

## **5 EXISTING WASTE WATER DISPOSAL & SANITATION CONDITIONS**

### **5.4 SEWERAGE SYSTEM**

There is no waterborne sewerage system in the town.

### **5.5 SEWERAGE SYSTEM (O&M)**

Not applicable.

### **5.6 SEWAGE TREATMENT WORKS (O&M)**

Not applicable.

### **5.7 OTHER DISPOSAL FACILITIES**

Waste disposal is by means of septic tanks, cess pits and/or pit latrines and is the responsibility of Wundanyi Town Council. The on-site disposal system does work well in Wundanyi as the soils have good percolation capacity and the population densities are medium to low.

The practice of on-site disposal should be encouraged and continued as the alternative of a waterborne system in the hilly terrain of Wundanyi will be very expensive to construct and maintain.

The Council does not have a vacuum tanker for emptying septic tanks and hires one from the Ministry of Public Works when needed.

### **5.8 ON-GOING OR PLANNED EL NINO WORKS**

No improvements are being carried out under the ongoing El Niño project.

### **5.9 OTHER WORKS AND PROJECTS**

A feasibility study of a sewerage system for the town has been prepared by an NGO, however details are not available at present.

### **5.10 SUMMARY OF SHORTCOMINGS AND PRELIMINARY RECOMMENDATIONS FOR REHABILITATION**

Construction of a waterborne sewerage is outside the scope of this study and will be an expensive undertaking, given the local hilly terrain and that appropriate collection and treatment techniques will be used.

The existing on-site disposal systems are functioning well and should be continued. Therefore, no rehabilitation of sewerage is proposed.

## **6 PROPOSED STRATEGY FOR WASTEWATER DISPOSAL AND SANITATION REHABILITATION**

### **6.1 AND FOR SANITATION SERVICES**

Current waste disposal methods in Wundanyi are on-site by means of septic tanks, cess pits and pit latrines and they work well. Until population densities and plot sub-divisions reach such critical levels, the current on-plot sanitation facilities are deemed to suffice with plot owners being encouraged to design and construct VIP type pit latrines to approved standards.

Salient features that make use of on plot sanitation facilities sustainable in Wundanyi are:

- The soil has good to moderate permeability.
- The annual rainfall is low and the evaporation rates are high.
- Plot sizes are large enough to accommodate percolation facilities.
- The population densities are low.

If and when water supply facilities are improved there will be a corresponding increase in the amount of sewerage and wastewater, which if untreated will become a health hazard.

A waterborne sewerage system for the town would be extremely expensive to construct. Consideration should be given to the installation of a community based small bore sewerage system.

### **6.2 DEMAND FOR WASTEWATER DISPOSAL SERVICES**

There is no waterborne sewerage in the town and no justification for one to be constructed in the immediate future as stated in Section 6.1.

### **6.3 CONFIRMATION OF REHABILITATION OPTIONS**

Construction of a waterborne sewerage system is not necessary and is outside the scope of this study.

### **6.4 PRELIMINARY DESIGN OF RECOMMENDED OPTION**

This is not applicable as rehabilitation or new sewerage works are not proposed under this study.

## **6.5 COSTING OF RECOMMENDED REHABILITATION PLAN**

This is not applicable as rehabilitation or new sewerage works are not proposed under this study.

## **7.0 LAWS AND REGULATIONS OF ENVIRONMENTAL IMPACT ASSESSMENT**

### **7.1 GENERAL**

The current Government of Kenya policy requirement stipulates that before any major development project is undertaken in the public or private sector, there is need to carry out Environmental Impact Assessment (EIA) on the project in order to ensure that each component conforms to good environmental management. This study involves mainly the identification of laws and regulations that govern the environmental impact assessment of water supply and sanitation projects.

### **7.2 LEGISLATION/REGULATIONS GOVERNING ENVIRONMENTAL IMPACT ASSESSMENT**

#### **7.2.1 General**

A large number of Acts and organizations deal with issues of pollution, environmental degradation and conservation. These include among others:

- Constitution of Kenya (especially Section 71)
- Water Act (Cap 372)
- Agriculture Act (Cap 318)
- Irrigation Act (Cap 347)
- Forests Act (Cap 385)
- Lakes and Rivers Act (Cap 409)
- Maritime Zone Act (Cap 371)
- River Basin Development Authorities Act (e.g. Cap 443)
- Land Tenure and Land Use Legislation
- Wildlife (Conservation and Management) Act (1976 and 1989 Amendment)
- Public Health Act (Cap 242)
- Local Government Act (Cap 265)
- Environmental Management and Co-ordination Act (1999)

Effectiveness in enforcement has not been commensurate with the many acts and regulations; in some instances there have been contradictions when an institution has evoked its act at the expense of proper operation of facilities belonging to another institution. The reason for the foregoing situation is that each sector utilizing water, apart from the water authority, has different objectives; their primary focus is not water development. The need to harmonize the application of the various Acts and Regulations, for effective protection of the environment, has been felt and expressed for a long time; hence the birth of the Environmental Management and Co-ordination Act of 1999.

### **7.2.2 Environmental Management and Co-ordination Act (1999)**

The most significant Act that specifically addresses environmental impact is the newly enacted Environmental Management and Co-ordination Act, 1999. Among the specific issues related to EIA procedures are stipulated in the Act as follows:

- Establishment of Environmental Management Authority (NEMA) to administer the Act.
- Submission of an EIA Report to NEMA by developers before undertaking any new project specified in the Act.
- Issue of an Environmental Impact License by NEMA if it is satisfied with the EIA Report.
- Environmental Impact Assessment to be conducted in accordance with the EIA guidelines and procedures provided in the 4<sup>th</sup> schedule of the Act.

### **7.2.3 Laws Relating Specifically to Water Supply and Sanitation**

Within the Environmental Management and coordination Act, a number of sections dealing specifically with water and sanitation can be identified as follows:

- Part V Section 42 dealing with protection of rivers, lakes and wetlands,
- Part VIII Section 72 dealing with water pollution prohibition,
- Part VIII Section 74 dealing with effluents to be discharged into the sewerage system,
- Part VIII Section 86 dealing with standards for waste,
- Part VIII Section 87 dealing with prohibition against dangerous handling and disposal of wastes,
- Part VIII Sections 88 and 89 dealing with waste licenses and licensing of waste disposal sites,
- Part VIII Sections 91 – 93 dealing with hazardous wastes and their disposal,
- Part XIII dealing with environmental offences and related penalties.

In order to minimize the conflicts in enforcement (due to the many different Acts and Regulations) as mentioned before, the Environmental Management and Coordination Act stipulates that where the provisions of any existing law conflicts with the provisions of this Act, then the provisions of this Act shall prevail. The foregoing proviso, in conjunction with the multi-disciplinary or composition of the Environmental Committees will hopefully enhance the effectiveness of administration and enforcement of the Act.

#### **7.2.4 Environmental Impact Assessment (Guidelines and Administrative Procedures)**

The format of the EIA Report has been set out in the guidelines and should include the following sections:

- Introduction
- Title of the Project
- Project Initiator
- Statement of Need
- Project Description
- Project Options
- Description of Existing Environment
- Results of Preliminary Assessment
- Detailed Examination of Impacts
- Suggested Mitigation and Abatement measures
- Residual Impacts
- Project Evaluation
- Summary Conclusions

In addition, the EIA guidelines and procedures describe procedures to be used in environmental planning and management in Kenya. It also gives a checklist of sectors, which can provide guidance to the public and private sector agencies involved in initiating development projects.

#### **7.2.5 Objectives of Environmental Impact Assessment**

The objectives of Environmental Impact Assessment Study for this project are identified as follows:

- To identify the existing environmental concerns which need to be taken into account in the proposals for rehabilitation of water supply and sanitation system.
- To evaluate the environmental impacts of the proposed rehabilitation works.
- To propose the counter measures to mitigate the impacts.
- To make recommendations for environmental conservation.

## **7.3 INITIAL ENVIRONMENTAL EXAMINATION**

### **7.3.1 Water Quality of Existing Supplies**

The programme for monitoring water quality both at source and within the distribution systems is in place at Wundanyi town, however, implementation is generally poor because of lack of appropriate and adequate laboratory equipment and reagents. There was no information on raw water quality. The quality analysis results available for the treated water (pH, coliform count and residual chlorine) indicated that inadequate treatment (see Section 2.4).

Both the spring and surface sources in Wundanyi town are open to pollution because of agricultural activities upstream of the intakes the raw water requires full chemical treatment.

### **7.3.2 Existing Sanitation Situation**

Wundanyi town depends on on-site sanitation systems comprising mainly pit latrines, cess-pits and septic tanks. The on-site systems generally provide inadequate service especially in public places like markets, institutions and bus parks.

### **7.3.3 Screening and Scoping for Environmental Impact Assessment**

Many guidelines have been used in Kenya for EIA but especially those of the World Bank. Often, the sponsor of a development has stipulated the standards to be met, because in the past Kenya did not have specific guidelines. However, as mentioned before, the Environmental Management and Coordination Act (1999) has set out the guidelines for EIA in its 4<sup>th</sup> Schedule. The guidelines propose the checklist method for screening and scoping for EIA.

The general environmental concerns and a checklist for Wundanyi town have been provided in the sections that follow. Whereas the full EIA will be undertaken at the feasibility stage it is envisaged that almost all the project components will be of such small scale that their impacts will not be serious. Impacts arising from construction activities will mainly affect the human environment but can be minimized by proper construction methods.

## **7.4 ENVIRONMENTAL CONCERNS IN WUNDANYI TOWN**

1. Solid waste disposal is inadequate. The council lacks the personnel and equipment for proper waste management. Collection of waste is irregular and whatever is collected is dumped without proper control.
2. Wastewater emanating from business premises is discharged into open storm drains causing nuisance.

3. The town depends on on-site sanitation systems but the council does not provide an exhauster for emptying septic tanks, cesspits and pit latrines. The exhauster service is obtained from the Ministry of Roads and Public Works at high costs.
4. Since there is no sewerage system in the town, there is no proper place to dispose of exhauster effluents.
5. Although the literacy level is quite high (78%) and people are fairly well sensitized on sanitation matters, latrine coverage is still not yet 100% in the town (latrine coverage in 1999 was 94%).
6. Only 46% of the population has access to potable water, through the MENR water supply. The balance of population depends on surface streams and springs. This causes health concerns because of risks of water pollution from on-site sanitation systems. The springs therefore need protection.
7. Inadequate water supply is probably contributing to the high incidence of diarrhoea and worm infections observed from morbidity records.

## 7.5 RESULTS OF INITIAL ENVIRONMENTAL EXAMINATION

Water Supply for Wundanyi town is derived from two main surface sources: Wesu intake (spring) and Wundanyi town intake (river). The latter source has potential for pollution since the stream passes through the town. Both sources go through full treatment before distribution. The spring source has been diminishing because of abstractions upstream by other community water supplies.

Sanitation in the town is mainly based on pit latrines, cess-pits and septic tanks. This is a cause for concern because over 50% of the population still depends on springs and the small streams passing through the town for water supply. The town depends on the exhauster service from Ministry of Roads and Public Works, which is expensive. Tables 7.1 and 7.2 summarize the results of the initial environmental examination.

**Table 7.1 IEE Checklist - Water Supply Component**

ITEM	EVALUATION	COMMENT
1. Human Settlement	3	Not immediately clear until surveyed at design stage
2. Economic Activities	5	Positive impact expected
3. Transport	4	No impact expected



4. Water and Common Rights	3	Increased intake from source may affect other peoples rights
5. Sanitation	5	Sanitation will be improved by increased water supply
6. Waste	4	No impact expected
7. Hazards / Dangers	4	No impact expected
8. Topography and Geology	5	No impact expected
9. Soil Erosion	3	Not clear considering the steep slopes in the town
10. Groundwater	5	No impact expected
11. River and Wetlands	4	No impact expected
12. Coastline and Sea	5	No such sites exist in project area
13. Flora and Fauna	4	No impact expected
14. Weather	5	No impact expected
15. View	5	No impact expected
16. Air Pollution	5	No impact expected
17. Water Pollution	4	No impact expected
18. Soil Contamination	5	No impact expected
19. Noise and Vibration	4	No impact expected
20. Ground Subsidence	3	Not clear considering steep slopes in the town
21. Noxious Odours	5	No impact expected
22. Cultural and Archeological Assets	5	No such assets are in the project area
23. Conflict with community Aspirations	5	No impact expected

**KEY:**

1. Serious impact expected
2. Minor impact expected
3. Uncertain (investigation needed to clarify)
4. Almost no impact expected if proper construction procedure are used
5. Almost no impact expected (no need for EIA)

**Table 7.2 IEE Checklist - Sanitation Component**

<b>ITEM</b>	<b>EVALUATION</b>	<b>COMMENT</b>
1. Human Settlement	5	No negative impact expected
2. Economic Activities	5	No negative impact expected
3. Transport	4	No impact expected
4. Water and Common Rights	5	No impact expected
5. Sanitation	1	Aim of project is to improve sanitation
6. Waste	3	Sludges from exhausted pits and septic tanks may cause contamination
7. Hazards / Dangers	4	No impact expected
8. Topography and Geology	5	No impact expected
9. Soil Erosion	5	No impact expected
10. Groundwater	5	No impact expected
11. River and Wetlands	5	No negative impact expected
12. Coastline and Sea	5	No such sites exist in project area
13. Flora and Fauna	4	No impact expected
14. Weather	5	No impact expected
15. View	5	No impact expected
16. Air Pollution	5	No impact expected
17. Water Pollution	5	No impact expected

18. Soil Contamination	3	Spills of sludges from exhausted pits and septic tanks may cause contamination
19. Noise and Vibration	5	No impact expected
20. Ground Subsidence	4	No impact expected
21. Noxious Odours	5	No impact expected
22. Cultural and Archeological Assets	5	No impact expected
23. Conflict with community Aspirations	5	No impact expected

**KEY:**

1. Serious impact expected
2. Minor impact expected
3. Uncertain (investigation may clarify)
4. Almost no impact expected if construction undertaken properly
5. Almost no impact expected (no need for EIA)

## **7.7 INITIAL ENVIRONMENTAL IMPACT ASSESSMENT**

By and large, the proposed rehabilitation project will have positive impacts by providing improved sanitation, reducing incidence of disease, and general improvement of the environment. However, from the results of IEE, four main items of potential impacts of the proposed rehabilitation works are identified for study as listed below:

- (i) Impacts resulting from abstraction of water from river or groundwater sources during operation.
- (ii) Impacts arising from the increase in wastewater generation that would result from the improved water supply.
- (iii) Impacts resulting from the operation of wastewater management and sanitation facilities.
- (iv) Impacts resulting from construction activities during implementation of rehabilitation works.

### **7.7.1 Impacts Resulting from Water Abstraction**

The most limiting factor in expansion of water supply in Wundanyi is source. No data is available on the hydrology of Wundanyi River and Wesu springs and discussions with the water bailiff revealed that, the Wesu spring source has been dwindling because of abstractions upstream of the Wesu intake. It is uncertain what the impact of increased abstraction at the existing intake will be and this needs to be examined further.

Wundanyi River is fairly small and direct intake from it without impoundment is unlikely to provide a reliable raw water source to meet even the current demand

### **7.7.2 Impacts from Increased Wastewater Generation**

Improved water service to be wrought by the rehabilitation will definitely make more water available to the consumers. The resulting increased wastewater flow will present disposal problems by putting pressure on the capacity of the existing on-site sanitation systems.

A study of the hydrogeology of the area shows that the groundwater potential is very low whereas the water table is quite shallow where aquifers exist. The risk of groundwater contamination by on-site sanitation systems in these areas is therefore real. On-site wastewater disposal in some of the major institutions like the District Hospital, the GK Prison are functioning well, however installation of a sewerage system, coupled with intensified public education on proper waste management is needed for protection of the environment.

### **7.7.3 Impacts from Operation of Sanitation Facilities**

Current operation of the on-site sanitation facilities is satisfactory since the soils have good percolation characteristics. However, it is not clear how they will function with increased wastewater flow. There is danger of waste flow reaching Wundanyi River since it passes through the town. There is need to install a sewerage system to reduce waste load into the river which is the major water source for the town. There is also a need to monitor operation of the on-site sanitation facilities by invoking the Public Health Act.

### **7.7.4 Impacts from Construction**

At the rehabilitation stage construction will be concentrated in the areas of existing treatment works and along the pipelines and these constructions will not be of any large scale as to adversely affect human settlements. Excavations for pipelines may cause interruption to traffic flow but this will be on a temporary scale. Serious traffic inconveniences will be avoided by appropriate construction methods.

However, development of source, if it includes impoundments, will necessitate major disturbance of human settlements. This will need further clarification at the feasibility stage.

