



Audit Service Sierra Leone

PERFORMANCE AUDIT REPORT ON THE SUPPLY OF POTABLE WATER BY SALWACO

SEPTEMBER, 2012

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ABBREVIATIONS AND ACRONYMS

GoSL	Government of Sierra Leone
LGA	Local Government Act
MDG	Millennium Development Goals
MEWR	Ministry of Energy and Water Resources
NGO	Non Governmental Organisation
SALWACO	Sierra Leone Water Company
WASH	Water and Sanitation Hygiene
WATSAN	Water and Sanitation
WHO	World Health Organisation
WSD	Water Supply Division

FOREWORD

As the Supreme Audit Institution (SAI) of Sierra Leone, the Audit Service Sierra Leone (ASSL), is set on expanding the scope of external audit. In addition to our traditional role in Regularity Audit we have therefore established Performance Auditing¹ as one of the services provided by the ASSL. To achieve this, we have put in significant efforts into upgrading the professional skills in the organisation and modernising the audit methodology.

In submitting this Performance Audit Report for tabling, I refer to the constitution of Sierra Leone in which Section 119 (2) states "The public accounts of Sierra Leone and of all public offices including the courts, the accounts of the central and local government administrations, of the Universities and public institutions of like nature, any statutory corporation, company or the body or organization established by an Act of Parliament or statutory instrument or otherwise set up partly or wholly out of Public Funds, shall be audited and reported on by or on behalf of the Auditor General, and for that purpose the Auditor-General, or any person authorised or appointed in that behalf by the Auditor-General shall have access to all books, records, returns and other documents relating or relevant to those accounts".

I further refer to the Government Budgeting and Accountability Act of 2005, Section 63 (1) Sub section (1e), which states "In his examination of the Final accounts the Auditor-General shall ascertain that in his opinion, financial business has been carried out with due regard to economy in relation to results achieved", and;

Sub section 66 (4) further states that "Nothing in this section shall prevent the Auditor-General from submitting a special report for tabling in Parliament on matters that should not await disclosure in the annual report".

In line with my mandate as described above, we have undertaken this Performance Audit on the Sierra Leone Water Company (SALWACO) of the Ministry of Energy and Water Resources (MEWR) highlighting the supply of potable water to consumers under three key headings – source, treatment and distribution.

**Lara Taylor-Pearce FCCA (Mrs.)
Auditor General of Sierra Leone**

EXECUTIVE SUMMARY

This Performance Audit report is on the supply of potable water by SALWACO. The objective was to assess the extent to which SALWACO has contributed to improved water supply services in their specified areas of operation. The motive of the audit was the increasing concerns from government, donors and the general public with regards to the water supply situation in the country.

The SALWACO Act of 2001 confers on SALWACO the responsibility of developing and operating satisfactory water services at reasonable cost and on a self supporting basis in six specified areas.

The audit focused on three key issues: Sourcing, Treatment and Distribution of water. It covered four of SALWACO's operational areas, namely Lungi and the cities of Kenema, Bo and Makeni. In each area, SALWACO's stations and reservoirs were visited and contacts made with Local Councils and communities to obtain data and information on the operations of SALWACO.

Despite Sierra Leone's abundant water resources, access to Raw Water has been problematic. During the dry season, existing Raw Water Reservoirs dry out and all the stations depend on water pumped from rivers or streams. We observed only one pump that seemed to function well at the time of our audit. As a consequence the treatment process has frequently come to a standstill. In some cases, notably in Bo, treatment had been stopped for several months and no water was distributed to the customers.

With the exception of Makeni station, the other three stations did not have equipped laboratories and water testing kits. Therefore, Bo and Kenema stations were unable to test the water to verify whether the treatment process had been successful and the water suitable for human consumption. Tests carried out on behalf of the auditors by SALWACO's lab technician, indicated that the treated water met WHO standards in Lungi and Makeni.

SALWACO has not been efficient and effective in scheduling adequate maintenance and attending to issues of repairs of damaged pipes. This has impacted negatively on the supply of water through excess water wastage.

SALWACO has not been able to recover their operational costs from the revenue that they generate. From 2007 to 2010 water rates and charges covered less than 10% of total expenditure. The rates set by the Board have not been implemented. Rates set by the stations are generally higher than those set by the Board, but still not high enough to secure cost coverage. In spite of what is stipulated in the act there was only one utility meter for measuring water use, in all of SALWACO's operational areas.

The failure to implement the act and provide clear guidelines to the stations is a reflection of weaknesses in SALWACO's management structures.

To improve SALWACO's performance the following issues should be addressed:

A Board in line with the criteria laid down in the Act should be appointed and key management positions filled. It is essential for SALWACO's future role and development that the company is in a position to reap the maximum benefits from the capacity building support that is an integral part of the three-towns-project.

In order to ensure a sufficient intake of raw water to allow the treatment process to go on without unnecessary stoppages, SALWACO should make sure that existing equipment are in good working condition, and examine the prospects for increasing the capacity of raw water reservoirs at the respective stations should be considered.

SALWACO should regularly test the water they supply. Testing should be done before and after treatment and when it is delivered to the customers. Immediate action should be taken whenever the results indicate that the water is not potable.

SALWACO should conduct regular maintenance of the treatment works, the distribution networks and the reservoirs as to prevent breakdowns and damage caused by poor maintenance.

SALWACO should review their rates with a view to providing water services at a self-supporting basis in the long run, in order to achieve this, the water utility meter system should be implemented in accordance with the Act to ensure that commercial and other clients pay a fair amount for their consumption.

1. INTRODUCTION

1.1 Purpose and Scope

Sierra Leone is blessed with abundant water resources. Most of its towns and villages are located by rivers or streams. The major constraint however, is the lack of adequate resources to treat the water and make it available for human consumption.

Due to poor operational and maintenance arrangements most urban water supply schemes are not functioning properly. Despite efforts made by the Government over the past years with assistance of NGOs and other donors, only about half the population has access to an improved source of water.

Although 42 water schemes were installed in various parts of the country, most of the facilities are dysfunctional and the population in the various settlements have outgrown the systems in place. Water supply is irregular because pipes are damaged, rusty and leaking. Available water is often wasted by the users since there are virtually no controls over how much is used. Most installations were damaged beyond repair during the decade long civil war.

The effect of the acute potable water shortage is that people develop alternative coping mechanisms, such as fetching water from inappropriate sources including unprotected wells and surface water. Water from these sources is neither treated nor is its quality monitored. The consequence is often a high presence of E-coli, faecal coliforms and other pathogens (germs) unfit for human consumption. Drinking water with high presence of germs can result in ill health.

The World Health Organisation (WHO) estimates that worldwide, around 4 million deaths each year can be attributed to water related diseases such as diarrhoea, cholera, hepatitis, dengue fever, malaria and other parasitic diseases.

Efforts have been made to improve access to safe drinking water as stated in target 7c of the Millennium Development Goals (MDG), which aims to halve the proportion of people without sustainable access to safe drinking water and basic sanitation by 2015.

