system and associated infrastructure, like any other development project in a village land, may have environmental and social impacts that may occur from the construction activities ranging from site clearance to transportation of building materials, construction and operation of works. Potential environmental and social positive and negative impacts may emerge during the subsequent phases of the project.

6.2 Methodology

The standard approach for undertaking ESIA was employed in this study. The main techniques applied were the collection and analysis of the project documents, design documents, legislations and other relevant information on the project; and field visits in all key locations. Key impacts and their significance were identified and assessed based on experience gained in other but similar developments, in Tanzania and abroad. Site inspection covered the proposed areas for the intakes, treatment plants, transmission main corridor, storage reservoir, distribution network routes, Domestic Points (DPs) and faecal sludge/wastewater treatment sites.

Impacts and their magnitude and receptor sensitivity were assessed and the overall significance was determined (Appendix 11).

6.3 Pre-construction, Planning and Design Phase

This phase includes topographical surveys and construction site selection, identification of suitable areas for camp sites, geotechnical investigation, identification of sources of natural construction materials (gravel, building sand, aggregates and water) and transportation of construction equipment to site.

6.3.1 Positive Impacts

The pre-construction/planning phase creates employment opportunities to various professionals directly or indirectly linked to the project. The proposed project during this phase will create employment to the following teams:

- Consulting Engineering teams for concept and design development;
- Environmental and social impacts studies teams;

- Building economists or Quantity Surveyors to establish quantities of construction materials and assessing project economic viability;
- Surveying teams and technicians for topographical and geotechnical investigations;
- Local laboratories for construction materials testing.

The preconstruction phase is envisaged to involve about 40 to 50 employees in all cadres.

6.3.2 Negative Impacts

Negative impacts resulting from the planning / pre-construction phase could include any of the following:

- **Vegetation loss through clearance –** It is expected that during this phase the need for vegetation clearing will be negligible. If clearing is needed this should be kept minimal as much as possible.
- **Temporary obstruction of access roads** – by topographic survey and geotechnical investigation teams.
- **Soil erosion –** during geotechnical investigation soils will remain bare and in some areas the soils will become loose due to borehole drilling or pit digging to facilitate geotechnical investigations.
- **Traffic increase –** motor vehicles in the area to facilitate topographic survey and geotechnical investigation.
- **Noise** – from geotechnical investigation equipment and hydraulic augers.
- **Noise –** from transport of equipment to proposed project site.
- **Accidents –** for example caused by moving vehicles of topographic and geotechnical investigation teams and other road users or damage caused to roads or existing structures.

6.4 Construction Phase

6.4.1 Positive Impacts

The construction works will require skilled and unskilled labourers, the latter should preferably be contracted from Misungwi town or nearby villages. Wages will temporarily increase family income and boost the local economy. Some labourers will learn from the construction works and improve their skills.

6.4.2 Negative Impacts

The main negative impacts during construction are expected to be the following.

- **Vegetation clearance –** On some locations vegetation will be present in or along the alignment of the planned works which has to be removed or trimmed. Contractors should try to avoid vegetation clearing as much as possible.
- **Disturbance to cultural, historical or archaeological artefacts during site clearance –** Based on the nature of the working sites it is possible that scientific, historical, or archaeological interest or anything of value during excavation works may be encountered. Field investigation on-site, including

consultations with local authorities and community members suggests that it is unlikely that the working sites have any cultural, historical or archaeological significance.

- **Disturbance of original land use, scenic and visual quality –** Laying of the pipes will be as much as possible along existing roads. Pipes will be buried underground and dug trenches will be back-filled, and therefore permanent impact on the land use or scenery will be insignificant. Above ground structures such as pump houses and storage tanks will mostly be built on government land that has already similar structures and therefore the impact of the additional buildings on the scenery is expected to be small.

- **Resettlement and disturbance to residents –** Project works may necessitate people to remove temporarily or permanently their property or movable assets to another location, or temporarily or permanently stop farming the land that they own or used through customary rights, and therewith become Project Affected People (PAP) that may need to be compensated through development and implementation of a (Abbreviated) Resettlement Action Plan (A/RAP).

Abbreviated Resettlement Action Plan (Final Draft – 8 March 2017)

Simultaneously to the present ESIA study, and in accordance with the project's Resettlement Planning Framework (RPF, January 2016) the Project Proponent prepared an Abbreviated Resettlement Action Plan (ARAP) for all planned project works in each town. All project components in Misungwi were screened on possible Project Affected People (PAP) that may result from the works. The main conclusions from the ARAP study are that in Misungwi two (2) PAPs were identified (i.e. Mitundo school and a pub) and in both cases a pipe of the distribution network will or may (depending on final decision on alignment) cross a fence. However, both PAPs have signed a letter of consent in which they state that they do not require compensation. There may be more PAPs if the works are inappropriately timed and implemented, for example when pipes are constructed in agricultural lands during the cropping season, in which case people need to be compensated for lost or damage to crops.

Accidental damage which may occur during construction works, for example to structures such as buildings, infrastructure, trees, fences, etc. will be dealt by the Contractor in collaboration with the developer, and cannot be considered within the framework of the present report due to the unknown about whether this will happen and if so, where and when.

At time of finalizing of the present ESIA report, the ARAP report was still under review by the District Council and the MoWI and MoLHS.

- **Disturbance, particularly land scarring at borrow sites or sources of construction materials –** Borrow materials to be used for construction of the infrastructure (for example sand, aggregates, stones for buildings) will to the extent possible be collected locally from agreed borrow sites.

- **Nuisance from noise and vibration during construction –** Noise may pose a problem to the population living or working in places next to areas to be affected by the project during construction work, especially in connection with the activities of construction of structures, relocation or interferences and transportation of fill materials as far as the area will require the use of heavy equipment and vehicles. The intensity of this impact will vary according to the degree of severity or

sensitivity of those affected. Noise may also temporarily affect domestic and wild animals including birds and other organisms living near the quarry areas and along transportation routes.

- **Soil erosion –** Soil excavation for particularly the laying of pipes and associated facilities may trigger soil erosion which may affect adjacent water sources including Lake Victoria. The removal of trees and other vegetation will accelerate soil erosion which if not abated it will result into gullies. This could also be observed at quarry sites if quarrying activities will not be conducted properly. Soil erosion will consequently affect soil fertility. Siltation of aquatic systems will therefore reduce aquatic production and it may result to mortality of the affected phytoplankton and benthic algae and other forms of life that depend on primary producers. Excavated soil from construction sites may also be washed away as runoff if the construction activities will be carried out during rainy season. The runoff has the potential to cause siltation of the aquatic system including Lake Victoria.

- **Increase in traffic intensity –** During construction there will be heavy duty vehicles that come to construction site to deliver various construction materials. This will increase congestion of vehicles on the Mwanza-Shinyanga tarmac road and in the town and villages concerned.

- **Contamination of water from leakages of fuel and lubricants from construction equipment –** Ground- and surface water contamination could occur if the Contractor does not follow pollution control measures. Ground water can be contaminated through leaching of fuel and lubricants during the construction phase of the project.

- **Poor air quality from dust and emissions around the construction site and material hauling routes –** The potential impacts on air quality will be located mostly in the areas subject to excavation for trenches, pits or ponds, in the circulation area for vehicles and other equipment used at construction areas. Re-suspension of dust may occur as a result of land cleaning, demolition, formation of pavement base and sub-base, paving and circulation of vehicles on non-paved roads, either next to the working faces or in the way to support areas. This is likely to happen when these activities are developed within relatively long time under dry weather conditions.

  Atmospheric pollution due to fuel combustion during construction may also occur as a consequence of the flow of vehicles and equipment on work, operation of industrial facilities (i.e. concrete plants) which may be implemented or outsourced to supply material inputs to the project, and due to increase of vehicular missions associated with temporary mean speed reduction on the roads directly affected and in the surrounding road network.

- **Spread of diseases (HIV/AIDs, STIs or STDs) –** Construction sites will be a place of work where job seekers and other service providers such as food vendors commonly known as “Mama Lishe” will gather for the purpose of work and services. Such gatherings will allow contacts that may spread the incidence of disease.

- **Safety during construction –** A construction site is inherently a potentially dangerous place. Once the construction site is active, this will attract people for example prospecting for employment. While this is their right, roaming or wandering the construction site can be dangerous to these people in case of any accident such as falling into open trenches.

- **Generation of construction solid and liquid wastes –** Since the construction works may involve clearing of the vegetation and excavation of trenches some unexpected issues may emerge, such as

bad soil unsuitable for use in backfilling the trenches, one may also encounter collapsible soils such that timber for supporting the walls is required. Worker camps will generate volumes of organic and non-organic wastes daily. Works result in wastes in all forms (liquid or solid).

- **Vandalism of construction materials and damage to pipelines –** Non-Revenue Water (NRW) will or may increase due to vandalism of construction materials or damage of existing pipe lines.

6.5 Operation Phase

6.5.1 Positive Impacts

Main positive impacts of the intervention are:

- Rehabilitated and extended water supply system offering a more reliable source of safe drinking water to a larger portion of the population.
- Reduced incidence of diseases due to more and better quality potable water resulting in a healthier population.
- Employment and trading opportunities for the neighbouring communities during the construction and operation phase of the project. This is likely to boost the household incomes and improve the living standards of the local community and other populations from the neighbouring and other areas.
- Government coffers will equally benefit from statutory contributions made by the contractor for his employees. Sales from construction materials will have value added tax that goes to the government.

6.5.2 Negative Impacts

Few negative impacts are expected from the operation of the rehabilitated and extended water supply system, i.e. (disturbance from pumps and engines, and (ii) discharge of effluents from (treatment) plants.

- Disturbance from pumps, engines – the raw water intake, the water treatment plant and the high-lift pump may require the frequent utilization of pumps and other engines to operate for longer or shorter periods. This may cause hindrance to the immediate surroundings of these facilities, such as noise and vibrations.
- Discharge of effluent from treatment plants may cause pollution of the soil and surface and water courses if inadequate precautions are taken.
- Health risks to laboratory attendant during mixing of water treatment reagents/chemicals.
- Vandalism of water supply appurtenances along the transmission main and distribution system.

6.6 Project Alternatives

Through the analysis of alternatives a comparison can be made of the operational effectiveness, costs and environmental and social risks of proposed development options. For the proposed water supply works two alternatives have been considered, as is outlined below.

6.6.1 Do-Nothing or Delay Implementation

Clearly it is in nobody's interest not to construct the planned development or to delay its implementation. There is a great need for improvement of water supply in the town, and funds are available through the GoT and EIB. Failure to complete the works within the relatively limited project duration may result in no improvement being realized for considerable time to come.

6.6.2 Include the Construction of a Sewerage Collection Network

Building underground conventional sewerage systems (house collectors, main sewers leading to a wastewater treatment plant) to connect the areas that will be provided with improved or new water supply services, will be costly and beyond the financial resources available for Misungwi town. Such development has to be materialized through future programmes or projects, or be financed through other means.

6.7 Cost-Benefit Analysis

As outlined in Section 1.1, preparation of the LVWATSAN – Mwanza Project started in 2010, and elaborate cost-benefit analyses were part of the preparatory work which led to the conclusion that the proposed works were financially and economically feasible. The main benefit of the proposed water supply works is that a substantial part of the town's population will be provided with a reliable source of treated drinking water. The metering system that will be installed or replaced will generate revenue with which the investment will fully or partly be paid back in the years to come.

7. Environmental and Social Mitigation Measures

7.1 Introduction

As outlined in the previous chapter, the construction and operation of the proposed rehabilitation and extension of the water supply works for Misungwi town will or may result in adverse environmental and social impacts that may be mitigated or reduced to acceptable levels by implementation of mitigation measures that are presented in the present chapter

7.2 Pre-Construction

Table 7-1. Impacts and mitigation measures during the Pre-construction Phase

Nr	Impact	Mitigation measures
1	Vegetation loss through clearance	• Geotechnical Investigations and other engineering surveys will be limited to very small areas meant for receiving permanent works of the project. Therefore limit vegetation clearance to the area required for topographical survey and geotechnical investigation only.
2	Temporary obstruction of access roads by topographic survey and geotechnical investigation teams.	• Signage to direct drivers to alternative free routes shall be placed at all areas or routes due to be surveyed or subjected to geotechnical investigations. • Community sensitization shall be carried out before these activities start (geotechnical investigation and topographical survey.
3	Soil erosion	• Earthworks for geotechnical investigation may be carried out during the dry season to prevent soil from being washed away. • Implementation of erosion control measures on disturbed surfaces such as planting vegetation that hold soils together, terracing in steep slopes and securing the available vegetated area (surfaces not required for works shall not be disturbed)
4	Disturbance from increased motor vehicles in the area to facilitate topographic survey and geotechnical investigation	• Allow only necessary traffic for works. • Disruption of traffic movement during survey and geotechnical investigations should be minimized by introducing traffic management plan. • Institute speed limit (40km/hr) to all project vehicles within the project area to be surveyed and subjected to geotechnical investigations.
5	Noise from geotechnical investigation equipment hydraulic augers	• Where the noise is from the geotechnical investigation equipment shall be well maintained and fitted with noise silencers such as mufflers. • Noise levels should be monitored and where it happens to be higher than 85dB (A), PPE in form of ear muffs or ear plugs shall be provided to all those working near the equipment including the operators.
6	Noise from transport of equipment to proposed project site.	• These are noise for a very short duration similar to all other vehicles passing by on other activities. However efforts shall be made to ensure that the

Nr	Impact	Mitigation measures
		transport trucks are fitted with sound mufflers.
7	Likely motor accidents with pedestrians	• Sensitize drivers of project vehicles to observe speed limits in all area and institute punishment to traffic rules offenders.

7.3 Construction

Table 7-2. Impacts and Mitigation measures during the Construction Phase

Nr	Impact	Mitigation measures
1	Vegetation loss through clearance	• Vegetation clearance shall be limited to the area necessary for permanent works) some trees on the edge shall be left intact • Clearance of vegetation around the sites shall be replaced with the natural vegetation on completion of the works.
2	Disturbances to historical and archaeological finds during site clearance	• Notify the Engineer giving the nature and location of the findings. The Engineer will consult the National Museum. • The Contractor shall exercise necessary care so as not to damage artefacts or fossils uncovered during trench excavation operations and shall provide such cooperation and assistance as may be necessary to preserve the findings for removal or other disposition by the employer. • Where appropriate by reason of a discovery, the Engineer shall order delays in the time of performance or changes in the work, or both. If such delays, or changes or both are ordered, the time of performance and contract price shall be adjusted in accordance with the applicable clauses in the general Conditions of Contract.
3	Deterioration of original land use, scenic and visual quality	• Operations house / buildings for facilitates the project will be designed to blend well with the surrounding buildings. • Landscaping will be carried out to match the existing surroundings.
4	Resettlement and disturbance to residents, including those who use land for cultivation	• Carry out valuation of the properties within the project areas and effect compensation.
5	Disturbance, particularly land scarring at borrow sites or sources of construction materials	• The borrow sites are the ones used for sourcing all other construction materials for projects in the area designated for mining of construction materials. Therefore the project will only contribute to land scarring and will not be the sole project causing this problem. • Since all the borrow areas are privately owned, the contractor employed by the Project Proponent will be buying the construction materials and thus contributing towards restoration of the borrow sites. • Part of the charges for purchase of construction materials shall channelled back for the rehabilitation or reinstatement of the borrow areas.
6	Nuisance from noise and vibration from construction equipment	• Use of properly serviced and well maintained equipment • Silencers (mufflers) to be used to minimize noise on otherwise noisy equipment such as generators and compressors. • Sensitization of the adjacent communities on likely vibrations and increased noise resulting from construction activities. • Where noise levels will be beyond 85dB(A), ear muffs and plugs shall be provided to all those working within the area with high noise levels.
7	Soil erosion	• Protection of steep slope with reinforcement.