Disturbance of the soil during construction may also give rise to soil erosion but this will be minimal because no large-scale earthworks are anticipated in the rehabilitation phase. The noise and vibrations are common features of most construction works and there are no unusual works that need special attention with respect to noise and vibration.

## **7.8 ISSUES FOR FURTHER INVESTIGATION**

1. The reliability of raw water sources, especially in terms of quantity, to satisfy demand.
2. Since a substantial section of the population is not served by the current water supply scheme and therefore draws water from traditional sources, the full impact of continued use of on-site sanitation systems on the degradation of water quality in such sources needs to be studied.

## **8. PROPOSED UTILITY MANAGEMENT PLAN**

The 10 study towns visited can be grouped into three different institutional categories or groups under the Ministry of Environment and Natural Resources. District water offices: Narok, Meru, Muranga, Wundanyi, Migori and Lamu report to the Ministry directly, Division water offices: Makindu, Webuye and Mumias are included in the respective District reporting, and Kabarnet Sub Area office reports to the Regional area office, which falls under the jurisdiction of the National Water Conservation & Pipeline Corporation, which again operates as a State Corporation under the same Parent Ministry, the Ministry of Environment and Natural Resources.

### **8.0. GENERAL APPROACH**

The approach for the analysis of the 10 towns was to work with a comprehensive base questionnaire that covers the commercial, financial and technical aspects of a water utility system. Interviews and discussions were held with those staff members that are either in charge or responsible for certain aspects of the day to day operation.

For the commercialised systems in Kenya, three sample towns were chosen: Malindi which is operated under a management contract for the NWC&PC, and Nyeri and Kitale Water Company, which are operated on the basis of an agency agreement for and on behalf of the respective municipal councils. Different questionnaires were used in order to obtain information about the problems that they have experienced since commencement of their operation.

The current system of Government reporting and record keeping has made it very difficult to obtain reliable and meaningful data within the given timeframe. The prevailing situation in all systems is that details are available, but neither instantly ready, nor summed up. Consequently numerous figures had to be compiled and abstracted from various ledgers and folders, in order to draw a picture of the current situation. At system level, the consumer ledger was found to be the most resourceful book of information concerning number of accounts, their condition (metered, non-metered, active, in-active), monthly consumption, arrears and payments received. It was therefore decided to use the consumer ledger information and take a snapshot picture of the situation for the month of June 2000. Where annual figures and records were available, those were absorbed for the Financial Year 99/00 in order to calculate monthly averages for comparison with the snapshot month June 2000. To substantiate procedures in place, it was considered essential, to question the figures and details that are routinely forwarded to the Head Quarter.

As procedures do continue at Head Quarter level it was as well attempted to find out, what procedures have to be undergone and is the information that is provided from Divisional or District Offices analysed in order to make planning assignments possible.

The details and procedures representing the NWC&PC area office in Kabarnet have been analysed upto the Regional Office level only. Operational decision making, funding and most personnel related issues are vested in the powers of

the Regional Manager. Instructions and procedural requirements, retained by the Head Office or vested in the State Corporation Act, are however considered for the analysis.

## **8.1. EXISTING WATER SUPPLY & SANITATION SYSTEMS**

### **8.1.0. Overview Of All Systems Visited**

All records and details abstracted in or compiled for the ten towns visited, are compiled in Appendices: A3 for Narok Town, B3 for Meru Town, C3 for Muranga Town, D3 for Kabarnet Town, E3 for Makindu Town, F3 for Wundanyi Town, G3 for Migori Town, H3 for Lamu Town, I3 for Webuye Town and J3 for Mumias Town. System situation description has been prepared for every town visited. Appendix K 3 holds questionnaires used for the commercialised systems and all summary statistics. Summary Table ST 8.2. contains the verified statistics for all 10 towns, using the month of June 2000 as the month for which verification could be done, based on the information abstracted from the various consumer ledgers. Comparisons between the towns are drawn from the same overview called "verified statistics summary" on details considered most relevant.

#### **8.1.0.1. Utility Systems Organisation**

##### **8.1.0.1.1. Staffing:**

All systems have a high number of unskilled Subordinate Staff being employed with different responsibilities. The O&M department integrates not only the source, treatment and distribution aspect of the water systems, but it is also responsible for billing and revenue collection. Within the billing and revenue collection department, majority of all staff have a technical background. Training, if offered, is within the technical field, financial or commercial training is not really considered. The staff assigned to the distribution system do as well undertake meter reading for which no schedules are available. Control over staff activities and whereabouts becomes very difficult. The number of consumer accounts per staff ranges from 23 in Migori to 110 in Mumias. Organisation Charts have been drawn for all 10 towns, based on the information collected and are to be found under the Appendix of the respective town.

The managers responsible for the various systems have no commercial or managerial, but technical background. There is no training offered to prepare officers into their managerial responsibilities, even though the assignment described in The "Schedule of Duties for the Ministry of Water Resources" – January 1999, issued by the Permanent Secretary, describes the duties of every District Water Officer as:

Representative of the MWR in the District and responsible to the PWO/Central for the following duties and responsibilities:

- Overall planning, control and management of all water related matters in the District, including financial management thereof
- Any other duties as may be assigned

#### 8.1.0.1.2. Office Set-up, Facilities and Transport:

While some District offices have adequate space, Division offices visited are in dire need of a decent working- and consumer-receiving-environment. Hard finishing can be termed as basic, but storage facilities for keeping and archiving documents reflect additional requirements in all places visited. Shortage of stationary or calculators is common everywhere.

The new NWC&PC office in Kabarnet has been taken over from the contractor just recently and basic requirements are still in very good condition.

The transport situation of all systems visited is below requirement. Water systems that are shared with the District water operation do have the advantage that transport can at least be shared in case of an emergency. All other systems do depend on well wishers, public transport or they walk.

#### 8.1.0.1.3. Consumer and Meter Information:

The existing level of information concerning the status of the meters, disconnection/ re-connection or new connection statistics or their operability, must be termed as low. In a number of towns, the available though estimated figures are not diverting too much from the snapshot situation taken for the month of June 2000, but others are completely "off-track" and reflect that the value of information has to be more emphasized.

Ad hoc information was difficult to obtain anywhere. The statement that everything is available somewhere, somehow, but not in a comprehensive and meaningful format, easy to analyse, applies to all systems. As an example can be taken that the cost for maintaining a vehicle cannot be abstracted from one ledger card, but different kind of items are reflected on different ledger cards for certain expenditure categories. This means, that the cost determination could only be made by going through a number of ledger cards and then compiling the same information.

#### 8.1.0.1.4. Production and Consumption:

For a number of systems, neither production nor consumption figures can be determined with certainty.

Where master meters were either not working or simply lacking, pumping hours were used to calculate the production; where gravity flow does not provide meter information, the situation was reflected, based on the assessment offered by the staff of the respective water system and then compared with the engineer's information. All systems operate well below their capacity, which can be related to:

- Limited use of power, because more pumping cannot be justified with equally increasing billed consumption
- Weak distribution systems, which cannot take the increased pressure and result in higher UfW
- Faulty pumps
- Reduced source capacity

To confirm consumption details is even more difficult, as the majority of consumer meters are not operational. The number of estimated accounts range from 31% in Wundanyi to 99% in Mumias. The verification of consumption details was only



possible for the month of June 2000, by abstracting consumer ledger information in a uniform format for all systems. While the information still reflects a number of discrepancies, it was considered the closest one can get, within the scopes and limited timeframe of the study.

While Migori, Webuye and Mumias have a very high estimated number of accounts (88% - 99%), the consumption abstracted exceeds the production considerably or is almost the same and raises the question of: what is the assessment tool for estimating accounts, or better their consumption?

#### 8.1.0.1.5. Un-accounted for Water (UfW):

Where production and consumption details are not very reliable, the determination of UfW is difficult and equally unreliable. While most systems do fill monthly returns with arithmetical calculations on the UfW, the verified information reflects differences. Where a calculation of UfW was possible, the percentages range from 1% for Webuye town to 77% for Kabarnet town (excluding Mumias and Migori towns which reflect a higher consumption than production).

The overall calculated loss, expressed in Kenya Shillings is considerable. The verified month of June 2000 calculates for 8 out of the 10 towns, for which UfW calculation was done, a total of approximately Kshs 6,374 million per month, or extrapolated: Kshs 76,492 million per calendar year.

As the calculation is based on water lost and the average tariff calculated for every town, this calculation should serve as a guiding figure only, as the figures used for the calculation are based on the month of June 2000 information and might vary, when a deeper analysis is carried out. The loss furthermore does not yet capture the full cost of the loss, because the current tariff is considered as not cost covering.

The determination of cost represents one of the most basic problems again applying to all systems, which starts by trying to establish the actual expenditure. With the current level of information cost can only be assessed but not established.

#### 8.1.0.1.6. Billing and Revenue Collection:

Many monthly billing records and returns were found to be estimated. Various explanations were offered, but all centered around the fact, that the information has to be monthly and manually abstracted from all consumer ledgers after the billing has been completed. The time available between completion of billing and submission of the monthly return is considered too short to complete the time consuming exercise. As monthly returns do not seem to be returned by the Head Quarter, the estimation is seen as an accepted practice. While the practice of estimation could be accepted for the given reason, the reconciliation at the end of the FY is missing, and annual details for the Head Quarter are simply wrong. Only Muranga town and possibly Makindu seem to be reporting actual monthly records. The tariff increment effective November 1999 could not be seen in many of the estimated billing figures for most systems, neither was it apparent for some of the revenue officers, that delayed implementation of the tariff increment should be captured with a retro-active adjustment.

The issue of estimation of monthly billing returns was not applicable for Kabarnet, as the water system only obtains meter readings and the Regional Office prepares computer generated bills. Monthly information about what was billed to the consumer should be correct.

For the verification exercise of June 2000 bills, the consultant filtered out consumers with the same actual consumption and noted, that different billing amounts seem to be calculated for the same consumption. As the majority of the billing officers do not have a calculator, this can be seen as a possible explanation for the variations. Appendix K 3 – ST 1.1. shows the analysis and reflects the situation for a few sample towns. The same bill variation seems to be the case for Kabarnet however limited in number, explanation for which should relate to the billing program.

Revenue collection records and returns are based on records obtained from the District Commissioner's office. Only minor discrepancies were noted, which can be explained by the fact, that report preparation does not necessarily fall together with calendar end month.

The attempt, to verify consumer payments against reported revenue collection, failed. The payment situation abstracted from the consumer ledgers for the month of June, 2000 was explained to reflect the situation as at 30.06.00. Unfortunately ALL the 9 water systems (excluding Kabarnet) involved in the exercise, misunderstood the information requested for and reflected last payments up to December,2000.

The billing efficiency for the various towns ranges between 22% in Kabarnet town and 64% in Narok town, while the collection efficiency ranges between 22% and 87% for Muranga. It should be noted that Migori and Mumias have not been considered for this comparison, as their billing efficiency is exceeding 100 % and unrealistic, as consumption should not be higher than the production. The combined billing and collection efficiency ranges between 15% and 49% and is suggested to be used as one of the criteria for selecting priority projects.

Muranga is the only town where consumers voluntarily come to the DC's office to ask for the amount due for payment, which they then pay, without even having received the bill. Bills are only issued for GOK institutions, schools or companies on request. While Lamu operates in a similar way, it must be noted that Muranga merges this fact with a high billing and collection efficiency.

#### 8.1.0.1.7. Average Tariff:

The average tariff had not been calculated in any of the towns visited, because it is not required for any of the GOK returns, hence not a commonly used term. The calculation of the average tariff, where possible, was prepared for the month of June 2000. It ranges between 16.57 Kshs for Migori and 42.31 Kshs for Wundanyi.

The June 2000 average tariff read in conjunction with the percentage of consumers billed on 10 cbm minimum charge, indicates which towns have a substantial base of minimum consumers. The minimum charged consumers

range from 12.37 % in Webuye to 78.14 % in Lamu. An analysis for the number of consumers falling into the various consumption brackets is commented on in the report for the various systems and gives an indication of the revenue base and the consumer portfolio.

#### 8.1.0.1.8. Debt Situation:

The monthly debt situation is reported to the Head Quarter, whereby brought forward balances are increased by the monthly ("averaged or estimated") billed revenue less revenue collected. For all towns it was therefore found, that balances abstracted from the consumer ledgers did not correspond with the reported information. Discrepancies reflected are substantial in some cases. It can however not be established where or when those differences slipped into the system. An analysis was undertaken to split between GOK, major and minor consumers where possible. The one consumer taking the biggest share of unpaid bills in District towns, is the Government of Kenya. While the debt situation increases on a monthly basis, no effective measures seem to be in place to improve on the prevailing situation. Collection targets are set for the WS systems, but collection of GOK debt must be termed as very difficult and the possibility of involving the MENR Head Quarter should be considered after verification and substantiation of existing GOK debts.

Verified debt, as abstracted from the consumer ledgers, for all the towns visited amounts to: Kshs 61,899 million as at the end of May, 2000 and Kshs 64,678 million as at the end of the Financial Year 99/00. This can be interpreted such that the debt outstanding, increases by approximately 3 million per month for all the ten towns. Even though this information has been abstracted from the respective consumer ledgers, it must be pointed out, that a much more intensive analysis will have to be done, to confirm the collectable debt, as it includes disputed bills relating to wrong billing calculation, wrong meter reading or no water situations. The abstracted figure can however be used as an indicator. When comparing the total outstanding at the end of the Financial Year with the value of the annual water loss of approximately Kshs 64,8 million, the need for intervention concerning UFW, becomes even more apparent. Remedial efforts should concentrate and start with the attempt to reduce this aspect of water lost.

#### 8.1.0.1.9. Funding:

Salaries, power and chemical expenses are paid through MENR Head Quarter. All other expenses at District level are funded through A.I.E. (Authority to Incur Expenses).

The A.I.E. earned during the FY is not automatically the A.I.E received. Any application, pending approval at the end of the FY, is not returned for resubmission in the new year, but null and void. It appears, that the 10 towns have earned a total of Kshs 17,930 million in A.I.E., but only received and incurred expenditure amounting to Kshs. 17,182 million. When a comparison is drawn between A.I.E. earned and A.I.E. received on a town by town basis, it shows that some towns managed to receive more A.I.E. then they have actually earned while others received considerably less. It could not be established with certainty how the procedure of "receiving more" operates.

### 8.1.0.2. Utility System Procedures

Existing procedures were analysed against the facts, figures and details obtained. Statements were questioned against the background of facts established.

#### 8.1.0.2.1. Administration:

##### 8.1.0.2.1.1. Staff:

No personnel management, training or recruitment procedures are in place and the approach of utilising staff where and when needed, results in a situation of no control over staff movements. Moving the technical staff into billing and revenue, instead of recruiting qualified and trained staff for the commercial aspect of the utility operation reflects on the system efficiency. The staff morale is equally affected and the low salary structure and delayed promotions attribute to the often understandable "not really concerned" situation. Sanctioning within the civil service structure has not been very effective in the past. The worst to happen was a transfer with no financial repercussions. At the same time positive efforts are not appreciated which often leads to the above indifference.

The recent retrenchment exercise has however changed the prevailing opinion concerning job security. The criteria for the recent retrenchment has not been understood by the staff, as in a number of systems, important and knowledged staff members were removed.

##### 8.1.0.2.1.2. Consumer Accounts:

Clear guidelines on new connection, dis-connection, re-connection and any other routine procedure, are not in place. Especially for cases of recently gazetted changes, the gazette notice seems not sufficiently explained with the consequence, that every system handles the issue differently. Concerning new meters, deposit levels or delayed tariff implementation, wrong implementation of the gazetted notice translates into loss of revenue. If for example the tariff adjustment information and implementation instruction reaches the systems with a certain delay, the gap between gazetment and implementation should be closed. Some systems did so, others did not.

The maintenance of consumer and connection records must be considered as vital for any utility system. All systems lack however clear guidelines and control at system level. The ever prevailing shortage of stationary or operating material is the excuse and/or explanation for messy filing or files and books not found or records not kept. Clear guidelines on consumer record keeping were not found and the recording varies from application form to meter reading book to consumer ledger, depending on the WS system.

##### 8.1.0.2.1.3. Meter Reading, Billing and Revenue Collection:

Meter reading schedules and procedures are not in place and there is no control over the process, neither the staff entrusted the exercise. Wrong or no meter reading affects the billing efficiency and eventually revenue collection, as consumers dispute by simply not paying. When wrong or over estimated bills go along with no supply and service, the payment morale drops and illegal activities increase. While all District water offices have water bailiffs on their staff list, they

are not used to handle cases of illegal water consumption, but only deal with water rights and granting permits for water abstraction.

All systems operated by the MENR issue manual bills and varying bill formats are used. Formats of the system have not been improved for years and some reflect for example consumption stated in gallons, while almost all consumer meters are read in cbm. This increases the risk of error calculations. Majority of consumer bills are hand delivered or collected from the water office, as no funds are available for mailing.