The Sierra Leone Water Company (SALWACO) has an important role to play if Sierra Leone is to achieve this goal. It is responsible for water supply services in the specified urban areas of Bo, Kenema, Koidu, Yengema, Makeni and Lungi as stipulated in the SALWACO Act of 2001. Only a minority of the people living in those areas have access to potable piped water and progress has been limited. Therefore it was decided to undertake a performance audit with the objective to assess the supply of piped potable water by SALWACO.

In order to meet this objective and arrive at an assessment on whether SALWACO's service delivery is efficient and effective, we focused on three key issues namely: Sourcing, Treatment and Distribution of water.

1.2 Audit Methodology

The audit covered the four specified areas where SALWACO is most active. These were Kenema Town, Bo Town, Makeni Town and Lungi.

In each area, we visited SALWACO's stations, reservoirs, the Local Councils and communities to obtain relevant data and information on the operations of SALWACO. This also gave the audit team the opportunity to seek further clarifications on issues observed during the course of the review of relevant documents.

The team held interviews, reviewed documents and did physical observations of water infrastructures.

Interviews to obtain an understanding of the systems and operations of SALWACO, were held with key personnel at the headquarters in Freetown and at the regional stations in Kenema, Bo, Makeni, and Lungi. See appendix 2 for a list of interviewees.

Documents were reviewed to obtain information and to confirm information collected through interviews.

Physical observations were made between January and November 2011, to verify through inspections and observations the condition of physical structures such as reservoirs, pumps, treatment plants, etc.

A draft version of this report was sent to the SALWACO Management for their comments. In their response dated 25th June 2012, SALWACO mentioned the steps planned or already taken to address some of the issues highlighted in this report. Some changes were made in the report in line with the clarifications provided by SALWACO. SALWACO's response is attached as Appendix 3.

2. POTABLE WATER SUPPLY PROCESS

2.1 Regulatory Framework

The provision of potable water in the specified areas of Sierra Leone shall be in accordance with the SALWACO Act of 2001, the Local Government Act (LGA) of 2004 and other relevant legal provisions and documents.

The SALWACO Act established SALWACO and conferred on it the responsibility of developing and operating satisfactory water services in every specified area in the country. The specified areas as defined by the act are the District towns of Bo, Kenema, Koidu and Makeni, Yengema town and Lungi. Areas under the jurisdiction of the Guma Valley Water Company (GVWC) or the Water Supply Division (WSD) of the Ministry of Energy and Water Resources (MEWR) are not covered by SALWACO.

LGA re-established the local councils and provided for the decentralisation and devolution of functions, powers and services to local councils. It devolved to the councils among other things the bulk supply of water, the rehabilitation of Degremont treatment plants and the construction of gravity schemes. But SALWACO remains responsible for the supply of piped water in those specified areas.

Statutory Instrument "The Local Government (Assumption of Functions) Regulations, 2004" devolves water supply responsibilities to Local Councils as stipulated below.

MINISTRY OF ENERGY AND POWER

No.	Main functions	Activities to devolve	Year of assumption of functions by Local Councils
1.	Urban Water supply	a. Rehabilitation of the Degremont treatment water supply schemes. b. Construction of gravity schemes. c. Construction of drilled and tube wells with solar panel in some provincial headquarter towns in the twelve districts.	2007
2.	Peri-Urban Water Supply	a. Construction/rehabilitation of water wells, spring boxes, drill wells and rain water harvesting. b. Construction of gravity schemes. c. Rehabilitation of Degremont treatment water supply schemes.	2008
3.	Rural Water Supply	a. Construction of water wells, spring boxes, drilled wells, rain water harvesting.	2006

Section 5 of the SALWACO Act states that:

“(1) The Company shall have a Board of Directors (hereafter referred to as ‘the Board’) which shall consist of

- a) a Chairman;
- b) the Financial Secretary or his representative;
- c) the Permanent Secretary, Ministry of Energy and Power or his representative;
- d) a representative of the Institute of Engineers;
- e) a representative of the Chamber of Commerce, Industry and Agriculture;
- f) four members representing consumer interest; and
- g) the Director General appointed under section 18

Section 13 of the SALWACO Act states that:

“(1) The company shall develop and operate in every specified area, satisfactory water service at reasonable cost and on a self supporting basis without adversely affecting the environment.

“(2) without prejudice to the generality of subsection (1) the company shall-

(.....)

(d) ensure that water is supplied to consumers in potable quality”

Section 37 of the Act states that:

“(1) The Company shall be entitled to levy and demand for the supply of water to consumers such water rates and charges as may from time to time be determined by the Company.

(2) The Company may fix different rates for different areas or different classes of consumers.

(.....)”

Section 38 of the Act states that:

“The Company shall direct its rating policy towards ensuring that –

(.....)

(b) water is supplied to commercial concerns and such institutions as schools and hospitals by meters;

(c) rates charged for water supplied to industrial and commercial concerns are higher than those charged for domestic supply in the same locality (.....)

(d) institutions such as schools and hospitals are charged special rates which shall not be higher than those charged for domestic supply in the same locality;

(.....)”

Section 46 of the Act states that:

“(1) The Company shall, except for reasons of impracticability, maintain a continuous supply of water and at a reasonable pressure in all pipes which are used for supplying water otherwise than in bulk”.

SALWACO is a sub sector of MEWR that is responsible for overall policy making and regulation of the sector as well as the supervision of SALWACO and other institutions.

SALWACO shall be governed by a ten-member Board of Directors holding office for two years and eligible for one further term. It represents both the Government and consumer groups and shall be appointed by the President with the approval of Parliament. The Board should meet at least once every month.

The Board should provide policy guidelines such as fixing of bills and rates charged on

consumers. The Chairman of the Board reports to the minister of MEWR on certain decisions taken. Certain expenditures are usually approved by the Board.

The first Board was inaugurated in December 2006 and the second Board served from August 2008 to July 2010. The second Board had three standing Committees, namely Admin, Finance, and Audit which operated in advisory capacities. It usually met twice every month and with the sub committees twice every week. The rates that were set by the first Board some five years ago still remain in force at Le15000 per month for domestic consumers or institutions like schools and hospitals, and at Le25000 per month for commercial concerns.

Currently, there is a Three-Man Supervisory Body to provide policy guidelines to the SALWACO Management until a new Board is constituted. This Body comprises representatives from the Office of the Chief of Staff, Ministries of Energy and Water Resources and Finance and Economic Planning.

2.2 Goals and Objectives

Water is a key factor for socio-economic development. Efforts are therefore needed to achieve sustainable management of water resources. Target 10 of the Millennium Development Goals (MDG) aims at halving, by 2015, the proportion of people without access to an improved water source.