Nr	Impact	Mitigation measures
		• Provision of silt trap to prevent sedimentation. • Construction activities especially land excavation should be carried out during dry seasons. • Avoid excessive clearance of trees and enhance tree planting and landscaping.
8	Nuisance and inconvenience from increase in traffic levels	• Where the construction of pipelines involves the crossing of trunk roads, TANROADS must be consulted. • Only essential traffic will be allowed to the project area during traffic peak hours when traffic is a problem. • Sensitization of the nearby communities about the increased traffic. • Materials hauling to tipping site and vice versa will be carried out during off peak periods during the day. • Alternatively finished materials such ready-made concrete, pre-cast elements or pre-assembled materials can be delivered at site when the need arises.
9	Contamination of water from leakages of fuels and lubricants from construction equipment	• Dripping pans to be used to contain all hydrocarbon leakages on construction equipment. • Re-fuelling on designated areas. • In case of hydrocarbon spills, the contaminated soils will be collected and treated to remove the hydrocarbon and prevent the hydrocarbons from being washed away in storm water to the nearby water bodies.
10	Poor air quality from dust and emissions around the construction site and material hauling routes	• Water sprinkling to reduce the dust at the construction sites. • Use of dust masks to operators and those working in the dusty areas. • Use of goggles for all operators. • Construction machines/equipment will be well maintained to ensure total fuel combustion. All vehicles involved in construction works will be frequently checked and well serviced during the whole construction period so that the level of exhaust emissions is reduced. • Speed of vehicles hauling construction materials shall be reduced and the construction materials will be covered with tarpaulins.
11	Spread of diseases (HIV/AIDs, STIs or STDs)	• Sensitization and health awareness campaigns to all involved in the project including service providers. • Construction workers to undergo health screening according to the National HIV/AIDs Policy. • Project will assist the nearby health facility in sensitization of those involved in the project.
12	Injuries to or damage inflicted on neighbours from falling into trenches and open pits for inspection chambers. Poor public safety during construction – risk to life.	• Construction sites shall be provided with barricades to protect neighbours and those passing-by. • Therefore the public particularly the children shall not be allowed to come closer to the swing area of excavators or other equipment at site. • In places where there are vehicles transporting construction materials and also at turning places towards the construction site, appropriate warning signage shall be posted. • Sensitization and training of the surrounding communities regarding the risks associated with construction activities. • In case of trenches, and excavated sewer lines, proper barricades have to be applied to warn and protect the people of impending dangers of falling into

Nr	Impact	Mitigation measures
		open trenches. • Constant surveillance from security to make sure that there are no "uninvited guests" in the project area.
13	Generation of construction solid and liquid wastes	• Site housekeeping to minimize solid and liquid wastes generated from construction and other related activities such as food vending and petty businesses. • Allocate a special area for petty business such as food stalls provided with garbage bins. • Post appropriate signage such as "DO NOT LITTER" or "USITUPE TAKA" at all strategic sites. • Assign Contractor's Environmental or Safety Officer the responsibility to ensure that the surroundings are kept clean. • All excavated spoil should be well managed through levelling or tipped into low lying areas or borrow areas which are no longer useful. • Trash and waste shall be well collected and removed from the site to district waste collection point. • Consult the district council about the suitable trash/waste dumping site and their procedures. • The community should instruct people to stay away from scavenging at the dumping sites. • Solid wastes generated from land clearing shall be collected and disposed of in district sanitary land fill at authorized site. • Decomposable materials shall be collected and combined with district wastes to the authorized dumpsites; plastics and other recyclable materials will be collected and sent out for recycling.
14	Vandalism and damage to the pipe system	• Fencing-off and guarding of sensitive facilities • Regular patrols and checks • Offence & penalty system in place and communities made aware of this through appropriate public awareness programs.

7.4 Operation

Table 7-3. Impacts and Mitigation Measures during the Operation Phase

Nr	Impact	Mitigation measures
1	Disturbance from pumps, and engines	• Pump and engines producing significant noise levels to be equipped with adequate noise silencing equipment, and placed inside isolated buildings.
2	Pollution of soil and surface and ground waters by discharge of effluent from water treatment plant	• Effluent from WTP should be tested regularly and if exceeding permissible standard quality, additional treatment should be conducted to bring quality of the effluent within these levels.
3	Health risk to laboratory attendant during water treatment and sampling procedures	• Appropriate training and equipment • Safe storage of chemicals
4	Vandalism and damage to pipe system	• Fencing-off and guarding of sensitive facilities • Regular patrols and checks • Offence & penalty system in place and communities made aware of this

Nr	Impact	Mitigation measures
		through appropriate public awareness programs.

8. Environmental and Social Management Plan

8.1 Introduction

An Environmental and Social Management Plan (ESMP) can be defined as "an environmental and social management tool that can be used to ensure that undue or reasonably avoidable adverse impacts of the construction, operation and decommissioning of a project are prevented; and that the positive benefits of the projects are enhanced". ESMPs are therefore important tools for ensuring that the management actions arising from Environmental Impact Assessment (EIA) processes are clearly defined and implemented through all phases of the project life cycle.

The objectives of this ESMP are to:

- Provide a systematic overview of the required measures to manage the mitigation of impacts that will or may result from the proposed rehabilitation and extension of water supply works in Misungwi town;
- Indicate main responsibility for implementation of these mitigation measures, as well as the timing of the measures, targets to be achieved, reporting requirements, and indicative costs.

8.2 Implementation Arrangement of the Project Works and the ESMP

Whilst the Ministry of Finance (MoF) is the 'borrower' of the loan, the Ministry of Water and Irrigation (MoWI) is the 'Promoter' and will have the ultimate ownership of this project. Execution at local level rests with the Mwanza Urban Water Supply and Sanitation Authority (MWAUWASA). MWAUWASA effectively acts as the implementing agencies on the ground, charged with the responsibility of delivering upon the commitments within the territorial jurisdictions, including the responsibility for execution at the three satellite towns of Magu, Lamadi and Misungwi. MWAUWASA may delegate part of its implementation responsibility to the District Council and/or the town's water utility company. The MoWI is charged with the oversight of execution and the provision of enhanced technical assistance as well as carrying the responsibility to supervise execution across the entire project.

Daily oversight of this project at the operational level will be provided by the Project Implementation Unit (PIU). A Lenders' Supervisors is an additional part of the institutional structure, their role being to act as "a third party contracted by and acting on behalf of the Lenders [EIB] to monitor the Project, including monitoring physical progress and compliance, procurement supervision and quality assurance of technical solutions and physical deliverables." The lender supervisor will sit alongside the PIU to review all implementation tasks. Independent monitors appointed by the EIB would not be full-time but are likely to go on short missions to check compliance of the programme.

MWAUWASA as the project proponent of the proposed works will be assisted by the project management and supervision consultants. These two bodies will ensure that the contractor and sub-contractors who

will win the tender for implementing the works adhere to the laid down procedures for construction and commissioning of the proposed development. To be able to minimize potential environmental and social negative impacts, the project will require the support of various institutions in the project area. Table 8-1 outlines the components of the ESMP, as well as the main actors and their responsibilities. The organizational framework for the ESMP is designed to evolve as the project progresses through detailed engineering design, construction, commissioning and operation phases.

8.3 Reporting Arrangements

The Ministry of Water and Irrigation, Environmental Section (Sector Environmental Coordinator), and the Consultant's Appointee to deal with Environmental Management will cooperate with other experts in the Misungwi District Council office such as the District Land Officer and District Environmental Management Officer to provide the Regional Environmental Management Expert (REME) under the Regional Secretariat with environmental reports of the project implementation as part of the progress reports and annual environmental monitoring reports. The Regional Environmental Management Expert is the link person between the region and the Sector Ministry Environmental Section (Sector Environmental Coordinator) and the Director of Environment as well as the Director General of NEMC.

8.4 Cost estimates for ESMP

The costs for implementing the mitigation measures have been estimated based on previous similar projects and engineering judgment. The actual costs will be as presented by the successful contractors during bidding exercise. The priced bills of quantities for environmental and social impact mitigation measures shall be made part of the contract for these mitigation measures to be effective.

Table 8-1. Environmental and Social Management Plan

Impact	Management Measures	Responsible for mitigation	Time Frame	Target Level / standard	Reporting to	Estimated Cost (USD)	Remarks
Pre-Construction							
1 - Vegetation loss through clearance	• Geotechnical Investigations and other engineering surveys will be limited to very small areas meant for receiving permanent works of the project. Therefore limit vegetation clearance to the area required for topographical survey and geotechnical investigation only.	Design Engineer	One month from start of activities	Vegetation lost in necessary areas only	Misungwi District Natural Resources Offices	1000	Part of Design engineers cost
2 - Temporary obstruction of access roads by topographic survey and geotechnical investigation teams.	• Signage to direct drivers to alternative free routes shall be placed at all areas or routes due to be surveyed or subjected to geotechnical investigations. • Community sensitization shall be carried out before these activities start (geotechnical investigation and topographical survey.	Design Engineer	At the start of the project	Ensure no complaints from road users	Misungwi district Engineer	500	Project cost
3 - Soil erosion	• Earthworks for geotechnical investigation may be carried out during the dry season to prevent soil from being washed away. • Implementation of erosion control measures on disturbed surfaces such as planting vegetation that hold soils together, terracing in steep slopes and securing the available vegetated area (surfaces not required for works shall not be disturbed).	Design Engineer	At the start of the project	Soil erosion is controlled	Misungwi District Environmental Engineer	2000	Part of the Project cost
4 - Disturbances from increased motor vehicles in the area to facilitate topographic survey and geotechnical investigation	• Allow only necessary traffic for works. • Disruption of traffic movement during survey and geotechnical investigations should be minimized by introducing traffic management plan. • Institute speed limit (40km/hr) to all project vehicles within the project area to be surveyed and subjected to geotechnical investigations.	Design Engineer	Once every week during preconstruction	No complaints	Misungwi District Engineer	500	Project cost
5 - Noise from geotechnical Investigation equipment hydraulic augers	• Where the noise is from the geotechnical investigation equipment shall be well maintained and fitted with noise silencers such as mufflers. • Noise levels should be monitored and where it happens to be higher than 85dB (A), PPE in form of ear muffs or ear plugs shall	Design Engineer	Once every week	Noise within set limits	District Health Officer	2000	Project cost

Impact	Management Measures	Responsible for mitigation	Time Frame	Target Level / standard	Reporting to	Estimated Cost (USD)	Remarks
	be provided to all those working near the equipment including the operators.						
6 - Noise from transport of equipment to proposed project site.	• These are noise for a very short duration similar to all other vehicles passing by on other activities. However efforts shall be made to ensure that the transport trucks are fitted with sound mufflers.	Design Engineer	Once every Week	Noise within allowable limits (<60 dB(A)	Misungwi District Health Officer	500	Project cost
7 - Likely motor accidents with pedestrians	• Sensitize drivers of project vehicles to observe speed limits in all area and institute punishment to traffic rules offenders.	Design Engineer	Every day during investigations No motor Vehicle	No motor Vehicle accidents	Traffic police in case of accidents	500	Project cost
Construction							
1 - Vegetation loss through clearance	• Vegetation clearance shall be limited to the area necessary for permanent works) some trees on the edge shall be left intact. • Clearance of vegetation around the site stations shall be replaced with the natural vegetation on completion of the works.	Contractors	At the beginning of the project On completion of the project		District Natural Resources officer	500	
2 - Disturbances to historical and archaeological finds during site clearance	• Notify the Engineer giving the nature and location of the findings. The Engineer will consult the National Museum. • The Contractor shall exercise necessary care so as not to damage artefacts or fossils uncovered during trench excavation operations and shall provide such cooperation and assistance as may be necessary to preserve the findings for removal or other disposition by the employer. • Where appropriate by reason of a discovery, the Engineer shall order delays in the time of performance or changes in the work, or both. If such delays, or changes or both are ordered, the time of performance and contract price shall be adjusted in accordance with the applicable clauses in the general Conditions of Contract.	Contractor	During extraction of construction materials	As set in the EMP for borrow sites	Mining License Holder	500	

Impact	Management Measures	Responsible for mitigation	Time Frame	Target Level / standard	Reporting to	Estimated Cost (USD)	Remarks
3 - Deterioration of original land use, scenic and visual quality	• Operations house and buildings to assist the project will be designed to blend well with the surrounding buildings. • Landscaping will be carried out to match the existing surroundings.	Lead Consultant/ Contractor	During construction of the project	Ensure design and construction blends well with surroundings	District and Project Architect	1000	
4 - Resettlement and Disturbance to some of the Residents particularly who depend on these plot for cultivation	• Carry out valuation of the properties within the project areas and effect compensation.	Project Proponent	Before the project starts	Ensure all Affected personnel are Compensated and leave the area before start of initial project activities.	Land Officer		
5 - Disturbances, particularly land scarring at borrow sites or sources of construction materials	• The borrow sites are the ones used for sourcing all other construction materials for projects in the area designated for mining of construction materials. Therefore the project will only contribute to land scarring and will not be the sole project causing this problem. • Since all the borrow areas are privately owned, the contractor employed by the Project Proponent will be buying the construction materials and thus contributing towards restoration of the borrow sites. • Part of the charges for purchase of construction materials shall channelled back for the rehabilitation or reinstatement of the borrow areas.	Contractor	During sources of Construction materials	As set in the EMP for borrow pits/sites	Mining License Holder	2000	
6 - Nuisance from noise and vibration from construction equipment	• Use of properly serviced and well maintained equipment • Silencers (mufflers) to be used to minimize noise on otherwise noisy equipment such as generators and compressors. • Sensitization of the adjacent communities on likely vibrations	Mining License Holder	Once every Week	Noise within set limits	District Health Officer	1000	

Impact	Management Measures	Responsible for mitigation	Time Frame	Target Level / standard	Reporting to	Estimated Cost (USD)	Remarks
	and increased noise resulting from construction activities. • Where noise levels will be beyond 85dB(A), ear muffs and plugs shall be provided to all those working within the area with high noise levels.						
7 - Soil erosion	• Protection of steep slope with reinforcement. • Provision of silt trap to prevent sedimentation. • Construction activities especially land excavation should be carried out during dry seasons. • Avoid excessive clearance of trees and enhance tree planting and landscaping.	Contractor	Measures applied as construction works proceed otherwise once every month during construction	All loose soils and bare soils protected from erosion	District Natural Resources Officer	2000	Part of the contractor BOQ
8 - Nuisance and inconveniences from increase in traffic levels	• Only essential traffic will be allowed to the project area during traffic peak hours when traffic is a problem. • Sensitization of the nearby communities about the increased traffic. • Materials hauling to tipping site and vice versa will be carried out during off peak periods during the day. • Alternatively finished materials such ready-made concrete, pre-cast elements or pre-assembled materials can be delivered at site when the need arises.	Contractor	Once every Week	No complaints		500	
9 - Contamination of water from leakages of fuels and lubricants from Construction equipment	• Dripping pans to be used to contain all hydrocarbon leakages on construction equipment. • Re-fuelling on designated areas. • In case of hydrocarbon spills, the contaminated soils will be collected and treated to remove the hydrocarbon and prevent the hydrocarbons from being washed away in storm water to the nearby water bodies.	Contractor	Once every day	No spillage of lubricants	Environmental Officer	1000	
10 - Poor air quality from dust and	• Water sprinkling to reduce the dust at the construction sites • Use of dust masks to operators and those working in the dusty	Contractor	Once every Month	Within limits	District Environmental	5000	