Systematic dis-connection and control procedures were not found to be in place. Explanations given relate always to shortage of funds and/or lacking plugging material, no transport or shortage of staff. Once an account is dis-connected, the consumer retains this status, unless he comes forward to regularise his/her account. Routine checks on long dis-connected accounts, are not practiced or not really possible, because the transport or staff necessary, is not available. This fact bears a high risk of undetected illegal re-connections and contributes into the high UfW.

#### 8.1.0.2.1.4. A.I.E. and Procurements:

An A.I.E. is calculated based on the monthly revenue collection and a certain A.I.E. percentage, determined by MENR, and varying from town to town. In the case of the towns visited, the percentage ranges between 60 % and 90 %. The basis for the different percentages could not be established.

The receipt of an A.I.E. is affected by many factors and in all cases causing delays for procurements and the day to day operation. Appendix K 3 – Figure 8.2. illustrates the 17 steps between revenue collected at the DC's office and the approved authority to spend. The approved A.I.E. can only be used for procurement, if the Local Purchase Order (L.P.O.) processing procedure has been complied with. Suppliers often reject to supply against an L.P.O., because the payment processing procedure is another lengthy procedure to follow. Appendix K 3 – Figure 8.3. illustrates the path a pro-forma invoice has to take, before a cheque can be issued. Supplies are limited to listed suppliers within the District and the District Tender Board has to approve such suppliers.

The issuance of a cheque to a supplier is furthermore dependant on District Office liquidity and priorities set by the District Administration. As the District Administration is not only responsible for A.I.E. of the water department, but all the other GOK departments represented within the District, priorities might be given to other departments, depending on the situation. Collection efforts from the water department can be frustrated by such factors, which are beyond their control.

As long as quotations are obtained as required, and vouchers are signed by the respective signatories, expenditure seems the responsibility of the respective District Water Officer. It must only be ensured that it can be booked against votes that have been budgeted for. Finally, the District Administration has to account for the expenditure incurred, while the Ministry concerned is no longer involved. The complicated and lengthy procedures do not seem to relate to Financial Control at the end of the process.

Transport and staff related expenditure absorb a relatively high percentage of the approved and received A.I.E., while stationary or other inexpensive items are said to be lacking. It could not be established based on which criteria approved A.I.E. are spent and whether quotations obtained, reflect a realistic market price, when

compared. The process shows that Water department requirements are not only at the discretion of the water department through its representative the District Water Officer, but mainly depend on the District Administration, which is answerable to the Office of the President and the Treasury/Ministry of Finance.

Divisional Offices are affected by the same procedure, but their requirements have to undergo an additional step in order to be incorporated into the District requirements.

The Kabarnet area office submits all its requirements through the Regional Office, which in turn still has to follow the same or similar GOK procurement procedures.

#### 8.1.0.2.2. Operation & Maintenance:

No preventive maintenance is in place, neither are technical manuals available. There is no guidance on standards and no procedure control over quality of water. Consumer meter servicing is neither scheduled, nor controlled or guided. Master meter preventive or routine maintenance is not covered by any procedure, and servicing lacks skill and the necessary tools. While some provincial water offices do have the necessary equipment, they lack spares. The reason for all shortcomings is said to be the lack of funding.

Chronically empty stores are explained by the same lack of funding. Only Lamu town had stock balance records available, which could relate to its location and island status. In most cases it was explained that procurements mainly relate to a technical problem that has to be attended to and parts are used as soon as they are available.

The WS Operators Handbook was found in the Webuye WS system, but the available version seemed very old (without any printing date) and not reflecting any system specific information or guidance.

### **8.1.6. Wundanyi Water Supply & Sanitation System**

Wundanyi is the District Head Office falling under the Provincial Water Office Mombasa (Coast Province), and at the same time provides the urban water supply for Wundanyi town, currently serving a population of approximately 7,200 people. The water demand for Wundanyi cannot be met by the current sources, especially at times when the rains fail as was the case during the visit of the consultant. The Weso intake capacity had dropped considerably consequently affecting the production.

#### **8.1.6.1. Utility System Organisation:**

##### **8.1.6.1.1. Staffing:**

The total number of staff is 35, of which 11 members, including the District Water Officer, are shared between District and Wundanyi Water Supply activities. Refer to Appendix F3 Figure 8.1.6. – Organisation Chart. A clear delineation between District and Wundanyi WS staff has been difficult and is reflected in the organisation chart to the best of the understanding of the consultant. The letter received from the DWO, dated 22.01.01, giving corrections to mis-spelt names of staff members, has been incorporated into the earlier submitted draft chart.

While 3 drivers are reflected in the chart, it is understood that 2 were being retrenched at the time of the visit. It was furthermore understood that an Assistant Executive Officer, a Higher Clerical Officer, one Power Plant Mechanic and one Superintendent Mechanical had been retrenched recently, leaving serious gaps, especially on the administrative side. At the time of the visit, the Executive Officer had taken over duties of the 2 additional staff retrenched from his department.

The District Water Officer is an Engineer by profession with many years of experience gained as DWO in other District Offices.

The Head of O&M is responsible for Source, Treatment, Distribution, Billing and Revenue Collection. There is a distinction between production and distribution network assignments, but distribution work includes meter reading and all other consumer meter related works. The background of all Billing and Revenue staff is technical. Officers entrusted with the bill preparation were previously assigned technical work and they expressed the wish to be assigned again work which they were trained for, as they expressed the fear that they would otherwise lose contact with their actual profession.

The Accounts Section is headed by the Executive Officer, who seems to be in control of all administrative issues, which were in an impressively neat condition. This seemed also the only tangible explanation for the speed with which A.I.E. procedures had been processed for Wundanyi.

Training, if offered, remains technical. There was no recollection of training offered over the last 7 years, apart from short courses offered under DANIDA, but still in the technical field. No courses whatsoever were offered in the commercial and managerial field. While the B.Com. of the Executive Officer is a good basis for handling the issues he is responsible for, Government specific procedures and formalities had to be learned on the job and do depend on the effort the officer makes. Request forms are however still filled annually, in the hope that training opportunities are forthcoming.

The index of number of accounts per staff member is:

Staff	Consumer Accounts	Accounts/Staff
35	1,136	32.46

#### 8.1.6.1.2. Office Set-up, Facilities and Transport:

The office building of the District Water Office is one of several District buildings and the plot area could not be clearly demarcated. It is understood that the building from which the DWO operates today was built under a Norwegian help project and was taken over in 1998. Previously all operations were co-ordinated from the T-Works, where 2 rooms, actually designed as staff quarters, are still occupied by the billing officers. The laboratory and a small office are housed in a stone building, while other uni-hut offices are used by the distribution system officer in charge and his support staff.

The District Water Office building comprises of 6 offices and good basic hard furnishings are provided, including tables, chairs and cabinets. The secretary uses one computer and 1 dot matrix printer. Two calculators were brought in just before the consultant's visit. Two additional computers were found, however said to be unserviceable and not used for Wundanyi WS.

The Revenue Clerk has his office in the District Officer's Office and serves as the Revenue Collection Officer. Two working telephone lines are available. There is a workshop for the District, located at the T-Works.

3 vehicles and 3 motorbikes (for DANIDA) are available for the District, but only used for the Wundanyi WS in case of emergency.

#### 8.1.6.1.3. Consumer and Meter Information:

All information is basically available from the consumer ledgers, hence not in a compiled or summarised format.

The decision was therefore made to obtain as much information as possible for June 2000 from the consumer ledgers, and use that "Base Verification Month" as a representative snapshot. This information was then related to figures and returns that are normally sent to the Provincial Water Officer (PWO) and MENR Head Quarters.

An abstract of the comparison between information available or provided, with the verified information, is shown here below. Complete information is available in Appendix F3 Table 8.1.6.:

Detail	Provided from WUNDANYI	Verified for June 2000
Registered Consumers:	1004	1136
Never Connected:	Not readily available	4
Metered:	1096	1114
Working:	Not readily available	493, but 427 actual bills
Not-Working:	Not readily available	290, but 192 estimate bills
Un-metered:	Not readily available	Nil
Disconnected:	Not readily available	357
Major Consumers	Not readily available	8
Minor Consumers:	Not readily available	611

There are no Kiosks in town. Even though several Kiosks were constructed by the Ministry, nobody applied for the running of the same. It is assumed that the small streams in the area, which do not dry up through-out the year, might constitute a substitute for those consumers with no connection. Hence there is no desperate need for kiosk supply, but the issue should be looked into further.



The distinction between Major and Minor consumers was based on the June 2000 consumption exceeding 100 m<sup>3</sup> for Major consumers only.

49 new connections were connected during 1999 and 44 new connections had been done by the time of the visit. The information was obtained from the deposit record book maintained by the revenue collection clerk. These annual connections indicate that the demand is very limited and translates into an annual growth of approx. 4 %.

#### 8.1.6.1.4. Production and Consumption:

##### *Production:*

The two existing master meters broke down before 1993, hence production was based on rating of the pumps and pumping hours. Due to the drought, the WESO intake was considered with 14 m<sup>3</sup>/hr (as opposed to 31 m<sup>3</sup> design), pumped for 24 hours, resulting in 336 m<sup>3</sup>/day and Wundanyi intake considered with 31 m<sup>3</sup>/hr, pumped for 12 hours, resulting in 384 m<sup>3</sup>/day. This results in a total daily production of 720 m<sup>3</sup>. Production figures as used for the monthly O & M Monitoring returns, are therefore the result of estimation and pumping hours and reflected in Appendix F3 Table 8.2.6. The average for 6 months January to June 2000 is used herebelow. The design capacity, taken from the engineering report, is 768 m<sup>3</sup>/day for both Weso and Wundanyi intakes:

Detail	Average 1-6/00 as provided in the O&M Monitoring	As provided verbally
Design Capacity / Month	46.080 m <sup>3</sup>	46,080 m <sup>3</sup>
Production / Month	20.209 m <sup>3</sup>	21.600 m <sup>3</sup>
Production / Day	673 m <sup>3</sup>	720 m <sup>3</sup>

The **Production Efficiency for June 2000**, calculated with the verbal information is **46.88 %**, however severely affected by the drought situation in June 2000.

##### *Consumption:*

Consumption records are available in Appendix F3 Table 8.2.6. and compared with the verified details from Appendix F3 Table 8.1.6.:

Detail	%	June 2000 as provided	%	Average 1-6/00 as provided	%	June 2000 verified
Actual Consumption	100	19,236 m <sup>3</sup>	100	18,816 m <sup>3</sup>	57	5,710 m <sup>3</sup>
Estimate & Flat Rate		- m <sup>3</sup>		- m <sup>3</sup>	43	4,310 m <sup>3</sup>
Kiosks		N/A		N/A	-	N/A
<b>TOTAL:</b>	100	19,236 m <sup>3</sup>	100	18,816 m <sup>3</sup>	100	10,020 m <sup>3</sup>

Consumption records can only be compiled by summation, on a monthly basis, from the consumer ledger information. This exercise seems to be estimated on a monthly basis in Wundanyi, and the information required for the monthly returns to the Provincial and Head Office seems estimated, when comparing the figures month by month and especially when comparing with the verified month of June.

As these returns do not appear to be commented on, or returned back to the Wundanyi office, the practice of approximation seems to be accepted. No reconciliation seems done at the end of the FY.

The June 2000 consumer portfolio as analysed here below shows that Wundanyi has a considerable number of minor consumers, consuming up to 10 m<sup>3</sup> per month and representing 67.37% of all billed connections.

Consumption Steps	Number of Bills		Revenue Earned (June 2000)	
	Actual	Estimate	Actual Kshs	Estimate Kshs
0 to 10 m <sup>3</sup>	255	162	63,650.00	41,525.00
11 to 20 m <sup>3</sup>	106	21	37,800.00	7,975.00
21 to 40 m <sup>3</sup>	46		33,580.00	
41 to 60 m <sup>3</sup>	13	2	18,605.00	1,537.00
61 to 100 m <sup>3</sup>	5	1	15,980.00	250.00
> 100 m <sup>3</sup>	2	6	14,950.00	150,585.00
<b>TOTAL:</b>	<b>427</b>	<b>192</b>	<b>184,565.00</b>	<b>201,872.00</b>

Even though the number of 10m<sup>3</sup> consumers is very high, representing 67.37% of all consumers, the revenue base seems to be equally spread over all consumer brackets.

The analysis revealed also that 30 bills reflected no consumption for June, but contributed with 37,530.00 Kshs additional to the above reflected total.

#### 8.1.6.1.5. Unaccounted for Water (UfW):

The practice of approximating production and consumption figures is equally reflected in the unaccounted for water records, refer to Appendix F3 Table 8.2.6. for the months January – June 2000, which seem very low. The calculated figure from Wundanyi is 1,394 m<sup>3</sup> or 6.89% of the monthly production. The verified calculation for June 2000 stands however at 11,580 m<sup>3</sup> or 53.61%.

The value of the verified UfW, calculated for June 2000, using the average tariff of Kshs 42.31, is therefore Kshs 431,117.74.

#### 8.1.6.1.6. Billing and Revenue Collection:

##### *Billing:*

The Billed and collected revenue is reflected in Appendix F3 Table 8.3.6 and abstracted from monthly returns to the PWO and MENR. It is not clear whether the billed revenue reflects the correct picture, but the assumption is, that monthly reported figures are estimated.

The approach of the consultant was to verify using Appendix F3 Table 8.1.6, which contains the information abstracted from the consumer ledgers for the month of June 2000. This exercise indicated the amount of Kshs 423,967.00 as the billed revenue, whilst the monthly return to PWO and MENR abstracted from Appendix F3 Table 8.3.6 states the June figure as Kshs 385,672.00.

The billing records do reflect a considerable increment in billed revenue between December 1999 and January 2000 and it is assumed that this hike relates to the prompt implementation of the new tariff.

Based on the production details obtained from the O&M Monitoring report, the production average for the months of January to June was 20,209 m<sup>3</sup> and Appendix F3 Table 8.1.6 records a billed consumption of 10,020 m<sup>3</sup>. Therefore the verified

**Billing Efficiency for June stands at 49.58%**

##### *Revenue Collection:*

The revenue collected is reflected in Appendix F3 Table 8.3.6 as provided through the Wundanyi WS office return and the District Treasury. This amounts for the whole FY to Kshs 2,173,738.00, resulting in an average of Kshs 181,144.85 per month.

Detail	June 2000 as provided	Average FY 99/00 As provided	June 2000 Verified
Billed Revenue:	385,672.00	289,786.70	423,967.00
Collected Revenue:	228,720.00	181,144.85	228,720.00

The attempt to verify payments with the information contained in Appendix F3 Table 8.1.6. must be termed as futile because the officers abstracting the information from the consumer ledgers, considered not only payments up to 30.06.00, but also any payment that was in their records by the time the exercise was undertaken and the last record reads 10/11/00.

No explanation was found for the increased revenue collection during the second half of the Financial Year 99/00, but might either relate to the increase in tariff or the new District Water Officer.

The amount used for calculating the Billing efficiency is the collected revenue, verified with the District Treasury.

The verified **Collection Efficiency for June 2000** stands at **53.95 %**

#### 8.1.6.1.7. Average Tariff:

As no reliable summarised consumption or billing details are available, the average tariff is taken to be based on June 2000 records from Appendix F3 Table 8.1.6 .

Billed Revenue Kshs 423,967.00 / billed consumption of 10.020 cbm =  
verified **Average Tariff for June 2000 Kshs 42.31 per m<sup>3</sup>**

#### 8.1.1.1.8. Debt Situation:

The debt arrears situation as provided by Wundanyi is the computed total, forwarded on a monthly basis in the format of Appendix F3 Table 8.3.6. The Wundanyi basis of calculation shows the problem that monthly bills are suspected to be estimated, and the outstanding balance brought forward from the last FY incorporates the same problem.

Using information from Appendix F3 Table 8.1.6., Table 8.4.6. and the account numbers of GOK consumers provided by Wundanyi, the situation **prior to the June 2000 bill** is:

Detail	Wundanyi Debtors as provided	%	Verified Debtors	%
Total Debtors	3,716,960.00	100	3,289,084.15	100
<b>Major Consumers</b>				
GOK	Not readily available		1,515,838.00	46
Others *			66,967.00	2
Total Major			1,582,805.00	48
Minor Consumers **	Not readily available		1,706,279.15	52

\* Criteria used for major consumers: > 20,000/= or consumption >100m<sup>3</sup>

\*\* Criteria used for minor consumers: <20,000/= or <100m<sup>3</sup>

Efforts concerning a rigorous disconnection programme could not be found, but disconnection and reconnection records are recorded in the O&M Monitoring report. The reported numbers are low, average for dis-connection is 10.5 consumers every month and re-connection is 5.5 consumers every month.

