UN-HABITAT

LAKE VICTORIA WATER AND SANITATION INITIATIVE
FAST TRACK CAPACITY BUILDING PROGRAMME FOR UTILITIES

Rapid Assessment Report

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Preface

UN-HABITAT in association with the Governments of Kenya, Tanzania and Uganda is currently implementing a major initiative to address the water and sanitation needs of poor people, living within the secondary urban towns around the Lake Victoria region. The Lake Victoria Region Water and Sanitation Initiative (LVWATSAN) has been designed to achieve Millennium Development Goal (MDG) targets for water and sanitation in small urban centers, taking into account the physical planning needs of these urban centers together with attention to drainage and solid waste management as an integral part of environmental sanitation.

A Capacity Building Workshop was held at the UN-HABITAT Headquarters in Gigiri from 16th - 18th October 2006, organized by UN-HABITAT with the aim of identifying capacity building activities required to support and sustain infrastructure investments under LVWATSAN. As part of the deliberations, a fast track capacity building programme was identified as an urgent necessity to ensure that the necessary capacity is in place to effectively manage and operate the expanded water and sanitation systems.

UN HABITAT identified, the National Water and Sewerage Corporation (NWSC) through its External Services Unit as a suitable partner with potential, experience within the region and competence to carry out the fast track capacity building programme. As such, UN HABITAT under a cooperation agreement contracted NWSC ES to take on the consultancy services in this regard. The NWSC was tasked with developing training modules and a comprehensive training programme that would result in: improved sustainability of the investments in each of the utilities, predicated on adequate cost recovery systems; an expansion of the revenue base; improved customer relations as well as more effective operational systems geared at reduction of unaccounted for water.

Since June 2007, NWSC has been carrying out an intense capacity building programme in four of the towns namely Muleba, Bukoba in Tanzania and Kisii and Homa bay in Kenya. The training has focused on building the capacities of the water utilities in utility management and Significant achievements have been made in addressing the following: water audit management (leak detection, illegal use reduction, non revenue water reduction), improvement of billing systems, reduction of non revenue water, increased revenue collection, customer care and revenue generation, improved customer referencing and other cross cutting institutional development issues, attitude change towards work and improved ambience.

As such, NWSC – ESU at the request of the UN HABITAT carried out a rapid assessment of two new towns namely Bunda in Tanzania and Bondo in Kenya as part of the LVWATSANI fast track capacity building initiatives. A team of three experts from NWSC thus visited the two towns from the 12th–15th August 2008. The purpose of the visit was to identify the situation in place in each of the two towns which would assist the team in developing a comprehensive proposal for the planned capacity building scheduled to start in September 2008. This report highlights the findings of the team. Detailed Performance Gap and Needs Assessment will be done at a later stage.

List of Acronyms and Abbreviations

%	Percentage
AC	Asbestos Cement
asl	above sea level
BUWSA	Bunda Urban Water Supply Authority
CEO	Chief Executive Officer
CTAs	Country Technical Advisors
DI	Ductile Iron
DN	Nominal Diameter
DWE	District Water Engineer
ES	External Services
ET	Expert Team
FY	Fiscal Year
GI	Galvanized iron
GIS	Geographical Information System
GoK	Government of Kenya
GoT	Government of Tanzania
GTZ	German Technical Cooperation
H	Head
h	hour
HDPE	High Density Polyethylene
IT	Information Technology
K.Shs	Kenya Shillings
kg	Kilogram
km	Kilo metre
KVA	Kilo Volt Ampere
Kwh	Kilo Watt Hours
L	Litre
LAN	Local Area Network
LVWATSANI	Lake Victoria Water and Sanitation Imitative
LVWSB	Lake Victoria South Water Services Board
m	Metre
MD	Managing Director
ml	milli litre
mm	millimeter
MoW	Ministry of Water
MSF	Mulit Sector Forum
No.	Number
NRW	Non Revenue Water
NTU	Nepheometeric Turbidity Unit
NWSC	National Water and Sewerage Corporation
O & M	Operations and Maintenance
PE	Polyethylene
PN	Nominal Pressure
PPM	Planned Preventive Maintenance
PVC	Poly vinyl chloride
Qtr	Quarter
SIBO	Siaya – Bondo Water Supply and Sanitation Company Ltd
T.Shs	Tanzania Shillings
UFW	Unaccounted for Water
uPVC	ultra Polyvinyl Chloride
WHO	World Health Organization

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1. INTRODUCTION

1.1 Back ground

In March 2004, UN-HABITAT in association with the Governments of Kenya, Tanzania and Uganda launched the Lake Victoria Region Water and Sanitation Initiative (LVWATSANI) to address the water and sanitation needs of the people particularly the poor in the secondary towns around Lake Victoria. The initiative has a clear pro-poor focus and is intended to generate desirable outcomes that have a lasting effect on the poor. Amongst the outcomes is institutionalized capacity building programmes.

In the past, development assistance has focused more on physical investments at the expense of the human dimension. As a result most of the infrastructure put in place has declined as most of the people managing these systems do not have the necessary capacity and in some cases the right skill to do so. Priority is now shifting and under the LVWATSANI project emphasis is being put on developing human capacity in the secondary towns around Lake Victoria. These towns are managed by Utility Companies which in general suffer from severe institutional weakness which has resulted into inadequate cost recovery, high levels of non revenue water, outdated billing and collection systems, low skill levels and poor customer and community relations.

The National Water and Sewerage Corporation of Uganda (NWSC) is one of the leading water utility corporations in the Region with an excellent track record in achieving performance improvements. Through its External Services Department, it has the necessary capacity to deliver capacity building programmes to other Utilities in the Region. Over the past ten years, the NWSC has been able to achieve major structural, operational and financial improvements. Over this period, the customer base has more than doubled, while non revenue water has decreased from 60% to 35% and is as low as 10% in some of the 22 towns served by the NWSC. Staff productivity has improved from 40 staff per 1000 connections to 7 staff per 1000 connections and the corporation is now able to fund a portion of its capital investments from internally generated funds.

In order to share its experience and expertise in bringing about real improvements in utility performance, the NWSC established an External Services (ES) department which has been actively involved in capacity building programmes for various water utilities throughout the eastern and southern Africa, including Kenya, Tanzania, Zambia, Rwanda and Uganda. The NWSC ES in the past year has been engaged in a major capacity building programme for private operators of small town water systems in Uganda and local government officials. Other assignments include the provision of training and assistance in systems development for the Dar es Salaam Water and Sewerage Authority and the Dar es Salaam Water and Sewerage Company in Tanzania, the Nairobi City Water and Sewerage Company and the Lake Victoria North Water Services Board in Kenya, Nkana Water and Sewerage Company and Lusaka Water and Sewerage Corporation in Zambia, and the development of policy procedure manuals for ELECTROGAZ, Rwanda. The NWSC ES has developed training modules in several areas, including water and sanitation management, performance improvement turn around approaches, customer care, billing and revenue management amongst others.

UN HABITAT under a Cooperation Agreement contracted the NWSC ES in May 2007 to design a fast track capacity building programme that focused on strengthening the capacity of water and sanitation utilities in five towns around Lake Victoria i.e. Bukoba, Muleba, Kisii, Homa Bay and Kyotera[1]. The training focused on three priority areas: Billing and Revenue Collection, Water demand management focusing on un accounted for water and Customer care. As part of its assignment, the NWSC ES carried out a situational analysis and training needs assessment, a tailor made capacity building training for change agents from each of the towns/utilities and developed a capacity building programme. Annual performance improvement plans were also designed for each of the Utilities, reporting templates designed and monitoring and evaluation carried out. On job training for staff in technical and financial operations was done and training materials and operational manuals developed. In a bid to improve the billing systems, a computerized (Access based) billing system was developed and installed in all the four towns. Staff were trained and by October 2008, computerized bills should be generated. For easy physical customer referencing, block mapping of selected zones in each of the towns was done and the block maps are now available. To date significant achievements have been noted that include reduction of non revenue water in some of the towns, increased customer base, improved billing systems, change in attitude of staff towards performance, increased team spirit amongst others.

As such UN HABITAT requested the NWSC once again through its ES unit to carry out a rapid assessment of two additional towns as a means of establishing the situation on ground in order to enable meaningful design of a capacity building programme. This report outlines the findings of this activity.

1.2 Study Area and Period

Two towns around Lake Victoria: Bondo in Kenya and Bunda in Tanzania were visited between the 12th – 15th August 2008.

1.3. Purpose of the Rapid Assessment

The visit to each of the utilities was aimed at enabling the NWSC Expert Team (ET) gain an in depth understanding of the required Fast Track Capacity Building requirements. The team carried out a rapid assessment of the situation i.e. infrastructure and performance of each utility and the staffing capabilities. The rapid assessment aimed at giving the ET a quick synopsis of the base line performance in the areas of billing and revenue collection, customer care and water demand management. It also gave the team together with the UN HABITAT Country Technical Advisors (CTAs) better insight into the type of infrastructure interventions required. Key and immediate hardware and software requirements and systems changes to support billing, customer care, revenue collection, water loss control, operations and maintenance (O& M) and financial management of the utilities were also identified.

[1] *Kyotera only participated in the Change Agents Training/Benchmarking visit and was later dropped from this phase since there was no Operator to manage the System*

The specific objectives of the Rapid Assessment were to:

- Get baseline information and identify core needs in the areas of a) billing and revenue collection b) customer care c) water demand management and d) infrastructure development
- Identify any essential complimentary skills required such as IT and management
- Identify key problems in the infrastructure and give an indicator on possible short term interventions
- Identify key and immediate hardware and soft ware requirements and systems changes to support billing, customer care, revenue collection and financial management of the utilities.

1.4 Expert Team

The NWSC ES Expert Team comprised of:

- Dr. Rose Kaggwa *Water Quality & Training Expert (Team leader)*
- Eng. Harrison Mutikanga *Network Management Expert*
- Edmond Okaronon *Business Development Expert*

2 APPROACH TO THE ASSIGNMENT

The Expert Team (ET) carried out site visits in each of the towns. Bondo in Kenya was visited on the 12th – 13th August 2008. The ET also visited Siaya the head office of the SIBO Water and Sanitation Company Ltd (SIBO) whilst Bunda in Tanzania was visited from the 14th – 15th August 2008.

2.1 Field visits and Rapid assessment based on a Check List

The ET visited the water installations and network systems and assessed the situation based on a Check list (Appendix 1). Photographs were taken to give the pictorial form of some of the observations made during the field visits.

2.2 Interviews

Interviews were held with key informants[2], members of the water boards/authorities and other civic leaders and staff and management of the utilities. Focus group discussions[3] were also held with key staff.

2.3 Exit Conference

Exit conferences were held with members of the management teams of the utilities and with civic leaders/water board authorities in some cases through which all stakeholders present were debriefed.

[2] Key informants are often people who speak the language of the field worker or who are easy to approach for other reasons.

[3] These are groups of people with a particular interest in the topic on which information is required.

3 TOWN/UTILITY SPECIFIC ASSESSMENT

3.1 Siaya- Bondo Water and Sanitation Company Limited (SIBO)

3.1.1 Introduction

Bondo town is a fast growing town in Western Kenya located about 50 kms northwest of Kisumu in Nyanza province and it is the headquarters of Bondo district. Bondo was established as a market center in the early 1920's and attained municipality status in 1995. Bondo district has a population of 282,780 (Population census 2002). Bondo town forms a town council with a population of 29,165 of whom 7,797 are classified urban (1999 census). With the high urban growth rate the town population is now estimated at about 35,000.