Impact	Management Measures	Responsible for mitigation	Time Frame	Target Level / standard	Reporting to	Estimated Cost (USD)	Remarks
emissions around the construction site and material hauling routes	areas. • Use of goggles for all operators. • Construction machines/equipment will be well maintained to ensure total fuel combustion. All vehicles involved in construction works will be frequently checked and well serviced during the whole construction period so that the level of exhaust emissions is reduced. • Speed of vehicles hauling construction materials shall be reduced and the construction materials will be covered with tarpaulins.				Officer		
11 - Spread of diseases (HIV/AIDs, STIs or STDs)	• Sensitization and health awareness campaigns to all involved in the project including service providers. • Construction workers to undergo health screening according to the National HIV/AIDs Policy. • Project will assist the nearby health facility in sensitization of those involved in the project.	Contractor	Once every week on weekends	All employees Sensitized and examined	District Medical Officer	3000	Part of HIV/AIDS sensitization program
12 - Injuries to neighbours from falling into trenches and open pits for inspection chambers. Poor public safety during Construction – Risk to life. Poor safety at work place.	• Construction sites shall be provided with barricades to protect neighbours and those passing-by. • Therefore the public particularly the children shall not be allowed to come closer to the swing area of excavators or other equipment at site. • In places where there are vehicles transporting construction materials and also at turning places towards the construction site, appropriate warning signage shall be posted. • Sensitization and training of the surrounding communities regarding the risks associated with construction activities. • In case of trenches, and excavated sewer lines, proper barricades have to be applied to warn and protect the people of impending dangers of falling into open trenches. • Constant surveillance from security to make sure that there are no “uninvited guests” in the project area.	Supervising Engineer/ Contractor	Every day	Zero injuries	District Health Officer /OSHA	2500	

Impact	Management Measures	Responsible for mitigation	Time Frame	Target Level / standard	Reporting to	Estimated Cost (USD)	Remarks
	• All employees working on the construction site will be sensitized to use PPE to avoid occupational risks. Such equipment include hard hats, ear plugs or ear muffs, dust coats or overalls, gloves, dust masks, goggles for eye protection, hard toed boots, safety harness etc.						
13 - Generation of construction solid and liquid wastes	• Site housekeeping to minimize solid and liquid wastes generated from construction and other related activities such as food vending and petty businesses. • Allocate a special area for petty business such as food stalls provided with garbage bins. • Post appropriate signage such as "DO NOT LITTER" or "USITUPE TAKA" at all strategic sites. • Assign Contractor's Environmental or Safety Officer the responsibility to ensure that the surroundings are kept clean. • All excavated spoil should be well managed through levelling or tipped into low lying areas or borrow areas which are no longer useful. • Trash and waste shall be well collected and removed from the site to district waste collection point. • Consult the district council about the suitable trash/waste dumping site and their procedures. • The community should instruct people to stay away from scavenging at the dumping sites. • Solid wastes generated from land clearing shall be collected and disposed of in district sanitary land fill at authorized site. • Decomposable materials shall be collected and combined with district wastes to the authorized dumpsites; plastics and other recyclable materials will be collected and sent out for recycling.	Supervising Engineer. Contractor	Every day	Good house keeping	District health officer	2000	Project cost
14 – Vandalism and damage to pipe	• Fencing-off and guarding of sensitive facilities • Regular patrols and checks	Supervising Engineer.	Every day	Good house	MIUWASA District	--	

Impact	Management Measures	Responsible for mitigation	Time Frame	Target Level / standard	Reporting to	Estimated Cost (USD)	Remarks
systems	• Offence & penalty system in place and communities made aware of this through appropriate public awareness programs.	Contractor		keeping	Council		
Operation							
1 - Disturbance from pumps, and engines	• Pump and engines that produce significant noise levels should be equipped with adequate noise silencing equipment, and preferably placed inside noise isolated buildings.	Project Operator (MWAUWASA; MIUWASA)	Monthly during operation	No complaints from surroundings	MWAUWASA District Council LVBWB	2000	
2 - Pollution from effluent from water treatment plant	• Effluent from WTP should be tested regularly and if exceeding permissible standard quality, additional treatment should be conducted to bring quality of the effluent within these levels.	Project Operator (MWAUWASA, MIUWASA)	Monthly during operation	Effluent quality not exceeding GoT standards	MWAUWASA District Council LVBWB	2000	
3 - Health risk to laboratory attendant during water treatment and sampling procedures	• Appropriate training and equipment • Safe storage of chemicals	Project Operator (MWAUWASA, MIUWASA)	Monthly during operation	No risks	District Environmental Engineer		
4 - Vandalism and damage to pipe system	• Fencing-off and guarding of sensitive facilities • Regular patrols and checks • Offence & penalty system in place and communities made aware of this through appropriate public awareness programs.	Project Operator (MWAUWASA, MIUWASA)	Monthly during operation	No vandalism or damage	District Environmental Engineer		
Total						***35,000***	

9. Environmental and Social Monitoring Plan

9.1 Introduction

Monitoring of the construction and operation of the proposed rehabilitation and extension of the water supply system in Misungwi town is a long term process that should begin at the start of the project construction and continue throughout the life of the project. Its purpose is to establish environmental benchmarks so that the nature and magnitude of anticipated environmental impacts are continually assessed. Monitoring involves the continuous or periodic review of mitigation activities to determine their effectiveness. Consequently, trends in environmental degradation or recovery can be established and previously unforeseen impacts can be identified and dealt with during the life cycle of the proposed development.

Environmental audits are also usually carried out some few years after completion of the project. These audits assess the relevance, efficiency and impact of any mitigation measures administered. The project proponent, MWAUWASA in collaboration with other project stakeholders (project financers, project beneficiaries, etc.) may initiate such audit processes to cover all its projects activities.

The project contractor should prepare an Environmental and Social Monitoring Plan which will cover the mobilization, construction, commissioning and demobilization phases of the project. Tasks to be covered and monitored during each phase are presented below.

9.2 Monitoring per Phase

9.2.1 Pre-Construction

During the pre-construction phase the monitoring will focus on:

- Appointment of the Health, Safety and Environment (HSE) Officer and how he/she carries out the assigned responsibilities.
- Maintenance and checking of construction equipment ready for work at site and during the actual works.
- Training and sensitization of the staff on safety aspects and environmental issues.
- HIV/AIDS sensitization campaign planned and implementation.

9.2.2 Construction Phase

During the construction phase the monitoring will focus on:

- Implementation of mitigation measures.
- HIV/AIDs sensitization campaigns implementation.

- Occupational health and safety measures (conditions at materials storage places, borrow sites, equipment, personal protective equipment (PPE) implemented.
- Data collection and analysis of baseline data on air and water quality, noise levels and socio - economic aspects as indicated in the EIA study are carried out.

9.2.3 Commissioning Phase

During the commissioning phase the monitoring will focus on:

- The water supply system is performing as anticipated and within set targets and permissible limits for adverse impacts on the environment.
- Solid and liquid wastes generated are taken care in the manner specified in the environmental management plan.
- Mitigation measures are effectively mitigating the impacts identified before the project start.

9.2.4 Demobilization Phase

During the demobilization phase the monitoring will focus on:

- Resulting debris is managed in planned order.

9.2.5 Operation Phase

MWAUWASA will be responsible for monitoring the environmental and social impacts after construction and handing over of the proposed works by the contractor. The Environmental Specialist at the Misungwi District Office together with the district Land Officer can be in-charge of the environmental and social monitoring of issues related with the Misungwi district if it is meeting all the statutory requirements. Among other things, the appointed District Environmental Management Officer should deal with:

- Monitoring water quality from various pollutants from the proposed works and in particular the water treatment plant.
- Monitoring air and noise pollution from the various components of the system.
- Environmental degradation control measures such as soil erosion.
- Changes in socio-economic status.

Table 9-1. Environmental and Social Monitoring Plan and budget sources

Nr	Impact	Project Phase	Monitoring location	Frequency	Parameters	Responsibility	Monitoring cost
1	Excavation and soil removal	Construction	Project site	Weekly	Soil erosion	Supervising consultant	2000
		Operation	N.a.	N.a.	N.a.	N.a.	
		Closure	Project site	Rain season	Soil erosion	District Council	1000
2	Air and noise pollution	Construction	Project site	Weekly	Dust (PM10) Noise (dB)	Supervising contractor	1000
		Operation	N.a.	N.a.	N.a.	N.a.	
		Closure	Project site / area	During demolition	Dust (PM10) Noise (dB)	Supervising consultant	1000
3	Soil and groundwater pollution	Construction	Project site	Weekly	Oil and fuel leakage	Supervising consultant	500
		Operation	Project site	Monthly Bi-annually	Sewage leaks Groundwater quality	MWAUWASA District Council	1000
		Closure	Project site	During demolition	Oil and fuel leaks Groundwater quality	MWAUWASA	1000
4	Water supply	Construction	N.a.	N.a.	N.a.	N.a.	
		Operation	Project area	Monthly	Peak Water Demand (m3/hr)	MWAUWASA	500
		Closure	N.a.	N.a.	N.a.	N.a.	
5	Solid and liquid waste	Construction	N.a.	N.a.	N.a.	N.a.	
		Operation	Project site	Weekly	Facility's waste collection	District Council	300
		Closure	N.a.	N.a.	N.a.	N.a.	
6	Improvement in hygiene and health in served communities	Construction	N.a.	N.a.	N.a.	N.a.	
		Operation	Project site	Monthly	Water supply against demand Incidence of diseases	District Council MWAUWASA	500
		Closure	Project site	Monthly	Incidence of diseases	District Council MWAUWASA	
7	Injury to workers and the public due to falling into pits and	Construction	Project site	During construction	Immediate backfilling; fencing or safety tape	Supervising consultant District Council	500

Nr	Impact	Project Phase	Monitoring location	Frequency	Parameters	Responsibility	Monitoring cost
	trenches	Operation	N.a.	N.a.	N.a.	N.a.	
		Closure	Project site	During demolition	Immediate backfilling; fencing or safety tape	District Council	1000
8	Injuries from work related activities	Construction	Project site	During construction	PPE to workers	Supervising consultant District Council	500
		Operation	N.a.	N.a.	N.a.	N.a.	
		Closure	Project site	During demolition	PPE to workers	District Council	500
9	Employment creation	Construction	Project area	During construction	Number of people employed as labourer	District Council	
		Operation	N.a.	N.a.	N.a.	N.a.	
		Construction	Project area	During construction	Number of local people employed as labourer	Supervising consultant	Project cost
	Total						***11,300***

10. Decommissioning

This chapter provides guidance to unlikely event that the construction works need to be terminated prematurely, or dismantled at the end of the lifetime of the constructions. The constructions are expected to have a minimal operational lifespan of 25 years; however they may rehabilitate the infrastructures within this specified duration or may rehabilitate this project after this period depending on the future demand.

10.1 Decommissioning During Construction

In the event that construction activities and associated work cease prior to facility completion and commissioning (with no expectation of construction re-start) the constructions would need to be decommissioned in a manner as described below. Mitigation measures will also be implemented where appropriate (e.g. to stabilization of exposed soils).

10.2 Decommissioning after the end of project operation

Decommissioning activities will occur in the following sequence:

- Disconnection of raw water intake
- Disconnection of water supply line (mains) and uprooting of pipes, and backfilling
- Dismantling of Water Treatment Plant
- Dismantling of High-lift Pump Station
- Dismantling of water storage reservoirs
- Uprooting of water distribution network, including house connections and meters, and backfilling
- Dismantling of the Faecal Sludge Treatment Plant
- Landscaping and re-vegetation.

NEMC approves decommissioning plans of projects when their life span expires or premature closure of the projects. In this regard, the proponent/ developer shall approach NEMC in due time with a proposal on decommissioning stating details and methodology of proper decommissioning.

Table 10-1. Summary of decommissioning plan

NO	Activity	Impact	Mitigation measure	Timing	Costs
1	Excavation of water supply line for rooting of pipes	Injury to workers and community members	Prior informing community / municipality on decommission works Provide warning tape around activity area Arrange for sufficient trucks to collect and dispose of sewage within a short period of time Provide PPE to workers according to the use, i.e. nose & ear masks, safety goggles Provide site holding fence Sell materials for reuse if in good condition	Tbd	tbd
2	Dismantling buildings, pump houses, tanks and equipment	Noise, dust, smell nuisance to neighbouring community	Prior informing community / municipality on decommission works Provide warning tape around activity area Arrange for sufficient trucks to collect and dispose of sewage within a short period of time Provide PPE to workers according to the use, i.e. nose & ear masks, safety goggles Provide site holding fence Sell materials for reuse if in good condition	Tbd	tbd
3	Landscaping and re-vegetation	Dust and noise generation, injuries to workers	Provide PPE to workers according to the use, i.e. nose & ear masks, safety goggles	tbd	tbd

11. Summary and Conclusions

In a joint effort, the Government of Tanzania and the European Investment Bank are implementing the Lake Victoria Water and Sanitation Project – Mwanza (2014-2020) with the main overarching aim to achieve the Millennium/Sustainable Development Goals (M/SDG) for water and sanitation in secondary centres within the Lake Victoria Basin, i.e. in Mwanza City, its three satellite towns of Misungwi, Magu and Lamadi, as well as the towns of Bukoba and Musoma.

One of the components of the Project is the rehabilitation and expansion of water supply infrastructure in Misungwi town, consisting of eight (8) components, i.e. (i) building a raw water intake; (ii) power supplies to the water treatment plant and high lift pumping station (although existing facilities are stated as adequate); (iii) building or upgrading the water treatment plant; (iv) building a high-lift pumping station; (v) replacing 3.6 km of main water supply transmission pipes; (vi) building two above ground water storage reservoirs; (vii) replacing existing and expanding some 40 km of water supply distribution networks; (viii) replacing more than 2,000 existing house connections and customer water meters, and constructing 13 communal water collection points. Total costs of these interventions are estimated at EUR 3.17 million.

The targeted developments will all be built in and around the rural town of Misungwi that is characterized by single-story housing and some economic activity amidst slightly undulating terrain with mixed land use that is dominated by agriculture and livestock keeping. Surface water is limited to Mwanza Gulf at 10 km distance, the abandoned Mitindo Dam and rainwater accumulation in low-lying spots and rice fields. Biodiversity at these localities is rather limited to pockets of low shrub and isolated trees, a marsh fringe along Mwanza Gulf and some birdlife – all common species for these rural environments.

Consultations on the planned interventions were conducted since October 2014. General agreement was achieved among the consultees on the selected interventions. Concerns expressed during these consultations have to the extent possible been incorporated in the design.

A systematic assessment of expected impacts of the interventions learns that the planned development is expected to lead to a number positive impacts notably improved water supply for population of Misungwi town, and some employment and business opportunities. Some negative impacts of the interventions are associated with the construction, operation and (whenever applicable) decommissioning phases of the facilities, all of low and some of moderate significance, but all impacts can be managed and mitigated to acceptable levels by the various parties for which responsibility has been indicated in the report.

An ESMP was prepared for the works in early-2016, and based on a preliminary review NEMC concluded that the proposed works will not have serious environmental impacts that cannot be mitigated. As the present ESIA report comes to the same conclusion, the ESIA study team is of the opinion that the project be allowed to go ahead provided that the recommended mitigation measures are adequately and timely implemented.