The overall goals and objectives of SALWACO are linked to the National Energy Policy and Strategic Plan as stated below:

- ◆ Support to improved access to Water supply and sanitation services
- ◆ To increase access to safe drinking water and basic sanitation facilities
- ◆ Improve access to Water in District Headquarter Towns
- ◆ Improve access to Water in Large Provincial Settlements
- ◆ Improve access Water in Rural Settlements
- ◆ Maintain a highly skilled and competent Workforce
- ◆ Provide a healthy working environment

The Government's overarching long term aim is to make potable safe water available to as many people as possible, targeting high population density areas. Pipe borne water supply will be preference.

SALWACO's role in attaining these goals is to:

- ◆ Provide technical/expert/professional advice to the rural water supply functions to councils.
- ◆ Undertake a review of current policy practices.
- ◆ Develop policies, strategies and plans

2.3 Process of Treatment and Distribution of Water

2.3.1 Sourcing of Raw Water

Sierra Leone is endowed with vast water resources consisting of both surface and groundwater sources which include rivers, lakes and wetlands.

Mechanically, the process of extraction of raw water is usually by means of a power generated system. With this system, water is sucked from the source using the equipment called vertical spindle; an electrically powered machine that is normally submerged into the river or stream to suck water and subsequently discharge/pump it into an impounding reservoir.

An impounding reservoir is a reservoir of concrete walls built close to the treatment plants where the raw water is temporarily preserved until used for treatment and supply.

Extraction of raw water from underground sources involves the construction of concrete reservoirs with channels around the catchment area. Water continuously drips into these reservoirs via the channels where it is treated and supplied.

2.3.2 Water Treatment

After the raw water has been brought into the impounding reservoir it is allowed to settle for at least an hour for natural sedimentation to take place. The settled water is then sent to the treatment works by gravity.

At the treatment works, treatment is done in five steps, namely coagulation, flocculation, sedimentation, filtration and disinfection.

- Coagulation which is the process of removing dirt and other particles suspended in water. At this stage sedimentation alum and other chemicals are mixed into the water to form sticky particles (flocs) which attract the dirt. The combined weight of the dirt and the alum (flocs) will eventually become heavy enough to sink to the bottom during sedimentation.
- Flocculation, a gentle mixing stage, increases the particle size from sub microscopic microflocs to visible suspended particles. Collisions of the microflocs particles cause them to bond to produce larger, visible flocs called pinflocs. Once the floc has reached its optimum size and strength, the water is ready for the sedimentation process.
- During the sedimentation process; the heavy particles (flocs) settle to the bottom after which the clear water moves to filtration.
- The filtration process involves the passing of water through filters made of layers of sand, gravel or charcoal that help remove small particles.

After filtration the water is placed in a closed tank or reservoir and chlorine is added for disinfection to take place.

After all the above processes the treated water should be tested. Water testing kits or furnished laboratories are used to test the water to ensure that the treatment process was complete and that the treated water is of potable quality in line WHO standards.

Once the tested water is found to be satisfactory it is pumped to service reservoirs for supply to the consumers by gravity.

2.3.3 Distribution of potable water

Treated water is distributed either directly from the treatment plant by means of thermal energy or indirectly when the water is pumped to overhead tanks or reservoirs from where it is later supplied by gravity. Distribution of treated water is through a

network of pipes which consists of main pipes that are connected to service reservoirs or overhead tanks, and consumer service pipes fed from the main pipes. These consumer service pipes supply water to household taps or water points/stand pipes. An alternative method of supplying treated water is through the use of water tankers. Supply of water in bulk has however been devolved to local councils whereas SALWACO remains responsible for the distribution of piped water.

The maintenance unit of each station has a staff of engineers, plumbers and technicians, and is charged with the responsibility of carrying out the periodic monthly maintenance of the network under the direct supervision of the engineer who acts as the maintenance crew supervisor. The maintenance activities undertaken by this technical unit includes the cleaning of filters, greasing of mechanical parts and washout of the tanks, air valves and reservoirs.

According to standards set by SALWACO **minor damages within the network should be repaired within two days. Major damages should be repaired within one week.** Minor repairs are done by the plumbers supervised by the engineer. Major repairs which require high skills and technical expertise are usually carried out by the engineer or network supervisor alongside plumbers and labourers.

When damages occur, the plumbers should detect them and make a report to the network supervisor who in turn makes a formal report to the station manager. The station manager will, for a minor damage, give orders and approval to the account officer to make funds available to cover the cost. If the repair cost exceeds a threshold of Le100,000 the station manager needs to make a formal request for funds from headquarters.

SALWACO should operate on a self supporting basis and is entitled to determine the water rates to be paid by the consumers accordingly. Different rates may be fixed for different areas and **SALWACO shall ensure that water to commercial concerns and such institutions as schools and hospitals is supplied using meter.** Rates charged for water supplied to industrial and commercial concerns should be higher than those charged for domestic supply, schools and hospitals

Consumers should pay their bills as and when they receive an invoice from SALWACO in line with the rates established by the Board.

2.4 The organisational set-up of SALWACO

The management of SALWACO is headed by a Director General who reports to the Board and is primarily responsible for the efficient running of the Company's programmes. The Director General is assisted by a Company Secretary, a Finance Director, a Technical Director, a Corporate Services Director, an Internal Auditor, and Regional Managers as well as a complement of qualified and experienced professional staff.

The technical wing headed by the Technical Director supervises technical staff such as water and sanitation engineers, programme coordinator, electro mechanical engineer, regional engineers and other technical staff within their respective divisions.

Headquarters staff include the procurement officer, the Water Analyst, the Environmental Specialist and the Hydro-geologist all of whom are charged with the major responsibility of ensuring network effectiveness and efficiency in the water supply process.

Each specified operational area is headed by a Station Manager who represents SALWACO in the area and is responsible for the successful implementation of all operations and administrative activities. See appendix 1 for the roles of the key players.

2.5 Funding

The Act states that the company shall develop and operate in every specified area, satisfactory water services at reasonable cost and on a self-supporting basis. This notwithstanding, SALWACO's major source of funding is the government in conjunction with donors. Table 1 below shows SALWACO's revenues and expenditures for the financial years 2008 to 2010

Table 1 Analysis of Income and Expenditure of SALAWCO
Source: SALWACO

YEAR	GOSL	COUNTER PART FUND	WATER RATES AND CHARGES	OTHER FUNDS	TOTAL	EXPENDITURE
2008	2,337,978,185	138,000,000.	197,364,170	6,000,000	2,679,342,355	1,936,999,996
2009	2,051,000,000	660,000,000	368,084,150	-	3,079,084,150	3,446,000,000
2010	5,479,189,745	-	355,239,233	-	5,834,428,978	5,384,998,745
TOTAL	9,868,167,930	798,000,000	920,687,553	6,000,000	11,592,855,483	10,767,998,741

SALWACO's total expenditures for the years 2008 to 2011 for the four specified areas under review amounted to Le 4,694,036,330. See table 2 below.