#### 8.1.6.1.9. Funding:

Based on the collected revenue and an A.I.E. (Authority to Incur Expenditure) of 65% , funds are sent from Treasury to the District Treasury. The process involves the MENR Head Office and is explained under Chapter 8.4. of the main report. The A.I.E. percentage is determined by the MENR Head Office with no involvement of Wundanyi WS. Appendix F3 Table 8.5.6. reflects that the A.I.E. earned is not necessarily A.I.E. received.

A.I.E. Earned FY 99/00	A.I.E. Received FY 99/00
1,412,929.70	2,180,300.00

The A.I.E. received is to be utilised by all Water Divisions within the District. A separation between Wundanyi WS and other Divisions was not readily available. It was not possible to find out how Wundanyi was able to receive actually more A.I.E. than applied for, while other WS systems have problems to receive what they have earned. It therefore should be noted that there must be a commendable effort behind this fact.

#### 8.1.6.2. Utility System Procedures:

All current procedures, as far as the office and field operations are concerned, are covered in the Appendix F3 Questionnaire 8.1.6 It was the approach of the consultant to verify as many as possible technical, financial and commercial details to substantiate procedures with the facts obtained.

Procedures that continue at Head Office level, and apply to all towns analysed, are investigated separately and covered under Chapter 8.4. of the Main Report.

##### 8.1.6.2.1. Administration:

###### 8.1.6.2.1.1. Staffing:

Staff members are transferred and/or promoted based on decisions made at HQ level and local recommendations succeed, depending on the effort made by the DWO, according to the DWO.

However, while there is provision for annual forms to be completed by staff members requesting promotion and training, such requests are widely perceived to be filed away. This appears to particularly concern Junior staff, where recommendations are forwarded to the DC, discussed in the District Advisory Committee, and then forwarded to the Headquarters. Nothing subsequently happens, and any action can take years.

Salary levels are considered as being much too low.

Staff working in the Billing and Revenue Department have a technical background, and have been placed in positions that bear no relation to the job category for which they were trained, employed and are paid for. When placed into these non-technical positions, staff do not get training, but are expected to learn from the others on the job.

###### 8.1.6.2.1.2. Consumer Accounts:

Consumer information is held in the **application** form and the consumer ledger, which is up-dated with the monthly meter reading, calculated bill and payment received. There is no registry for new connections available hence the information can only be obtained by going through the application forms. Every consumer has a connection and account number, whereby the connection number indicates the zone and a walk number. Walk numbers are issued by leaving a gap of 250

between the last and the new consumer. The issue of consumers providing their own meters has not been implemented in Wundanyi and at the time of the visit all 44 new connections of the year 2000 had been provided with meters. There are no forms available to close a consumer account, but pending bills have to be cleared before the account is closed in the consumer ledger.

The **refund of a consumer deposit** has developed into a problem for the consumer. Since the deposit, which was initially kept by the District, has been called back by the Office of the President, the revenue clerk only issues a voucher, but is not clear whether the consumer has to claim the money from Nairobi. The issue of deposit handling requires further clarification. It is not possible to off-set the deposit against the final balance. It remained unclear whether consumers who may have initially paid a very low deposit, and have subsequently been disconnected many times, should be required to pay a new deposit in line with currently gazetted rates. No guidance seemed to be available.

The **transfer of an account** to another consumer is only recorded in the consumer ledger after the outstanding has been cleared. The account number does not indicate the transfer.

**Change of address** is absorbed into the consumer ledgers, as all consumer bills are mailed. An effort to replace mailing by hand-delivery failed, as consumers are said not to have liked it.

#### 8.1.6.2.1.3. Meter Reading, Billing & Revenue Collection:

##### Meter Reading

Meter reading is undertaken by 4 staff members. The process starts from the 25<sup>th</sup> of every month and all consumers are said to be visited. Currently Wundanyi has 5 zones and meter readers go either with the meter reading books or note on a plain piece of paper. The meter reading information is then transferred by the billing and revenue staff into the consumer ledgers, currently 5 books. Billing is held until all meters are read.

##### Billing:

The billing and revenue section calculates the bills, whereby payment information which is received every day and entered into the consumer ledgers, is considered and reflected on the bill. The billing process requires the necessary billing stationery, which in case of non-availability can cause the delay of bills. A similar situation exists with regard to mailing funds. GOK departments receive their bill with a delivery book, while approximately 400 consumers bills are mailed monthly.

##### Disconnection:

The same billing and revenue section prepares a disconnection list, based on the consumer ledger information and seeks approval by the DWO prior to the actual field activity. The disconnection is undertaken on a zonal basis, by 3 people, all on foot and the speed was considered as slow.

While domestic consumers are disconnected without warning, institutions are informed about the intention to do so and given notice.

##### Revenue Collection:

All consumer payments are made at the District Treasury. The revenue collection officer forwards collection details daily for regular consumer ledgers up-dates.

#### 8.1.6.2.1.4. AIE and Procurements:

##### Authority to Incur Expenditure (A.I.E.)

Monthly revenue returns are prepared to the Head Office and supported by form F.O.17 prepared at the D.C.'s Office, reconfirming the total amount of revenue collected. With this information, the DWO forwards a request to HO to approve the same.

##### Procurement:

Chemical requests are made through the HO. Appendix F3 Table 8.6.6 has details of the total chemicals received for the Financial Year 99/00. The stock balance as at end of June 2000 is nil.

#### 8.1.6.2.2. Operation & Maintenance:

##### *Intake*

No procedure laid down, staff attend to problem when there is a problem

##### *Treatment*

No procedure laid down, and therefore only records on Alum, TCL and S/Ash ordered, received and used are available.

##### *Lines and Appurtenances*

No routine or preventive maintenance procedures or schedules are in place.

##### *Master Meters*

All master meters, located at the point of production are non-operational since before 1993, and no service or maintenance schedule is in place.

##### *Consumer Meters:*

No quality control on material procured by the consumer, no control how the meter is installed and any plumber/pipe-fitter can do the physical connection.

No procedures or records of field activities are in place. Only flushing is possible, other problems cannot be attended to, as no spares and different makes of meters.

##### *Stock*

No stock information available. Only chemical details available.

##### *Operation Manuals:*

No manuals for technical procedures.

#### 8.1.6.3. Community Projects:

The consultant did not obtain any information about community projects within the Wundanyi Water Supply area.

#### 8.1.6.4. El-Nino Project:

No information was obtained concerning any on-going El-Nino activity.

#### 8.1.6.5. Recommended Priority Measures

Wundanyi Water Supply has 69 % of all consumer accounts on actual bills, which combined with eight major consumers, results in a fairly high average tariff, even though Wundanyi has a bottom heavy minor consumer portfolio of 67%).

It is therefore the understanding and assessment of the Consultant that the unaccounted for water (UfW) relates at least in the same percentage to the technical rehabilitation as it does to billing. Billing and revenue might currently even over estimate and reduce the calculated UfW artificially. The UfW has been calculated at 50 % which in monetary terms exceeds the collected revenue and must be given the overall priority.

Unaccounted for Water is always made up of:

- Physical losses in the transmission and distribution system
- Wrong meter reading and billing, and
- Water theft.

Concluding from the above, it is recommended to give the following priorities:

- 1. Full rehabilitation of the existing source and distribution system, including standardised meter connections,**
- 2. Replacement or repair of all faulty consumer meters,**
- 3. Setting up of a consumer data base and a reliable billing program, and**
- 4. Management and staff Training for the relevant staff members.**

All other recommended activities under the Utility Management Plan under Chapter 8.10., are given second priority. These second priorities are however to be considered as equally important and recommended to be implemented.

#### 8.1.6.6. Recommended Project Implementation Plan:

Based on the Action Plan Activity Phases as reflected in Appendix K3 Summary Table ST 8.4., the following Project Implementation Plan for Wundanyi is outlined here below for the 3 different Phases mentioned.

The overall assumption under which the proposed activities will reflect in the expected results, is, that major players and stakeholders ensure that recommended reforms in the Water Sector are implemented.

Other assumptions under which the proposed activities will reflect in the expected results are:

#### Assumption 1:

- Funds for approx. 300 consumer meters are available
- Funds for computer hardware (5), printers (2), billing software, additional transport (2 x 4WD pick-up, 3 motorbikes (2 meter reading, 1 new connection & line patrol)), 2 mountain bikes and basic office equipment are available,
- Funds for remuneration of the proposed staffing organisation is available,
- Funds for 6 months interim operation, while cash collection is re-organised such that funds remain available at system level, and
- Funds for the involvement of the Management Consultant

All funds must be available or planned for at the beginning of the Management Consultant's involvement. Refer to Table 4.4.: Cost Estimate for Rehabilitation Works for the Wundanyi Water Supply.

**Assumption 2:**

Staffing re-organisation, training and selection of staff as recommended by the management consultant receives the necessary support from MENR.

**Assumption 3:**

The reduction of UfW is expected as a result of meter replacement, meter reading reorganisation, billing improvement and management / training-on-the-job-support. The meters to be replaced will require a period of 3 months, during which time approx. 100 meters are replaced in a standardised manner and on a monthly basis by the Wundanyi WS staff.

The minimum time involvement of the Management Consultant support is taken as 12 months.

Task	Months																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
Appointed Management Consultant	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Setting up of consumer database and billing program	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Management and staff training for the relevant staff	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Replacement / repair of all faulty consumer meters	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Implementation of other Action Plan activities	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█

PHASE I

Phase 2 concentrates on decentralisation changes, for which the more detailed activities are described in the Action Plan of Appendix K3 Summary Table ST 8.4

Task	Months																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
Review and initiation action on staff performance criteria	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Implementation by MENR	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Initiate de-centralisation recommendation	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Implementation by MENR	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Initiate control, monitoring and MIS reporting system	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█

PHASE II

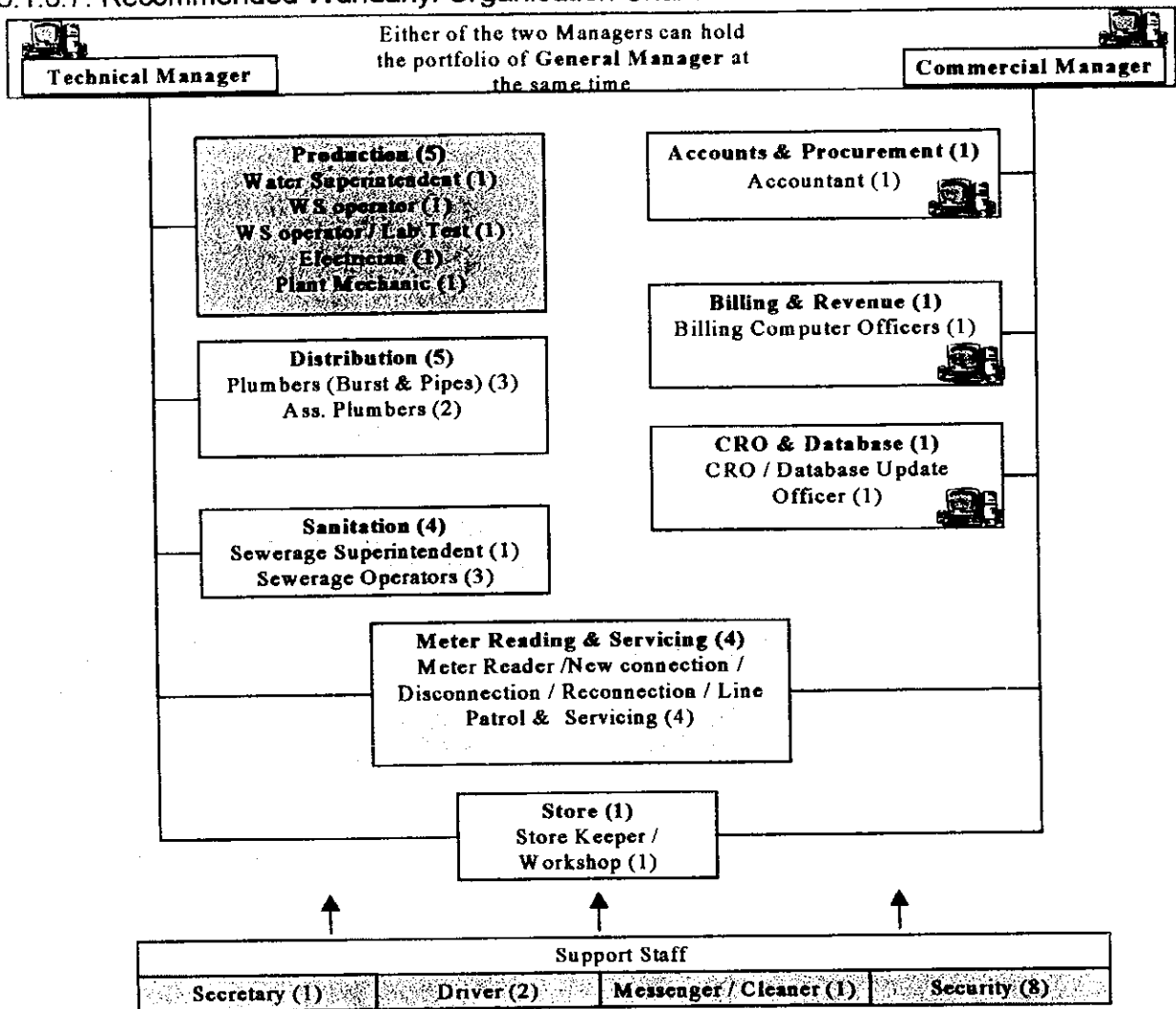
Phase 3 relates to legal changes recommended for which the more detailed explanations are listed and described in the Action Plan of Appendix K3 Summary Table ST 8.4

Task	Months																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
Speeding up water amendment	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Simplify debtor write-off procedures	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Initiate retention / quality control system recommendation	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█

PHASE III



8.1.6.7. Recommended Wundanyi Organisation Chart:



Note:



Department is allocated a computer

Total recommended number of staff = 32 (additional 4 for sanitation)

The possibility of out-sourcing security services, master meter maintenance and pump maintenance should be surveyed and assessed during the management consultancy contract. Implementation should be considered during the preparation of the rehabilitation works. Casual labour to support trenching or cleaning of blocked sewers e.t.c, will be sourced from the market whenever the need arises.

It is further recommended that consumer payments be received through existing Financial Institutions.

NOTE:

As the sanitation system is not in place staff shown for sanitation is only meant to be an indication.

## **8.2. COMMUNITY SYSTEMS WITHIN THE EXISTING UTILITY SYSTEMS**

Only three towns had community maintained systems within their supply area. Western Province, unlike any other province visited, has enjoyed massive support of community projects through Finnish Aid. Phase 1 of the KIFINCO project initiated and financed between 1981 and 1995 almost 4000 community projects. The current Phase 2 has now 4 main components under the overall objective of "increasing access to safe water for improved health and well being of the communities in Western Province, by increasing community management skills for maintenance, operation, improvement and replication of water facilities and for the protection of water resources":

- Monitoring and evaluation whether systems are functioning
- Support to those communities that approach the project and are prepared to contribute
- Provincial/District capacity building
- Water Resource Management

Implementation of new or rehabilitation projects are done through external contractors, while MENR staff is involved in the technical supervision. During Phase 1 all work was done through external staff, which led to frictions between MENR staff and those employed from outside.

Phase 2 concentrated at the onset on awareness creation amongst all District and Divisional Offices, using the ToT approach (Train the Trainer), and then involved other leaders and representatives of communities, to disseminate the new approach.

### **8.2.1. Makindu**

There are four operational and functioning community systems within the Makindu water supply area, but information could only be obtained from three.

Kikumbuli Community took over 136 accounts in 1992, because they received water from Umani Springs. No information could be obtained on how it is managed, but community members are receiving water.

Amref financed 2 additional projects, the Kai Water Project and the Nzumi Water Project. Both systems serve approximately 7,400 people. Amref conditions were the involvement of the community in trenching and laying of the pipes and construction of the tanks. Community members were trained in the technical field and bookkeeping, and training included formulation of the By-laws.

Both systems operate smoothly and the Makindu WS system receives payment of bills promptly. Maintenance of the line is the responsibility of the community. Artisans and Kiosk attendants are from within the community and receive a salary for the work they do. The Community plans to use the money on the account for maintenance and expansion of the line.

The Mulili Water Project was financed by German Agro Action and started its operation just recently. It serves approximately 3,700 people. The approach for the project was similar to Amref's, whereby the community is actively involved in

the work during and after the completion.

Bulk supply from Makindu WSS to all communities at Kshs 15,00/cbm and no problems have been experienced so far.

### **8.2.2. Migori**

The Nyasare Water Supply community project is registered under the Society Act and has been in operation since 1994. The project was financed by the Austrian Government and serves the rural and part of the urban population of Migori town. The community has 989 paid up members.