12. References

Atkins, August 2012
Project Formulation Report (PFR) for LVWATSAN – Part 6: Mwanza Satellite Towns

COWI, 18 February 2015
Project Brief on environmental and social impact assessment for rehabilitation and expansion water supply infrastructure for Misungwi town

COWI, 21 December 2015
Satellite Towns Study Report – Misungwi (Final)

COWI, July 2016
Tender Documents, Volume V – Drawings, Part 2: Drawings for Misungwi

COWI, January 2017
Environmental Impact Assessment Screening for Design Purposes – Screening Report

EIB, February 2013
Environmental and Social Datasheet for LVWATSAN

EIB, 2013
Environmental and Social Handbook

EIB, 2014
EIA Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment

EIB/Halcrow, December 2015
Resettlement Planning Framework for LVWATSAN

EIB/UN-HABITAT, December 2015
Stakeholder Engagement Plan for LVWATSAN

Mott MacDonald, February 2016
Environmental and Social Management Plan for construction of water supply and faecal sludge treatment plant in Misungwi town

Mott MacDonald, March 2017
Abbreviated Resettlement Action Plan for Contract 2: Extension and rehabilitation of water supply systems and construction of a faecal sludge treatment plant in Misungwi, Magu and Lamadi

R-Solve, August 2012
Supplementary Engineering Report for LVWATSAN

Tanzania Ministry of Water, 2006
Environmental and Social Management Framework (ESMF) for Water Sector Development Programme

Tanzania Ministry of Water, 2006
Resettlement Management Framework (RMF) for Water Sector Development Programme

Appendix 1. Terms of Reference for ESIA study

The Terms of Reference for the Environmental and Social Impact Assessment Study for Rehabilitation and Expansion of Water Supply Infrastructure in Misungwi were developed according to the requirement of the Environment Impact Assessment and Audit Regulations, GN No.349/2005 in making an Environmental Impact Statement.

The purpose of Terms of Reference (TOR) is to provide formal guidance to the proponent and ESIA Consultants the issues that should be addressed during the ESIA process. The terms of reference form the basis for subsequent review processes. In these TOR, strategies for addressing the issues identified during scoping have been incorporated to make the ESIA more focused and project specific.

A-1. DESCRIPTION OF THE PROJECT

The present project comprises a consultancy services to undertake detailed engineering design, tender document preparation and supervision of short and long term interventions works for water supply and Sanitation in Misungwi.

The Project is financed under the European Union (EU) Africa Infrastructure Trust Fund within the overall context of the EU and Africa Strategic Partnership. The European Investment Bank (EIB) and the Agence Française de Development (AFD) have signed two loan agreements with the Republic of Tanzania for an amount of EUR 45 million each for the financing of 86% of the investment costs associated to the extension and upgrading of water supply and sanitation in Mwanza City and satellite towns (Misungwi, Magu, Lamadi), as well as sewerage systems in the towns of Bukoba and Musoma. The total Project cost is estimated at EUR 104.5 million, including EUR 14.5 million provided by the Tanzanian government.
The project is one of several interventions under the Lake Victoria Water and Sanitation (LVWATSAN) Programme for improving and attaining the strategic goal of sustainable, efficient and economic water services provision in Misungwi.

The proposed interventions to improve sanitation and waste management include:
Improving on-site household sanitation

A-2 OBJECTIVES
Part IV of the EIA Regulations GN No. 349 of 2005 provides the general objectives for carrying out the EIA.

The objectives of the EIA are:
› To ensure that environmental considerations are explicitly addressed and incorporated into the development during decision making process
› To anticipate and avoid, minimize or offset any adverse significant biophysical, social and relevant effects of the developmental proposal
› To protect the productivity and capacity of natural systems and ecological processes to maintain their functions
› To promote development that is sustainable and optimizes resource use and management opportunities
› To establish impacts that are likely to affect the environment before a decision is made to authorize the project; and
› To enable information exchange, notification and consultations between stakeholders.

A-3 ENVIRONMENTAL ASSESSMENT REQUIREMENTS

The Environmental Management Act, Cap 191 (Act No. 20 of 2004) requires that an EIA be undertaken for all new projects that may cause adverse environmental and social impacts. Under the Environment Impact Assessment and Audit Regulations, 2005 the proposed project is categorized as an EIA obligatory project for which a full EIA is required. The activities associated with this type of services fall under schedule 1 of the EIA and Audit Regulations item 21 titled water supply.

A-4 STUDY AREA

In order to undertake a comprehensive assessment of all key issues related to the project, the core area has been determined to be the area identified within the Misungwi district.

A-5 ENVIRONMENTAL IMPACT ASSESSMENT SCOPE OF WORK

Task 1: Description of the Proposed Project
The Consultant shall give details of:
Location of all project - related development and operation sites
General layout of facilities - diagrams of facilities, design basis, size, and sources of utilities
Pre-construction activities and construction activities
The current water sources and supply systems
Organizational relationships, mandates and interactions among the different parties to be involved in the project

Task 2: Description of the Environment
The Consultant shall:
Provide general description of the project environment and sources of information for anyone requiring a more extensive description (Especially the EIA reviewers);
Identify features that are particularly important in the project area i.e. maps at appropriate scales to illustrate the surrounding areas likely to be environmentally and social affected if any;
Identify areas that may require special attention during project implementation.
The EIA shall specifically focus on the ecological components in the environment to ensure that the proposed development does not harm the well-being of these characteristics.

Task 3: Legislative and Regulatory Considerations
The Consultant shall:
Describe pertinent local, national and international regulations and standards governing environmental quality, health and safety, land use control etc. which the developer is required to observe during the implementation of the project activities.

Task 4: Determination of Potential Impacts of the new Proposed Project Component
Under this activity the Consultant shall:
Identify issues and concerns in order to find suitable remedies
Identify linkages among project components and the issues
Identify where project activities or elements interact with social and biophysical environment (direct impacts)
Identify indirect impacts of the project on the environment
Identify cumulative impacts that may be anticipated
Identify residual impacts if any
Predict probability, magnitude, distribution and timing of expected impacts and
Forecast what will happen to the affected environmental components if the project is implemented as is or if the alternatives (e.g. sites and routes) are chosen.

Task 5: Estimation of the significance of the impacts
The Consultant shall:

Determine which environmental components are mostly affected by the project or its alternatives
List issues raised by the public and classify them according the level and frequency of concern whenever possible
List regulatory standards, guidelines etc. that need to be met; and
Rank predicted impacts in order of priority for avoidance, mitigation, compensation and monitoring.

Task 6: Development of Management Plan to Mitigate Negative Impacts and develop a monitoring plan
The Consultant shall:
Determine appropriate measures to avoid or mitigate undesirable impacts
Assess and describe the anticipated effectiveness of proposed measures
Ascertain regulatory requirements and expected performance standards
Determine and assess methods to monitor impacts for prediction accuracy, and remedial measures for effectiveness
Determine and assess methods to monitor for early warning of unexpected effects
Re-assess project plans, design and the project management structure
Describe follow-up scheme and post-project action plan for achieving EIA objectives; and
Assess the level of financial commitment by the project proponent for the management and monitoring plan, and follow up activities.

The Consultant shall be guided by the cost-effectiveness principles in proposing mitigation measures. Estimation of costs of those measures shall be made. The assessment will provide a detailed plan to monitor the implementation of the mitigation measures and impacts of the project during construction and operation.

Task 7: Institutional set-up
The Consultant shall review the institutional set-up - Community, Ward, District levels - for implementation of the Management and Monitoring Plans recommended in the environmental assessment. The assessment shall identify who should be responsible for what and when.

Task 8: Recommendations
The Consultant shall:
Highlight key concerns and considerations associated with the acceptance and implementation of recommended actions
Determine resource requirements for implementing recommendations
Determine capacity and resourcefulness of the client to meeting such commitment
Explain rationale for proposed development and benefits and costs vis-à-vis the no-project option;
Ascertain degree of public acceptance of /or reaction to recommendations.

Task 9: Environmental and Social Impact Statement (ESIA)
The assessment shall result in an EIS which focuses on findings of the assessment, conclusions and recommended actions, supported by summaries of data collected etc. This shall be a concise document limited to significant environmental issues. The report format will be as per Environment Impact Assessment and Audit Regulations, G.N. No. 349 of 2005.

Task 10: Review
The review report from NEMC may require further input (data collection, consultation inputs, etc.). The Consultant shall undertake to provide extra information and inputs until the project review is satisfactorily concluded.

Task 11: Public involvement
The assessment shall establish the level of consultation of the affected stakeholders before designing the project level of involvement in the running and maintenance of the project facilities as this is an important aspect for both environmental, social and project sustainability.

The assessment will provide a framework:
For coordinating the Environmental and Social Impact Assessment with other government agencies, and
For obtaining the views of affected groups, keeping records of meetings, other activities, communications, and comments on their disposition.

Consultation with various stakeholders has been conducted during the Scoping Exercise and further consultation will be conducted during the detailed ESIA Study.

A-6 TIME SCALE
It is expected that the detailed assessment will be completed within a period of three months, including the review process with NEMC

A-7 PERSONAL REQUIREMENT
The Client shall deploy Consultants / Experts with the demonstrable practical experience in conducting ESIA studies and other specialists including:

- Environmental Scientist (EIA registered Expert and Team leader)
- Health and Safety Expert
- Sociologist
- Water Engineer

Additional experts will be consulted when needed.

A-8 REPORT STRUCTURE
Prepare EIA report which will contain the following information:
Executive summary;
Acknowledgement;
Acronyms;
Introduction;
Project background and description;
Policy, administrative and legal framework;
Baseline or existing conditions;
Assessment of impacts and identification of alternatives;
Impacts management or environmental mitigation measures;
Environmental and social management plan
Resource evaluation or cost benefits analysis;
Decommissioning;
Summary and conclusion
References and Appendices

The Cover page of the Environmental Impact Statement will have the following information:
Title of the proposed project
Location of proposed development
Developer;
Lead consultants;
Contact address and phone; and
Date of submission.
The EIS will also constitute an executive summary that contains the following information.
Title and location of the project or undertaking;
Name of the proponent and contact;
Names and addresses of experts or firms of experts conducting EIA;
Brief outline and justification of the proposed project or undertaking showing:
A brief description of the project environment;
Project stakeholders and their involvement in the EIA process;

Explanation on why some impacts are not addressed;
List of developer, consultant, local planning authorities and other people and organizations consulted
Results of public consultation
Description of the major significant impacts;
Alternative considered;
Recommendations and plan for mitigation of the impacts;
Environmental and social management;
Proposed monitoring and auditing; and
Resource evaluation or cost benefits analysis.

A-9 OUTPUT

The Consultant shall submit to NEMC, five bound hard copies of the Scoping Report accompanied with Terms of reference which shall quid the EIA study. The Consultant shall then undertake the detailed EIS, and shall also make 15 copies of the EIS for the review process, finally shall submit five copy of final ESIA accompanied by one electronic Version and five Non-technical executive summary for both Swahili and English version as stipulated in the Environment Impact Assessment and Audit Regulations, G.N. No. 349 of 2005.

A-10 Record of meetings

The Consultants shall provide records of the names of organizations, Authorities, government departments and individuals whose views will be obtained. The records will also provide description of views and information that will be obtained.

A-11 References

The Consultant shall provide a list of all information sources used, including unpublished documents and sources in the EIS.

Appendix 2. NEMC's Screening Decision

NATIONAL ENVIRONMENT MANAGEMENT COUNCIL (NEMC)
BARAZA LA TAIFA LA HIFADHI NA USIMAMIZI WA MAZINGIRA

Tel: Dir: +255 22 277 4852
Tel: +255 22 277 4889
Mob: +255 713 - 608930
Fax: +255 22 277 4901
E-mail: dg@nemc.or.tz
Website: www.nemc.or.tz

Regent Estate Plot No. 29/30,
P.O. Box 63154,
DAR ES SALAAM
TANZANIA

In reply please quote:
Ref: NEMC/HQ/EIA/11/0145/VOL. I/02

Date: 04/03/2015

Magu Urban Water and Sanitation Authority,
P. O. Box 200,
Magu. *Attn: Eng. Joseph Bundala*

RE: SCREENING DECISION ON THE PROPOSED REHABILITATION AND EXPANSION OF WATER SUPPLY INFRASTRUCTURE IN MAGU TOWN, MAGU DISTRICT, MWANZA REGION

Please refer to your letter dated 19th February, 2015 submitting the EIA registration form and the Project brief in respect of the above mentioned project. Kindly be informed that the project has been registered and allotted Application Reference Number **5030.**

We have screened the documents based on the information provided in the documents and project screening criteria stipulated in Regulations 6(1), 9 and 11(1) (a) of the Environmental Impact Assessment and Audit Regulations, 2005 and found that it requires Environmental Impact Assessment study. With this legal requirement, you are required to carry out the EIA study of your project.

As a first step towards this process, you will be required to submit a Scoping Report and draft Terms of References (ToR), to the National Environment Management Council for review and approval before the beginning of the EIA study. Be reminded also that:

i. The scoping report should conform to the EIA and Audit Regulations, 2005 and particularly Regulations 12 (3) and fourth schedule made under Regulation 15 for the contents of the scoping report and the essence of the scoping exercise respectively;
ii. Detailed stakeholders consultation should be done during the scoping exercise from the National Level to the Ward/Mtaa level. Among the stakeholders to be consulted should include; Lake Victoria Basin Water Office
iii. Detailed description of each project component should be provided in the scoping report i.e abstraction intakes, transmission mains and distribution pipelines, pumping stations, water treatment plant
iv. The land required for the project should be predetermined in the scoping report

Do not hesitate to contact us in case you need further information or clarification on this process through Tel No. +255 767 774777

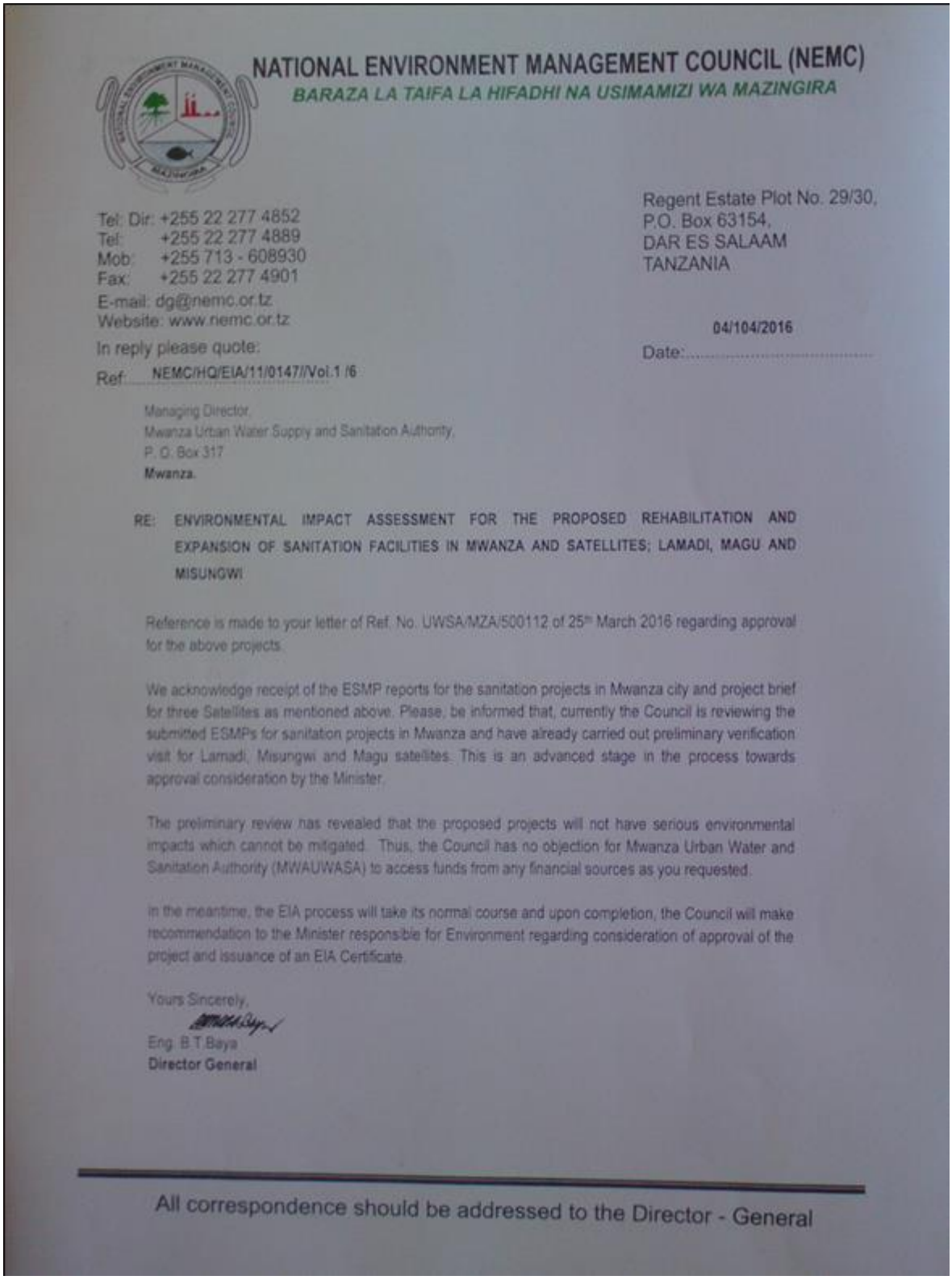
All correspondence should be addressed to the Director - General

Yours Sincerely,

Dr. M.H. Makene
For Director General

CC COWI TANZANIA LTD,
P.O. Box 1007,
Dar es Salaam.