Table 2 Expenditure in four specified areas
Source SALWACO

YEAR	BO	KENEMA	MAKENI	LUNGI	TOTAL
2008	178,505,575	1,009,375	425,249,575	233,900,778	838,665,303
2009	323,065,125	74,224,825	184,375,325	111,392,350	693,057,625
2010	575,311,753	109,764,953	832,783,029	230,259,053	1,748,118,788
2011	214,121,197	181,272,347	645,704,509	373,096,587	1,414,194,640
TOTAL	1,291,003,650	366,271,500	2,088,112,438	948,648,768	4,694,036,330

2.6 Recent Developments

The Government is taking various steps aimed at improving access to Water, Sanitation and Hygiene (WASH), and maintain sustainable water supply and sanitation in both urban and rural areas. This is in line with the Government's Agenda for Change which places high priority on the development of safe and adequate water supply and sanitation services as a key instrument for fighting poverty and accelerating socio-economic development

The largest of all ongoing projects is the "Three-Towns-Project" with a total estimated cost of more than USD 61 million, equivalent to around Le260 billion. The project is funded by the African Development Bank (ADB) and the Opec Fund for International Development

(OFID). It aims to provide improved access to adequate, safe and reliable water supply and public sanitation services for Bo, Kenema and Makeni. SALWACO has a supervisory role through its Project Implementation Unit (PIU), responsible for monitoring and reporting on progress. SALWACO will also benefit from training and capacity building support to enhance its institutional, operational and management capabilities. According to plans this project will be completed in 2015.

SALWACO also supervises a number of projects funded by the Government together with various donors such as Angelic International, Exim Bank India, IDB, BADEA and the World Bank. Projects that have recently been completed or are near completion include:

- ◆ Construction and rehabilitation of hand dug wells and training of Water and Sanitation (WATSAN) Committees in ten communities along the Freetown Masiaka Highway.
- ◆ Drilling of boreholes with solar pumping systems to provide potable water in the children`s and maternity wards of the government hospitals in Bo, Portloko, Koidu, Makeni and Kabala.
- ◆ Drilling of 200 boreholes; construction of 430 hand dug wells, 100 institutional latrines; 2240 house hold latrines and training of 630 gender balance WATSAN committees as part of the power and water project for rural communities in Bo, Bombali, Kenema and Tonkolili districts.
- ◆ Rehabilitation of the existing water supply system in Mile 91, Tonkolili District and of civil structures (staff quarters, treated water tank and work shop) in Pujehun.
- ◆ Rehabilitation work on the clear water tank, the pump chamber and laboratory, the intake generator room and on trench excavations and pipes laying to improve existing potable water facilities in six communities in Kailahun District.
- ◆ Rehabilitation of existing potable water facilities in six communities in Lungi Township.
- ◆ Drilling of boreholes with solar pumping systems in 24 communities and construction of five towers along the Freetown Masiaka highway.
- ◆ Drilling five boreholes with solar pumping systems at Kossoh Village, Western Rural District.
- ◆ Work including site clearing, fencing of treatment works; rehabilitation and manufacturing of treatment works and staff quarters at Lunsar, Port Loko District.

3 FINDINGS

3.1 Kenema

Kenema station had a defunct Degremont water treatment plant at the Moa River and fourteen raw water reservoirs where water was treated. The audit team visited the defunct water treatment plant at Moa and one of the functional water treatment works. Kenema station operates a drip-feed chlorination method of treatment and supply the treated water by means of the gravity into the distribution system. The main water works in Kenema were constructed during the 1980's and most of the pipes laid in the 1960's. Even before the war the water supply situation had deteriorated and the installations needed extensive rehabilitation.

3.1.1 Failure to access water from the Moa River

Kenema has an abundant source of raw water at the Moa River. Due to technical constraints, linked to the defunct Degremont plant, the station is unable to access that water. Instead it relies on the underground raw water sources of the Kambui Hills that feed into the raw water reservoirs. Only eight of those reservoirs were functional at the time of our visit.

Water supply from this source is seasonal due to fluctuations in the water table of the Kambui Hills. Thus there was sufficient water supply during the rainy and insufficient supply during the dry season.

The capacity of the functional reservoirs at the catchment points was inadequate for storing sufficient amounts of raw water to last through the dry season. It was also observed that the dams were not covered or fenced with mesh or wires, thereby exposing the water to leaves falling from surrounding trees and human activities such as tree cutting, gold mining, walking along the dam's pavement, etc.

3.1.2 Inadequate treatment and no testing

The Kenema station is the only station in the country that uses the so called drip feed treatment method for treating the raw water. This method involves the introduction of alum into the raw water at the intake reservoirs after it has cleared and settled naturally.

The water then filters into the sub component of the reservoir where chlorine, drip fed from containers dipped in the water, disinfects it. The treated water is then pumped to an overhead service tank from where it is supplied to the consumers by gravity.

It was observed that after the Degremont plant broke down in 1983 it had never been rehabilitated, repaired or maintained. According to the network supervisor the treatment plant, if not for its dysfunctional state, would have been able to efficiently and effectively supply sufficient potable water to the entire city.

The auditors observed that the treated water was not tested before distribution to the consumers. The station did not have the required testing kits. Nor did it have a furnished laboratory to carry out water quality tests.

At the request of the auditors water samples were collected by SALWACO's lab technician and brought to Freetown for analysis at SALWACO's testing laboratory at Tower Hill. Samples were taken from two end users at different locations in the town. The analysis revealed that both samples contained E. coli (45 and 50 units respectively), as well as faecal coliforms (10 and 20 units respectively). It was not possible to verify whether the bacteria remained in the water after treatment or entered later during the distribution process.



A view of the defunct Water Treatment Plant, Kenema

3.3.1 Late repairs and poor revenue collection

Over the years, the gravity water supply system of the existing water works at the Kambui Hills has been used to supply water to places that are on relatively low lands and those close to the source of supply within the township.

The capacity of the service reservoirs for treated water at the Kenema station has been estimated to 1,583m³. According to SALWACO's technical director this is not enough to ensure a continuous distribution of potable water to consumers in situations of high demand or temporary halts in the operation of the treatment works.

Depending on the availability of requisite materials, minor repairs are normally done within two to three days. Interviews with the station manager revealed however that most times there are no available spare parts to repair major damages. This frequently causes serious delays. There was for example a major damage that occurred on the galvanised pipes at Lambayei Avenue where the pipes were reported damaged in November 2008 and repaired only in August 2010.

A review of the repair and maintenance ledger revealed that the recording system only takes cognisance of the dates that the damages were repaired and not when they occurred. The absence of records stating the date the damages occurred made it impossible for the auditors to determine the average length of time that elapsed between the time of the damage and the time taken before it was repaired.

The station manager explained that the station follows a weekly schedule for maintenance on the main supply pipes and the network system. The activities include cleaning of air valves and washout of service reservoirs for treated water.

There was no measuring of the quantity of potable water supplied to the consumers. There were no utility meters, not even for institutions and commercial concerns as stipulated in the Act, and this lack prevented SALWACO from determining the quantity of water each individual consumer utilised or wasted over a particular billing period.