Siaya-Bondo Water and Sanitation Company Limited (SIBO) was established in June 2006 and is one of the utilities under the Lake Victoria South Water Services Board (LVSWSB). The mandate of the company is to provide cost effective and affordable quality water and sanitation services to the residents of Siaya, Rarieda and Bondo districts. The service area covered by SIBO is estimated at 2,507 km^2 of which 987 km^2 is covered by the Bondo Water supply scheme (Figure 1).

Figure 1: Aerial view of Bondo Water Supply Scheme

SIBO is headed by a Board and comprised of 11 members (Appendix 3a). SIBO has 62 staff of which only 3 staff namely the Internal Auditor, Procurement officer and the Commercial Manager/Accountant are employed by SIBO. The rest of the staff are seconded from the Ministry of Water and the council. Bondo Water Supply Scheme has 8 permanent staff. Since there was no organizational chart available, ET through interviewing the Managing Director (MD) and other staff members was able to come up with a rough understanding of the structure and this is presented in Appendix 3b. The company employs a number of casuals from time to time.

The Bondo distribution network covers 10 km and comprises of different pipe sizes. At present only 60 % of the town is covered and of these only 19% are said to be receiving water. The water is abstracted from Yala River and currently about 600 m^3 is pumped per day. The water demand is estimated at 1,500 m^3/day with raw water pumped for 18 hours a day. However almost 40% of the water abstracted is being lost in the plant itself. The service coverage is reported to be about 80%.

3.1.2 Technical Assessment of Bondo Water Supply Scheme/Infrastructure

The ET carried out field visits to assess the on-ground condition of operations and assess the areas which were in need for plant personnel to be trained. The field visits targeted the water installations i.e. water treatment plant and the reservoir and distribution system. The check list provided baseline information further enhanced by focused group discussions and interviews. The major findings of the assessment are described in the subsequent sections.

3.1.2.1 Bondo Water Supply System

(a) General Observations

The Bondo water supply scheme dates back to the colonial time of 1956. The intake and treatment works are located on the Bondo-Siaya river bridge separating the two districts. The current water production capacity is estimated at about 600 m^3/day. The Bondo water supply system is old and dilapidated and in many cases need complete overhaul and replacement of equipment and civil structures e.g. water treatment units such as the composite filter units. The drinking water supply situation in Bondo calls for urgent action. The current water produced is not able to meet the demand. In the town water supply is often interrupted due to planned and unplanned failures in the water system. To address the structural institutional and organizational issues in water supply nation-wide, the Ministry for Water embarked on a National Urban Water Sector Reform Project. As such some interventions have been made e.g. construction of a composite filter and others are being planned e.g. some few mains extensions. However it is apparent that some of these interventions will not have a marked impact due to poor planning and poor designs.

(b) Main Components of the existing Bondo Water Supply System

- **River Yala Raw Water Intake and Treatment Works**. Raw water is abstracted from Yala River (Plate 1) via two GI pipes of DN 75 mm and about 20 m long. There were two installed raw water pumps (NORMAFLO manufactured by Denorco) of capacity 44 m^3/hr but only one was functional with one needing the foot valve to be replaced (Plate 2). A newly purchased pump was also lying in the pump house awaiting installation. The electro-mechanical condition of the pumping units were in poor condition and there was no evidence of planned preventive maintenance (PPM) being done.

Plate 1: Yala River Water intake

Plate 2: Raw water pumping house at Yala River Intake

- **Water Treatment Units:** The treatment process is comprised of the conventional treatment: raw water pumping, mixing tanks, composite filters (clarification/filtration) and disinfection (Plate 3). The treatment process is ineffective and most units are non-functional. At the time of the visit, it was observed that there was a mismatch between raw water production capacity and mixing chambers resulting into overflow of alum/soda ash dozed water. The units were poorly kept, leaking and needed painting.

Plate 3: Overview of the treatment plant

The two composite filters were also not working although one had just been constructed less than a year ago (Plate 4). The failure of this filter is attributed to the poor design of the filter nozzles as well as the use of poor sand quality. The failure of the composite units is further a result of improper dosing of alum resulting in floc formation occurring in the filter and resulting in faster clogging of the filter. Furthermore, the staff on site did not seem to understand the need for backwashing of the filters or desludging of the clarification units.

Plate 4: Filter Composite units

The chemical dozers were not functioning properly and there was no clear guideline for chemical dosing. About 40% of the raw water abstracted was being wasted in the treatment units and returned to the river (Plate 5).

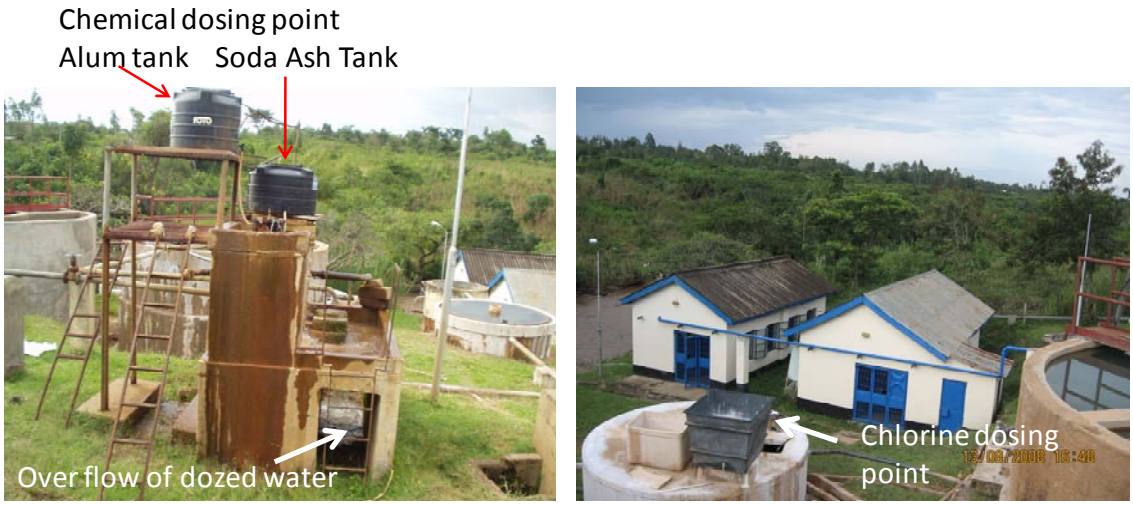


Plate 5: Chemical dosing points

There was no process control or quality control system in place hence no records on the quality of raw water abstracted or the treated water pumped. The laboratory was apparently bare and no staff within SIBO are trained to handle quality issues. The chemical storage was poor with chemical bags put flat on the floor.

Plate 6: Laboratory and bulk chemical storage

- **Treated Water Pumps*:*** There were two high lift pumps with one operational (40 m^3/h) and a new one awaiting installation (50 m^3/h) (Plate 7). Water is pumped from two old clear water tanks of capacity 45 m^3 each. Frequent pump breakdowns were reported and is mainly attributed to lack of PPM. There were some records being taken at the plant covering power consumption and water pumped to the reservoir. However, there was no raw water bulk meter and records were based on pumping rates and hours (Plate 7).
- **Transmission Mains:** There are two rising mains of size 150 mm and 100 mm of uPVC, AC and GI with length of about 6.5 km each. Water production is measured by the two bulk meters installed within the treatment plant on each transmission main. There were no records for bulk meter calibration raising doubts on their accuracy. Frequent bursts were reported on the transmission mains especially the old AC DN 100 mm line.

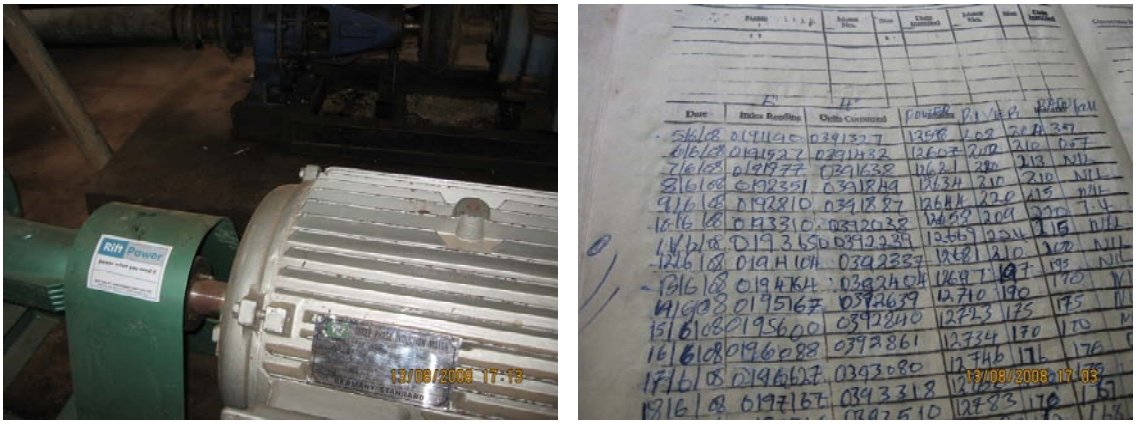


Plate 7: Motor of one of the pumps and records of pump hours and power consumption

- **Storage Tanks:** Water is pumped to an elevated backwash water tank (50 m^3) and the elevated steel tank (90 m^3) near the main hospital via transmission mains. The tank had a level recorder. However, this storage tank is being by-passed and no explanation was given by the management team. It was apparent that this reservoir has not been utilized for a long time (confirmed by the Scheme Manager) but appears to be in a good condition. Before storing water for distribution in the reservoir, it should be cleaned and disinfected and checked for leakage and for any structural damage. Direct pumping into the system results into high pressures increasing frequency of bursts and leaks which result into low pressures and service interruption in some parts of the network. The reservoir area was poorly kept with no fence to ensure security. The grass had also overgrown into a bush.

Plate 8: Elevated reservoir for Bondo Water Supply area

- **The Distribution Network:** There were no maps indicating the distribution network layout which complicates network operation and management. The network mainly comprises of AC, GI, PE and uPVC pipes ranging in diameter from 25 to 100 mm. It is estimated that the total length of the existing main distribution network is approximately 10 km and covers approximately 60% of the town.
- **Water Booster Station:** There is a booster station located at the Water Office premises supplying water to the higher and far away areas of Nyawita & Maranda. The booster gets water from two sumps of 4 m^3 and 11 m^3. There are two pumps each of capacity 9

m^3/h and pumping head of 50 m. At the time of the visit the pumps were not working due to insufficient water in the storage sumps (Plate 9). The electro-mechanic equipment were in poor state. There is need to refurbish this booster as it is now serving very sensitive customers including the Prime Minister's residence.

Plate 9: Bondo Water Booster Station

- **Distribution points:** There are no kiosks in Bondo however some public distribution points exist. One point was visited and is run by a group of youth and supplies a public toilet and car washing bay. The meter box was tightly secured and the ET could not establish if the meter in place is working or not. The general sanitation of the stand post was poor. It was also apparent that there were two water supply points (Plate 10).

Plate 10: one of the Water Distribution points in Bondo town

- **Distribution network:** Some of the mains are laid on the surface and this was seen in various parts of the network (Plate 11). There appears to be no standard on the pipe depth. Some efforts have been made to make some mains extensions but there was no proper data available at the Bondo office on what has been done.