The management and operation of the system is paid for work done and O&M cost incurred monthly are covered out of the collected revenue. The management comprises of the Chairman, Vice chairman, Secretary, Ass. Secretary, Treasurer and Ass. Treasurer.

Since 1997, the organisation has been operating without donor funds. Even though the community faces problems in revenue collection, there are efforts to increase the tariff. The organisation works closely with the District Water Officer Migori.

The community intends to come up with a phase 2 project, to develop other water sources and the Institute for International Co-operation (Austrian Aid) is willing to assist. They have also applied to take over Migori Water Supply under the Ministry.

### **8.2.3. Webuye**

Webuye has one community project for which no information could be obtained. The Muchi Milo Community project, initially financed by KIFINCO, is non-operational since 1995. Electrical fittings were vandalised twice, now the project seems completely stalled. KIFINCO in Kakamega had information that chairman of the project has political ambitions and is therefore suspected to have political enemies, who could be responsible for the vandalism. The new approach of KIFINCO is the "demand driven approach", i.e. communities can come for help, if they are prepared to contribute 50% into the cost.

Muchi Milo treasurer did not seem to know, neither did the Divisional Water Officer, even though KIFINCO had informed all Districts and Divisions creating awareness down to the communities through leaders and representatives. Consumers are now neither receiving water from the mains nor through the community project.

## **8.3. PROBLEMS AND SHORTCOMINGS OF THE EXISTING SYSTEMS:**

All systems visited suffer from a number of problems which in turn lead to more shortcomings, ultimately translating into:

- Low efficiency on production,

- Limited supply situation,
- Billing below expectation, and
- Revenue collection, which cannot sustain the operation.

An assessment of the problems seen and experienced in the various systems visited, is represented in the Problem-Symptom-Cause Matrix under Appendix K 3 – ST 8.3. To various degrees the systems show that neither the Head Quarter nor the water systems do know what they produce, what is in place, what is outstanding, what are the actual cost for the water production and/or what is the financial position they are in.

Community systems established with the involvement and / or contribution of the community, combined with training into the management and operation, seems more successful, than those systems that have been simply handed over to the people. This equally reflects in the second phase approach of the KIFINCO project, which is demand driven and with financial involvement of the community.

### **8.3.1. Division Specific Problems:**

Divisions operate under the District offices. The systems visited operate under even more difficult circumstances. All problems are similar to the problems experienced in the Districts, because whatever is a problem for the District results in an even bigger problem or longer delay for the Division.

The criteria for category Division or District does not relate to the population served. While Mumias is a Divisional office, with less than a decent office and the necessary skilled staff, it serves a population of 110,400 people, Wundanyi is a well equipped District office and serves a population of 7,600 people. The same applies to Webuye Division office, serving approximately 73,000 people and lacking the absolute basics.

The Division is run with no imprest at all and the most basic requirement like making a photocopy or using public transport to visit the District office, expects the staff member to pre-finance the expense and claim it from the District in due course. Refund procedures can take weeks, even months.

### **8.3.2. Districts Specific Problems:**

The biggest problem seen at District level is the A.I.E. funding and procurement procedure. While the District Administration is involved throughout the lengthy procedures, the District Administration has to cater for all the Government Departments and does not necessarily give the Water Department priority over other Departments. Special efforts in revenue collection may result in Nil A.I.E. received, as was the case in Narok, where the approved A.I.E. came just before the end of the Financial Year and lacking liquidity at the District Administration office resulted in an approved A.I.E. but no funds. Un-utilised A.I.E can then not be carried forward into the new FY.

### **8.3.3. NWC&PC Area Office Specific Problems:**

The area office is totally dependant on the Regional Office and faces the same problems as the Division Offices under the Districts. Decision making does not take place on the ground and any requirement has to be organised through the

Regional Office.

Recent changes turned a small imprest previously available into a NIL cash flow. The 50% of re-connection and labour charges do not seem to come forward. Even the smallest operational requirement becomes a problem. A further problem is, that billing and consumer related issues face considerable delays as they cannot be dealt with immediately. They have to be forwarded to the Regional office and reply has to be awaited. Disputes are decided by a committee at the regional level, while the recommendation of the area manager seems to be given lesser or often no consideration.

#### **8.4. MENR HEADQUARTER PROCEDURES, SHORTCOMINGS AND IMPEDIMENTS**

Every utility system visited had the feeling that the Head Quarter receives monthly forms and returns only to file the same away. No reaction is received. Considering the meaning of reporting, facts and figures should be used for planning, control and management decisions.

As the majority of the information reflects discrepancies or plain gaps and no reaction comes from the Headquarter, it means that either the information is not used for decision making, or the discrepancies are not seen and plans are based on wrong information.

Procedures and tangible details are more difficult to obtain at Head Quarter level than at the District. Efforts by the consultant to get clear and substantiated information, were fruitless in most cases. Similar to the record keeping at District or Division level, information is available somewhere and somehow, but the magnitude of data handled at the Head Quarter makes the search even more complicated.

##### **8.4.1. Personnel Issues and Procedures**

All Division, District and Province staff salary matters are dealt with at Head Quarter. The structure seems to be such that within the personnel department at the Head Quarter, one officer is allocated a certain number of staff numbers. Following up several personnel issues for the District, can result in having to see several officers for the same problem relating to several staff members. The attempt to obtain comprehensive remuneration details for the towns visited, failed.

##### **8.4.2. Power**

Payment of power bills from the District has been changed during the last Financial Year. The processing procedure at District level had caused a number of power accounts being cut. Current practice is, that power bills for all water systems operated by the MENR, are paid for from the Head Quarter. If the bills are received at District level, they are passed on to Nairobi for settlement. As many bills are paid for many Districts with one payment, to find and obtain details for any particular WS System, requires lengthy searches. The question as to whether credits are correctly reflected on the following power bills, could not be established.

### **8.4.3. Chemicals**

Sourcing and procurement for chemicals is done centrally for all the WS systems operated by MENR. The procedure involves an annual open tender, approved by the MTB (Ministerial Tender Board), followed by the CTB (Central Tender Board). While the District gave the information that chemicals have to be collected from the Nairobi Central store, the information at the Head Quarter was, that chemicals are delivered to the Districts and only additional requirements over and above the planned quantity have to be collected. It is to be analysed, whether the centralised procurement bears any price advantages over the system level procurement, as the existing system does not reflect any other advantages.

As chemical requirements are planned from the Head Quarter and information of chemicals from the Districts is in most cases based on estimated past experience, the question arises also, whether there is a realistic basis for actual chemical requirements, relating to actual production?

### **8.4.4. A.I.E. Issues and Procedures**

The A.I.E. procedure originates from the District and has to be processed through MENR Head Quarter and Ministry of Finance/Treasury, before it can go back for further processes to the District. Appendix K 3 – Figure 8.2. and Figure 8.3. reflect the whole process, which is lengthy and complicated.

### **8.4.5. Planning and Control**

Planning is based on information about the performance of a water supply system. Indices like production-, consumption-, billing- and revenue collection-efficiency or system compiled cost, are necessary tools to control the use of chemicals, calculate a cost covering tariff or determine the right transport requirements or staffing levels. As reported information from the water supply systems lack the correct information or if availed, are not translated into an efficient Management Information System, the question arises as to: Which are the tools, that the Head Quarter plans with?

While the A.I.E. process and involved procedures are lengthy and complicated, the accounting for the money spent, is done by the District Administration to Treasury. The MENR receives only the printed information, against which votes the expenditure has been booked. The question is, whether GOK procurement procedures have been complied with, but not whether the three or five quotations obtained reflected a realistic market price, hence the whole system is more procedure than financial control.

## **8.5. PROVINCIAL WATER OFFICE FUNCTIONALITY**

The functionality of the provincial water offices could not be clearly established. However, the schedule of duties for the Provincial Water Officer is giving the following duties and responsibilities:

- Development, maintenance, control and supervision of all Ministry's operations in the Province
- Any other duties as may be assigned.

Meetings with the district water officers, receiving donors and delegations and general co-ordination, were the comments received. While all technical and

financial returns are as well copied to the Provincial Office, reminders on performance and targets do originate from the MENR Head Quarter. It therefore remains to be explored further, what role the Provincial Office plays in the context of management support, control and/or assistance, when compared with the schedule of duties? Is the Provincial Office an information and control filter for the mass of operational and financial details that are sent to the Headquarter? Is the Provincial Office used as an information dissemination medium? How is the infrastructure, which is in place at the Provincial Office, utilised?

## **8.6. NWC&PC SHORTCOMINGS AND IMPEDIMENTS**

NWC&PC has already a partly de-centralised reporting system, as the Regional Manager only reports filtered information to Nairobi. Decision making remains however an equally lengthy procedure (experienced as well, where commercialisation is involved). AS NWC&PC has to comply with the normal GOK procurement procedures, only slightly modified, problems are of similar nature.

## **8.7. COMMERCIALISED SYSTEMS IN KENYA**

The number of commercialised systems, evolving from former Government operated systems, is limited. Malindi, Nyeri and Kitale were chosen. All systems visited and analysed are currently operated under an agency agreement. The difference in their structure is, that the agent in Malindi is a privately owned company, while the other two companies of Nyeri and Kitale are wholly owned by the former operator, with a Board of Directors representing the stakeholders of the water and sanitation system. Assets remained in all three cases with the former operator of the system.

### **8.7.1. Malindi: Management Contract (NWC&PC)**

The Malindi Management Contract is actually an agency agreement between the National Water Conservation and Pipeline Corporation and H.P. Gauff in association with Gauff Utility Services Kenya Ltd. The Amendment to the State Corporation Act under which NWC&PC has been incorporated, gives NWC&PC the formal mandate to enter into agency agreements, which are accepted by the Attorney General.

The agreement was signed in March 2000, covering a period of 4.5 years. The company is given autonomy for the day to day operation and related decision making. The overall regulations guiding the NWC&PC do however relate as well to the agency agreement. This means that Government procurement regulations and procedures or writing off debt procedures have to be observed and complied with by the agent as well.

Appendix K 3-Q 8.6.1. reflects the interview with the representative(s) of the agent. While the Malindi agency agreement built on an earlier pilot project, where consumer account aspects, billing and revenue collection, Meter reading and O&M aspects had already been systematically taken up in the past, the new agency agreement took off with the experience gained before. The major task is to get procedures and schedules refreshed and close the information gap that was caused by a delay of almost two years between the old project and the new agreement.

As the project was only in operation for a period of 8 months by the time of the visit, comments on the self-sustainability could not be obtained yet. The initial setting up time required must be considered and self-sustainability should be looked at, at a later point in time.

#### **8.7.2. Nyeri: NYEWASCO Private Water Company**

Nyeri Water Company, NYEWASCO, operates under an agency agreement which was signed on 19<sup>th</sup> March, 1999 and amended on 7<sup>th</sup> April, 2000. The duration of the agency agreement is 20 years. The agreement is between the Municipal Council of Nyeri and the company.

A Core Management Team is in place and all other staff members were taken over. However it was said that the individual staff performance determines whether they will stay with the company. Salary increments of 15% and 7.5% have been effected since the operation started. An incentive scheme for the staff is being worked on.

Appendix K 3 – Q 8.6.2. reflects the interview with the Managing Director of NYEWASCO.

#### **8.7.3. Kitale: KIWACO Private Water Company**

The Kitale Water Company operates under an agency agreement drafted, but not yet finalised or signed. The agreement is between KIWACO, the new company and the Municipal Council of Kitale.

A new Core Management Team (CMT) has been recruited and is supported by a Financial Advisor, seconded by CIM (Centre for International Migration). All other staff members were taken over from the Council Water Department, pending finalisation of the agency agreement.

Day to day operation has been transferred to the agent at the beginning of the year 2000, while numerous financial issues have not yet been sorted out with the former operator and creditors of the former operator. Much of the manager's time is therefore spent on issues relating to the past and negotiation concerning the agency agreement. The day to day operation is independent.

Appendix K 3 – Q8.6.3. reflects the interview with the CMT and the Financial Advisor.

### **8.8. PROBLEMS AND SHORTCOMINGS OF EXISTING COMMERCIALISED SYSTEMS**

The problems or impediments experienced in Malindi and adversely affecting the efficiency, can be summarised as follows:

- The line of command is too long and decision making processes take too much time and additional effort



- Government procurement procedures

The problems or impediments experienced in Nyeri seem very limited and reduced to staff related issues. All former problems, concerning interference of some Councillors with the Board, seem no longer applicable.

- Audited Accounts from the Council to start with the Opening Balance of the company are not yet available
- Not clear how consumer balances absorbed? (audited or not)
- Not clear how old creditors to be absorbed (audited or not)

The problems and impediments experienced in Kitale and adversely affecting the current operation of the company, can be summarised as follows:

- The agency agreement should be signed prior to the commencement of the new company
- Liabilities taken over from the previous operator should be reconciled and audited, to enable the company to start of with a clear picture of the Opening Balance situation
- Financial start up help should be available
- Amount or mode of lease for the assets not yet finalised
- Loan balance of assets not yet clear with the council
- Production affected, due to power on cut off, not for current but old KP&LC debt, carried forward
- Staff issues (transfer, provident fund etc) not finalised as agency agreement still pending

## **8.9. OPTIONS FOR VIABLE MANAGEMENT AND OPERATION**

The approach for recommended changes has focussed on the intention to offer viable approaches that can be implemented within the shortest possible timeframe. Achievements should be possible, while more substantial changes touching on the institutional and legal framework are discussed, formalised or registered.

The various degrees of implementation carry the risk that other players involved in the changes do not agree to the recommended changes. To avoid this major risk, which has been experienced in the Kenyan environment, especially in the Water Sector, a gradual approach is recommended.

While the registration of a private company, Water User Association, Trust or Trust Corporation can be done within a few months, it is seen as a very time consuming and involving exercise, to prepare a detailed network condition plan, existing asset and liability information and clarify the position on the consumer accounts. The assessment, training, selection and repeat training of existing staff into a commercial environment requires "change management" in order to build capacity.

The problems caused by not having reconciled or audited data ready, when registering the "commercial" institution, can be learned from the commercialised

systems currently already in operation. The preparation of these details can fall into the operation of the "commercial" institution, provided the mode of establishing and confirming the figures has been agreed upon, prior to commencement of the 'commercial' operation.

Recommended changes have been worked out in Appendix K3 – ST 8.3 and are used as the basis for further analysis, leading to the phased options, reflected in the Action Plan. Refer to Appendix K3 – ST 8.4

#### **8.9.1. Recommended Changes within the current Institutional Framework**

Recommended changes for Phase I of the Action Plan are those changes that can be implemented immediately, with the assistance of a consultant and jointly with the client MENR. All recommended changes are vested within the powers of the client.

#### **8.9.2. Recommended Changes for a De-centralised Framework**

The analysis of the current situation reflects that the centralised system under which all water systems are managed and operated, accounts for many of the impediments listed. Phase II of the Action Plan indicates, which steps are recommended to be taken.

The decentralisation approach is as well seen as a step-by-step movement towards bringing the systems closer to the communities, pending a gradual approach towards Private Sector Participation. No lead model has been confirmed yet and a countrywide move can only be implemented by a gradual approach, as capacity building will be a lengthy process and not just a decision or declaration.

#### **8.9.3. Recommended Changes for a Transition Approach**

It is expected that recommended changes of Phase I will lead into and continue during Phase II and III. Any changes recommended under the institutional framework management, can build on the grass root work that has commenced with the preparatory measures of Phase I, as they are seen as a requirement for any kind of improvement or change towards a commercialised operation.