The Billing Officer disclosed that billing was based on the number of water points (i.e. taps) in a household or at an institution or commercial concern. Each tap was charged at Le 15000 per month. This rate is not in line with the rates set by the Board some five years ago. Those rates were set as per consumer at Le15000 per month for domestic consumers or institutions like schools and hospitals, and at Le25000 per month for commercial concerns. According to our interviews, there was also poor revenue collection as a result of customers' unwillingness to pay their bills which in turn was blamed on the irregularity in supply.

3.2 Bo

This station operates a Degremont water treatment plant that is situated at Gelehun, seven miles from Bo city. The audit team visited this plant and the treated water service reservoir in the city. Water is treated mechanically at the treatment plant and pumped to the overhead reservoir in Bo from where it is supplied by gravity to consumers.

3.2.1 No water pumped from river Sewa

Bo station has access to an abundant and reliable source of raw water from River Sewa at the Gelehun intake point. There is a pump powered by an electric motor to pump raw water from the river into a raw water reservoir between the intake point and the treatment plant. From that reservoir water should be fed into the treatment plant for treatment. Physical inspection by the auditors revealed that the raw water reservoir was no longer in use and that raw water was to be pumped directly from the river into the treatment plant. At the time of our visit in November 2011 the electric pump had been broken for a couple of months bringing the treatment plant to a standstill.

3.2.2 Treatment plant at a standstill

The treatment plant was not operating at the time of our visit due to the broken raw water pump. Interviews with the plant manager disclosed that the plant was normally functional though not as effective as when it was established in the 1980s. He stated

that the plant was designed to treat 360m³ of raw water per hour but due to wear and tear, coupled with periodic breakdowns, the actual capacity was considerably less.

According to the plant manager the set treatment procedures with the five steps of coagulation, flocculation, sedimentation, filtration and disinfection were strictly followed when the plant was running.

The laboratory within the treatment plant was not functional because of a lack of reagents and testing kits and there was no laboratory technician stationed in Bo. According to the plant manager a technician from headquarters come with reagents from time to time to conduct water quality tests and give advice. It was not possible to determine the quality of any treated water at the time of the audit since the plant was not in operation.

3.2.3 Main pipe broken

Interviews with the station manager revealed that the station had one reservoir for treated water with a capacity of about 130m³. He stated that to meet the water need of the growing population, more reservoirs with similar capacity would be required.

The station manager disclosed there were no scheduled times for maintenance of the systems. Maintenance was done as and when necessary, usually every three to six months. He also stated that preventive maintenance activities such as changing of filters, engine oil and batteries were carried out when the need arise.

According to the maintenance supervisor minor repairs were usually addressed within two days. The station manager stated that major repairs which depended on the availability of materials, sufficient labour strength, mobility and communication often were delayed. It was observed at our visit in November 2011 that one of the main pipes had been broken for months.

The station had no functioning water tanker of its own. Interviews revealed that there

is a memorandum of understanding between the Bo city council and SALWACO for the use of the Council's water tanker on a cost recovering basis. The cost of 1500 liters of potable water supplied by the tanker was Le 60,000.

Interviews with the Billing Clerk revealed that there were no utility meters in Bo. Water rates did not conform to the rates established by the Board. They were set so that the first water point, usually a stand pipe, was charged at Le 15,000. Supplies to overhead tanks were charged based on the capacity of the tank. All other water points, including wash hand basins, showers, etc were charged at Le 10,000 each per month.

3.3 Makeni

This station operates a Degremont water treatment plant that was rehabilitated in March 2011 after having been vandalised during the war. The treatment works, the raw water reservoir and reservoirs for treated water are situated at the foot of the Wusum hills close to the city. Treatment activities are done mechanically and the treated water is pumped to the overhead steel and concrete reservoirs from where it is supplied by gravity.

3.3.1 Abundant access to water, but broken generator

This station had access to abundant raw water for treatment. Raw water was sourced from the Mabile River at Konsho intake point which is five miles away from the town. The station manager stated that during the rainy season raw water was harvested from the catchment area into the raw water reservoir and during the dry season it was pumped from the river into the same reservoir from where it was pumped to the treatment plant. The station had two generators for the raw water pump that was needed for pumping water from the river during the dry season. One had been completely broken for a long time. We were not able to verify the condition of the other generator since it was not being operated at the time of our visit. See comments from SALWACO in appendix 3.

The station manager disclosed that the raw water reservoir had a capacity of about 6800m³ which was sufficient for running the treatment plant without risking any shortages of water.

3.3.2 Treated water of good quality

Apparently, the treatment plant at this station was vandalised and made dysfunctional during the rebel war. Physical inspection confirmed that the rehabilitation works on the treatment plant and on the Braithwaite overhead service tank were completed in March 2011. Since then the plant had functioned well.

Physical observations and interviews with the former regional engineer revealed that water treatment processes and procedures were strictly followed as set out in standard water treatment procedures.

The station manager revealed that the station has a functioning laboratory with water testing kits and other reagents which were used to test for water PH and chemicals composition of the treated water before supply.

Water quality tests carried out in Freetown, by SALWACO's lab technician, in November 2011 on collected samples of raw and treated water (before distribution to the consumers) showed no indications of E. coli or faecal coliforms. The test values were in conformity with the WHO recommended permissible limits for treated water.

3.3.3 Repairs on pipes normally carried out promptly

Interviews with the station manager disclosed that there were two reservoirs for treated water with capacities of 400m³ and 1600m³ respectively. He further stated that due to the increase in the population, there was need for an additional reservoir with a capacity of 1400m³.



Rehabilitated treatment plant - Make

The station manager stated that minor repairs were done within a day. Major repairs, depending on the nature and timely availability of materials, could take a week. If there were no lacks or delays in accessing materials, major repairs would be done in two days. The maintenance officer disclosed that prior to June 2010, minor repairs lasted for a week and major repairs lasted for a month.

According to the station manager, routine maintenance of the treatment plant and raw water intake generator should be carried out every three months. Also, routine maintenance of the air valves in the form of greasing, cleaning and fixing up should be done every six months.

The station did not have a water tanker; but it collaborated with the city council for the use of the council's tanker to supply water in bulk to consumers who paid the service charges direct to the council.

The auditors noted that there were no consumer utility meters in Makeni. The station manager revealed that billing was based on the number of water points a consumer has in a household. We observed that rates set by the Board were not implemented in Makeni. The first water point (stand pipe) was charged at Le.15,000 and all other points at a rate of Le 10,000 each plus a general service fee of Le 5,000 monthly.

3.4 Lungi

This station has two sub-stations at different locations and with different treatment facilities. The sub-stations are located at Sanda and Banda. Sanda has a Degremont treatment plant and at Banda raw water is treated in reservoirs. After treatment the water is pumped into overhead service reservoirs from where it is distributed by gravity.