Plate 11: Pipes laid on the surface in Bondo town

- **Water Quality Management***:* There is no water quality monitoring programme and there was no evidence of any water quality monitoring being done. The Bondo and SIBO management did not have knowledge on the quality of the raw water source. There is no water laboratory within the district or the authority and no testing kits provided. Currently the chemicals are being added using a very rudimentary method which does not allow for adequate retention/contact time. The application of chemicals is not properly done as there are no gravity dosers. There were no records to prove that the water supplied conforms to WHO guidelines or National Standards.
- **Illegal Water Use Assessment:** Illegal cases were reported but there are no records on this. There is *no clear procedure for illegal use investigations*. Some effort is being made to reduce illegal use consumption through use of informers. There is need to find an enforcement mechanism without impacting negatively on customer relations. No programme is in place to ensure that customers with suppressed accounts are encouraged to come back onto supply. There is no information gathering mechanism in place to reduce on the illegal water users.
- **Customer Physical Referencing Assessment:** The customer reference methodology is done based on the sequence of customer applications for new connections and account numbers are assigned accordingly. There are no property reference numbers given to the customer, instead each customer has a number that is sequential as per the record book. Account numbers are available. There is need for proper identification of property referencing using GIS mapping tools.

The drinking water supply situation in Bondo town can only be described as inadequate. With no stand by pumps, the reliability of supply is questionable. The service level in Bondo is insufficient and is categorized with poor water quality, low pressures, frequent supply interruption and high levels of NRW with computations being wrongly done. Reliable figures of the amount of water produced and supplied to the customers do not exist since bulk water production meters are not periodically calibrated and consumption data for unmetered

consumers is not available or unreliable. The distribution network was delivering water at very low pressures on a few visited sites and most places were not receiving water. There were no records of pipe bursts and leaks to give an indication of the condition of the network.

3.1.2.2 Bondo Water Supply Infrastructure

The present condition of the main elements of the intake waterworks and distribution is summarized in the table below:

Improvement of the water supply in Bondo is a matter of some urgency and will require substantial investments. However, new investments will only be effective and achieve their objectives if they are accompanied by organizational improvement measures. These measures should focus on improvement of planning and management, and improvement of operation and maintenance in all its aspects.

Assuming organizational improvement can be achieved; additional investments will be effective and shall improve the water supply conditions in Bondo. The aims of the investments are to gradually improve the water supply situation by rehabilitating existing facilities so that additional investments can be made effectively to reach full coverage. In Table 6 the required investments in water production and water distribution are presented.

Table 1: Summary of Technical Assessment of Bondo - Yala Intake/Water works and Water distribution

No.	Item	Present condition	Required works	Estimated Costs (USD $)
	Civil Works			
1	Civil works of weir & access walkway	Weir destroyed & walkway structurally unsound	Rehabilitate weir and reinforce access walkway	3,000
2	Pump houses	Good apart from broken doors.	No essential works required. Painting for good ambience and replacing broken doors.	2,000
3	Treatment Units	Visible cracks in concrete walls & leaks Malfunctioning dozers & composite filters Undersized mixing tanks & composite filters	Cracks in concrete walls need resealing. Major works required to refurbish the composite filters including resanding/replacement of sand media Increase capacity of mixing tanks and composite filters	1,500 25,000 2,000
4	Store	Non existent	Construct a store for bulk chemicals/spares etc	15,000
5	Laboratory	Non existent	Construct a laboratory	20,000
6	Transmission main	Very old GI transmission main laid in 1956	Replace the old GI transmission main DN100 mm (6 km) with a DN 250 mm	350,000
	Mechanical & Electrical Works			
1	Raw water Pumps	One pump operational One pump under repair One pump beyond repair and cannibalized for spare parts Frequent breakdowns are reported, main problems with bearings.	Install newly purchased pump to increase production Purchase & install 2 new pumps sets and control panels Train staff on how to do PPM Procure assorted spare parts	35,000
2	High lift pumps	One pump operational Frequent breakdowns are reported, main problems with bearings.	In order to restore design capacity procure two new pump sets and control panels	50,000
4	Bulk meters	Functioning but production meters have to be replaced or calibrated.	Meter replacement/calibration (10") Check & service valves on mains	10,000
3	Electrical controls	Good	Require out some repairs	5,000
4	Water Quality Laboratory Bulk chemical storage	No proper chemical dosing equipment No process control/quality control systems in place	Procure gravity dozers for Chlorine, alum and soda ash	15,000

No.	Item	Present condition	Required works	Estimated Costs (USD $)
	Water Distribution			
1	Pipelines & Valves	No network maps No Asset register & failure records to ascertain condition Some pipes were visible above ground Frequent pipe burst reported	Network Distribution maps Need for Asset register Database for data capturing Replacement of old AC mains	15,000 15,000 5,000 30,000
2	Storage Reservoirs	Good but by-passed Bushy surrounding Poor sanitation	Bulk meters Fence to keep off intruders Toilet & quarters for attendant	1,000 1,000 2,000
3	Booster Stations	One pump operational Electro-mechanical equipment in poor condition Receives insufficient water and increasing plant downtime	Procure a second standby pump Refurbish all electro-mechanical equipment Ensure reservoir is in use to guarantee maximum flow to the booster station	15,000 5,000
4	Customer service Lines	Inadequate depth for some lines Low metering efficiency (53%) Inadequate meter management High number of leaks reported	Relay pipes which are on the surface to the right depth	10,000
5	Public Kiosks	No public kiosks with low pressures	Increase coverage by installing about 10 Public stand pipe	30,000
6	Flow & Pressure Monitoring	No flow and pressure measurements done, making leakage management impossible	Network zoning and bulk metering Procure flow and pressure data loggers	20,000 10,000
7	O & M Tools	Very old and inadequate	Procure 2 new die-sets and pipe wrenches (Assorted sizes) and 4 radio call sets	6,000
			TOTAL	**698,500**

3.1.2.3 Commercial and Customer Care Services

Under Commercial and Customer Care Services, the ET found that there were some systems in place but most were not comprehensive enough with important information not being recorded. The general appearance of Bondo Water Supply Offices is poor with the ambience of the place not very good. Offices need some painting and reorganization as well as need for better furniture (Plate 12). The office of the Scheme Manager was in a uniport and the District Water Officer/Operations Manager was using the main office.

Plate 12: General appearance of Bondo Water Supply Scheme

The major commercial functions are taken care of at the SIBO head office in Siaya. The major findings for the Commercial and Customer Care aspects are listed below:

- **Customer complaints handling**: The town maintains a customer complaints register that captures complaints, however detailed information of action take and time when action is taken is not recorded. Assessment of response time is therefore not done and is difficult to verify to facilitate management decision in addressing constraints encountered. There is no feed back mechanism in place to update the customers on progress of implementation of their complaints or actions taken.
- **Front desk**: There is no front desk office. The customer care services are handled by the revenue clerk. The customers are usually directed to the operations manager who also works as the district water engineer and is at times not aware of some enquiries from the customers thus causing delays and frustration.

- **Customer Surveys**: The authority does not carry out customer surveys to capture consumer perceptions of the efficiency in service delivery. The authority does not therefore have a mechanism of getting feedback from customers on how well they are being served.
- **Billing System**: The *customer database* is manual and the customer details are captured in consumer ledger books. The current system is not comprehensive due to the difficulties experienced in data entries. The *billing system is computerized* using the Water Flex billing software (Plate 13). There are many errors from the current computerized billing system due to wrong data capture and billing non-existent services. The errors are also due to the lack of competence of staff and poor co-ordination between the operational office at Bondo and management staff at SIBO Head office in Siaya. However some reports like consolidated arrears and other management reports cannot be generated from the system.

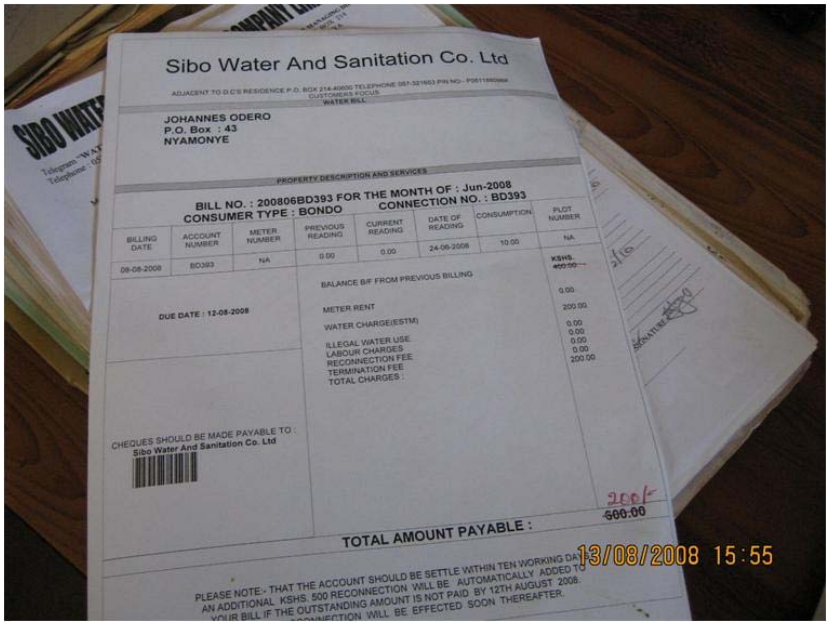


Plate 13: Example of printed water bill which has amount due crossed out

The *billing cycle* starts on the 21st of every month and bills are printed by the end of every month. There is no system for back up as the server is procured but not yet installed and no comprehensive security for billing and other important data/records. The Authority effects *physical bill delivery* to the consumer premises. There are *metering procedures* in place however these are not well documented and there is *no mechanism to verify meter readings* before billing. There is no book work sequence in place to be followed and guide the meter readers during the reading, which results in omission of some consumer meters.

Constraints:

- The field staff have a constraint of lack of transport to expedite the entire process of bill delivery.
- The billing staff do not have adequate qualifications and experience to effectively carry out the assignments. There is need to deploy staff with adequate competence to effectively carry out the operations for the overall improvement of performance.

- **Public Relations:** There are no public relations strategies instituted for marketing of services provided and assist in delivery of better services.
- **Pro Poor initiatives:** There is no provision to serve the poor communities through pro-poor initiatives.
- **Tariff Structure:** The tariff structure in place has been found to be inadequate and is not full-cost recovery. There is however a challenge of increasing the tariff due to the political connotation.
- **Consumer base:** On average 4 new connections are made every month and it takes about two days to effect a new connection from the time the new connection fees are paid provided the customer has all the required materials and has carried out excavation to a satisfactory depth. The new connection fee is K.Shs 1,650 of which, K.Shs 1,000 is deposit fee and K.Shs 650 is connection charge.
  Constraint: The major constraint for improvement of new connection rates is the high cost of materials, low network coverage and inadequate marketing of the services by the water authority.

3.1.2.4 Revenue generation and financial management

- **Documentation and procedures**: The system used to capture revenue details is manual and consumer payments are captured in a ledger book. There is no accounting software in place and the financial operations are manually implemented that causes delays.
- **Bill scrutiny, follow up after delivery:** Bills are scrutinized and those found faulty are rectified before delivery to the customers. However the documentation of *adjustments* is poorly coordinated between the operational office at Bondo and the management staff at SIBO Head Office at Siaya. Delivery of bills is effected with 2-3 days. There are *no clear pro-active mechanisms for bills follow up* after bill delivery, which results in customer's reluctance and delays in payment.
- **Payment:** Payment of bills is done in the office and there are currently no complaints from customers on inconvenience in payment method. There is however no security at the office during the day. Posting of receipts for payments are immediately done in the consumer ledger book, however there are noted delays in banking of collections, which at times take as long as 2 weeks. There is need for streamlined implementation and monitoring of financial regulations to minimize financial loss to the Authority.
- **Debt write off:** There is no procedure in place to ensure proper management of write-offs. This is done mainly by the Billing/Revenue Clerk but is not effectively documented

and coordinated with other department staff at the Operational office and SIBO Head office.