## 8.10. RECOMMENDED UTILITY MANAGEMENT PLAN

No.	Action	Narok	Meru	Muranga	Kabarnet	Makindu	Wundanyi	Migori	Lamu	Webuye	Mumias	Utility Management Plan
1.	Arrange for decent office space							X		X	X	
2.	Set up organisation charts with detailed job description and skill requirements.	X	X	X	X	X	X	X	X	X	X	
3.	Arrange for intensive management training for Engineers or recruit well-qualified managers.	X	X	X	X	X	X	X	X	X	X	
4.	Arrange for commercial and technical staff training	X	X	X	X	X	X	X	X	X	X	
5.	Set up positive and negative staff sanctioning system.	X	X	X	X	X	X	X	X	X	X	
6.	Limit recruitment to the system requirement, based on skill and merit.	X	X	X	X	X	X	X	X	X	X	
7.	Prepare criteria for transport requirements based on size of system coverage, pipe network, number of consumer e.t.c.	X	X	X	X	X	X	X	X	X	X	
8.	Redesign consumer recording and reporting formats	X	X	X	X	X	X	X	X	X	X	
9.	Computerise consumer data base and consider billing software	X	X	X		X	X	X	X	X	X	
10.	Obtain field information from all existing consumer using the re-designed application format	X	X	X	X	X	X	X	X	X	X	
11.	Prepare implementation guidelines related to gazette notices and relating procedures	X	X	X	X	X	X	X	X	X	X	
12.	Prepare consumer and connection management guidelines	X	X	X	X	X	X	X	X	X	X	
13.	Design consumer / connection – management guidelines	X	X	X	X	X	X	X	X	X	X	
14.	Design meter reading / servicing / disconnection schedules and guidelines.	X	X	X	X	X	X	X	X	X	X	
15.	Undertake analysis to substantiate and confirm old debts	X	X	X	X	X	X	X	X	X	X	
16.	Propose write off procedure for old debtors	X	X	X	X	X	X	X	X	X	X	
17.	Recommend commercial charges and penalties	X	X	X	X	X	X	X	X	X	X	
18.	Create staff, consumer and stake holder awareness on cost of production and distribution of water	X	X	X	X	X	X	X	X	X	X	
19.	Outsource the servicing for master meters and condition future supply / tenders to procurement with service backup	X	X	X	X	X	X	X	X	X	X	

1.000000 - RENEWABLE UTILITY MANAGEMENT PLAN

No.	Action	Narvik	Merå	Murungá	Kabonjeg	Maktofu	Wundaryi	Migori	Lamu	Webuye	Mumias	Utility Management Plan
1	Develop a 'Renewable Energy' policy that states the utility's commitment with reference to meeting the stakeholder requirements	X	X	X	X	X	X	X	X	X	X	X
2	Develop a 'Renewable Energy' management plan that outlines the process, strategies, and other measures	X	X	X	X	X	X	X	X	X	X	X
3	Assign the responsibility of implementing the policy	X	X	X	X	X	X	X	X	X	X	X
4	Conduct a 'Stakeholder' identification and mapping exercise	X	X	X	X	X	X	X	X	X	X	X
5	Develop a communication strategy to implement the policy and the plan	X	X	X	X	X	X	X	X	X	X	X
6	Develop the communication management plan to ensure the policy and the plan are implemented	X	X	X	X	X	X	X	X	X	X	X
7	Develop a communication strategy to implement the policy and the plan	X	X	X	X	X	X	X	X	X	X	X
8	Develop a communication strategy to implement the policy and the plan	X	X	X	X	X	X	X	X	X	X	X
9	Develop a communication strategy to implement the policy and the plan	X	X	X	X	X	X	X	X	X	X	X
10	Develop a communication strategy to implement the policy and the plan	X	X	X	X	X	X	X	X	X	X	X
11	Develop a communication strategy to implement the policy and the plan	X	X	X	X	X	X	X	X	X	X	X
12	Develop a communication strategy to implement the policy and the plan	X	X	X	X	X	X	X	X	X	X	X
13	Develop a communication strategy to implement the policy and the plan	X	X	X	X	X	X	X	X	X	X	X
14	Develop a communication strategy to implement the policy and the plan	X	X	X	X	X	X	X	X	X	X	X
15	Develop a communication strategy to implement the policy and the plan	X	X	X	X	X	X	X	X	X	X	X
16	Develop a communication strategy to implement the policy and the plan	X	X	X	X	X	X	X	X	X	X	X
17	Develop a communication strategy to implement the policy and the plan	X	X	X	X	X	X	X	X	X	X	X
18	Develop a communication strategy to implement the policy and the plan	X	X	X	X	X	X	X	X	X	X	X
19	Develop a communication strategy to implement the policy and the plan	X	X	X	X	X	X	X	X	X	X	X
20	Develop a communication strategy to implement the policy and the plan	X	X	X	X	X	X	X	X	X	X	X

No.	Action	Narok	Meru	Muranga	Kabarnet	Makindu	Wundanyi	Migori	Lamu	Webuye	Mumias	Utility Management Plan
20.	Decentralise AIE funding and procurement procedures to system level and transfer efficient and stringent control to the provincial / regional office level	x	x	x	x	x	x	x	x	x	x	
21.	Decentralise decision making process to station level	x	x	x	x	x	x	x	x	x	x	
22.	Decentralise planning and control of cost	x	x	x	x	x	x	x	x	x	x	
23.	Design efficient and stringent control system for the provincial / regional office level (Price analyst, independent external auditors, adequate use of chemicals )	x	x	x	x	x	x	x	x	x	x	
24.	Design MIS reporting system for Povincial to HQ reporting (investment planning, policy making)	x	x	x	x	x	x	x	x	x	x	
25.	Set up stock management system and controls	x	x	x	x	x	x	x	x	x	x	
26.	Set up consumer meter workshop (with volumetric test facilities)	x	x	x	x	x	x	x	x	x	x	
27.	Prepare / update O&M guidelines / manuals	x	x	x	x	x	x	x	x	x	x	
28.	Propose outsourcing criterias for pump maintenance depending on the pump capacity.											
29.	Include consumer lines into the planned network	x	x	x	x	x	x	x	x	x	x	
30.	Clarify and document water wayleafs	x	x	x	x	x	x	x	x	x	x	
31.	Introduce retainer security on contracted civil works and quality control	x	x	x	x	x	x	x	x	x	x	

No.	Action	Year											Urban Management Plan				
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024					
26	Centralise decision making and procurement processes of various departments, particularly for equipment and spare parts, under the procurement department directly.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
27	Centralise decision making process to station level.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
28	Decentralise planning and control of cost.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
29	Design efficient and stringent control system for the provincial/regional office level office assets, independent external monitors, adaptation use of chemicals.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
30	Design MIS/expense system for town level to EPD covering investment planning, policy making.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
31	Set up a team to manage the system and monitor.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
32	Set up consumer unit workshop with voluntary test facilities.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
33	Prepare/update O&M guidelines, manuals.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
34	Propose outsourcing/citizens for pump maintenance depending on the pump capacity.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
35	include consumer unit into the planned network.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
36	Introduce measurement and ways of.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
37	introduce retailer security or contracted civil works and quality control.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

## 8.11. RECOMMENDED PRIORITY PROJECTS

The final choice of priority projects is recommended to be made during or as a result of the stakeholders workshop. The utility indices and figures compiled in Annex K3 – ST8.2. allow however to draw conclusions and give a basis for good comparison. There are a number of criteria offered as a selection criteria, like:

- Which town promises the fastest results?
- In which town are the highest savings expected?
- Where is the intervention most urgently needed?
- Billing and Revenue Collection Efficiency highest or lowest? or
- Which town has shown the highest effort under the prevailing circumstances?

## 8.12. RECOMMENDED PRIORITY MEASURES:

The reduction of Un-accounted for Water (UfW) must be considered as the overall priority measure, necessary for all the systems analysed.

Un-accounted for Water is made up of:

- Physical losses in the transmission and distribution system
- Wrong meter reading and billing, and
- Water theft

For those towns where the calculation showed no UFW, the consultant is of the opinion that the information availed needs further confirmation and more detailed field investigation, because such a situation is unrealistic.

To reduce the said water losses it is therefore recommended to give the following priorities:

- 1) **Full rehabilitation of the existing distribution system, including standardised meter connections,**
- 2) **Replacement or repair of all faulty consumer meters,**
- 3) **Setting up of a consumer data base and a reliable billing program, and**
- 4) **Management- and Staff Training for the relevant staff members**

## **9. INSTITUTIONAL AND LEGAL ASPECTS OF WUNDANYI URBAN WATER SUPPLY SERVICE**

### **9.1 Institutional Set-Up of Wundanyi Urban Water Supply Service.**

Wundanyi urban water supply is under the responsibility of the District Water Office (DWO), Taita Taveta District. This means that in addition to the operation and management of the Wundanyi Urban Water Supply, the DWO has the responsibility of operating and managing other water supply systems in Wundanyi District. The District Water Officer, Wundanyi, is supported by a Deputy District Water Officer. The detailed organisational structure for Taita Taveta District Water Management is presented in the utility management section of this report. The functional arrangement in the District water supply system includes the following sections:

- (a) Operations and maintenance.
- (b) Revenue and billing.
- (c) Accounts.
- (d) Administration.
- (e) Supplies.

Wundanyi town has no centralised sewerage system. Disposal methods in Wundanyi are on-site by means of septic tanks, cess pits and pit latrines which serve the town satisfactorily. Wundanyi Town Council hires a vacuum tanker from the Ministry of Public Works when needed.

In recommending a viable institutional and legal framework for Wundanyi Urban Water Supply, it is necessary to provide details of the existing institutional and legal framework for the water sector in Kenya.

### **9.2 Existing Institutional Framework for the Water Sector**

#### **9.2.1 Organisations Concerned with Water Supply**

Water is principally now being managed under the Ministry of Environment and Natural Resources. However, there are specific institutions responsible for the development, operation and maintenance, and regulation of water supply. These institutions are analyzed below.

##### **(a) Department of Water Development**

The Department of Water Development (WDD) is the GOK agency responsible for the development, conservation and control of water. In support of this, its mission statement is: "to ensure proper and orderly Water Resources Management, including assessment, conservation, development and protection of the environment from degradation from water development activities." In order to fulfill its mission, the functions of the department are stated as:



- Water development and water supply;
- Control of water catchments;
- Water resource management;
- Water quality and pollution control;
- Water conservation.

To execute these functions, the Director of Water Development is responsible for three branches, which together are responsible for ten Divisions, one additional Division, the Kenya Water Institute (KEWI), six provincial water offices and, through the provincial offices, 64 district offices throughout Kenya. WDD operates a total of 375 (309 rural)<sup>3</sup> schemes through its network of Provincial, district and Divisional offices.

The Department of Water Development manages ground and surface water resources by hydrological observation, assessing water resources, controlling water quality, planning water projects, assessing environmental and other impact of water resource management practices. There are 500 observation stations around the country providing data for this unit. The branch also manages a division for water rights ad assessment, which issues, cancels and registers water permits and maintains water resources database.

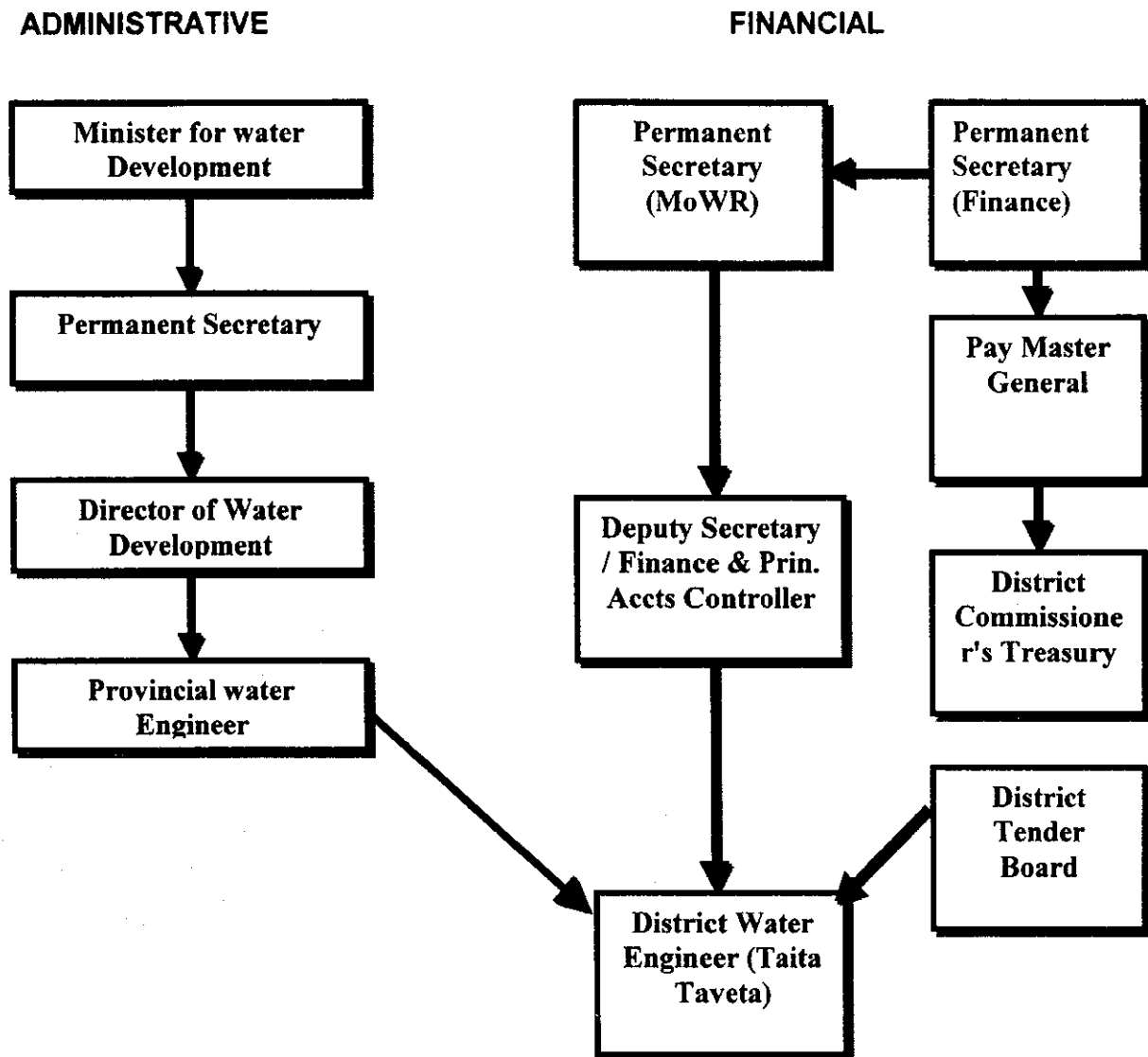
The four branches of the department are:

- Water resource development
- Water resource management
- Water research
- Kenya Water Institute

#### **(b) Water Operations at District and Scheme Level**

In Districts and scheme level, management is vested on the District Water Engineer. The District Water Engineer is also Secretary to the District Water Board and executes decisions as required by the DDC.

**Chart 1: Management Structure for Water and Sewerage Services - Water Undertaker: Director of Water Development**



**9.2.2 Agencies Related to the Ministry of Environment and Natural Resources**

There are various agencies operating in support of the mission of the Department of Water Development. These include:

**(a) Water Appointment Board (WAB)**

WAB reports to the Minister of Water. It, on behalf of the Minister, authorises, supervises and controls the use of water throughout Kenya. The function is discharged through Catchment Boards. There are six catchment Boards as follows: Tana, Rift Valley, Athi, Northern Ewaso Nyiro, Lake Victoria North, and Lake Victoria South.

## **(b) District Water Boards**

District Water Board, established since 1991, in each district assist the planning and coordination of water related activities. The Boards are subcommittees of the DDC's. Their mandate includes:

- Protection, conservation and preservation of all catchment areas in the district;
- Partitioning, allocations and authorisation of al water bodies;
- Water quality and pollution control activities;
- Management and control of water use;
- Overseeing and coordinating all water related activities in the District;
- Assisting in the enforcement of the Water Act.

## **(c) National Water Conservation and Pipeline Corporation (NWPC)**

The National Water Conservation and Pipeline Corporation (NWPC) was established under the State Corporations Act, Chapter 446 of the Laws of Kenya vide Legal Notice No. 270 of 24<sup>th</sup> June, 1988, as an autonomous agency reporting to the then Ministry of Water Development. The Corporation became operational on 1<sup>st</sup> July, 1989. The Corporation was created to meet the following objectives:

- To commercialize the water sector operations;
- To achieve financial autonomy in water operations;
- To improve performance of water supplies and
- To reduce dependence on public funding of water projects.

At the time of establishment, the Corporation was mandated to undertake the following in connection with water supplies and projects where it had been appointed water undertaker:

- (i) Under the general direction of the Minister for the time being responsible for water resources, manage and develop the specified water supplies and projects;
- (ii) Supply water in bulk to such water undertakers as the Minister may, after consultation with the Board of Directors, by notice in the Gazette, designate;
- (iii) Supply water in bulk or otherwise, to such persons or class of persons as the Minister may, after consultation with the Board, by notice in the Gazette, designate;
- (iv) Do all such things as may be necessary or advantageous for the management of the water projects and for securing an adequate supply of water;
- (v) Apply for and obtain all such licenses, permits and other authorities required under any written law or as may be desirable.

The Corporation was also mandated to assist the Government in the formulation and execution of a National Water Development Policy.

### **9.2.3 Other Institutions Related to Water**

#### **(a) Ministry of Local Government (MOLG) and Local Authorities**

MOLG is the third institution with major responsibilities for the water supply and sanitation sector. The ministry's mission is to promote the development of Kenya through the establishment and existence of viable and well organised Local Authorities (LA's). MOLG currently oversees 164 LAs which are established by the Minister as provided for in Local Government Act. Among their many responsibilities is the provision of water and sanitation services in their areas as set out in the Act. Of the 164 LA's, 10 administer water and sewerage schemes, and the rest administer sewerage only or sanitation schemes, water being supplied by another water undertaker such as MENR or NWCP. The Water and Sewerage Department of the Nairobi City Council, although a local authority scheme, is really a special case because of its size and the degree of autonomy it enjoys.