3.4.1 Sourcing problems during the dry season

At the Banda sub-station raw spring water was collected into the concrete treatment reservoir through a system of underground channels in the catchment area. Water continuously dripped into this reservoir via the channels. The capacity of the reservoir

was about 364m³. According to interviews there was an abundant flow of raw water during the rainy season. During the dry season, when the water table falls, it was necessary to wait for a minimum of two days before the reservoir was full enough for the treatment process to commence.

Raw water for the Sanda sub-station was pumped from the Sanda stream and from drilled wells in the nearby swamps. According to the pump attendant this substation has access to abundant raw water during the rainy season. Shortages did however occur during the dry season. Water was pumped directly into the treatment plant and there was no reservoir for storing raw water before treatment.

3.4.2 Acceptable treatment in spite of old equipment

Due to the fact that the raw water at the Banda sub-station was from a spring source, it did not undergo a sophisticated treatment process. Once the raw water had settled in the reservoir (clear water tank), alum and lime were added to treat the water. After filtration and chlorination the treatment was complete and the water pumped to steel overhead tanks for distribution by gravity to the consumers. Interviews with the pump attendant revealed that this substation was vanda-lized during the rebel war and rehabilitated after it was taken over by SALWACO in 2001.

The Sanda substation operated a Degremont treatment plant. Treated water was pumped to an overhead concrete service reservoir from where it was distributed by gravity. Physical observations revealed that the treatment plant is very old with most of the parts not in a good condition. According to information during interviews, the set treatment procedures were carefully and strictly followed at both substations.

There was no equipped laboratory and water testing kits. The pump attendant at Sanda stated that the existing laboratory was destroyed during the rebel war and has been defunct since then.

At the auditors' request two water samples were taken and brought to Freetown for analysis by SALWACO's lab technician. The tests showed that there were E. coli and

faecal coliforms present in the raw water. These bacteria had however been removed during treatment and when the treated water was pumped into the overhead tanks it met all the standards set by WHO.

3.4.3 Lack of material for repairs and low water rates

The capacities of the two reservoirs for treated water are 654m³ for the steel over head tank at the Banda sub-station and 590m³ for the concrete reservoir at the Sanda sub-station. The station manager stated that more reservoirs with similar capacities were required to meet the increasing demands of the growing population.

According to the station manager minor repairs would be carried out within a maximum of two working days and major repairs within two weeks, provided the necessary materials were available. He pointed out that the major causes of the delays in repairs are the procurement process at head quarters, untimely availability of funds to procure materials for minor repairs and the unavailability of certain major repair materials.

The station manager disclosed that the maintenance crew normally carried out routine maintenance on the treatment plants every three months. These maintenance works involve changing the engine oil, filters and greasing of the fittings and equipments. The senior plumber informed the team that maintenance work on the network is done every six months.

According to the accounts assistant the station had a water tanker that was used as a complementary means for supplying treated water to residents at a reasonable cost. He also stated that individual consumers rarely made use of the tanker service because few of them possess home reservoirs where they can store the water.

The station operated only one utility meter that had been installed at the Sierra Leone Airport Authority (SLAA).

The Account and Administrative Assistant revealed that billing was based on household water points and that the rate charged for the first water point was Le 15,000 and any

other water points are charged at Le 5,000. Thus the water rates in Lungi are lower than the rates charged in the other specified areas and different from the rates set by the Board.

4 CONCLUSIONS

4.1 Inadequate resources to extract Raw Water

Despite the abundant water resources which include both surface and underground water sources, access to raw water has frequently been problematic. During the dry season, the lack of sufficiently large raw water reservoirs makes all stations dependent on pumps. Either for pumping raw water directly into the treatment works or into a reservoir that supplies raw water to the treatment process. Some stations, Bo and the Sanda sub-station, depend entirely on pumped raw water throughout the year since they do not have functioning raw water reservoirs. The only pump that seemed to function well at the time of our audit was the one in Sanda where they still faced some problems since the water flow in the Sanda stream is insufficient during part of the dry season.

As a consequence of these problems the treatment process has frequently come to a standstill. In some cases, notably in Bo, treatment has been stopped for several months and no water was distributed to the customers.

The capacity of the reservoirs is too low to cater for the number of consumers in the specified areas. This problem is likely to become even more serious with the predicted increase in population and the increased demand for water.

4.2 Too little testing of treated water

The tests carried out for the auditors on samples from Lungi and Makeni indicated that the water met WHO standards, but the water from the taps in Kenema was not potable. Since no test could be conducted on samples of water for Bo due to the fact that the treatment plant had broken down, it is impossible to determine if the treatment process had failed or if bacteria entered into the distribution pipes.

Except for Makeni station, the other three stations do not have equipped laboratories and

water testing kits. This makes regular testing of water at the end of the treatment process impossible. Therefore, it cannot be ascertained whether the treatment process at Kenema and Bo stations has been successful and the water suitable for human consumption.

The presence of E. coli or faecal coliforms in drinking water is of immediate concern as many water borne diseases can be spread through faecal transmission. The presence of these bacteria is a strong indication of recent sewage or animal waste contamination. Drinking contaminated water can lead to infections that may cause severe bloody diarrhoea, abdominal cramps or other water born diseases.

4.3 Poorly maintained distribution network

SALWACO has not been efficient and effective in scheduling adequate maintenance and attending to issues of repairs of damaged pipes. This has impacted negatively on the supply of water through excess water wastage. This has not only deprived many customers of water, but also led to a loss of revenue.

A poorly maintained distribution system can also act as a vehicle of transmission for germs and water born diseases.

The delay in repairs and maintenance can mainly be attributed to delays in the process of acquiring the necessary materials through requests to the head office in Freetown.

4.4 Rate fixing and billing not in line with the Act

According to the act SALWACO should operate "on a self supporting basis". The rates should be fixed accordingly and if necessary "the Company may fix different rates for different areas". In spite of this obligation SALWACO has never recovered the costs of its operations. For the period 2007 to 2010 water rates and charges covered less than 10% of total expenditure (see table 1).

The rates set by the first SALWACO Board some five years ago at Le15000 per month for domestic consumers or institutions like schools and hospitals, and at Le25000 per month

for commercial concerns, have not been implemented by any of the stations.

The stations charge per ***tap*** whereas the Board set the rates per ***consumer***. Although the rates set by the stations probably work out as higher than those set by the Board, since some consumers have more than one tap, they have obviously not been high enough to secure cost coverage.

The act further requires that domestic consumers, schools and hospitals should pay lower rates than industrial and commercial concerns. The Board correctly made a distinction between different customers, but this policy has not been reflected in the rates fixed by the stations where the same rates apply to everyone.

In spite of what is stipulated in the act SALWACO has installed only one utility meter in the entire country. The absence of utility meters can lead to over or under billing of customers. There is no way to measure how much water a particular commercial consumer uses over a billing period.

Some consumers may waste water knowing that they will not have to meet any extra charge. This would not only lower the amount of revenue collected, but could also deprive other consumers who are at the extreme end of the network.