- **Cost optimization**: The authority implements a system of regularly pre-qualifying service providers and ensuring adequate competition during the procurement process.

3.1.2.5 Strategic and Human Resources Management

- **Staffing:** There is an organization structure in place that clearly shows the reporting framework. The existing staff however lack the required skills and experience to effectively manage the water supply operations. The scheme manager for Bondo town is also the Area Manager responsible for the management of operations in other towns. There is therefore need to deploy competent staff and a dedicated scheme manager for Bondo if the delivery of services is to be hastened. The roles of the district water engineer who currently works as the operations manager at Bondo water supply office need to be clearly streamlined to avoid confusion to the customers.
- **Staff motivation/incentive structure**: There are inadequate motivational strategies in place. Field staff are given physical lunch while carrying out major emergency works. Workers are paid salaries at the end of each month irrespective of whether they have performed or not and since most of them are government workers there is little commitment from most of the staff. There is no incentive mechanism in place.
- **Strategic Planning:** There is a strategic plan in place for the period 2007 – 2012 (FY2007/2008 – FY 2011/2012). There are no performance improvement programmes being implemented by the authority.
- **Staff development and training:** There is no training programme undertaken to develop stall skills and knowledge. The management currently carrying out training needs assessment although this was not documented.
- **Meetings:** The management holds regular meetings to discuss operational issues and are fully documented.

3.1.2.6 Proposed Change Agents for SIBO

The proposed change agents for SIBO are:

Table 2: Change Agents for SIBO

No.	Position	Name
1.	Managing Director	Mr. Nashon Akello
2.	Technical Manager	Mr. John Nyambare
3.	Commercial/Finance Manager	Mr. Evans Okoth
4.	Scheme Manager	Mr. Morris Ojungu
5.	CEO - LVSWSB	Eng. Michael Ocieng
6.	Board Chairman - SIBO	
7.	M&E Officer - LVSWSB	Paul Agwanda
8.	Board Member - SIBO	
9.	Town Clerk - Bondo	
10.	Chairman Multi Stakeholders Forum	

Table 3: Key Hardware and Software requirements for SIBO

(a) Electro mechanical equipment and office equipment

No.	List of Equipment	No.	Remarks
1.	Computer desk tops and accessories	02	
2.	Printer for billing	01	
3.	Printer : ordinary	01	
4.	Computer server	01	
5.	5 KVA UPS	01	
6.	Computer software programmes Billing[4] GIS/Autocad[5]		
7.	Mapping – GIS[5] • Drawing tables • Drawing equipment (rulers, templates, adjustable set squares, drawing pens and pencils, paper etc.) • Theodolite • Total Station • Oedometer • Tape measures (100 m, 50 m, 5 m) • Measuring staffs • Umbrellas with stands to protect equipment • Cadastral Base maps and/or satellite images • Carrying boxes, cases and bags	 01 Assorted 01 02 02 02 each 05 02	
8.	Start up stock for network pipe repair materials e.g. repair clamsp, flange adapters, couplings etc. (to be verified on a detailed analysis)		
9.	Dewatering pump	01	
10.	Plumbing tools Spanners, Wrenches, die and stock, valve keys	Assorted	
11.	Standby Power Generator set	01	
	Under pressure tapping machine with drill taps for uPVC, steel and GI	01	
13.	DN Cold Water meters, Volumetric or multified	500	
14.	Bulk meters 2", 3", 4" and 6"	08	
16.	Electrical Tool box set	01	
17.	Mechanical Tool box set	01	
18.	Fast moving items e.g. gland packing, bearings, lubricants, cleaning materials, contactors, soft softer spares, coils, protective devices e.g. relays, fuses, circuit breakers, insulating materials (PVC tape, insulating varnish, cotton tape) etc.	Assorted	
19.	Meter installation materials (lining unions, sockets, elbows, bends, nipples, reducing bushes, reducing sockets and GI pipes etc.	Assorted	
20.	Walkie talkies	06	
22.	Motor Cycles	02	
23.	Bicycles	04	
24.	Leak detection equipment	01 Set	
25.	Meter testing bench and accessories	01 Set	

(b) Laboratory Equipment, reagents and apparatus

No.	Item	Unit	Quantity
1.	**Equipment**		
	Bacteriological kit (Delgua/Pota lab)	No.	01
	Floc tester	No.	01
	pH meter	No.	01
	EC meter	No.	01

[4] *Billing system developed by NWSC to be used*
[5] *Can be procured for the whole of SIBO*

No.	Item	Unit	Quantity
	Turbidity meter	No.	01
	Photometer	No.	01
	Lovibond Comparator & discs for chlorine, aluminium residual, colour iron	Set	01
	Iron test tables	Tablets	200
	Chlorine test tablets 3 DPD No. 1	Tablets	800
	Chlorine test tablets 3 DPD No. 2	Tablets	800
2.	**Apparatus/glassware**		
	Beakers 1000 mls	No.	06
	Beakers 500 mls	No.	06
	Beakers 250 ml	No.	06
	Flasks conical – 250 mls	No.	02
	Flasks conical - 500 mls	No.	02
	Burette 0- 25 mls	No.	02
	Pipette – graduated 0-10 ml	No.	02
	Pipette – bulb 0-25 ml	No.	02
	Bacteriological glass bottles autoclavable 300 mls with metal caps	No.	20
	Reagent bottles 250 mls	No.	10
	Reagent bottles (medium bottles) 150 mls	No.	10
	Measuring cylinders 0-500 mls	No.	02
	Measuring cylinders 0-250 mls	No.	02
	Measuring cylinders 0-100 mls	No.	02
	Measuring cylinders 0-25 mls	No.	02
	Volumetric flask 500 ml	No.	01
	Volumetric flask 250 ml	No.	01
	Volumetric flask 100 ml	No.	02
	Filter funnels 98 cm diameter	No.	02
3.	**Chemical & Reagents**		
	Alkalinity indicator tablets	Tablets	100
	Hardness indicator tablets	Tablets	100
	Calcium indicator tablets	Tablets	100
	Manganese test tablets1 & 2	Tablets	@50
4	**OTHER Items**		
	Cool Box 10 Ltrs	No.	1
	Sampling plastic baskets for carrying sampling kits and bottles	No.	1
	Aluminium foil		1
	Marker pens, stationary etc - adequate -	Assorted	

3.2 Bunda Urban Water Supply Authority (BUWSA)

3.2.1 Introduction

Bunda district in Mara Region is bordered by Musoma (Rural) District in the North, Serengeti District in the East, Magu District in the South and Ukerewe District in the West and has its headquarters located in Bunda town. Annual rainfall in the district range between 900-1300mm and the district covers an area of 3,088 km^2 of which 200km^2 is occupied by Lake Victoria and 480km^2 by Serengeti National Park. The remaining part is dry land, which is used for farming and settlements. Administratively, Bunda District is divided into 4 divisions, 20 wards, 86 villages and 14 sub villages, which makes Bunda Township. There are 470 hamlets. Population in the district was 258,930 people (2002 Census) and main occupations include agriculture, livestock and fishing. The annual population growth rate of the district stands at 1.8% and the average population density is 70 people/km^2. There are a total of 42,605 households with an average size of 6.1 people per household in the district as a whole. Water Supply coverage by December 2005 stood at 53.4% and the attracting feature of the district is tourism in the surrounding game parks of Serengeti and Grumeti.

The Bunda Council is among the five Local Authorities of Mara Region. It lies between latitudes 1°30'' & 2°45'' South of the Equator and between Longitudes 33°39''to 34° 05'' East of the Greenwich. Bunda town lies about 50 km from Musoma on the Musoma-Mwanza road and has a population of 45,881 (Population Census 2002). It is the main commercial centre. Bunda town gained official status in September 2004 and consists of urban areas as well as villages. Social services available include schools, colleges, health centers, dispensaries and a district hospital. A water supply system exists though aged. Communication services include those of TTCL, Celtel, Vodacom and Tirgo. Electrical power is available through the national grid. Economic activities include agriculture, livestock, and cotton processing ginneries, trading and banking.

Bunda Urban Water Supply Authority (BUWSA) was established on 21st June 2002 under the Water Works Ordinance Cap 281-Supp 62 of 4th November 1949. The water authority supplies the Bunda town ship and Guta, Tairo and Migungani villages located at the intake and along the transmission pipeline respectively. BUWSA is headed by the Board of Directors comprising of 11 members. The present Water Board is the second since the establishment of BUWSA. The first board started its functions on the 1st June 2003 and completed its period on 30th May 2006. The current board was appointed on 15th November 2006 and is expected to serve until November 2009. BUWSA top management is led by a Managing Director assisted by two Managers: the Technical Manager and the Commercial Manager who handles finance as well.

BUWSA has one main source of water namely Lake Victoria. Water is abstracted 22 km away from the town. Bunda town covers an area of 5 hectares and has a network length of 27 km. At present only 18.6% of the population within the BUWSA supply area is served. The total production at the moment stands at about 1,000 m^3/day. It was not possible to ascertain the design capacity since the pumps had no plates and no operational manuals. The water demand currently stands at about 6,500 m^3/day as reported in Feasibility Study report. The 6'' transmission main from the lake constricts the amount of water that can be pumped from the lake. With such a high demand and inadequacy to produce or transmit more, Bunda town can

be termed as highly water stressed. In addition to this, the non revenue water is extremely high (about 60 %).

The drinking water supply situation in Bunda calls for urgent action. Current water provision is not able to meet the demand and the water supplied is not treated apart from chlorine dosing at the Bunda hills main reservoirs. The town water supply is often interrupted due to frequent power failures and imbalance between supply and demand at the Migugani Booster station.

Bunda town has no sewerage system in place.

Plate 14: Aerial photograph of Bunda town

3.2.2 Technical Assessment of Bunda Urban Water Supply Area

The Expert team carried out field visits to assess the on-ground conditions of infrastructure and find out areas in which the personnel need to be trained. The field visits targeted installations i.e. water pumping station, water towers, booster stations, reservoirs and consumer points (distribution points and house connections). Furthermore, a check list was used which provided baseline information through focused group discussions and interviews.

3.2.2.1 Bunda Water Supply Scheme

(a) General Observations

The Bunda water supply scheme was constructed in 1971 to serve Bunda town and the surrounding villages of Guta, Tairo, Kung'ombe, Kabasa, Misisi, Ligamba and Kanzugu. In general, the Bunda Urban Water Supply Area has old infrastructure and equipment that is run down, dilapidated and in need of urgent repair/replacement. The water supply system is operational but is facing challenges of meeting increased water demand due to rapid population growth and increased socio-economic activities. As such, the amount of water being abstracted is inadequate and the transmission main is undersized. The current water production capacity is estimated at 1,000 m^3/day against a demand of about 6,500 m^3/day. Due to the long distance between the pump station and the distribution network, water is pumped twice before the main reservoir and after that there are two booster stations for supplying some of the areas. Currently the water production levels are inadequate and the town is experiencing high levels of water stress. Much of the population depends on shallow wells and some springs. The Government of Tanzania (GOT) has embarked on infrastructure

development and new pumps are being procured. However this will only partially address the problem since there is no adequate transmission main to transmit the water. A greater part of the distribution network has old pipelines with leakages and high illegal use. The Unaccounted for Water is high at 60%. The need for improving the transmission and distribution network cannot be underscored. Currently BUWSA runs a deficit budget mainly due to its high energy pumping costs.