Appendix 3. NEMC's Comments on ESMP



NATIONAL ENVIRONMENT MANAGEMENT COUNCIL (NEMC)
BARAZA LA TAIFA LA HIFADHI NA USIMAMIZI WA MAZINGIRA

Tel: Dir: +255 22 277 4852
Tel: +255 22 277 4889
Mob: +255 713 - 608930
Fax: +255 22 277 4901
E-mail: dg@nemc.or.tz
Website: www.nemc.or.tz

Regent Estate Plot No. 29/30,
P.O. Box 63154,
DAR ES SALAAM
TANZANIA

In reply please quote:
Ref: NEMC/HQ/EIA/11/0147//Vol.1 /6

Date: 04/104/2016

Managing Director,
Mwanza Urban Water Supply and Sanitation Authority,
P. O. Box 317
Mwanza.

RE: ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED REHABILITATION AND EXPANSION OF SANITATION FACILITIES IN MWANZA AND SATELLITES; LAMADI, MAGU AND MISUNGWI

Reference is made to your letter of Ref. No. UWSA/MZA/500112 of 25th March 2016 regarding approval for the above projects.

We acknowledge receipt of the ESMP reports for the sanitation projects in Mwanza city and project brief for three Satellites as mentioned above. Please, be informed that, currently the Council is reviewing the submitted ESMPs for sanitation projects in Mwanza and have already carried out preliminary verification visit for Lamadi, Misungwi and Magu satellites. This is an advanced stage in the process towards approval consideration by the Minister.

The preliminary review has revealed that the proposed projects will not have serious environmental impacts which cannot be mitigated. Thus, the Council has no objection for Mwanza Urban Water and Sanitation Authority (MWAUWASA) to access funds from any financial sources as you requested.

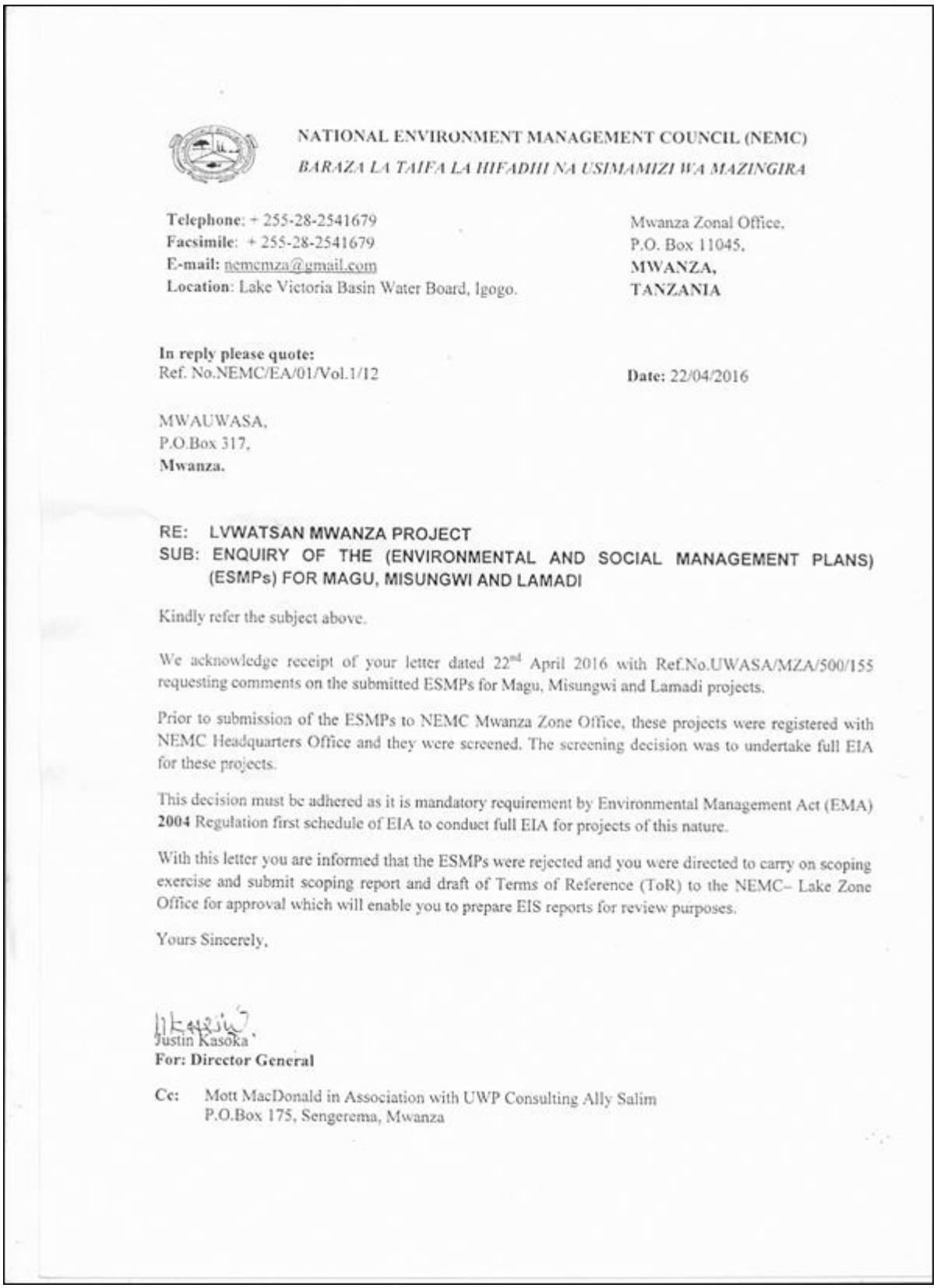
In the meantime, the EIA process will take its normal course and upon completion, the Council will make recommendation to the Minister responsible for Environment regarding consideration of approval of the project and issuance of an EIA Certificate.

Yours Sincerely,

Eng. B.T.Baya
Director General

All correspondence should be addressed to the Director - General

Appendix 4. NEMC's ESMP Rejection



NATIONAL ENVIRONMENT MANAGEMENT COUNCIL (NEMC)
BARAZA LA TAIFA LA HIFADHI NA USIMAMIZI WA MAZINGIRA

Telephone: + 255-28-2541679
Facsimile: + 255-28-2541679
E-mail: nemcmza@gmail.com
Location: Lake Victoria Basin Water Board, Igogo.

Mwanza Zonal Office,
P.O. Box 11045,
MWANZA,
TANZANIA

In reply please quote:
Ref. No.NEMC/EA/01/Vol.1/12

Date: 22/04/2016

MWAUWASA,
P.O.Box 317,
Mwanza.

RE: LVWATSAN MWANZA PROJECT
SUB: ENQUIRY OF THE (ENVIRONMENTAL AND SOCIAL MANAGEMENT PLANS) (ESMPs) FOR MAGU, MISUNGWI AND LAMADI

Kindly refer the subject above.

We acknowledge receipt of your letter dated 22nd April 2016 with Ref.No.UWASA/MZA/500/155 requesting comments on the submitted ESMPs for Magu, Misungwi and Lamadi projects.

Prior to submission of the ESMPs to NEMC Mwanza Zone Office, these projects were registered with NEMC Headquarters Office and they were screened. The screening decision was to undertake full EIA for these projects.

This decision must be adhered as it is mandatory requirement by Environmental Management Act (EMA) **2004** Regulation first schedule of EIA to conduct full EIA for projects of this nature.

With this letter you are informed that the ESMPs were rejected and you were directed to carry on scoping exercise and submit scoping report and draft of Terms of Reference (ToR) to the NEMC– Lake Zone Office for approval which will enable you to prepare EIS reports for review purposes.

Yours Sincerely,

Justin Kasoka
For: Director General

Cc: Mott MacDonald in Association with UWP Consulting Ally Salim
P.O.Box 175, Sengerema, Mwanza

Appendix 5. NEMC's Response on Scoping Report

NATIONAL ENVIRONMENT MANAGEMENT COUNCIL (NEMC)
BARAZA LA TAIFA LA HIFADHI NA USIMAMIZI WA MAZINGIRA

Telephone: + 255-28-2541679
Facsimile: + 255-28-2541679
E-mail: nemcmza@gmail.com
Location: Lake Victoria Basin Water Board, Igogo.

Mwanza Zonal Office,
P.O. Box 11045
MWANZA,
TANZANIA.

In reply please quote:
Ref. No. NEMC/EA/01/Vol.1/23

Date: 09/06/2016

Managing Director,
Mwanza Urban Water Supply and Sanitation Authority,
P.O. Box 317,
Mwanza.

RE: SCOPING REPORT AND TERMS OF REFERENCE FOR THE PROPOSED REHABILITATION AND EXPANSION OF WATER SUPPLY INFRASTRUCTURE IN MISUNGWI TOWN, MISUNGWI DISTRICT, MWANZA REGION

The above captioned subject refers.

We acknowledge receipt of your letter dated 25/05/2016 submitted with the scoping report and Terms of Reference [ToR] for undertaking an EIA of the above mentioned project with project registration number **5035.**

We have reviewed the scoping report and ToR and found that there are some areas that need to be worked on to improve the ToR so that they can in turn be used to guide the EIA. The EIA should take note of the following comments:

1. Fine tune the Terms of Reference to that it is focused and specific to the issues to addressed during the EIA study. Improve Task 1, Task 2, and 5 ad indicated below:
    a. In Task 1 include the description on: projective and rationale, designs, activities in each phase, components, boundaries, land use planning, land ownership, Wastes and waste management.
    b. In Task 2 include the description of the physical, biological and socio-economic and cultural environments. Also you are required to collect relevant baseline data of various parameters including; topography, air quality, hydrology and water quality specific to the project area.
    c. In the Task 6 include the management of wastes in all project implementation phases.
    d. Methods used for impact Identification, assessment and analysis should be described and where checklists are used, they should be appended.

2. Stakeholders' Consultations should be adequate and their concerns considered in the EIS: Among the stakeholders to be consulted should include Lake Victoria Basin Water Board.

3. The project alternatives should be analyzed and the reasons given for the preferred alternative:

4. The EIA report should address issues related to land acquisition, land use planning and suitability of the site for the project and Copies of Relevant permits should be appended.

You are advised to work on the comments provided above. In addition to observing the ToR we emphasize that you undertake the EIA study, prepare the EIA report and submit the EIS to the National Environment Management Council, according to the requirements of the EIA and Audit Regulations, 2005.

Upon submission of the EIA report, the Council will arrange for a technical review of the document by the Cross-sectoral Technical Advisory Committee (TAC). Prior to review, representatives of the TAC will visit the project area and surrounding environment to verify the adequacy of the EIA report.

You are also reminded that submitted ToR with these improved comments should be appended with this letter to the Environmental Impact Statement (EIS) that will be submitted to the Council for review.

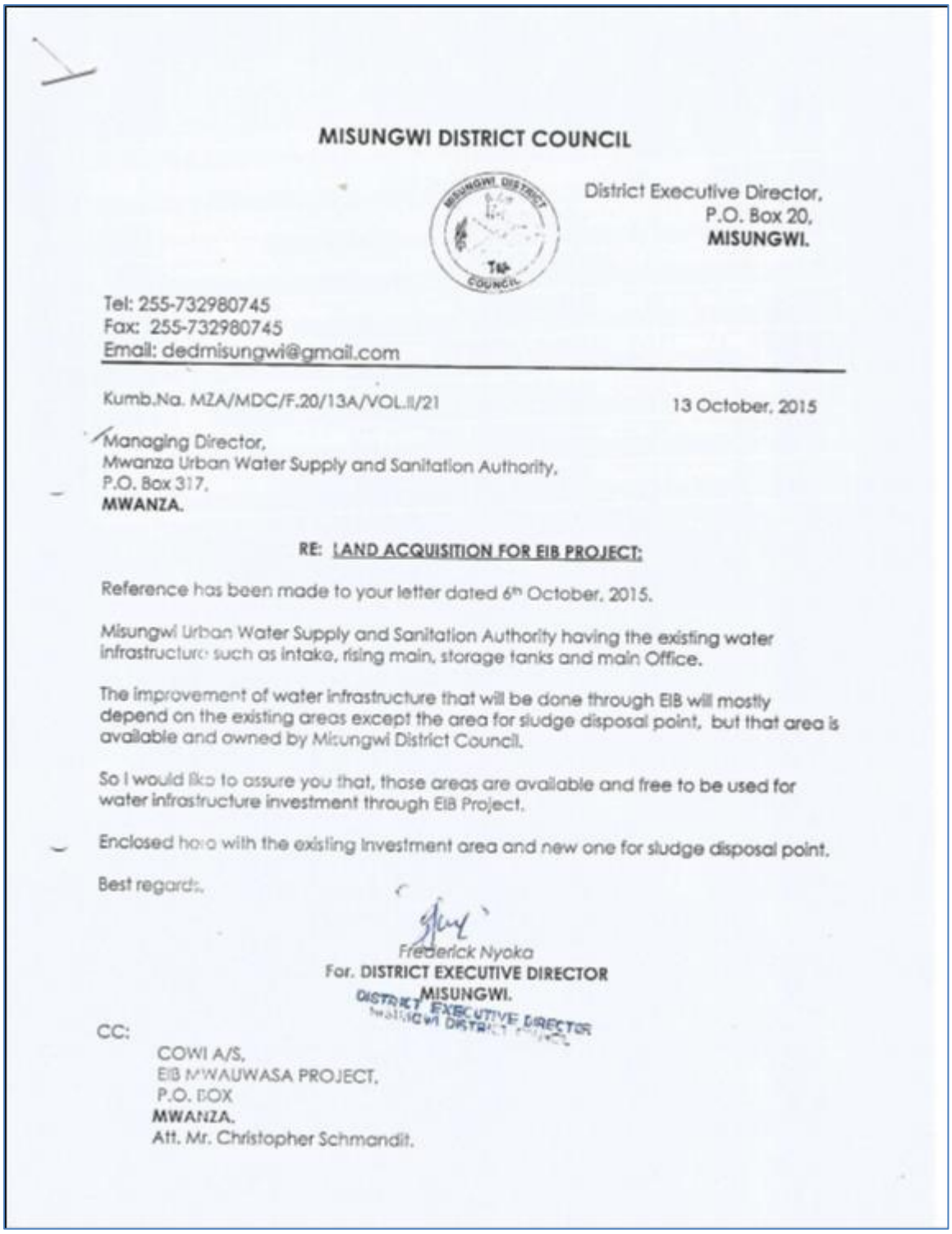
In case you need further clarification on this matter, please do not hesitate to contact us on ***Tel: 0767 153 776***

Yours sincerely,

Jamali Baruti
ZONAL COORDINATOR

Cc: Ally Salim (Registered Environmental Expert)
P.O. Box 175,
Sengerema – Mwanza.