The failure to implement the act and provide clear guidelines to the stations is a reflection of weaknesses in SALWACO's management structures. The first Board had its inaugural meeting in December 2006, more than five years after SALWACO's inception.

The second Board served from 2008 to 2010. Its focus appeared to be more on managerial and operational issues than on policies and guidelines. This provoked frequent tensions between the Board and the management. Since 2001 SALWACO has had five different managing directors. These problems have undermined policy implementation and effective management of the Company.

5 RECOMMENDATIONS

5.1 Put permanent management structures in place

A new Board in line with the criteria laid down in the Act should be appointed and key management positions filled. SALWACO will not be able to succeed in its key role in the supervision of the three-towns-project unless its own management problems are addressed. It is also essential for SALWACO's future role and development that the company is in a position to reap the maximum benefits from the capacity building support that is an integral part of the project.

5.2 Secure continuous access to raw water

In order to ensure a sufficient intake of raw water to allow the treatment process to go on without unnecessary stoppages, SALWACO should make sure that existing equipment are in a good working condition. The prospects for increasing the capacity of raw water reservoirs at the respective stations should be examined.

SALWACO should ensure that all raw and treated water reservoirs should be protected from human and environmental activities which have the tendency to pollute the water contained in these reservoirs. Raw water reservoirs should be fenced with wire meshes and covered as to prevent leaves and other pollutants from entering the water

5.3 Test treated water before and after distribution

SALWACO should ensure that their stations maintain equipped and functioning laboratories or water testing kits with all required reagents and technicians able to carry out water quality tests.

Water should be tested frequently to assess the quality before treatment, after treatment and finally as it comes out of the tap. Action should be taken whenever the results indicate that the water is not potable.

5.4 Improve maintenance and repair

SALWACO should conduct regular maintenance of the treatment works, the distribution networks and the reservoirs, so as to prevent breakdowns and damage caused by poor maintenance and care.

SALWACO should ensure that repairs are carried out within the shortest possible time to avoid water wastage and the leaking in of surface water through the broken pipes. This can be achieved by procuring and storing the requisite materials in advance so that they are available whenever needed.

5.5 Review water rates

SALWACO should review their rates with a view to covering their costs and providing water services at a self-supporting basis in the long run. The rates charged for water supplied to industrial and commercial concerns should be higher than that for other consumers.

5.6 Install utility meters

SALWACO should implement the water utility meter system in accordance with the Act to ensure that all commercial concerns and such institutions as schools and hospitals have meters that can determine the exact quantity of potable water used over the billing period. The option to introduce meters also for domestic consumers should be considered.

APPENDICES

Appendix 1 The roles of key players

Technical director

- ◆ Provides positive and professional leadership to staff in the Technical Department; ensuring that the department is well managed to support the activities of SALWACO
- ◆ Contributes to the management of SALWACO, as a member of the senior management team
- ◆ Contributes to the development of SALWACO`s policies and strategies and be the key player for those directly related to his or her department
- ◆ Assigns appropriate responsibility for specific activity within the technical department whilst retaining overall accountability for the department
- ◆ Provides advice and support to SALWACO on matters relating to any issue within the remit of the technical department
- ◆ Recruits, manages, trains and motivates direct reporting staff according to company procedures, policy and employment law
- ◆ Provide weekly, monthly, quarterly, half yearly and annual plans and reports on the Departments activities to the Director General by the required deadline
- ◆ Undertakes such duties, in addition to the principal duties listed as may be delegated by the Director General
- ◆ Provide support to Local Councils and other agencies as the need may arise.

Procurement Officer

- ◆ Handles the purchases of items
- ◆ All bidding processes from advertisement to award of contracts
- ◆ Plays vital role in the identification and evaluation of contractors and suppliers

Water & Sanitation Engineer

- ◆ Is the key technical person responsible for project proposals?
- ◆ Preparation of Bill of Quantities (BOQ) and other bidding documents
- ◆ Supervises and monitors the construction of water and sanitation facilities

Environmental Specialist

- ◆ Regular environmental assessment of the various stations
- ◆ Monitor of activities around the raw water intakes in operational area

Station Manager

- ◆ Overall operational activities or affairs of the station and he is the head
- ◆ All matters concerning the station are directed to him/her except otherwise
- ◆ All matters including plan of activities, budget, staff salary etc. are forwarded to head office by him

Station Engineer

- ◆ Works closely with supervisors and other technical heads and at the same time liaises with station manager and Technical Director
- ◆ He/she is the direct technical representative of the Technical Director in the station
- ◆ Critical technical issues are pondered over or solved by his/her leadership of a team of supervisors and other key technical staff

Plant Manager

- ◆ He/she ensures that the raw water and treatment plants are ready for reliable service
- ◆ All mechanism and staff providing service to the raw and treated water plants are under his/her supervision

Plumbers Plant Manager

- ◆ He/she ensures that the reticulation is serving its purpose
- ◆ He/she amend leakages or faults on service pipes and also other water supply apparatus where necessary
- ◆ He/she liaises between consumer and office

- ◆ Takes part in monthly distribution of bills to consumers and reads meters
- ◆ Takes record of flows and is capable of using GPS
- ◆ Reports about level of water and activities at or around intakes, condition of reticulation, request for new connection from the field, are all forwarded by him/her to the Supervisor in charge.

Operators

- ◆ Develop a system of monitoring the operations of the water supply and sanitation schemes;
- ◆ Ensure that the water supply system and sanitation are in proper working order at all times;
- ◆ Ensure that there is fuel available for running the stations so that water is available to consumers on a daily basis,
- ◆ Ensure that breakdowns that prevent the supply of water to consumers are addressed immediately,
- ◆ Ensure that enough revenue is collected from the operations of the scheme through the sale of water
- ◆ Takes care of entire plant including operations of water treatment
- ◆ Responsible for the entire treatment process and subsequent supply of the treated water to the consumers

Billing Clerks

- ◆ Bill consumers on a monthly basis and prepare bills every month.
- ◆ Prepares compile disconnection list.
- ◆ Address report on damages and water wastage in the absence of the supervisor.
- ◆ Assist consumers with connection to the network.

Lab Technicians

- ◆ Conduct tests on raw water before treatment
- ◆ Ensure that the water that is treated is of potable quality by conducting a water quality test on the treated water.
- ◆ Maintain an environmentally hygienic condition around the treatment plant.