The management of BUWSA have high level of competence and skill but there is still need for building capacity in core areas coupled with targeted performance improvement initiatives in order to advance BUWSA's operations. There is also need for recruitment and training of competent junior staff. The stakeholders especially the political leadership have a lot of interest in the scheme management and it would be vital if they visited one or two towns of NWSC in Uganda to see for themselves how utility management is done.

(b) Main components of the existing Bunda Water Supply System

- **Raw Water Intake & Guta Pumping Station**: Raw water is abstracted from Lake Victoria via two GI pipes of DN 150 mm and about 100 m long into the lake. Water is pumped directly to Migungani Booster without treatment. The communities tapping water directly from the pumping mains are at great risk of water borne diseases. Like all intakes around the shores of Lake Victoria, the Guta intake was hit by the drop of lake water levels since 2005, and poor water quality. The intake was extended 150 meters into the lake and floating pumps installed to mitigate against the dropping lake levels (Plate 14).


Plate 15: Guta raw water abstraction point

The raw source is heavily polluted (Faecal coliform counts up to 4800/100 ml) due to the many Hippos within the lake and the cows that graze within the vicinity and drink water from close by. There are two installed surface raw water pumps whose capacity was not known and one floating pump inside the lake (Plate 15).

The mechanical condition of the pumping units were in fair condition but the electrical units need attention. The energy consumption was observed to be very high with energy efficiency of about 1.7 kwh/m^3. This is due to the small size of transmission mains and so many bends at pumping house outlets resulting into high head losses. The various booster stations in the distribution network due to the hilly topography of Bunda also

increase energy costs. The total monthly electricity pumping costs is about T.Shs. 8 million which is far more than the monthly water sales of about T.Shs. 2.5 million raising challenges of system sustainability. According to the area manager, new pumps have been procured for the newly proposed Nyabehu intakes & treatment works.

Plate 16: Raw water pumps and electrical panel units at Gupta pumping station

- **Water Treatment Units**: There is no water treatment in Bunda apart from disinfection by chlorine dosing at the Bomani hills main reservoirs. There were no dosing records and the effectiveness of chlorine dosing was doubtful (Plate 16).

Plate 17: Bomani Reservoir and chlorine dosing point

- **Transmission Mains**: There is one rising main of size 150 mm uPVC, with a total length of about 22 km (Plate 17). Water production is measured by the bulk meter installed at Guta pumping station. There are also two bulk meters at the Migungani Booster stations along the transmission mains. There were no records for bulk meter calibration raising doubts on their accuracy. Frequent bursts were reported on the transmission mains.

Plate 18: Transmission main leaving Gupta Pumping Station

- **Storage Tanks**: There are various small water towers at Guta (45 m^3), Tairo (45 m^3) Migungani (45 m^3), Mugaja (45 m^3), Manyamanyama (90 m^3), and Mishushi (135 m^3) in the water distribution systems with the main reservoirs (3 No. each of capacity 225 m^3) located at Bomani Hills (Plate 18). The tanks are made of concrete blocks and are fairly in sound condition with minor surface cracks. They all lack water levels and frequently experience overflows increasing physical water losses. The main storage reservoirs at Bonda hill are suitable to supply areas within pressure zone A (below 1240 m asl). A new tank has been proposed at Kaswaka Hills (1300 m asl) to serve pressure zone B (between 1240 & 1300 m asl).

Plate 19: Water tower in Gupta Village and Bomani Reservoirs

- **The Distribution Network**: The distribution network is divided into two pressure zones A and B. Zone A with about 400 connections is comprised of Ikuzu road, Ukerewe road, Kabarimu, Kiabakari road, Balili, Tairo and Guta villages. Zone B has about 600 connections and is comprised of Bunda stoo, Sabasaba road, Posta road, Nyasura Boma quarters and Boma road. Manyamanyama hospital that is going to be connected soon will also be part of Zone B. Most of the network is old with frequent leaks and bursts. Piped water service coverage is estimated at 18%. Metering efficiency is low at 40% resulting into water wastage and high non-revenue water (NRW) estimated at 60%. For example one public kiosk at Tairo primary school was being charged a flat rate of T.Shs 8,000 yet it sells about 20,000 jerry cans of water per month at T.Shs 100 per 20 litre jerrycan. There are no maps indicating the distribution network layout which complicates network operation and management. The field team could not trace pipelines that used to supply places like Manyamanyama water tower. The network mainly comprises of AC,GI, PE and uPVC pipes ranging in diameter from 25 to 100 mm. It is estimated that the total length of the existing main distribution network is approximately 27 km. The operations and maintenance team lack sufficient tools to effectively carry out their field tasks. Water supply is intermittent and most areas do not receive water at all.

Plate 20: Water Distribution point at Tairo Primary School

- **Water Booster Stations:** There are three booster stations (Migungani, Mugaja & Ushashi) within the water supply system. Migungani is the biggest booster station with two pumps (Q = 70 m^3/h, H = 90 m) and a storage tank of 45 m^3. It pumps water along the transmission line to Bomani Hill reservoirs (Plate 20).However, the pumps are idle most of the time due to inadequate water supply from Guta intake. There is a mismatch between the Guta intake pumps and the Migugani booster station pumping capacity that need urgent attention to reduce on water supply shortages. There was apparent evidence of overflows around the booster station.

Plate 21: Migungani Booster Station

The Mugaja booster station is newly refurbished with one new vertical pump (Q = 32 m^3/h, H = 138 m) and a suction reservoir of 45 m^3 (Plate 21). It receives water from the Bomani reservoirs and is meant to supply the Manyamanyama water tower and the surrounding areas. At the time of the visit the pump was not in operation as the old pumping main to Manyamanyama was still being traced. The Ushashi booster has one pump and pumps water to Mishishi reservoir (135 m^3). Water supply to the station is on and off. The pump house was in a messy state and the pump attendant was found cooking right next to the new pump (Plate 22).

At all the pumping stations there were some records being kept for water pumped, power consumption and hours run. However the format needs to be revised to ensure that all important information is properly captured.

Plate 22: Mugaja Booster Station with newly installed vertical pump

Plate 23: Ushashi Booster Station

The drinking water supply situation in Bunda town can only be described as inadequate. The service level in Bunda is insufficient with low pressures, frequent supply interruptions, high levels of NRW, high energy costs and poor water quality. The water pumping stations at Guta, Migungani and Ushashi are in a fair state and with some rehabilitation should be able to work well. There were no preventive maintenance records seen at any of the stations nor at the head office. This is likely to affect performance of the assets in the long run. This indicates that no planned preventive maintenance system is in place. It is not possible to accurately compute NRW figures due to low levels of metering and inadequate billing system to generate required revenue water data. The distribution network was delivering water at very low pressures on a few visited sites and most places were not receiving water. There were no records of pipe bursts and leaks to give an indication of the condition of the network.

3.2.2.2 Bunda Water Supply Infrastructure

The present condition of the main elements and proposed improvements are summarized in the Table 6. Improvement of the water supply in Bunda is a matter of some urgency and will require substantial investments. However, new investments will only be effective and achieve their objectives if they are accompanied by organizational improvement measures. These measures should focus on improvement of planning and management, and improvement of operation and maintenance in all its aspects.

Assuming organizational improvement can be achieved; additional investments will be effective and shall improve the water supply conditions in Bunda. The aims of the investments are to gradually improve the water supply situation by rehabilitating existing facilities so that additional investments can be made effectively to reach full coverage. In Table 6 the required investments in water production and water distribution are presented.

Table 2: Assessment of Guta Intake and Distribution network

(a) Intake

No.	Item	Present condition	Required Action/Works	Estimated Costs (USD $)
	Civil Works			
1	Civil works of access walkway	There is no proper access bridge into the lake. They walk along pipes which is risky.	Create a proper access walkway	20,000
2	Pump house	Good apart from the ambience	No essential works required. Painting for good ambiance.	1,000
3	Water transmission main	Functioning but too small to meet the current demand. DN 150 mm GI and uPVC.	DN 600 mm DI Pipe, 22 km DN 300 mm DI Pipe (Migungani to Kaswaka)	3,000,000
	Mechanical & Electrical Works			
1	Raw water Floating Pumps	One pump operational but of low capacity	Pumps have been procured and are yet to be delivered by the Ministry (MTB/Contract No.10)	
2	Raw water surface pumps	Two pump operational but of low capacity	Pumps have been procured and are yet to be delivered by the Ministry (MTB/Contract No.10)	
3	Electrical controls	Good	Refurbishment of control panels	3,000
4	Water quality	No disinfection	Provide on line chlorine dosing equipment	10,000
5	Gravity Flow Schemes as an alternative source of supply	Existing and supplying Bunda TTC	Carry out a feasibility study to assess potential of this alternative source of supply	10,000

(b) Water Distribution network

No.	Item	Present condition	Required works	Estimated Costs (USD $)
1	Pipelines & Valves	No network maps No Asset register & failure records to ascertain condition Some pipes were visible above ground Frequent pipe burst reported Lack of skills for proper network management	Network Distribution maps Need for Asset register Database for data capturing Extensions to increase access (10 km of HDPE DN 50 mm, PN 10) Identify and replace old mains (10 km) & Valves Bulk meters (20 Number Assorted sizes)	10,000 15,000 5,000 45,000 50,000 6,500
2	Storage Reservoirs	Good but minor cracks need to be sealed All reservoirs lack water level indicators	Repair of minor cracks Install water level indicators (8 No.)	4,000 10,000
3	Booster Stations	All pumps in fair operational condition apart from Ushashi and Magaja booster station with no standby capacity pumps Electro-mechanical equipment in fair condition apart from	Pumps for Migunguni have been procured and are yet to be delivered by the Ministry (MTB/Contract No. 10). Minor refurbishment of all electro mechanical	 5,000

		those at Magaja	equipment to enhance energy use efficiency	
4	Customer service Lines	Inadequate depth for some lines Low metering efficiency (53%) Inadequate meter management High number of leaks reported Illegal use of water	Procure & Stock network repair materials (assorted sizes) Procure domestic meters of size 15 & 20 mm (600 No.) Form an illegal use reduction unit	6,000 15,000 25,000
5	Public Kiosks	Very few public kiosks with low pressures	Increase coverage by installing about 10 PSPs	30,000
6	Flow & Pressure Monitoring	No flow and pressure measurements done, making leakage management impossible	Network zoning and bulk metering Procure flow and pressure data loggers Water balance training for NRW computation	Covered under capacity building 10,000 Covered under Capacity building
7.	Water quality	No chlorine dosing equipment No water quality monitoring programme in place No water quality testing equipment	Procure on line gravity chlorine dosing equipment for main reservoirs (02 sets)	15,000
8.	O & M Tools	Very old and inadequate	Procure 2 new die-sets and pipe wrenches (Assorted sizes) and 4 radio call sets	5,000

- **Water Quality Management***:* There is no water quality monitoring programme and hence in the network sampling was only done once in a long time and only for the bacteriological quality of the raw water source. There is no water laboratory within the district or the authority and no testing kits provided. Disinfection of the water is carried out at the main reservoir but there was no evidence of any one having carried out tests to determine the right amount of chlorine to add to the water. Currently the chlorine is added using a very rudimentary method which does not allow for adequate contact time. The application of chemicals is not properly done as there is no gravity dosing equipment. There were no records to prove that the water supplied conforms to WHO guidelines or National Standards.
- **Illegal Water Use Assessment:** Illegal cases were reported but there are no records on this. There is *no clear procedure for illegal use investigations*. Some effort is being made to reduce illegal use consumption through use of informers. A Penalty worth 500,000 T.Shs or imprisonment of not less than 6 months is provided for in the Water Act but it is not implemented. There is need to find an enforcement mechanism without impacting negatively on customer relations. No programme is in place to ensure that customers with suppressed accounts are encouraged to come back onto supply. There is no information gathering mechanism in place to reduce on the illegal water users.
- **Customer Physical Referencing Assessment:** The customer reference methodology is done based on the sequence of customer applications for new connections and account numbers are assigned accordingly. There are no property reference numbers given to the customer, instead each customer has a number that is sequential as per the record book. Account numbers are available. There is need for proper identification of property referencing using GIS mapping tools.