Appendix 6. Land Ownership for Land to Accommodate the Facilities



MISUNGWI DISTRICT COUNCIL

District Executive Director,
P.O. Box 20,
MISUNGWI.

Tel: 255-732980745
Fax: 255-732980745
Email: dedmisungwi@gmail.com

Kumb.Na. MZA/MDC/F.20/13A/VOL.II/21 — 13 October, 2015

Managing Director,
Mwanza Urban Water Supply and Sanitation Authority,
P.O. Box 317,
MWANZA.

RE: LAND ACQUISITION FOR EIB PROJECT:

Reference has been made to your letter dated 6th October, 2015.

Misungwi Urban Water Supply and Sanitation Authority having the existing water infrastructure such as intake, rising main, storage tanks and main Office.

The improvement of water infrastructure that will be done through EIB will mostly depend on the existing areas except the area for sludge disposal point, but that area is available and owned by Misungwi District Council.

So I would like to assure you that, those areas are available and free to be used for water infrastructure investment through EIB Project.

Enclosed here with the existing investment area and new one for sludge disposal point.

Best regards.

Frederick Nyaka
For. **DISTRICT EXECUTIVE DIRECTOR**
MISUNGWI.

DISTRICT EXECUTIVE DIRECTOR

CC:
COWI A/S,
EIB MWAUWASA PROJECT,
P.O. BOX
MWANZA.
Att. Mr. Christopher Schmandit.

LOCATION OF LAND EIB INVESTMENT:

S/NO.	DESCRIPTION OF ACTIVITY	M2 ALLOCATED	AREA
1.	Construction of intake structure and T/Plant	34,000	Nyahiti
2.	Improvement of transmission line	125	Nyahiti – Misungwi
3.	Construction of main storage tank for higher level.	15,000	Bomani Hill
4.	Construction of lower level tank	10,000	Mbela Hill
5.	Construction of sludge disposal point	40,000	Mitindo forest resource
6.	Main Office and Existing pump house	40,000	Mitindo
7.	Mitindo Dam	150,000	Mitindo

Appendix 7. Multi-Stakeholder Forum for Misungwi Town

Name	Gender	Membership in MSF	Contact
Modest William	M	Chairperson	766373109
Grace Kusolwa	F	Deputy Chairperson	762824815
Emmanuel Kija	M	Secretary	753143335
Stephano Makoye	M	Deputy Secretary	759020877
Mobilization Thematic Group			
Mathayo Gody	M	Member	766173128
Wilson Simon	M	Member	766384065
Jovin Justian	M	Member	756776181
Rachel John	F	Member	759566343
Adam Kalembumtambi	M	Member	
Gideon Bujiku	M	Member	753478424
Samuel Kashimbe	M	Member	759287299
Sebastian Patrick	M	Member	756810146
Zebedayo Lubasha	M	Member	
Lusia Joseph	M	Member	768796413
Elias Kabipe	M	Member	762232759
Capacity Building Thematic Group			
Mwadawa Shabani	F	Member	759616126
Asha Kabola	F	Member	755642874
Richard Nkingwa	M	Member	757905495
Said Kabaju	M	Member	766373312
Elizabeth Bukelebe	M	Member	758109005
Fatuma Ismail	F	Member	755689673
Jumanne Shihumbe	M	Member	756589494
Hamisa Ally	F	Member	756017289
Theodora Benedicto	F	Member	7534112293
Boniphace Kanyasu	M	Member	757849147
Veronica Maduka	F	Member	757898545
Infrastructure Thematic Group			
Shemsaldd	F	Member	756582366
Michael Malanguka	M	Member	655840568
Martha Charles	F	Member	

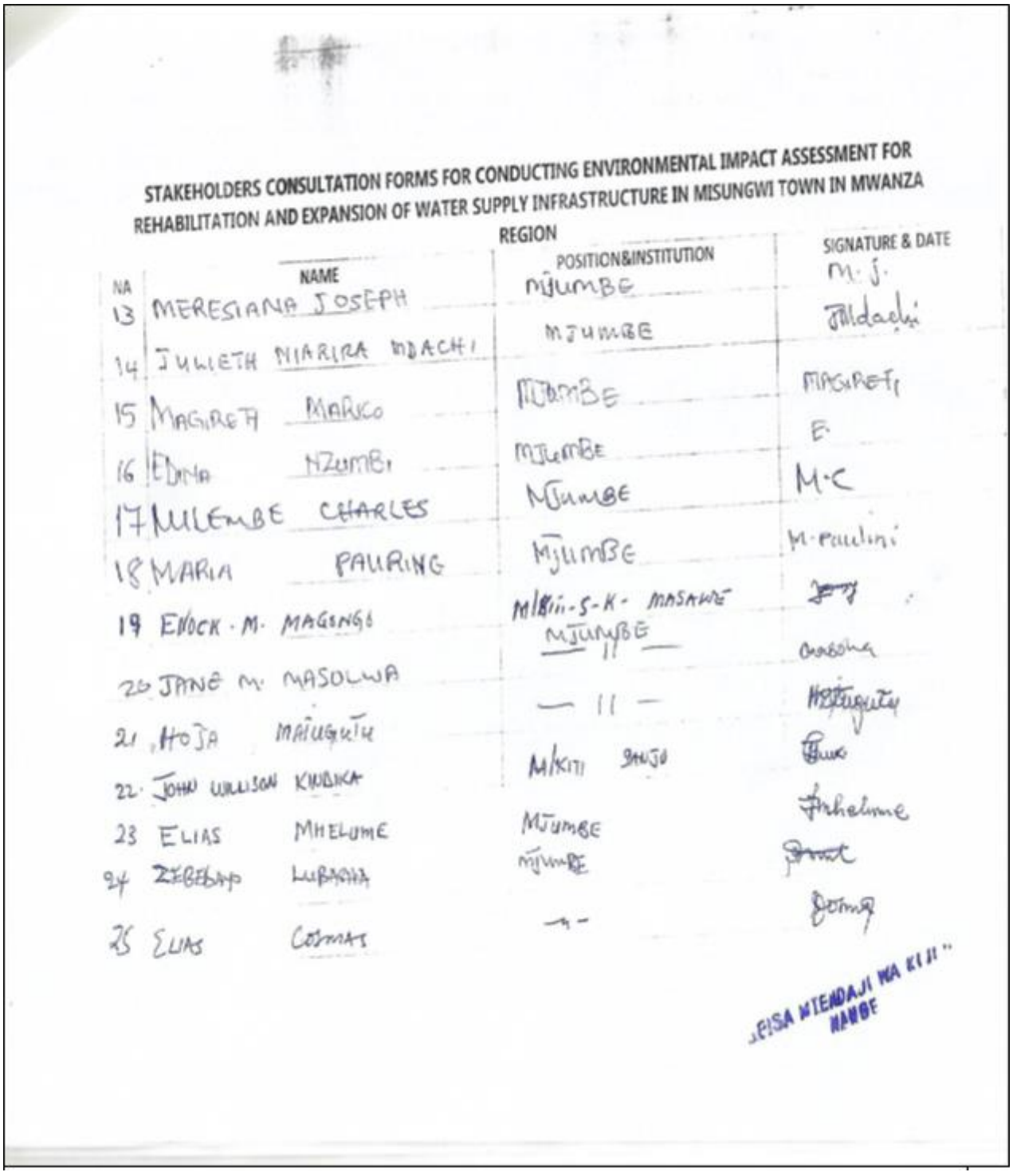
Name	Gender	Membership in MSF	Contact
Cosmas William	M	Member	759615104
Cartherine Mabula	F	Member	756436571
Musa Salum	M	Member	
Patrick Michael	M	Member	755739849
Ally Ramadhani	M	Member	753536247
Jackline Soda	F	Member	754356525
Anastalia Mhembe	F	Member	752770402
Meshack Miselya	M	Member	786227756
Mriamu Marko	F	Member	758350408

Appendix 8. Lists of Consulted Stakeholders

STAKEHOLDERS CONSULTATION FORMS FOR CONDUCTING ENVIRONMENTAL IMPACT ASSESSMENT FOR REHABILITATION AND EXPANSION OF WATER SUPPLY INFRASTRUCTURE IN MISUNGWI TOWN IN MWANZA REGION

NA	NAME	POSITION&INSTITUTION	SIGNATURE & DATE
1.	MODEST WILLIAM	MKUTI	
2.	GRACE KUSOLWA	MKUTI MSAIDIZI	
3.	EMMANUEL KIJA	KATIBU	
4.	STEPHANO MAKOYE	KATIBU MSAIDIZI	
5.	ELIZABETH BUKELEBE	MJUMBE	
6	ELIAS K. CHAGA	MJUMBE	
7	EMMANUEL JETUTA	MJUMBE	
8.	LUKUBA LUKUMBA	MJUMBE	
9	MICHAEL G. PALLANGYO	VEO-NANGE	
10	MUSSA S. NKALAGO	MJUMBE	
11	EZEKIE M. MASOTHANYA	MJUMBE	
12	KAVIKA - MAVIKA	MJUMBE	

OFISA MTENDAJI WA KIJIJI
NANGE



STAKEHOLDERS CONSULTATION FORMS FOR CONDUCTING ENVIRONMENTAL IMPACT ASSESSMENT FOR REHABILITATION AND EXPANSION OF WATER SUPPLY INFRASTRUCTURE IN MISUNGWI TOWN IN MWANZA REGION

NA	NAME	POSITION&INSTITUTION	SIGNATURE & DATE
13	MERESIANA JOSEPH	MJUMBE	M. J.
14	JULIETH NIARIRA MDACHI	MJUMBE	Mdachi
15	MAGRETH MARCO	MJUMBE	MAGRETH
16	EDNA NZUMBI	MJUMBE	E.
17	MULEMBE CHARLES	MJUMBE	M.C
18	MARIA PAURING	MJUMBE	M. Pauling
19	ENOCK. M. MAGENGE	M/Bii. S. K. MASAWE MJUMBE	
20	JANE M. MASOLWA	— 11 —	
21	HOJA MAIUGULU	M/KITI SHULE	
22	JOHN WILLISON KWEKA	MJUMBE	
23	ELIAS MHELUME	MJUMBE	
24	ZEBEDAYO LUBASHA	— " —	
25	ELIAS COSMAS		

"FISA MTEMAJI WA KIJIJI"
MANGE

STAKEHOLDERS CONSULTATION FORMS FOR CONDUCTING ENVIRONMENTAL IMPACT ASSESSMENT FOR REHABILITATION AND EXPANSION OF WATER SUPPLY INFRASTRUCTURE IN MISUNGWI TOWN IN MWANZA REGION

NA	NAME	POSITION&INSTITUTION	SIGNATURE & DATE
26	PETER KOMANYA SHINASHU	MSUWAZ	[signature]
27	Luena J. NTELENZU	MJUMBE	[signature]
28	KUBERABO KISUMO	Mjumbe	K. kisomo
29	NESTORY MISIMI	" "	[signature]
30	BARNABAS LAURENT	" "	[signature]
31	TEODORA B. ANDRE	" – " – "	Benedicto
32	maria marico	" – "	maria

"SEISA MTENDAJI WA KIJIJI" MABUG.

Appendix 9. Pubic Consultations

Misungwi town – meetings held in January-March 2017

Meeting with community leaders – For planning purposes the E&S team convened meetings with the ward and village leaders, which had positive impacts on the public meetings. During these meetings the team was able to understand the situation prevailing in the community and hence established gaps which needed to be addressed. All issues which were not clear with the community leaders were ironed out during this meeting. It is through this meeting that the E&S team was able to set a plan for the public consultation meeting, and roles of each one was well stipulated at this meeting. All meetings were preceded by meetings with ward and village committees, the idea of having these meetings first was to enable the leaders be aware and therefore reduce unnecessary critics during the community meetings in which some cases leads to misleading and unnecessary prolonged meetings.

Public Meetings at Misungwi Mjini ward, Nange, Busolwa and Mwajombo villages – The E&S team together with the satellite town counterpart staff organized a series of meetings with community members. The aim was to inform them about the project which was about to start and chart out the community responsibility in ensuring that the project performs effectively. The meetings were held at ward and village levels, i.e. in Misungwi and Igokelo ward. In Igokelo the villages that participated in the meetings at different sessions were Nange, Buswolwa and Mwajombo villages. Mwajombo village hosts Nyahiti sub-village which is the water intake source.

The transmission main from the source at Nyahiti about 2.5 km will be replaced with steel pipe DN300. The village along this line, Mwajombo village Nyahiti sub-village, was summoned to a community meeting. The agenda was presented and people were informed that the defected pipe line will be replaced with a new pipe. Explained was that the project is about to start and that the pipes will be laid mainly along existing road reserves and foot paths. Community members were shown the pipe alignment on an A0 size map for verification.

Community members reiterated that their interest is to get water and when they were assured that no houses will be affected by the project they agreed with the works as long as they can continue with their activities in their sites. It was stressed however that people will not be allowed to construct permanent buildings on the pipelines reserve which is clearly known that it is 5 m on both sides of the pipes.