Water Analyst

- ◆ To be responsible to the Principal Engineer (Water Resources)
- ◆ To carry out water analysis throughout the country
- ◆ To supervise and train junior staff
- ◆ To set up test laboratories
- ◆ To prepare records of analysis
- ◆ To perform any other duties that may be assigned by a Senior Officer

Appendix 2 Position and number of people interviewed

SALWACO (HQ): Technical Director/ag Director General (1)
Finance Director (1)
Procurement Officer (1)
Water & Sanitation Engineer (1)
Environmental Specialist (1)

SALWACO (operational areas): Station Managers (4)
Billing Officers (5)
Plant Manager (1)
Pump Attendants (2)
Plumbers (7)
Finance officers (4)
Council Chairman (1)
Consumers (3)
Medical Doctor (1)
Maintenance
Supervisors (2)
Administrative officers (4)
Staff Devolved to Council (2)
Water and Sanitation Coordinator- Ministry of Health
(1)
Programme Administrator-Red Cross Regional office
(1)

Appendix 3 SALWACO's response

OVERVIEW

The Management of the Sierra Leone Water company has reviewed the Performance Audit Report dated 2nd May 2012. The Company wishes to thank and appreciate the extensive work in compiling such a fact revealing report. The Management and staff of SALWACO note the challenges of providing safe and potable water in its areas of operations highlighted in the report. As a responsible Management that feels the plight of its customers, the Company will do everything possible in its capacity to address the current situation of water supply in its operational areas of Bo, Kenema, Makeni and Lungi in the shortest possible time.

Irrespective of the known challenges in providing water supply in water supply in our locations, the Company have provided responses to key findings in the report.

BO FINDING

Finding 3.2.1

1. The repair and maintenance policy of the company cannot allow an electrical pump to be broken down for a month. However, the absence of spare parts in the country does limit the timeliness of repairs and maintenance.
2. As stated earlier, new laboratories have been built, with complete kits and trained staff.
- 3.

Findings 3.2.3

1. The main pipe that was broken needed to be ordered and this takes at least three to four weeks. However, Management is trying to procure and store a large quantity of assorted pipes and fittings to meet eventual breakdown.
2. The inconstancy in the billing system is currently been handled by management and the Three Towns Water Supply and Sanitation Project will sponsor a tariff study which is expected to be completed by December, 2012.

KENEMA FINDING 3.1

1. Funds are now available for from the ADB, OFID and GoSL for a complete rehabilitation of the system. Procurement activities are almost completed for securing contractors to carry out the work.
2. Contrary to the report findings, the Kenema station have 4 reservoirs, twelve water catchment areas of which eight are functional.

Finding 3.1.2

1. The Degremont plant was vandalized during the Rebel War. As stated in 3.1 above, rehabilitation work will start by December, 2012 to get the station functional once again. The station currently has engineers and other technical staff to operate it once it is rehabilitated.
2. In paragraph 3 of 3.1.1 the technical labeling of functional reservoirs was mislead, since the Water catchment area are spring sources, weirs are constructed not to serve as reservoirs, but to collect and direct water in the storage four existing reservoirs for onward transmission into the network.
3. At the moment, a security firm is being hired to protect all catchment areas of the company.

Technically Water Dam should not be covered, since UV treatment is expected from sunlight.

As the system is gravity based, the issue of pumping does not exist.

Finding 3.1.2

1. While the audit report was been complied, UNICEF, constructed Technical Laboratories in all of our operational areas.
2. Since the Water Sample was collected by auditor who does not have the technical competence to do so, SALWACO cannot rely on this finding hence, Management will institute an investigation on this matter.

Finding 3.1.3

1. As the whole situation is about being rehabilitated, major repairs cannot be carried out. Some of the spare parts are not available in the country and ordering them takes time.

2. Repairs and maintenance staff are field works, and cannot be readily available in the office of a visit or call.
3. There is a Water tanker in Kenema, that is controlled by the Kenema city council but can be used by SALWACO from time to time. However Tankers are being procured under the Three Town Water Supply and Sanitation Project for the Three Cities of Bo, Kenema and Makeni.
4. Once the Stations are rehabilitated, all connection to consumers will be metered and street stand post will be on a water Kiosk System.
5. The inconsistency in the billing system is currently be handled by the SALWACO Management and the Three Town Water and Sanitation Project will sponsor a tariff study which is expected to complete by December, 2012. When this is done the recommendations commendation will be forwarded to the Ministry of Energy and Water Resources and Parliament for the implementation of a sustainable tariff structure.

MAKENI FINDING

Finding 3.3.1

There are two generators at Konsho intake, one of which is grounded, and the other is fully operational and providing continuous water supply to Makeni City. It is probable that the auditors were referring to the grounded generator. The generator that is grounded is as a result of expensive damage that was cause by lightning and thunder that could not be reasonable to repair and hence a new generator was donated by the H.E the President.

Finding 3.3.3

The inconsistency in the billing system is currently been handled by Management and the Three Towns Water Supply and Sanitation Project will sponsor a tariff study that is expected to be completed by December 2012

LUNGI FINDINGS

3.4.1

1. The System was not design for storage of the raw water since the sources are spring

with clear water that is transmitted into the treatment plant by gravity.

2. The entire Lungi Station is being rehabilitated with funds from the EXIM Bank; the work will be completed by December 2012. This rehabilitation will solve the inadequate water supply problem in Lungi Town.
3. As stated in other responses for Bo and Kenema, the Construction of Laboratory in Lungi will soon start

3.4.3

1. Management have decided to procure large quantity of assorted spare parts and store them to respond to breakdown promptly.
2. The Low water rate will be handled by the tariff study that is expected to be completed by December, 2012.

COMMENTS ON CONCLUSION

4.1 INADEQUATE RESOURCES TO EXTRACT RAW WATER

Once the rehabilitation of the four stations, Bo, Kenema, Makeni and Lungi is complete, the company will be in a capacity to extract adequate raw water to meet the demand of the consumers in these towns

4.2 TOO LITTLE TESTING OF LOCATED WATER

The new constructed and equipped laboratories have settled the problem of testing and the existence of water borne diseases will be substantially reduced.

4.3 POORLY MAINTAINED DISTRIBUTED NETWORK

The newly rehabilitation system will require little maintenance. Management have also decided to procure and large quantity of maintenance materials to respond to break down on a timely manner.

When the ratio of expected technical staff to available staff is compared it is not possible for more than half of the required staff to be absent from the stations.

4.4 RATE FIXING AND BILLING NOT IN LINE WITH THE ACT

Though the provincial areas in which SALWACO operate view water as a social commodity. Management has in recent years developed policies and programs to run the company sustainably. A customer Survey was carried out in 2010 to establish the total number of customers that are using the system and estimate what could be a profitable Water Supply capacity. However, the dilapidated nature of the entire system caused by the ten years rebel war makes water supply in our operation area to inconsistent and unreliable. This to great extent had militated on customer's confidence on our services and hence a strong impact on revenue mobilization.

Once the tariff study is completed in December 2012 and parliament approves the tariffs, the inconsistency in the billing system will be eliminated. When the rehabilitations water is completed, station consumers will be billed on a metered system, also street stand post will be operate using the metered water kiosk system.

The current SALWACO Management operates strictly with provision of the act except for areas were findings may limit decisions of management.

The Ministry of Energy and Water Resources is currently reviewing the role of SALWACO in which SALWACO will take responsibility to provide potable water in the provinces. When the review process is completed, and a new Act is enacted, the Ministry of Energy and Water Resources will take the necessary steps to have a fully constituted Board.

The organogram presented does not represent the current organizational structure of SALWACO.

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