- **Alternative Source of Water Supply:** Alternative sources of supply include gravity flow schemes, boreholes and shallow wells. Bunda teachers training college is currently being supplied by Nyaruga gravity scheme. From the discussions held with the District Leaders and Water Engineers, its like there is potential for supplying the town with gravity water schemes. This potential should be exploited to save energy pumping costs and ensure sustainable water supply to the town.
- **Sewerage Services:** Bunda town has no sewerage system yet it is a rapidly growing town with good physical urban planning. There is potential for increasing the sanitation coverage and condominium sewage as a pilot can be considered.

3.2.2.3 Commercial and Customer Care Services

Under Commercial and Customer Care Services, the ET found that some attempts have been made to improve the existing systems and to streamline the roles of each of the staff involved. However not all the information is captured. With regard to the corporate image, the offices are generally clean and efforts are being made to up grade them over time e.g. the MD's office has been tiled and furnished. However the main office block needs painting and tiling.

The major findings related to commercial and customer care aspects are listed below:

- **Customer complaints handling**: There is no customer complaints register in place to capture customer complaints and track there implementation. The authority provides written responses to written customer complaints and are maintained although not in an orderly manner.
- **Front desk:** The customer front desk is not in place and there are no labels at the office to guide the customers.
- **Customer Surveys:** The authority does not carry out customer surveys to capture consumer perceptions on the efficiency in service delivery. The authority does not therefore have a mechanism of getting feedback from customers on how well they are being served.
- **Billing System:** The *customer database is manual* and the customer details are captured in consumer ledger books. The current system is not comprehensive due to the difficulties experienced in data entries. The authority currently uses a *manual billing* system and consumer details and bills raised are captured in a ledger book. *Billing procedures* are not explicitly documented and the current system does not effectively meet the needs of the organization and customers. The staff carrying out the billing do not have the relevant qualification and experience in billing but they can be trained to enhance their capabilities. There are *metering procedures* in place however these are not well documented and there is no mechanism to verify meter readings before billing. Meter readings are done monthly and take a period of seven days. There is however no book work sequence in place to be followed and guide the meter readers during the reading process, which results in omission of some consumer meters.

  Constraints:

  - Lack of transport to expedite the entire process of bill delivery.
- **Public Relations:** BUWSA does not have any public relations strategies that assist in delivering better services to the customers.
- **Pro Poor initiatives:** Provisions to serve the poor in through installation of public stand pipes. Currently BUWSA has 24 No. public stand pipes aimed at providing services to the poor communities.
- **Tariff Structure:** The tariff in place does not allow for full cost recovery and is not protected from inflation. The tariff structure is convenient however there are complaints from customers charged on flat rate due to intermittent water supply situation. There is need therefore for universal metering to mitigate such complaints and avoid eroding customer's willingness to pay.
- **Consumer base:** For a new connection a customer pays a connection fee of TShs 20,000. The customer then buys the materials required and carries out excavation to the required standard before the connection is effected by the authority. The process is appropriate and on average it takes 3 days to effect the connection provided all requirements are in place. The new connection rate for the town is 4 connections per month.

  Constraints: The major constraint for improvement of new connection rates is the high cost of materials and inadequate water supply situation in the town. The town has a lot of demand and un-tapped potential, therefore the rate of implementation of new connections can drastically increase once the water supply situation improves.

3.2.2.4 Revenue Generation and Financial Management

- **Documentation and procedures:** The system used to capture revenue details is manual and consumer payments are captured in a ledger book. There are some errors in data entry especially for the metered accounts. There is no accounting software in place and the financial operations are manually implemented that causes delays in implementation of tasks under the finance and accounts section.
- **Bill scrutiny and follow up after delivery:** There is no system in place for bills scrutiny. Bills are physically delivered door to door and on average take a total of seven days. There are noted delays in bill delivery mainly attributed to lack of transport which has resulted in customer complaints. It was reported that customers are reminded to pay their bills through megaphone – mobile transport announcements. Once no response is received, disconnections are effected as a strategy for revenue collections but this could not be verified as there was no documentary evidence.
- **Payment:** Payment options are not there since customers can only pay at the cash office. Management informed us that there are currently no complaints from the customers although this can not be verified since there are no customer surveys done to capture customer perceptions. There are delays in posting of payments received from customers. Banking of cash collected is not done promptly and at times takes up to one week. Collections are also diverted for use as petty cash. There is need therefore to institute financial regulations/procedures and ensure their implementation.
- **Debt write off:** There are no bad debt write off procedures and policy. It was reported that complaints from customers on billing are usually investigated and recommendations made to the Manager for adjustment if the complaint is found genuine and justified.
- **Cost optimization:** The cost optimization strategies currently being implemented in ensuring competition in all procurements undertaken by the authority to achieve value for money.

3.2.2.5 Strategic and Human Resources Management

- **Staffing:** The current organization structure is such that the District Water Engineer (DWE) is responsible for the development of the water supply infrastructure and BUWSA is responsible for the operation and maintenance of the system. The authority has some staff with the required qualification although their skills need to be enhanced through capacity building. However there is need to have a structured deployment of staff with the right qualification and skills to occupy vacancies currently filled by staff without the right competence for improved performance output.
- **Staff motivation/incentive structure:** There are inadequate motivational strategies in place. Field staff are paid overtime and lunch allowance when they work beyond normal working hours and while handling major emergencies respectively. Workers are paid salaries at the end of each month irrespective of whether they have performed or not and since most of them are government workers there is little commitment form most of the staff. There is no incentive mechanism in place.

- **Strategic Planning:** There is a four year strategic plan in place for the period 2008 – 2012 (FY2008/2009 – FY 2011/2012). There are no performance improvement initiatives undertaken by BUWSA.
- **Staff development and training:** There is no staff development scheme in place to enhance staff skills. Funds for training are provided in the budget but there is no proper training identification and implementation mechanism.
- **Meetings**: The management holds weekly meetings to discuss operational issues and are fully documented. It was reported that staff are encouraged to freely deliberate and contribute ideas that affect operations under their sections and the authority.

3.2.2.6 Proposed Change Agents for BUWSA

The proposed change agents for BUWSA were chosen from the existing management including that of the district council.

Table 3: Change Agents for BUWSA

No.	Position	Name
1.	Managing Director	Eng. Idd M. Swai
2.	Technical Manager	Jumanne Turbeth
3.	Commercial/Finance Manager	Jairo Sanga
4.	District Water Engineer	Eng. Tanu I. Deule
5.	District Administrative Secretary	
6.	District Executive Secretary	
7.	Chairman Multi Stakeholder Forum	
8.	Chairman of the Board of Directors	
9.	Regional Administrative Secretary	

Table 4: List of Key Hardware and Software requirements for BUWSA

(a) Electro mechanical equipment and office requirements

No.	List of Equipment	No.	Remarks
1.	Computer desk tops and accessories	03	
2.	Printer for billing	01	
3.	Printer : ordinary	01	
4.	Computer server	01	
5.	5KVA UPS	01	
6.	Computer software programmes Billing GIS Autocad		
7.	Mapping – GIS • Drawing tables • Drawing equipment (rulers, templates, adjustable set squares, drawing pens and pencils, paper etc.) • Theodolite • Total Station • Oedometer • Tape measures (100 m, 50 m, 5 m) • Measuring staffs • Umbrellas with stands to protect equipment • Cadastral Base maps and/or satellite images • Carrying boxes, cases and bags	 03 Assorted 02 01 02 03 each 05 02 Assorted	
8.	Start up stock for network pipe repair materials • E.g clamps, air valves, flanges, adapters to be verified after detailed assessment.	Assorted	
9.	Dewatering pump	01	
10.	Plumbing tools Spanners, Wrenches, die and stock, valve keys	Assorted	
11.	Standby Power Generator set	02	
12.	Under pressure tapping machine with drill taps for uPVC, steel and GI	01	
13.	Grinding machine and assorted cutting discs	01	
14.	Diesel powered Welding machine	01	
15.	DN Cold Water meters, Volumetric or multified	1,000	
16.	Bulk meters DN 80 – DN 150 mm	10	
17.	Electrical Tool box set	01	
18.	Mechanical Tool box set	01	
19.	Portable flood lights	02	
20.	Fast moving items e.g. gland packing, bearings, lubricants, cleaning materials, contactors, soft softer spares, coils, protective devices e.g. relays, fuses, circuit breakers, insulating materials (PVC tape, insulating varnish, cotton tape) etc. Fast moving items e.g. gland packing, bearings, fuses etc.	Assorted	
21.	Meter installation materials (lining unions, sockets, elbows, bends, nipples, reducing bushes, reducing sockets and GI pipes etc.	Assorted	

No.	List of Equipment	No.	Remarks
22.	Walkie talkies	08	
23.	Pick up 4WD Car (single cabin)	01	
24.	Motor Cycles	02	
25.	Bicycles	06	
26.	Leak detection equipment	Assorted	
27.	Meter testing bench & accessories	01 set	

(b) Laboratory Equipment, reagents and apparatus

No.	Item	Unit	Quantity
1.	**Equipment/instrument**		
	Autoclave	No.	01
	Water still	No.	01
	Incubator (portable) Potalab 1 to include the following:		
	pH meter	No.	01
	EC meter	No.	01
	Turbidity meter	No.	01
	Photometer	No.	01
	Lovibond Comparator & discs for chlorine, Al. residual, colour iron	No.	
	Iron test tables	Tablets	200
	Chlorine test tablets 3 DPD No. 1	Tablets	800
	Chlorine test tablets 3 DPD No. 2	Tablets	800
	Aluminium test tablets No. 1	Tablets	200
	Aluminium test tablets No. 2	Tablets	200
	Digital titrator	No.	01
2.	**Apparatus/glassware**		
	Beakers 1000 mls	No.	06
	Beakers 500 mls	No.	06
	Beakers 250 ml	No.	06
	Flasks conical – 250 mls	No.	02
	Flasks conical - 500 mls	No.	02
	Burette 0- 25 mls	No.	02
	Pipette – graduated 0-10 ml	No.	02
	Pipette – bulb 0-25 ml	No.	02
	Bacteriological glass bottles autoclavable 300 mls with metal caps	No.	20
	Reagent bottles 250 mls	No.	10
	Reagent bottles (medium bottles) 150 mls	No.	10
	Measuring cylinders 0-500 mls	No.	02
	Measuring cylinders 0-250 mls	No.	02
	Measuring cylinders 0-100 mls	No.	02
	Measuring cylinders 0-25 mls	No.	02
	Volumetric flask 500 ml	No.	01
	Volumetric flask 250 ml	No.	01
	Volumetric flask 100 ml	No.	02
	Filter funnels 98 cm diameter	No.	02
3.	**Chemical & Reagents**		
	Sulphuric acid titration cartridge for alkalinity	Cartridges	2
	EDTA titration cartridge for hardness and calcium	Cartridges	2
	Alkalinity indicator tablets	Tablets	100
	Hardness indicator tablets	Tablets	100
	Calcium indicator tablets	Tablets	100
	Manganese test tablets1 & 2	Tablets	50
	Membrane Lauryl Sulphate broth	g	500

No.	Item	Unit	Quantity
4	**OTHER ITEMS**		
	Cool Box 10 Ltrs	No.	1
	Sampling plastic baskets for carrying sampling kits and bottles	No.	1
	Aluminium foil		1
	Marker pens, stationary etc - adequate -	Assorted	

4. GENERAL RECOMMENDATIONS

From the Rapid assessment and assessment, it is apparent that both SIBO – Bondo and BUWSA are still struggling with a number of issues that have greatly hampered their performance.