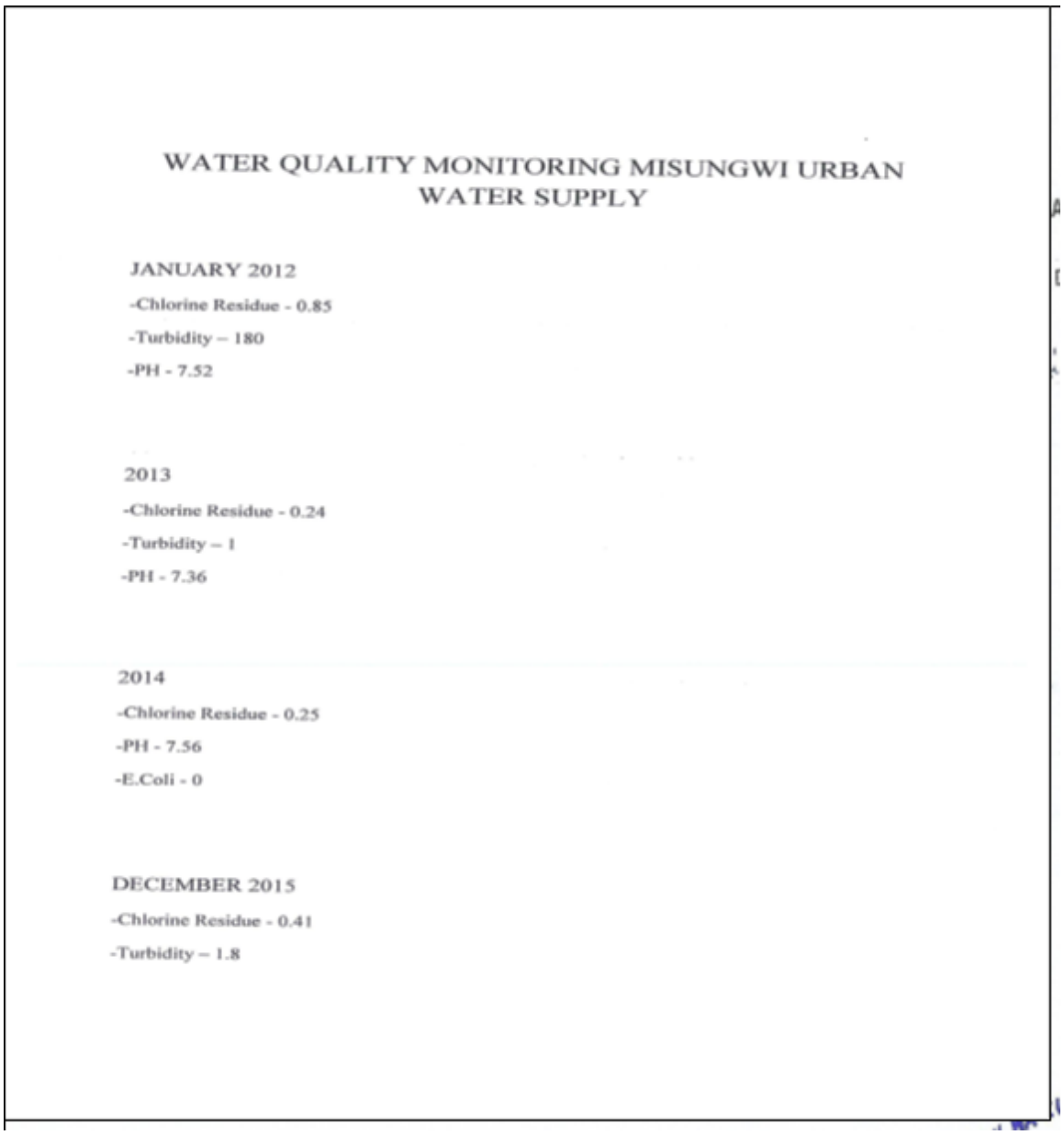
Meeting with District officials – The E&S had a forum with the district officials concerning the field work done. Feedback was given to the district and water utility to give the field insight and share issues which were noted. Results of the meeting:

- The Misungwi Mjini ward meeting was well organized, more than 300 people attended.
- The community was much motivated and ready for the project which they said was already late since have waited for it for a long time.
- On land issues they voted by raising up hands for those who agreed with the project infrastructure to cross in the fields in case there is no any other option.
- The meeting at Nyahiti sub-village was not very active although more than 50 people attended, women were very few, the idea of replacing the old pipe with a new one was deemed interesting although they complained about unavailability of enough DPs at the village while water is crossing their village.
- On land issues they all agreed and said to be aware of the 5 m reserve for water pipelines, therefore agreed to support the project.
- Coming to Busolwa and Nange the community meetings were moderate too, not much participation either, although the pipe section will depend more on internal resource it will not be served by this project.

Table 1.1. Main comments and responses during consultative meetings held in Misungwi town

Nr	Issues Comments from the Community	Remark/Action by the Consultant
1.	People have long waited for the project implementation due to acute shortage of water	The project implementation is scheduled to commence immediately after contract signing scheduled for February 2017 and project duration is 18 months.
2.	Possibility of getting water to areas not covered by the project	The Misungwi District Council will internally arrange extension of water supply to uncovered areas for the purpose of increasing the number of customers.
3.	Scope of the project	The project activities were explained.
4.	Compensation arrangement for identified PAPs	The E&S team identified and interviewed all 3 PAPs: one constructed a mud-brick house roofed with iron sheets on the existing transmission main, Mitindo Primary School whereby the distribution pipeline will cross the already constructed blockwork fence and another person extended his commercial premise's fence on the existing distribution main. All of them accepted to allow the execution of the project without any compensation.
5.	Need of introducing cattle troughs	The design has not considered the construction of cattle troughs for feeding livestock, the project is intended to supply clean water for human consumption.
6.	High concentration of the residual chlorine prevailing in current water which cause decrease the water quality due to incomplete treatment plant system	The new design of Water Treatment Plant has considered the treatment of raw water by all necessary methods (flocculation, sedimentation, filtration, and chemical dosing) whereby the clear water from the clear storage tank will be pumped to these two individual tanks.
7.	The execution of agricultural activities along the pipeline routes after pipe laying	Temporary agricultural activities above the backfilled trenches is allowed.
8.	The nature of the route reserves for the proposed transmission and distribution pipelines	The proposed transmission and distribution pipelines will be laid mainly on the existing public utility area of road reserves and few pipe sections will cross on the people's plots and/or farms.
9.	Labour force (employment)	The project will provide temporary jobs to local residents and hence, enhance the local economy.
10.	Number of domestic points proposed for the construction in the peri-urban areas	The contract has considered 13 domestic points for these areas.
11.	The introduction of pipeline marker posts to avoid future encroachment	The design has considered installation of marker posts for both transmission and distribution mains at their specified distances and associated valve chambers.

Appendix 10. Water Analysis Report



WATER QUALITY MONITORING MISUNGWI URBAN WATER SUPPLY

JANUARY 2012

-Chlorine Residue - 0.85

-Turbidity – 180

-PH - 7.52

2013

-Chlorine Residue - 0.24

-Turbidity – 1

-PH - 7.36

2014

-Chlorine Residue - 0.25

-PH - 7.56

-E.Coli - 0

DECEMBER 2015

-Chlorine Residue - 0.41

-Turbidity – 1.8

-PH - 7.54
-TDS - 93.3
-Iron - 0.25
-Manganese - 0.18
-Calcium hardness - 13.5
-Nitrates - 3.5
-Sulphate - 2
-E.Coli - 0

JANUARY 2016

-Chlorine Residue - 0.73
-Turbidity – 274
-E.Coli at 35°C - 0

Appendix 11. Impact Tables

The overall impact of the proposed interventions is positive but some impacts will or may negatively affect the communities in the study area. Table A11-2 presents a preliminary listing of potential interventions that may be undertaken as part of the Misungwi Water Supply works with their expected environmental and social impacts, positive and negative.

Table A11-1 provides a key to the significance of the identified impact criteria.

Table A11-1. Significance of impact criteria

Magnitude of potential impact	Sensitivity of receptors			
	Very severe	Severe	Mild	Low / negligible
Major	Critical	High	Moderate	Negligible
Medium	High	High	Moderate	Negligible
Minor	Moderate	Moderate	Low	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible

Table A11-2. Potential interventions and expected adverse environmental and social impacts

Intervention	Potential impact	Impact duration	Spatial extent	Reversible (Y/N)	Likelihood	Magnitude	Sensitivity	Significance prior to mitigation	Significance after mitigation	Mitigation measure
No-project scenario										
None	Continued lack of piped treated water, poor water quality	Long term	Local	Yes	Certain	Major	Severe	High negative	--	--
With-project scenario										
All interventions	Availability of treated piped water	Long term	Local	Yes	Certain	Major		High positive		
Impacts related to pre-construction, planning and design										
Surveys	Employment generation	Temporary	Local	Yes	Possible	Minor	Low	Positive	--	--
Surveys	Vegetation loss through clearance	Temporary	Local	Yes	Possible	Minor	Low	Low negative	Negligible	Limit vegetation clearance as much as possible
Surveys	Temporary obstruction of access roads	Temporary	Local	Yes	Possible	Minor	Low	Low negative	Negligible	Signage & community sensitization
Surveys	Soil erosion	Temporary	Local	Yes	Possible	Minor	Low	Low negative	Negligible	Conduct during dry season; erosion control
Surveys	Traffic increase	Temporary	Local	Yes	Possible	Minor	Low	Low negative	Negligible	Speed limits
Surveys	Noise from geotechnical surveys	Temporary	Local	Yes	Possible	Minor	Low	Low negative	Negligible	Noise silencers
Surveys	Noise from transport	Temporary	Local	Yes	Possible	Minor	Low	Low negative	Negligible	Sound mufflers
Surveys	Accidents	Temporary	Local	Yes	Possible	Minor	Low	Low negative	Negligible	Sensitize & instruct drivers
Construction										
Site clearing	Vegetation clearance	Temporary	Local	Yes	Likely	Minor	Low	Low negative	Negligible	Limit as much as possible

Intervention	Potential impact	Impact duration	Spatial extent	Reversible (Y/N)	Likelihood	Magnitude	Sensitivity	Significance prior to mitigation	Significance after mitigation	Mitigation measure
Site clearing	Disturbance to cultural, historical & archaeological art.	Permanent	Local	No	Unlikely	Negligible	Low	Low negative	Negligible	Provide fair per compensation timely
All works	Disturbance to land use, scenic & visual quality	Temporary	Local	Yes/No	Possible	Minor	Mild	Low negative	Negligible	Blend-in & provide landscaping afterwards
All works	Disturbance to residents & resettlement	Temporary	Local	No	None identified	Negligible	Mild	Low negative	Negligible	Provide fair compensation timely
All works	Land scarring at borrow pits	Temporary	Local	Yes	Likely	Minor	Low	Low negative	Negligible	Landscaping afterwards
All works	Noise & vibration	Temporary	Local	Yes	Likely	Minor	Low	Low negative	Negligible	Silencers to be used
All works	Soil erosion	Temporary	Local	Yes	Possible	Minor	Low	Low negative	Negligible	Slope protection, silt trap, dry season timing, etc
All works	Traffic intensity increase	Temporary	Local	Yes	Likely	Minor	Low	Low negative	Negligible	Driver sensitization, control plan, signage
All works	Water contamination from fuel & lubricant leakage	Temporary	Local	Yes	Possible	Minor	Low	Low negative	Negligible	Dripping pans, re-fuelling on designated areas, contaminated soil collection & disposal
All works	Poor air quality, dust & emissions	Temporary	Local	Yes	Likely	Minor	Low	Low negative	Negligible	Water sprinkling, use dust masks and goggles, speed limits and load covers
All works	Spread of disease (e.g. AIDS/HIV)	Temporary	Local	Yes	Possible	Medium	Mild	Moderate negative	Low negative	Sensitization & health awareness; worker's screening
All works	Safety	Temporary	Local	Yes	Likely	Medium	Mild	Moderate negative	Low negative	Appropriate warning & control
All works	Solid & liquid waste	Temporary	Local	Yes	Likely	Minor	Low	Low negative	Negligible	Site housekeeping,

Intervention	Potential impact	Impact duration	Spatial extent	Reversible (Y/N)	Likelihood	Magnitude	Sensitivity	Significance prior to mitigation	Significance after mitigation	Mitigation measure
	generation									garbage bins, officer-in-charge, trash & waste collection & disposal
All works	Vandalism & damage of pipes	Temporary	Local	Yes	Possible	Medium	Mild	Moderate negative	Low negative	Fencing off, regular control, offence & penalty
Operation and Maintenance										
O&M	Disturbance from pumps & engines	Regular	Local	Yes	Possible	Minor	Low	Low negative	Negligible	Noise silencing equipment
O&M	Pollution of soil & surface/ground waters by effluents from PS & WTP	Regular	Local	Yes	Possible	Minor	Low	Low negative	Negligible	Regular testing followed by repair or additional treatment
O&M	Health risk to laboratory attendant	During water treatment & testing	Local	Yes	Possible	Minor	Mild	Moderate negative	Negligible	Proper training and equipment
O&M	Vandalism to WS system	Regular	Local	Yes	Likely	Minor	Mild	Moderate negative	Negligible	Regular control, offence & penalty

Appendix 12. Lenders' Supervisor's Comments on the ESMP

The following comments were received on 1 April 2016 from EIB's Lenders' Supervisor on the draft ESMP for Misungwi town of 18 February 2016.

Nr	*Lenders' Supervisor Comment*	ESIA Team's response
1	*The Consultant has made thorough reference to the EIB Guidelines and applied them appropriately. And given the fact that most of the negative impacts associated with the proposed interventions are generally site-specific, short-term, reversible in nature, low significance, and can be easily mitigated, the ESMPs (which could also be called PEAs) suffices.*	Noted.
2	*There is an ambiguity or contradiction regarding the application of national legislation. In the first and second paragraphs of Section 3.3, the reports says screening decision by NEMC HQ required full EIA studies (see 3 below), but in the same section the Consultant gives a justification to waive full EIA studies in favour of ESMPs without a written consent from NEMC HQ or NEMC Lake Zone Office. The Consultant seems to have taken for granted that based on his consultation with NEMC Lake Zone Office on ESMPs for IIP subprojects in Mwanza City (Appendix 1: Meeting Minutes between NEMC and PMC), the ESMPs also apply to the subprojects for the satellite towns. I hope this will be cleared by NEMC HQ (Director General) when responding to MWAUWASA's letter requesting for urgent approval of the ESMPs.*	Verbal (telephone) conversation with NEMC in January 2016 on the structure and contents of the E&S reports for the satellite works learned that the team was instructed to submit all six reports (3 ESMPs for IIP works and 3 reports for the satellites) in one go, and that then NEMC would do its review. It was therefore assumed that for the works for the satellites, similar in nature as the IIP works for Mwanza City but in less challenging terrain, ESMPs would do for the satellites as well. This was particularly convenient as at that time final Tender Documents for the works were already (late and) due in January 2016 and the E&S documentation was to be included in these. There was simply no time for any sort of full ESIA and the ESMPs were consequently prepared in a period of a few weeks. Works on the E&S documentation for the satellite could not start earlier either because of delayed delivery of the designs by COWI (in January 2016 as well). The team faces currently exactly the same situation for preparing the ESIA for the Mwanza Master Plan (STIP / LTIP) for which the delayed designs are expected from COWI in end-August the earliest, whereas the draft tender documents are expected to be available in October. This leaves very little time for the ESIA process, i.e. first preparing a Scoping Report and ToR for the ESIA study, followed by a review and approval by NEMC, and subsequently conducting the ESIA itself, followed by NEMC review/approval.
3	*In the first paragraph of Section 3.3, (pg 11 for Lamadi and pg 12 for Magu and Misungwi ESMPs) says "NEMC's screening decisions on the proposed rehabilitation and expansion of water supply infrastructure and construction of a faecal sludge treatment plant for .... (of 4 March 2015) indicated that an EIA study is to be undertaken." In connection to 2 above, the decision to waive full EIA studies in favour of ESMPs or PEAs*	As response (2) above.

Nr	*Lenders' Supervisor Comment*	ESIA Team's response
	{you could also add environmental audits - based on EIA and Audit Regulation 46.-(2)(a)} should come from NEMC, based on arguments/ suggestions from the Consultant and/ or the Developer.	
4	*In connection to comment 2 above, the ESMPs for Satellite Towns (and those for IIP subprojects in Mwanza City) are by far Preliminary Environmental Assessment 5(PEA) as defined under Regulation 11-(1)b of Tanzanian EIA and Audit Regulations. In case NEMC recommends renaming the ESMPs as PEAs, the Consultant will be required to revise relevant paragraphs notably under Section 1.3; 3.3; and 10. Other changes will be as per the requirements of the Regulation 11-(1)b of Tanzanian EIA and Audit Regulations.*	Meanwhile NEMC has been insisting on the full ESIA process for the satellite works, one for the water supply component, the other for the faecal sludge treatment plant.
5	*The Consultant has ardently used the project activity/ impact matrix, such that the main negative impacts associated with the interventions have been identified and appropriate and adequate mitigation measures have been proposed. However, some of the identified impacts and their proposed mitigation measures (e.g. permanent or temporary loss of land and assets; and intensification of HIV/AIDS and other STDs) are not included in the ESMP matrices in Chapter 7 of each ESMP. All identified impacts and their respective mitigation measures should appear in the ESMP matrices.*	Amended.
6	*NEMC approves decommissioning plans of projects when their life span expires or premature closure of the projects. In this regard, the proponent/ developer shall approach NEMC in due time with a proposal on decommissioning stating details and methodology of proper decommissioning. The Consultant may consider reflecting this in Section 9.*	Amended.