Of the five MOLG departments reporting to the Permanent Secretary and which, together, are to execute the functions and fulfill the mission, the Urban Development Department has direct technical responsibility for water and sanitation (see Figure 2.1.2 for its organisation structure). It has a Planning Division and a Technical Division out of its functions of:

- Formulating, with LA's, urban development policies;
- Coordinating implementation of urban development policies, programmes and projects in LAs; monitoring and evaluating these;
- Providing technical assistance to LAs.

Water and Sanitation Section is one of four technical sections addressing different subsectors of LAs and providing technical assistance to them.

#### **(b) Non-Governmental Organisations (NGOs) and Community Schemes**

The impact of NGOs in the provision of water supplies appears to be considerable and to have operated over many years. It has been estimated that at least 60 of the more than 400 NGOs active in Kenya are engaged in the water sector. Most have water components in integrated rural development projects.

It appears that many NGO projects employ MENR staff as technical advisers during development, after which they are handed over to the communities with some ongoing help from the Ministry. However, other water projects which may form part of larger integrated development projects, are undertaken without MENR being notified.

The district or divisional offices of the Ministry should be the contact point for all such schemes and a registration procedure should be mandatory.

In addition to the above, there are schemes operated by small informal groups which often collapse without financial or technical assistance. Those that do not fail are better managed, either with or without external help from, say, MENR field staff, with realistic fund raising arrangements. The Ministry of Culture and Social Services attempts to mobilise and assist groups like these, but is hampered by lack of funds and manpower in the field.

### **9.3 Legal Framework of the Water Sector**

An appropriate legal and regulatory framework is necessary to monitor and control the water sector. The main objectives of the regulatory system are to: ensure compliance with standards of acceptable service, protect the ratepayer and create an environment that promotes stable and viable water institutions. The Kenyan Government has enacted laws related to water supply and sewage disposal including environmental legislation. The main laws include:

- (a) The Water Act (Cap 372)
- (b) The National Water Conservation and Pipeline Corporation Order (Legal Notice No.270, June 24, 1988)
- (c) The Local Government Act (Cap 265)
- (d) The Irrigation Act
- (e) The Tana and Athi Rivers Development Authority Act
- (f) The Keno Valley Development Authority Act and The Lake Basin Development Authority Act
- (g) The Agriculture Act (Cap 318)
- (h) The Public Health Act (Cap 242)
- (i) The Environmental Management and Co-ordination Act of 1999.
- (j) Wildlife (Conservation and Management) Act (Cap 376)

These laws are briefly described and assessed where relevant to the water sector.

#### **9.3.1 The Water Act (Cap 372)**

The Water Act, which is the most important law related to water, was first established in 1951 to make better provision for the conservation, control, apportionment and use of water resources. It was revised in 1972 and further subsidiary legislation was enacted in 1995.

**(a) The objective of the Water Act**

The purpose of the Water Act is to make provision for the conservation, control, apportionment and use of the water resources of Kenya, and for purposes incidental thereto and connected therewith. Except for waters which are wholly situated in a private land owner's domain, the Act vests the rights over all surface and ground water in the Government subject only to the rights which users may acquire under licence.<sup>1</sup> The overall power for the control of every body of water is exercised by the Minister,<sup>2</sup> who has the duty to promote the investigation, conservation and proper use of water resources of Kenya.<sup>3</sup> Part III of the Act provides for the general powers of the Minister. He has power to purchase or acquire land by any other means for the conservation, improvement or use of water,<sup>4</sup> to construct and maintain such works as may be necessary for the protection of the source or course of any body of water, the disposal or control of flood water, the conservation of water, and the distribution, apportionment or measurement of water,<sup>5</sup> to impose water rates upon any person benefiting by such works;<sup>6</sup> to impose water rates in connection with community water projects;<sup>7</sup> to impose water rates on local authorities with respect to water projects in reserved areas;<sup>8</sup> to order drainage of swamps;<sup>9</sup> to establish protected catchment areas in cases where special measures are necessary for the protection of water resources;<sup>10</sup> to expropriate, on payment of compensation, and operate or dispose of water works;<sup>11</sup> to enter upon, use, order the use of, maintain, vary, destroy or remove abandoned water works wherever situated;<sup>12</sup> and, in cases of emergency as a result of a serious deficiency of water for domestic purposes caused by reason of exceptional shortage of rain, accident, or other unforeseen circumstances, to direct that any person who has excess water supply for his domestic purposes does supply to such area or other person the excess quantity.<sup>13</sup>

**(b) Institutions under the Water Act**

The Act then establishes two important institutions. The first is the Water Resources Authority, established under section 19, with the duties, *inter alia*, to investigate the

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<sup>1</sup> Supra, note 24, section 3.

<sup>2</sup> Ibid., section 4.

<sup>3</sup> Ibid., section 7.

<sup>4</sup> Ibid., section 8.

<sup>5</sup> Ibid., section 9.

<sup>6</sup> Ibid., section 10.

<sup>7</sup> Ibid., section 11.

<sup>8</sup> Ibid., section 12.

<sup>9</sup> Ibid., section 13.

<sup>10</sup> Ibid., section 14.

<sup>11</sup> Ibid., section 15.

<sup>12</sup> Ibid., section 16.

<sup>13</sup> Ibid., section 17.

water resources of the country and advise and make recommendations on the improvement, preservation, conservation, utilization and apportionment, to prepare estimates of the future water supply requirements of any area of the country, and to formulate proposals for meeting the existing and future water supply requirements of any area.<sup>14</sup> The second is the Water Apportionment Board established under section 25, with the duty, to grant permits for proposed diversion, abstraction, obstruction, storage or use of water from a body of water or drainage of a swamp,<sup>15</sup> and powers to prescribe measuring and controlling devices for water consumption,<sup>16</sup> to require equitable use and to prohibit any practice that may cause undue reduction of water during drought and in the case of small watercourses,<sup>17</sup> to determine all questions as to full, efficient, reasonable and beneficial utilization of water,<sup>18</sup> and to declare various matters pertaining to bodies of water.<sup>19</sup> Overall, the Water Apportionment Board works in an advisory capacity to the Minister and determines the apportionment of national waters according to user requests.

### **(c) Powers of the Minister under the Act**

The Act then empowers the Minister to take a number of steps to ensure the protection of water catchment areas and ground water resources. He may declare an area to be a protected catchment area, a conservation area, or a protected area. Where the Minister is satisfied, after consultation with or on the advice of the Water Resources Authority, that special measures are necessary for the protection of water resources in or derived from any area, he may declare such area or any part thereof to be a protected catchment area.<sup>20</sup> By order, the Minister may require, regulate or prohibit any activities within such a protected catchment area which may be contrary to the requisite protection goals. Any person who fails to comply with such order shall be guilty of an offence.<sup>21</sup> Under section 74 of the Act, the Minister has power to declare, after consultation with the Water Resources Authority, an area to be a conservation area if special measures for the conservation of ground water in the public interest whether for the protection of public water supplies or for the protection of water supplies used for industrial or other purposes are required. Any person who has been using ground water in an area so declared to be a conservation area and who desires to continue with the use must, within six months of the Minister's declaration, obtain a permit.<sup>22</sup> Besides, no person may construct and use any well for the abstraction of ground water, extend any existing well for the abstraction of additional ground water, or abstract ground water by mechanical means from any well, within a conservation area without a permit.<sup>23</sup> Where the Minister has appointed an undertaker to be responsible for the control and distribution of water in a given

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<sup>14</sup> Ibid. section 20.

<sup>15</sup> Ibid. sections 36, 78, & 79.

<sup>16</sup> Ibid. section 28.

<sup>17</sup> Ibid. section 29.

<sup>18</sup> Ibid. section 30.

<sup>19</sup> Ibid. section 31.

<sup>20</sup> Ibid. section 14.

<sup>21</sup> Ibid.

<sup>22</sup> Ibid. section 75.

<sup>23</sup> Ibid., section 76.

area,<sup>24</sup> there is a corresponding duty to ensure an adequate supply. Accordingly, whenever the Minister is satisfied that special measures are necessary for the protection of a catchment area from which the water supply of an undertaker is obtained, he may declare such area to be a protected area.<sup>25</sup> By order, he may require, regulate or prohibit the carrying out of any activities in the area that may be inimical to the protection of the area or the water supply obtained therefrom. Such an order must be published in the Gazette and in a newspaper circulating in the district where the area is situated.<sup>26</sup>

#### **(d) Pollution control**

The Water Act also addresses the issue of pollution of water resources, albeit in the part of the statute addressing miscellaneous issues.<sup>27</sup> One may be tempted to conclude that pollution, and the quality of water generally, is not given the priority that it deserves in the statute. There is comparatively more emphasis on ensuring that there is no diminution in the quantity and not quality of supplies. However, pollution of water used for human consumption is an offence under the Act.<sup>28</sup> The perpetrator of the pollution shall not be so liable if he was practising a lawful method of cultivation of land or the watering of stock which does not conflict with the principles of good husbandry.<sup>29</sup> Similarly, it is not an offence if the perpetrator is involved in reasonable use of oil, tar, or other substances on any highway or road and reasonable steps are taken to prevent pollution. Finally, the pollution does not constitute an offence where the perpetrator was involved in the disposal of wastes or effluent in any area that the Minister may have specified.<sup>30</sup>

In any event, it is an offence for any person to wilfully and without authority throw, convey, or cause or permit to be thrown or conveyed, any rubbish, dirt, refuse, effluent, trade waste or other offensive or unwholesome matter or thing into or near any body of water in such manner as to cause, or be likely to cause, pollution.<sup>31</sup> Besides, under Rule 72 of the Water (General) Rules<sup>32</sup>, any person the effluent from whose works is returned to or discharged into a body of water not being "in such a degree of purity as will satisfy" the Water Apportionment Board or containing any matter "poisonous or otherwise likely to be injurious directly or indirectly to public health, to livestock or to crops, or to orchards or gardens irrigated with such water, or to any product for which such water is used in any process whatsoever," shall be guilty of an offence. Absent water quality and discharge standards as well as a monitoring mechanism, these provisions have remained inoperable, although well-intentioned!

A further attempt to amend the Act is now in progress led by the Water Rights

<sup>24</sup> That is, under section 124 of the Act.

<sup>25</sup> Section 150(1)

<sup>26</sup> Section 150(2).

<sup>27</sup> Part XVI of the Act.

<sup>28</sup> *Ibid.*, section 158(1).

<sup>29</sup> *Ibid.*

<sup>30</sup> *Ibid.*

<sup>31</sup> *Ibid.*, section 160(2)(b).

<sup>32</sup> *Ibid.*, L.N. 374 of 1964. See also Rules 77-80.



Section of the MOWR. It is intended that a second Water (Amendment) Bill be prepared, circulated to stakeholders and the Attorney General, and then submitted to Parliament.

### **9.3.2. The National Water Conservation and Pipeline Corporation Order, 1988**

The National Water Conservation and Pipeline Corporation was established in 1988 by an Order,<sup>33</sup> and among its functions are the development and management of the water projects listed in the Schedule to the Order, as amended from time to time.<sup>34</sup> To that end, and in connection with the water projects in the Schedule, Regulation 5 provides that the Corporation shall (a) supply water in bulk to such water undertakers as may be designated by the Minister, (b) supply water, in bulk or otherwise, to such persons or class of persons as the Minister may designate, (c) do all such things as may be necessary or advantageous for the management and development of water projects and for securing an adequate supply of water, and (d) apply for and obtain such licences, permits and authorities required under any written law or as may be desirable. Further, the Regulation provides that the Corporation shall operate under the general direction of the Minister and shall assist the government in the formulation and implementation of a national water development policy.

It is noteworthy that the functions of the Corporation do not include addressing or dealing with factors or activities that may affect the availability of water or its quality. The supply with which the Corporation is concerned is dependent on the availability which, in turn, is dependent on conservation of catchment areas and drainage basins and ensuring that activities in these areas do not lead to diminution of the water in quantity and quality. The implication here is that the Corporation would be rendered functus officio if the supplies dried out!

A major weakness in the legislation establishing the Corporation is the absence of any statement indicating how it is to relate to other institutions, eg MOWR and local authorities, in the development and management of water supplies. This has caused considerable confusion among these other institutions and needs to be resolved.

### **9.3.3 The Local Government Act (Cap 265)**

This Act was set up in 1963 to provide for the establishment of authorities for local government, to define their functions and to provide for "connected" and "incidental" matters. It was revised in 1986.

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<sup>33</sup> *Supra*, note 37.

<sup>34</sup> As per the last amendment to the Schedule, effected vide L.N. 42 of 1989, the total number of water projects under the Corporation is now forty two.

In the context of this study, the Act provides that every local authority (municipal, town and urban council) may establish, maintain and regulate sewerage and drainage works within or outside its area. It may also compel the construction of private drains and their connection to public drains or sewers, and fix charges for the use of sewerage and drainage facilities.

In addition, a local authority (municipal, town, urban or area council) may undertake the supply of water within its area, and may establish, acquire and maintain works for this purpose. A local authority may make by-laws under this Act to the extent that a water undertaker may make regulations under the Water Act. However, it is not stated clearly that every local authority-undertaking water supply is a water undertaker under the Water Act. For example, the Water (Water Undertakers) Rules apply only to gazetted water undertakers.

Many local authorities operate and manage water supply systems, not only as water undertakers but also pursuant to the provisions of the Local Government Act.<sup>35</sup> The water and sewerage department of every local authority is responsible for operation and maintenance of works for the supply systems. Augmentation and expansion of the systems are under the control of the parent ministry.

#### **9.3.4 The Irrigation Act**

Section 15(2)(a) of the Irrigation Act (Cap. 347) enjoins the Irrigation Board, in conjunction with the water Resource Authority, to formulate and be responsible for the execution of policy in relation to national irrigation schemes. One can only hope that such policy would take into account and be in consonance with the provisions of the Water Act.

This Act provides for the establishment, constitution and functions of the National Irrigation Board which is responsible for the development, control and improvement of national irrigation schemes in the areas designated by the Minister of Water Resources.

#### **9.3.5 The Tana and Athi Rivers Development Authority Act**

The Act provides for the establishment of an authority to advise on the institution and coordination of development projects in the two basins.

#### **9.3.6 The Kerio Valley Development Authority Act and the Lake Basin Development Authority Act**

These Acts each provide for the establishment of an Authority to:

(a) Plan and coordinate the implementation of development projects in the

<sup>35</sup> Chapter 65, Laws of Kenya, (Revised Edition, 1986), sections 178-180.

catchment area;

- (b) Establish a long range development plan for the area;
- (c) Coordinate the abstraction and use of natural resources, especially water, and to monitor this;
- (d) Maintain a database of all relevant statistics for the area.

The Acts do not state that the Authorities have sole or any responsibility for developing and distributing water supplies in bulk, either within the Area or outside it.

### **9.3.7 The Agriculture Act (Cap 318)**

Section 201 of the Agriculture Act acknowledges the supremacy of the Water Act. It states -

"Nothing in this Act or any rules made thereunder shall prejudice or affect the provisions of the Water Act, and where anything in this Act or any rule is inconsistent with any such provision that provision shall prevail." This provision should be included under other Acts as far as water is concerned.

The Act promotes agricultural development according to sound practices of good land management and stresses the need for conservation of soil and its fertility. Thereby, the Act indirectly emphasises the importance of preventing of soil erosion and the consequential deterioration of the quality of surface water.

### **9.3.8 The Public Health Act (Cap 242)**

This Act requires local authorities to take all lawful measures to prevent and deal with the outbreak of disease. As there is a direct connection between certain diseases, sewage and water supply, every local authority, whether a water undertaker or not, has a statutory duty in water supply, water pollution and sewage disposal. For this purpose, the Act gives every local authority wide powers to deal with unsatisfactory water supplies, wastewater and sewage disposal and water pollution. For example, a local authority is mandated to prevent pollution of any supply of water used for drinking or domestic purposes, to purify it should it become polluted and to take action against those causing the pollution. Furthermore, the local authority is empowered to exercise its powers outside its area, if for example the source of water is outside its area.

Powers given to the Minister include: delegation of powers to local authorities and others to control the standard of purity of treated effluent and to control industries liable to pollute water courses; making rules for the protection of water supplies in defined areas; prohibition of insanitary irrigation within a town or its environs. There is

a fair amount of subsidiary legislation which includes detailed provisions for drainage and sewerage.