4.1 Staffing issues

(i) SIBO - Bondo

- A number of staffing issues identified impinge greatly on the performance of the SIBO – Bondo and have hampered the performance of the Scheme and Authority. One of the major problems noted was the lack of a clear organizational structure. At the moment the structure in place does not allow for proper management of the scheme e.g. the Scheme Manager is overshadowed by the Operations Manager and cannot take full authority. It is therefore recommended that at the onset of the Fast Track Capacity Building programme, a review be done on the staffing for Bondo and a revised organizational structure with clear separation of roles between the operator (SIBO) and the District Water Officer.
- A number of the lower cadre staff do not have the right qualifications and skills for their job positions. Some of the staff are nearing retiring age and this may affect their level of commitment and ability to embrace change. There is need to recruit new staff and equip them with the right skills. SIBO and LVSWSB need to take this up as a serious and urgent matter. The ET recognizes that there may be some constraints related to the water sector reform implementation in Kenya, however the importance of having the right staff to manage the utility cannot be underscored.

4.2 Billing and Customer Care

(i) SIBO - Bondo

SIBO has a computerized billing system in place which was funded by the German Technical Cooperation (GTZ) similar to the one in Gusii Water and Sanitation Company (GWASCO) – Kisii namely the Water Flex, a programme designed by Data Flex Computer Consults, Nairobi. However the assessment of the programme by NWSC revealed a number of short falls that necessitated the development of a more friendly and robust access based billing system. The current system allows for double entries when posting of receipts and transactions, does not provide for physical customer referencing, does not generate consumption automatically etc. It is recommended that the new billing programme developed by the NWSC be installed and implemented at the SIBO and Bondo offices and that the billing staff undergo training on the use and implementation of this system.

(ii) *BUWSA*

BUWSA operates a manual billing system. However, it was found that there are a number of shortfalls and gaps in the system. The manual system also allows for easy

manipulation. It is recommended that NWSC install the newly developed access based billing software and carry out training for staff.

4.3 Tariff Structure and application

- The tariff levels and structure appear to be inadequate when compared to the water tariffs of other towns of similar sizes within the region and this makes it very difficult for any of these utilities to break even. It is recommended that proposals for tariff reviews be prepared and discussed with relevant stakeholders.
- In SIBO it was also noted that many of the customers who should be on commercial rate are being charged on domestic rate. It is recommended all accounts be checked and the database updated to enhance financial viability.

4.4 Metering

There is need to put effort to ensure universal metering is achieved. It is recommended that LVSWSB and UN HABITAT procure both bulk meters and consumer based meters to ensure 100% meter coverage within a year. There is need to ensure calibration of meters. It is recommended that a meter testing bench be procured for each of the utilities to continuously monitor meter performance and minimize on commercial losses.

4.5 Customer Physical Referencing

Base maps and satellite images are a very important prerequisite for block mapping which will greatly impact on the revenue improvement programmes as well as water demand and network management. At the moment none of the utilities has any network maps. It is recommended that in order to have a noticeable impact with regard to metering, leak detection etc, block mapping be done for the whole water supply area of each of the towns.

4.6 Network operations

- Currently the network operations in both SIBO-Bondo and BUWSA are being done in a haphazard way mainly as a result of lack of water. However, optimization of pumpage in order to meet the demand despite the low production levels is not being properly implemented. There is need to build capacity in how to best operate the network system, ensure proper O & M through effective Planned preventive maintenance of production units and network systems. It is recommended that one staff from NWSC be attached to each of the utilities for short periods covering four months in order to assist the utilities develop systems. It is also proposed that for BUWSA a simple hydraulic model be produced for ease of network operations and management. This will go a long way in improving the network efficiency. It is also recommended that one person from each of the utilities e.g. the technical manager/scheme manager be attached to one of the NWSC towns for a period of two weeks to learn and see best practices in utility management more so with regard to the network operations.
- In a bid to ensure positive and quick reduction of Non Revenue Water, it is recommended that UN HABITAT procure the necessary hardware e.g. leak detection

equipment, bulk meters, repair materials, pipes for replacement of damaged sections etc within the shortest time possible. This will thus enable the quick implementation of improved strategies. There is need to train technical staff on how to carry out a water balance audit for more accurate computation of NRW.

4.7 Water quality monitoring

There are no water quality monitoring programmes in each of the utilities and no trained staff to carry out the function. There is need for each of the utilities to recruit a competent laboratory technician. Furthermore it is recommended that a proper Water quality monitoriong programme be set up that is based on the current best practice approach that includes the use of water safety plans. NWSC can attach a water quality expert to assist in the establishment of systems for proper water quality monitoring. However, prior to this, UN HABITAT should ensure that the necessary testing kits as a minimum are provided. It is also recommended that LVSWSB and the Ministry of Water through its regional laboratories ensure that some level of water quality monitoring is carried out on a quarterly basis as a minimum.

4.8 Infrastructure Development

The general performance and viability of both towns shall be achieved with development and expansion of the existing infrastructure. Key investments are required on electro - mechanical equipment at intakes of Bondo and Bunda, the treatment in Bondo, booster stations in both towns and network expansion to improve coverage. BUWSA requires expansion on the transmission mains to improve on water delivery. The upgrade of the infrastructure will enable the utilities meet the water demand and improve on levels of service (coverage, water quality, system pressures and service interruptions) currently being provided. It is recommended that the interventions proposed by the NWSC ET on infrastructure development be considered by UN HABITAT for the hardware requirements.

5. CONCLUSION

The water utilities of Bondo and Bunda are currently facing a number of problems that are hindering the performance of these utilities. These include: old and dilapidated infrastructure with some requiring replacement, low reliability of water supply, restrictions in the network leading to poor water demand management, lack of proper billing and commercial systems, inadequate staffing capacity and lack of adoption of best practices in utility management. From the Rapid Assessment SIBO – Bondo and BUWSA do have the potential to improve their performance. The fast track capacity building programme coupled with the planned infrastructure development by UN HABITAT will have a positive impact on these towns in the short and medium term. However, unless some of the interventions are put in at the onset of the programme it may take time before positive results are achieved. From the technical and infrastructure assessments done during the Rapid Assessment UN HABITAT may need to spend about US$ 700,000 for the SIBO-Bondo scheme and US$ 3,300,000 for BUWSA (this does not include the costs for the proposed treatment works). For the latter, the bulk of the money will go on the transmission main. The issues pertaining to staffing must be addressed as a prerequisite to the capacity building programmes more so in the case of SIBO-Bondo.

APPENDICES

APPENDIX 1. CHECK LIST FOR RAPID ASSESSMENT

LAKE VICTORIA WATER AND SANITATION PROGRAMME
FAST TRACK CAPACITY BUILDING PROGRAMME FOR UTILITIES

FUNDED BY UN HABITAT

Check List

Conducted by
National Water and Sewerage Corporation, Uganda
Rapid Assessment

Date……

Town……

Anonymity

Your answers to the following questions will be completely anonymous. We shall use your responses to plan for the Capacity Building of staff in your company for better service delivery. The questions are easy to follow and we expect that you will take a maximum of 10 minutes to fill the questionnaire.

(a) Water Network Management

#	What to be Checked	Findings/Observations	Recommendations
1.	What is the general condition of the water distribution network		
2.	Is there any Planned Preventive Maintenance (PPM) plan for Water distribution network appurtenances and Booster Stations		
3.	Is there a programme for flushing water mains and cleaning water reservoirs?		
4.	Is there a proactive programme for searching leaks/bursts and proper reporting, recoding and work scheduling systems for leak/burst repairs in place?		
5.	Are records of repairs of water distribution mains and service lines and materials used maintained?		
6.	Are repair materials readily available in the stores and timely replenished?		
7.	Does the town have leak detection equipment and is it being used		
8.	Are the water Reservoirs/ Tanks in sound condition and Operational and duly equipped with good sanitation facilities?		
9.	Are daily records of reservoir levels maintained i.e. documentation or databases?		
10.	Are there mechanisms to control reservoir overflows		
11.	Are the Booster Houses and electro-mechanical equipment (Pumps, motors, control panels etc) in good functioning condition and are the stations duly equipped with good sanitation facilities?		
12.	Is the depth for connections of service lines in the field adequate enough to ensure reduction in leaks and bursts		
13.	Are all connections in the town metered		
14.	What is the functionality level of the consumer meters		
15.	Is there a maintenance plan for defective meters and is it being implemented		
16.	Are the materials transparently procured? Do they follow the right procurement procedures?		
17.	Is there proper documentation of the procurement procedures?		
18.	Are all goods delivered entered onto stock cards or related document		
19.	Do all stock items have catalogue numbers		
20.	Are there pre-qualified suppliers for goods & services and prevailing market rates for the various works, goods & services?		

(b) Water Infrastructure and Systems Management

#	What to be Checked	Findings/Observations	Recommendations
1.	What water sources are used for water supply to the town		
2.	Is there any Planned Preventive Maintenance (PPM) plan for water infrastructure in place and is it being followed?		
3.	Are the electro-mechanical equipment (Pumps, motors, control panels etc) in good functioning condition?		
4.	Are records of defects and repairs of electro-mechanical equipment maintained i.e. frequency of breakdown, downtime, response time etc.		
5.	Are the Chemical Dosing pumps, tanks and Stirrers in good functioning condition?		
6.	Are there records of daily electricity consumption and diesel usage maintained?		
7.	Are all the Water Production meters in place and/or functioning and are the daily water production records maintained?		
8.	Are the Buildings and Treatment Units in sound condition and adequately furnished and duly equipped with good sanitation facilities?		
9.	Are the compounds, Access roads and Parking areas at the booster, reservoir stations and production facilities well maintained and easily accessible?		
10.	Are there records of daily electricity consumption and diesel usage at Booster Stations and water pumping facilities maintained?		
11.	Are there Bulk Water meters in place at the Booster Stations and are daily meter readings recorded & maintained?		

(c) Water Quality Management

#	What to be Checked	Findings/Observations	Recommendations
1.	Does the Area have a sampling schedule and is it being followed?		
2.	Is the laboratory adequately equipped and are the equipment in good working condition?		
3.	Are there regular water quality tests being carried out and are records of quality tests maintained?		
4.	Is the laboratory well organized and cleanliness satisfactorily maintained?		

#	What to be Checked	Findings/Observations	Recommendations
5.	Is the chemical dose rate regularly determined and applied appropriately?		
6.	Are the chemical dosing equipments in good working condition?		
7.	Is the chemical mixing properly done and dosing process effectively implemented?		
8.	Are there proper records of daily chemical usage and does the usage comply with recommended dosage rates?		
9.	Does the quality of water produced and supplied conform to the National and WHO Standards?		
10.	Does the quality of Sewage effluent disposed conform to the National effluent Standards?		