Appendix 13. Comments Received on Draft ESIA of August 2016

The following comments were received through NEMC from the report reviewers on 10 March 2017.

Nr	***Energy and Water Utilities Regulatory Authority (EWURA) – N. Musira***	**ESIA Team's response**
	General comments	
1	*Generally the report has covered all key areas concerning health, safety and environment*	Noted
2	*EWURA has no objection with the proposed construction of proposed rehabilitation and expansion of water supply infrastructures and construction of faecal sludge treatment facilities provided that the project proponent abides to Environmental and Social Management Plan as proposed in the document and adheres to the current technical standards, policies and bylaws*	For Contractor, Supervising Consultant and the town's Water Utility Company to follow up.
	Specific comments	
3	*Cover page: prepared for: "Mwanza Urban Water Supply and Sanitation Authority (MWAUWASA)"*	Amended
4	*Page 16, section 2.9 Land ownership: The allocated land by Misungwi District Council for tank construction shall be legally transferred from Misungwi District Council to MIUWASA. This shall include the title deed of the said land.*	Amended
5	*Page 16: Section 3.0 Policy, Legal Framework and Administration: The Energy and Water Utilities Regulatory Authority (EWURA) Act, Cap 414 (2006) has not been sighted in the ESIA report. Include EWURA Act, Cap 414 (2006) in this report.*	Included as Section 3.3.16
6	*Page 28: Section 4 Baseline/existing conditions: the report has not described the current status of quality of water distributed to customers by MIUWASA. The report shall briefly describe the status of water quality by comparing to TBS and WHO water quality standards.*	Amended in Section 4.1.3
7	*Page 29, section 4.3 Socio-economic environment: This section shall also include the current status of water supply, conditions of the existing water supply infrastructure, current water tariff rates, conditions pumps and machineries/energy consumption and water treatment facilities*	See Section 1.2 and Chapter 2.
8	*Page 32, Land acquisition and compensation: The right of way (10 m wide) for the existing and the*	Noted, for MIUWASA to follow up

Nr	***Energy and Water Utilities Regulatory Authority (EWURA) – N. Musira***	**ESIA Team's response**
	proposed new transmission main pipe line from Nyahiti intake to water storage tanks at Bomani shall be owned by MIUWASA. All properties along the proposed pipeline route of the transmission main falling within the right of way shall be compensated or otherwise and legally be transferred to MIUWASA.	
9	*Page 34: Section 6.6.2: Negative impacts during construction stage: Vandalism of construction materials shall be included as negative impact. Also, increase of Non-Revenue Water (NRW) due to damage of existing pipe lines during construction shall be included in this report as a negative impact.*	Included
10	*Page 37: Section 6.5.2: Negative impacts during operation stage: Health risks to laboratory attendant during mixing of water treatment reagents/chemicals shall be included in the negative impacts during operation stage. Also vandalism of water supply appurtenances along the transmission main and distribution system shall be included in the list of negative impacts during the operation stage.*	Included

Nr	***National Environment Management Council (NEMC) Lake Zone – J. Baruti***	**ESIA Team's response**
	General	
1	*The attached documents are difficult to read, make sure that in the final report the documents attached are readable.*	Referred attachments are scanned versions of provided PDF letters.
2	*The relationship and implementation arrangements between MIUWASA and MWAUWASA do not feature very clearly in the document. This has to come clearly in the final EIS.*	Amended.
3	*According to the EIA and Audit Regulations, 2005; EIS studies are conducted by the registered experts or firms of experts. It is understood that Mott MacDonald is not a registered firm and thus it has subcontracted the EIA study to Ally Salim, who is registered expert. It should be explained clearly in the report.*	See note on Acknowledgement page.
4	*A separate bound copy of Non-Technical Executive Summary and CD should be submitted in the final submission. The English and Kiswahili versions of the Non-technical Executive summary must reflect the same information.*	Noted.
5	*Where the construction of pipe lines involves the crossing of trunk roads, TANROADS must be consulted.*	Included in Section 7.3/8.
6	*Comments from the Lake Victoria Basin Water Board (attached as annex) are linked to the faecal treatment plants*	Deleted.

Nr	*National Environment Management Council (NEMC) Lake Zone – J. Baruti*	ESIA Team's response
7	*Proof read report to ensure that the information presented corresponds to the respective project.*	Done.
8	*Adhere to EIA and Audit Regulations, 2005 particularly Regulation 18(1) and(2)*	Noted.
	Review Area 1 ***Description of the Development Local Environment and Baseline conditions:***	
9	*Page v; the registered experts who conducted the study must sign against their names. For those who are not registered, they can be acknowledged.*	Achieved – see note on Acknowledgement page.
10	*Page vi; in the names and address of experts; Mott and MacDonalds and UWP Consultants are not Registered Firms of Experts as required by Law.*	See note on Acknowledgement page.
11	*Are Magu, Misungwi and Lamadi, Satellite Towns of Mwanza City?*	That is how they are referred to in the project documentation.
12	*Page 1; last paragraph; how is the current project addressing the Sustainable Development Goals which has replaced the Millennium Development Goals?*	The project is directly addressing several of the 17 main SDGs, particularly (3) 'Good health and well-being' and (6) 'Clean water and sanitation'.
13	*Page 3, second paragraph; the Tanzania Development Vision is 2025*	See revised Chapter 1.
14	*What are the project objectives*	See revised Chapter 2.
15	*Page 8; Figure 2-1; put a better map that is readable.*	See revised Chapter 2.
16	*Page 13, what will be the duration of construction phase?*	24 months, see revised Chapter 2.
17	*Figure 2-3; the figure is difficult to read.*	See revised Chapter 2. Figures are better to read in the digital report version, available on separate CD.
18	*Page 14, figures 2-4 and 2-5; improve the figures by printing in an A3 papers and put in the annex.*	See revised Chapter 2. As above.
19	*Page 15, under the operation phase; What is the life span of the project?*	See revised Chapter 2.
20	*Page 16, table 2-1; what will be source of materials? The information provided is incomplete (see items 16 to 19). What is the source of data in this table?*	Table delete because outdated. Full details on materials are provided in the Tender Documents, Volume IV: Bills of Quantity.
21	*Page 17; make sure that the sections and provisions in the policies and legislations are relevant to the project and the proponent commits to implementing the provisions.*	See revised Chapter 3.
22	*Page 24; section 3.4.4; pick the standards which are more relevant to the proposed project.2*	See revised Chapter 3.
23	*Page 26 and 27; what is the relevance of these other environmental protection endeavours to the current project?*	See revised Chapter 3.
24	*Page 27, second paragraph from the bottom, the information can be deleted.*	Left unchanged.
25	*The administrative framework section is missing. This must include key institutions and their roles in the proposed project.*	Added.
26	*Page 30; under solid waste; is it true that Misungwi produces 1,200-1,400 tons of solid wastes per day?*	Amended.

Nr	***National Environment Management Council (NEMC) Lake Zone – J. Baruti***	**ESIA Team's response**
27	*How current project of water supply expansion is facilitates the management of liquid wastes?*	Section on waste management is meant to provide general background information.
	Review Area 2 ***Identification and Evaluation of key impacts:***	
28	*Under this section the logic requires that you first identify the impacts, analyse for their significance. How were the impacts identified and analysed for significance levels?*	Amended.
29	*The impacts are not described in in terms of magnitude, duration and significance.*	Added, see Appendix 11.
30	*Page 36; section 6.5.1; confine yourself to positive impacts during the operation phase.*	Positive impacts omitted from ESMP and Monitoring Plan.
	Review Area 3 ***Alternatives, mitigations, EMP, and commitment***	
31	*Page 37; section 6.5.2; what will be the source of effluent from the treatment plants?*	Source is Lake Victoria waters.
32	*Section 6.6; Revisit the alternatives you have proposed. The construction of sewage collection network is not right alternative for the project.*	Alternatives have been considered during the long process of project preparation, starting in 2010, and the currently selected option has been selected; it is believed to be beyond the scope of the current report to revisit and present all these options here.
33	*Page 38; what is the level of significance that deserves the mitigation measures? Normally is it moderate to high significant impacts.*	See Appendix 11.
34	*Make sure that impacts appearing here are all that have appeared in the chapter 6.*	Amended.
35	*Page 39, section 7.3; separate impacts during mobilization and construction phases.*	Amended.
36	*Page 44, table 8-1;make sure that the impacts and mitigation measures are the ones appearing in chapter 6 and 7.*	Amended.
37	*Remove the column reporting to. There will be a lot of reports which are practically impossible to produces. Also effectiveness of the mitigation measures is realised through the monitoring, you may wish to delete columns with targets and timeframe.*	Columns remain and may be deleted once actual implementation and monitoring concludes that these columns are not necessary.
38	*What is the total cost of the mitigation measures?*	Added.
39	*The responsibilities of implementing mitigation measures lies within the project proponent.*	Noted.
40	*Page 50; where is the pollution from the effluent treatment plant under the proposed project?*	Backwash waters from the WTP may pollute soil and/or waters at the discharge point.
41	*Page 53, table 9-1; Put the targets or standards and where applicable put the numbers as per the national standards.*	It is the responsibility of the monitors to assure that the monitored parameters comply to or are within the national standards.
42	*If air quality is to be monitored, then the baseline data is necessary.*	Air quality is to be monitored indicatively, near emission points (e.g. dust at construction sites, & pump houses, WTP during operation)
43	*What is the total cost of the monitoring plan?*	Added.
44	*The Cost Benefit Analysis of the Project is missing.*	This has been assessed during preparation of the project – see

Nr	***National Environment Management Council (NEMC) Lake Zone – J. Baruti***	**ESIA Team's response**
		response on comment, above.
	Review Area 4 ***Stakeholder participation and communication of results***	
45	*Front page: Who is the project proponent? The EIA certificated will bear the Name of MWAUWASA as the proponent unless it is clearly stated that the client is MWAUWASA/ EIB*	Project proponent is MWAUWASA.
46	*There is a confusion on who prepared the ESIA (see the address), is Ally Salim on behalf of Mott MacDonald or both? Take note that Mott MacDonald is not a registered firm in Tanzania.*	See response above, and note on Acknowledgement page.
47	*The final EIS should show the exact date of submission of the report.*	Noted.
48	*Page 31; provide a summary of who said what during the stakeholders' consultations; what were the comments raised and how the report has taken the comments on board.*	Amended. See Appendix 9.
49	*In annex 8, some stakeholders were consulted but their views and concerns are not shown in the consultations.*	See Chapter 5, and Appendix 9.
50	*Page 57, what are the key conclusions?.*	Amended.

Nr	***Attorney General's Chambers – J. Nyaki***	**ESIA Team's response**
1	*The Environmental Impact Statement (EIS) have tried to show the relevant law concerning the proposed project and how the proponent will abide with the said laws and policies. The EIS have tried to provide a commitment statement on how the developer will adhere to the law and policies of the country.*	Noted
2	*There are water infrastructures already existing in a project area which the developer intends to expand them.*	Noted
3	*The proposed area is the area assigned for water infrastructure by the Misungwi District Council as there is a letter from the Misungwi District Council which satisfies that the proponent is the legal owner of the said area.*	Noted
4	*Chapter 3-Policy, Administration and Legal Framework. The EIS should cite the laws and regulation in a manner acceptable by the law. The following areas should be reviewed and cited as follows:* • *Environmental Management Act No. 20 of 2004.* • *Land Act No. 4 of 1999.* • *Water Supply and Sanitation Act No. 12 of 2009.* • *Urban Planning Act No. 8 of 2007.* • *Occupational Health and Safety Act No. 5 of 2003.*	Amended

Nr	***Attorney General's Chambers – J. Nyaki***	**ESIA Team's response**
	• *Workers Compensation Act No. 20 of 2008.* • *Public Health Act No. 1 of 2009.* • *Employment and Labour Relations Act No. 6 of 2004.* • *Engineers Registration Act No. 24 of 2007.* • *Contractors Registration Act No. 17 of 1997.* • *Architects and Quantity Surveyors (Registration) Act No. 16 of 1997* • *Local Government (Urban Authority) Act No. 8 of 1982.*	

Nr	***Lake Victoria Basin Water Board (LVBWB) – A.B. Malima***	**ESIA Team's response**
1	*Page 6 section 1.7 consultation meeting bullet its Lake Victoria Basin Water Board not Lake Victoria water basin office*	Amended
2	*Page 15 table 2-1 what is the estimated quantity (amount) and the source of water during the construction phase for the proposed project*	Table 2-1 deleted as outdated; detailed account of required construction materials is provided in COWI's tender documents of July 2016, particularly Volume IV: Bill of Quantities. Water source is either from coastal groundwater/infiltration galleries close to Lake Victoria, or surface water from Lake Victoria. Quantities not specified in the tender documents but presumed not excessive or unusual for this type of intervention.
3	*Page 18 sub-section 3.2.2 the heading for National Water Policy should the reversed edition of 2002*	Amended
4	*Water Resources Management Act No.11 of 2011 it should be among the Act at legal framework regarding to this proposed project*	Included
5	*Sub-section 4.1.3 page 28 since it discussed about surface and ground water information the heading should be Hydrology and Hydrogeology*	Amended
6	*Page 50 table 8-1 at operation phase is it MWAWASA? For the case of pollution to nearby water sources LVBWB should be among the reporting to organization*	Included
7	*Page 77 attach the official signed document for water analysis report*	Action/response awaited from the ESIA Study Team Leader (not available any longer since August 2016)
8	*Page 81 at appendix 11 is not Lake Victoria Basin Office (LVBO) , its Lake Victoria Basin Water Board (LVBWB*	Amended

Nr	***Occupational Health and Safety Authority (OSHA) Lake Zone – M.M. Shenduli***	**ESIA Team's response**
	General comments concerning the report	
1	*Page 4 , first paragraph, line 1, it is MIUWASA and not MLUWASA, also appeared in last line of last patagraph.*	Amended
2	*Page 10, figure is dark, you cannot depict anything.*	This is due to quality of the copy machine.

Nr	***Occupational Health and Safety Authority (OSHA) Lake Zone – M.M. Shenduli***	**ESIA Team's response**
3	*Page 12, it is TANROADS and not TANROAD, also it is not in the list of abbreviation.*	Amended
4	*Page 15, table 2-1, no estimation of other construction materials, sand, aggregates, reinforced bars and water.*	Table deleted as outdated; detailed account of required construction materials is provided in COWI's tender documents of July 2016, particularly Volume IV: Bill of Quantities.
5	*Page 16, section 2.8.1, last paragraph, line 1, it is Environmental management Act, 2004 and no environmental management act.*	Amended
6	*Page 16, section 2.9, line 1, you need to specify the local government, rather than saying owned by local government.*	Amended
7	*Page 21, section 3.3.5 it is the occupational Health and Safety Act, and not occupation Health and Safety Act*	Amended
8	*Page 28, section 4.1.1, line 1, the data for average rainfall (930mm- 1000mm) is not the same with the data of average rainfall (700mm- 1000mm) in page vii, paragraph 4, line 2.*	Amended
9	*Page 30, liquid waste management, line 3, the word feacal is erroneously typed and line 4 and 5 must be rephrased, because this is the project of rehabilitation and expansion of water supply and not project of feacal sludge treatment plant.*	Amended
	General comments for Misungwi, Magu and Busega documents	
11	*The word wastewater has no space between waste and water.*	Amended
12	*Justify the whole documents.*	Left alignment is the consultant's house style
13	*The colours for all headings and sub headings should be set to automatic.*	Colour setting of headers and sub-headers is as per the consultant's house style
	OHS recommendations	
15	*The projects must be registered with OSHA during construction and operation phases*	Noted, for MIUWASA to follow up
16	*All workers must undergo fitness for work medical examinations*	Noted, for the Contractor and Supervising Consultant to follow up