(d) Illegal Water Use Management

#	What to be Checked	Findings/Observations	Recommendations
1	What procedures are in place to manage the suppressed accounts?		
2	What penalties are issued to illegal users and what enforcement mechanisms are in place?		
3	What information gathering mechanisms are in place to ensure reduction of illegal users?		
4	What kind of statutory provisions are available for illegal water use under WATSAN services?		
5	Is there a meter installation procedure in the utility?		
6	Are the fire hydrants well located and accessible?		
7	What procedures are in place for the disconnection and reconnection practices to be transparent?		
8	Is there a comprehensive system that captures illegal users e.g. customer database?		

(e) Block mapping Management

#	What to be Checked	Findings/Observations	Recommendations
1	Does the town have a block mapping programme and legible maps in place and are they timely updated		
2	What customer referencing procedures are in place?		
3	How is property identification handled?		
4	Is the network mapping convenient for revenue collection?		

(f) Commercial and Customer Care Management

#	What to be Checked	Findings/Observations	Recommendations
1	Check if the town maintains a customer complaints register that captures complaint and response time to complaints versus the desired (target)		
2	Is there a comprehensive system that captures the customer details i.e. database?		
3	Check the way the front desk staff handle customers. Can it be improved?		
4	Ask if the Town has a customer survey system that captures customer perceptions on the service delivery		
5	Check if the Town has a comprehensive customer feedback system (when a customer complains and we handle the problem, do we give feedback?)		
6	Is the billing system, backups and security comprehensive enough?		
7	Are the billing procedures up to date with the needs of the customers		
8	Is there a metering procedure and is the meter reading exercise adequate?		
9	Is the process of getting a new connection as well as the time taken to connect a customer appropriate?		
10	Is the tariff structure in place convenient enough for the utility and the customers?		
11	Are there any public relations strategies that assist in delivering better services?		

#	What to be Checked	Findings/Observations	Recommendations
12	Are there any provisions to serve the poor communities through pro-poor initiatives?		

(g) Revenue Management

#	What to be Checked	Findings/Observations	Recommendations
1	Is there a comprehensive system that captures the revenue details e.g. customer database?		
2	Is there a comprehensive procedure that enables for Bill scrutiny and timely delivery of bills?		
3	What strategies are used for Revenue Collection?		
4	Is the billing system convenient for customers to pay their bills?		
5	Is the posting of receipts done on a timely basis and banked with transparency?		
6	What procedures are in place to ensure proper management of debt write-offs?		
7	What cost optimization strategies are in place?		

(h) Strategic and Human Resources Management

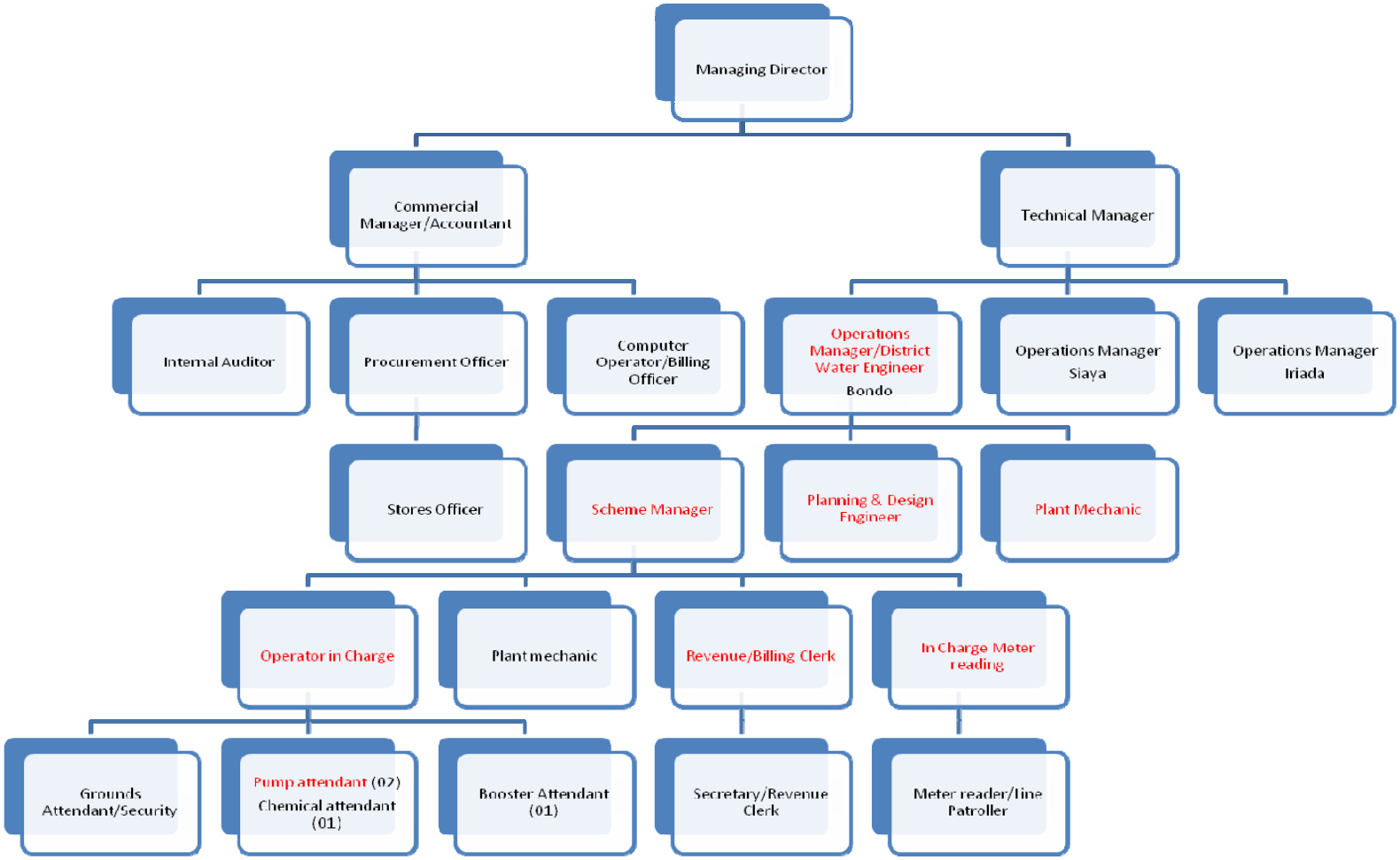
#	What to be Checked	Findings/Observations	Recommendations
1	What is the current organizational set up and is it adequate and dully staffed to effectively manage service delivery		
2	Is there a strategic plan in place?		
3	Are there any provisions for performance improvement initiatives in the Company?		
4	What motivation strategies are in place to improve on staff attitude?		
5	Is there a staff development scheme in place to enhance staff skills?		
6	Does management hold regular section and departmental meetings and are staff involved in decision making.		

(g) Hardware and Software Management

APPENDIX 2a. SIBO WATER BOARD MEMBERS

No.	Name of Board Member	Title
1.	Dr. Francis O. Angáwa	Chairman
2.	Mrs. Jane K. Rogo	Director
3.	Mr. Nelson J. Oreng	Director
4.	Cllr. Marie Dan Owino	Director
5.	Mr. Paul Nyambala	Director
6.	Mr. Peter O. Odero	Director
7.	Mr. Nashon Akello	Managing Director SIBO, Secretary
8.	No name given	Director
9.	No name given	Director
10.	No name given	Director
11.	No name given	Director

APPENDIX 2b. STAFF ORGANOGRAM FOR SIBO - BONDO



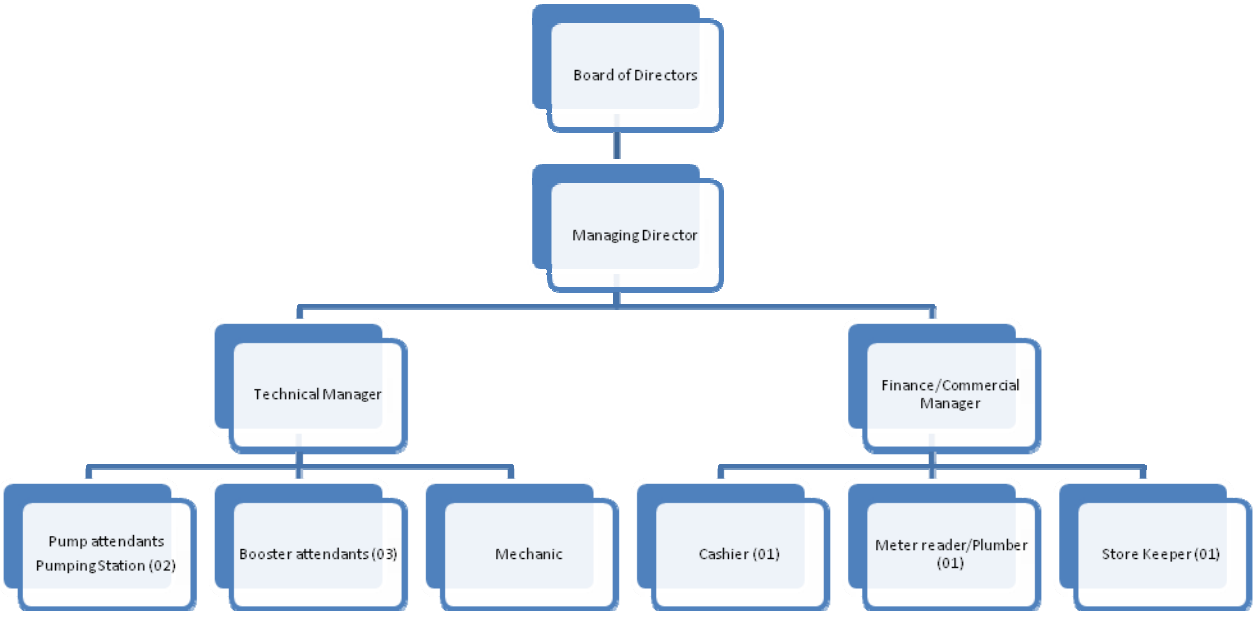
APPENDIX 3. TARIFF STRUCTURE FOR SIBO

Category	Unit Rate (T.Shs)
Consumption < 10 m^3	200
Consumption greater than 10 m^3 but less than 20 m^3	25
Consumption between 21 – 50 m^3	30
Consumption between 51 – 100 m^3	45
Consumption between 101 – 300 m^3	75
Consumption greater than 300 m^3	100
Kiosks	15
Retail at the kiosk per 20 L	2
Bulk sales for resale	15

APPENDIX 4a. LIST OF BOARD MEMBERS FOR BUWSA

No.	Name of Board Member	Designation
1.	Joram Mulla	Board Chairman
2.	Idd M. Swai	Secretary
3.	Flavian N. Chacha	Councilor
4.	Haule M	DED
5.	Nkwande B.M	Assistant Administrative Secretary
6.	Helen Gulinja	Women Representative Secretary
7.	Edward Nyeura	Water Consumer Representative
8.	Dickson Ng'orongo	Businessmen Representative
9.	Deo Mangazini	District Administrative Secretary
10.	Tanu Deule	District Water Engineer

APPENDIX 4b. STAFF ORGANOGRAM FOR BUWSA



APPENDIX 5. TARIFF STRUCTURE FOR BUWSA

#	CATEGORY	BLOCK TARIFF	ADOPTED PROGRESSIVE TARIFF
		Unit Rate	Unit Rate (T.Shs)
1.	20 L jerrican	20	20
2.	Domestic	350	500
3.	Institutional	350	600
4.	Commercial	250	500
5.	Industrial	-	-
6.	Domestic flat rate	4,800	5,000