### 9.3.9 The Environmental Management and Co-ordination Act 1999

Management of water resources has also been addressed by legislation outside the sectoral confines. In particular, this has been addressed under the rubric of environmental protection and conservation by the newly enacted Environmental Management and Co-ordination Act.<sup>36</sup> The Act has detailed provisions on this matter. For instance, section 42 provides that no person shall, without the written approval of the Director General of the National Environment Management Authority, given after an environmental impact assessment in relation to a river, lake or wetland carry out a number of activities, namely, (i) erect, reconstruct, place, alter, extend, remove or demolish any structure or part of any structure in or under the river, lake or wetland; (ii) excavate, drill, tunnel or disturb the river, lake or wetland; (iii) introduce any, animal whether alien or indigenous, dead or alive, in any river, lake or wetland; (iv) introduce or plant any part of a plant specimen, whether alien or indigenous, dead or alive, in any river, lake or wetland; (v) deposit any substance in a lake, river or wetland or in, on, or under its bed if that substance would or is likely to have adverse environmental effects on such water body; (vi) direct or block any river, lake or wetland from its natural and normal course; or (vii) drain any lake, river or wetland. Besides, the Minister is empowered to declare a lake shore, wetland, coastal zone or river bank to be a protected area for purposes of conserving the environmental quality of such a body of water.<sup>37</sup> He may also issue general and specific orders, regulations or standards for the management of river banks, lake shores, wetlands, or coastal zones and for the protection and conservation of such areas if they face imminent risk of environmental degradation. Such orders may provide for, *inter alia*, the development of overall environmental management plans for the water bodies taking into account the relevant sectoral interests, the development of contingency plans for the prevention and control of all deliberate and accidental discharge of pollutants into the water bodies, as well as the development of plans for the protection of wetlands.<sup>38</sup>

#### (a) Management of environment - lakes and rivers

The National Environment Management Authority is also under a duty to issue guidelines for the management of the environment of lakes and rivers.<sup>39</sup> It is also required to develop, issue and implement regulations, procedures, guidelines and measures for the sustainable use of hill sides, hilltops, mountain areas and forests and the control of the harvesting of forests and other natural resources so as to protect water catchment areas.<sup>40</sup>

<sup>36</sup> Act No. 8 of 1999. The Act became operational effective January 14, 2000.

<sup>37</sup> *Ibid.*, section 42(2).

<sup>38</sup> *Ibid.*, section 42(3).

<sup>39</sup> *Ibid.*, section 42(4).

<sup>40</sup> *Ibid.*, sections 44 & 47.

Further, the Minister is empowered to declare any area of land, sea, lake or river to be a protected natural environment area for the purpose of promoting and preserving specific ecological processes, natural environment systems, natural beauty or species of indigenous wildlife or the preservation of biological diversity in general. Once an area has been so declared, the National Environment Management Authority is empowered to issue guidelines and prescribe measures for the management and protection of such area.<sup>41</sup>

#### **(b) Environmental impact assessment - water projects**

Section 58 of the Act makes it mandatory for projects that are likely to have adverse environmental impacts on water to undergo environmental impact assessment. These projects are dams, rivers and water resources including storage dams, barrages and piers; river diversions and water transfer between catchments; flood control schemes; and drilling for the purpose of utilizing ground water resources including geothermal energy.<sup>42</sup>

What is clear from the above is that the Environmental Management and Co-ordination Act is innovative in one fundamental way. Unlike the other legal instruments before it, it focuses the management strategy less on the resource (water) *per se* and more on the protection and conservation of the ecosystems that enhance and maintain both the quality and quantity of the resource available for use. By focussing more on the ecosystems, the Act adopts a holistic approach to water resource management which, in turn, enables the consideration of related factors such as deforestation, agricultural and animal husbandry and human settlements, all of which have direct implications on the availability and sustainable use of water.

#### **(c) Water quality standards**

As already noted above, the major problem with the prevention and control of water pollution is the absence of any water quality and discharge standards. With the Environmental Management and Co-ordination Act in force, this may soon become history. Water polluting activities and pollutants will be subjected to strict control measures under the Act. The Act establishes a Standards and Enforcement Review Committee whose functions are, *inter alia*, to advise the National Environment Management Authority on how to establish criteria and procedures for the measurement of water quality, to recommend to the Authority minimum water quality standards for uses such as drinking, industry, agriculture and recreation, and to analyse and submit to the Director General of the Authority conditions for discharge of effluents into the environment.<sup>43</sup> Implementation of the quality standards will be reinforced by penal sanctions, a factor that recognizes societal interest in water quality. Any person who discharges or applies any poison, toxic, noxious or

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<sup>41</sup> *Ibid.*, section 54.

<sup>42</sup> *Ibid.*, section 58 and Second Schedule to the Act.

<sup>43</sup> *Ibid.*, sections 70 & 71.

obstructing matter, radioactive waste or other pollutants or permits any person to dump or discharge such matter into the aquatic environment in contravention of the established water pollution control standards shall be guilty of an offence and liable to imprisonment for a term not exceeding two years or to a fine not exceeding one million shillings or to both such imprisonment and fine.<sup>44</sup> In addition, the person shall be ordered to pay the cost of the removal of the pollutant(s), including the costs of restoration of the damaged environment and, also, to pay third parties reparation, cost of restoration, restitution or compensation as may be determined by the court on application by such third parties.<sup>45</sup>

#### **(d) Trade and industrial effluents**

Trade and industrial effluents shall be discharged only into existing sewerage systems and only pursuant to an effluent discharge licence issued by the local authority operating or supervising such sewerage system.<sup>46</sup> The discharge licence may be cancelled by the Authority if (i) the holder contravenes any provision of the Act, (ii) the holder fails to comply with any condition specified in the licence, or (iii) the Authority considers it in the interest of the environment or in the public interest so to do.<sup>47</sup> Otherwise all licenses issued for effluent discharge shall be kept in a register to be maintained by the Authority as a public document that may be inspected by any person on payment of the prescribed fee.<sup>48</sup>

An important provision of the Act is section 158 which provides that any written law in force before the commencement of the Act relating to the management of the environment shall have effect subject to such modifications as may be necessary to give effect to the Act. Further, where the provisions of such law conflict with those of the Act, the latter shall prevail. This provision is crucial in charting the future trends in legislative action with respect to the management of the environment generally and water in particular.

#### **9.3.10 Wildlife (Conservation and Management) Act (Cap. 376).**

Mention should also be made of the Wildlife (Conservation and Management) Act (Cap. 376). Under S.15 thereof, the Minister is empowered, upon certain conditions being satisfied, to prohibit, restrict or regulate any particular acts in any area adjacent to the Park, National Reserve or local sanctuary. In particular, he may declare an area to be a protection area and may also specify the acts which are prohibited or regulated and the extent or manner of such restriction or regulation. The Minister's action might well encroach upon water allocation and related matters. Should that happen, it would then become necessary to ensure that the Minister's actions are in conformity with the express provisions of the Water Act.

#### **9.4 Concerns With the Current Institutional Framework**

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<sup>44</sup> *Ibid.*, section 72.

<sup>45</sup> *Ibid.*

<sup>46</sup> *Ibid.*, sections 74 & 75.

<sup>47</sup> *Ibid.*, section 76.

<sup>48</sup> *Ibid.*, section 77.

Past measures and policies have not effectively addressed the problems in the water supply and sanitation sector. The water delivery systems continue being ineffective and inefficient. The main reasons for these are:

- (a) The politics of water - Water has been regarded as a social good. It is therefore part of a political culture that water provision and sanitation is the obligation of the state. Citizens, administrators and politicians regard water utilities as naturally existing to fulfill that social role. Moreover, water utilities are significant employers and instruments of political patronage.
- (b) Uncertainty over the policy regime and regulatory framework has been a major constraint in the water supply and sanitation sector management. It is held that rules which are clear, sound and stable, and institutions which enforce those rules in a fair and predictable manner, are the linchpin to efficient institutions.
- (c) The role of private capital and management in the water supply and sanitation sector and the pricing of services have not been clarified. Lack of detailed information on the sector and its potential as a business is a major reason why entrepreneurial resources have yet to be mobilized on a scale consistent with the potential of the sector.
- (d) There are no performance standards for water utilities in Kenya currently. This means that managers cannot be sanctioned for poor performance. This extends to the fact that there are no effective sanctioning system for wayward and dishonest employees as well.
- (e) The centralized system of managing water utilities particularly those under the MENR and NWPC makes efficient operations difficult.
- (f) Water services are provided by centrally managed monopolistic public enterprises or government departments. Those charged with the responsibility for delivery of water services are rarely given the managerial and financial autonomy they need to do their job properly.
- (g) Users of these services both actual and potential are not well positioned to make their demands felt.

In addition to the above there are specific constraints arising from the administrative and financial over water. These are:

- (h) The Ministry is responsible for all features of water development and management. This includes policy formulation, water sector regulation and is also the main water undertaker. This leads to over centralized decision making processes leading to slowness in project implementation and capacity responsiveness.

- (i) The financial management aspects of water schemes is governed by Treasury Regulations. Revenues, especially for those schemes operated by the Ministry of Water Resources, revert to District Treasuries with little reference to the dynamic needs of the water schemes. This affects operation of water schemes in that there is absence of financial control at the District level. This results in:
  - Lack of attention in even a minor leakage problem as repair financing decisions lies elsewhere.
  - In excess financing charges for the water sector.
  - Lack of accountability and transparent with respect to the finances raised and utilized by the water schemes.
- (j) There exists Parallel authority systems in the implementation of projects, particular at the District and Provincial Water Engineers level.
- (k) The Water Act, which is the operative Act for the water sector does not formally recognize the position of the Permanent Secretary in the management of water resources.
- (l) Water resource management responsibilities are often fragmented among sector agencies and this becomes a major impediment to integrated water resources management.

## **9.5 Concerns with the Existing Legal Framework**

Implementation of the law is generally intended by Government and public authorities. If laws are made for good reasons, there must be equally good reasons for their enforcement. Law which is not implemented because it is not enforced encourages the public to disregard it, and is unfair to those who observe h.

Several studies of the sector spanning two decades have revealed that most problems are due to poor implementation and enforcement of the law, rather than any serious deficiencies in h. It is reported that formal enforcement action is virtually unknown, with scarcely a single prosecution under the relevant laws in the last 35 years. (The Study was unable to verify this absence of prosecutions.) The reasons for this low level of enforcement were:

- (a) The division of responsibilities among many agencies, with little coordination and between which cooperation is not always good. At best this makes for procedural difficulties, and at worst leads to lack of interest.
- (b) The number of laws involved which may be difficult to understand and correlate, particularly by the subordinate officials concerned.



- (c) The demise of the Water Resources Authority and the Regional Water Committees, which, in the absence of amendments to the Water Act, implies that their functions have been taken over unlawfully.
- (d) Lack of experience of enforcement procedures by officials and lack of case law.
- (e) Staff shortages.
- (f) Inability to take Water Act prosecutions to subordinate courts quickly. (The present procedure whereby prosecution of people contravening the Water Act must be initiated by the AG will be quite unworkable if the number of prosecutions increases. This would be better handled by designated officers at a lower level, eg water bailiffs).
- (g) An absence of what can best be described as the "philosophy of enforcement", particularly at senior levels. One might add, from the present perspective:
- (h) Generally poor motivation among officials of the public service because of inadequate pay and service conditions when these are compared to the private sector and even state corporations.

## **9.6 Proposals for Reform of the Water Sector**

The need to improve the management systems of providing water and sanitation services in urban areas in Kenya is now apparent and urgent. The technical and operational; commercial and financial; human and institutional; and environmental problems of the water utilities must be addressed. This requires examining different management arrangements that will deliver the intent. Three approaches are considered for ameliorating the problems of water supply in Kenya. These are:

- (a) Retaining the current water management arrangements but strengthening the operations.**
- (b) Corporatization of water and sanitation services.**
- (c) Allowing private sector participation in water utility management.**

Each of these options requires careful analysis as to its viability and application in the Kenyan context. These options are discussed hereunder:

### **9.6.1 Retaining Existing Arrangements**

The proponents of **Retaining the current water management arrangements but strengthening the operations** maintain that the current urban water undertakership arrangements remain. They argue the problem is not institutional but one of the quality of management. Therefore performance of the water utilities can be enhanced

without changing current institutional arrangements but by adopting appropriate reform programmes which include:

- (a) Strengthening the institutional mechanisms of the Ministries of Water Resources and Local Authorities, the urban centers and the National Water Conservation and Pipeline Corporation.
- (b) Developing institutional mechanisms such as contract plans and performance evaluation systems to hold managers of water utilities accountable for results.
- (c) Recruiting skilled manpower with market based compensation systems for the utilities.
- (d) Increasing the autonomy and freeing water utility managers from government interference in day-to-day operational decision making and from non-commercial goals. This will include granting autonomy to management of the utility to hire and fire, negotiate on tariffs and spend outside civil service rules. It also includes restructuring the board of management to diminish the role of sector ministry and civil servants.
- (e) Allowing gradual move to cost recovery tariffs

### 9.6.2 Corporatization

Corporatization means the formation of autonomous utilities to take charge of water supply and sanitation. Corporatization implies full application of commercial principles to the water service providers. The utilities will have focused and explicit performance objectives, well-defined budgets based on revenues from users, and managerial and financial autonomy. The managers can then be held accountable for their performance. The advantage is rapid improvement in performance.

The key in Corporatization is the formation of autonomous utilities. This can be done through:

- (a) Transferring the assets of the water utility to public **trust company**, owned directly by the Government or indirectly through a local authority. The assets are therefore separated and isolated from those of the Government or council. This company will be managed by an independent Board of Trustees similar to that envisaged under the Kenya Revenue Authority Act. Since this is a public company owned by the Government, it will have the capacity to source multilateral funds for development purposes.
- (b) Forming an **autonomous operating entity** which will be granted some rights to manage the utility by the public trust company. Corporatization will be achieved where an autonomous operating unit is created and which is then allowed to operate on full commercial principles enjoying commercial freedoms. Corporatization establishes independence of a local authority or government unit and insulates it from noncommercial pressures and constraints. This is because

lack of autonomy and accountability creates problems such as overemployment and unfocused goals occur because managers do not have control over day-by-day operations. They also must refer decisions on prices, wages, employment, and budgets to someone else. It is known that water departments in urban authorities are not autonomous units. Under this phase, mechanisms for the creation of institutional framework which can lead to commercialization would be considered. This will include the role of the main stakeholders in the commercialization process and the internal arrangements required to create autonomous water departments including human resource and finance issues.

### **9.6.3 Private Sector Participation**

Private sector participation (PSP) in water and sanitation is based on the separation of the ownership of assets from the management of those assets. Private sector participation involves changing the managerial characteristics of the water industry. It further calls for the making of a complex set of choices about all the factors influencing water sector performance and creating the conditions under which private involvement can yield the desired performance improvements. Experience from PSP in water and sanitation has helped to:

- (a) improve the quality and availability of services
- (b) expand service coverage
- (c) mobilize capital from both public and private sources for urgently needed investments
- (d) introduce new cost-effective technologies and stimulate the development of superior management and more efficient use of labour
- (e) reduce operating subsidies, and in some cases, transform them into positive returns on investments
- (f) reduce political interference in the operations of water utilities which often contributes to the chronic inefficiency in public utilities<sup>49</sup>

### **9.7 Proposed Institutional Options and Legal Aspects of Wundanyi Urban Water Supply**

The proposed institutional options and legal implications for the institutional improvement and rehabilitation of water supply system for Wundanyi Urban Water Supply are guided by:

- (a) Government policy on water resource management (Sessional Paper No. 1 of 1999) and policy linkages with Poverty Reduction Strategy Paper (PRSP);

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<sup>49</sup> Nakani, P.2

- (b) Government policy on the restructuring and privatisation of public enterprises (1992)
- (c) Grant financing eligibility for institutional strengthening and infrastructure rehabilitation by development partners and, more particularly, the Government of Japan.
- (d) Sustainability of water supply and sanitation services;
- (e) Improved access of water service to community, especially women;
- (f) Cost effective operations balanced by affordability;
- (g) Speed of incorporation in view of current strict deadlines;
- (h) Consistency with existing incorporation laws;
- (i) Community participation and involvement - public orientation as opposed to private sector orientation;
- (j) Substantial autonomy to deliver service without undue political interference.

The options considered and presented hereunder include: State Corporations; Limited Liability Company; societies Act; and the Trustee Act (Perpetual succession) Act, Cap. 164. These options are summarised below. A detailed analysis of these options and their legal implications are presented in Annex 1 (Institutional options and Legal aspects of Wundanyi Urban Water Supply)

### **9.7.1 State Corporation**

This can be established under the provisions of the State Corporations Act<sup>50</sup> (Chapter 446). This would be a public institution whose day to day operations would be decided by a Board of Directors in which the Government would have a substantial control. It would satisfy the requirement by the Government that it must retain the ownership of its assets and other investments in the sector. It would also meet the condition for grant financing by the Government of Japan through JICA.

However, in the light of the fact that the stated Government policy is to pull out of the water sector, this is not a recommendable option as it would be contradictory to the government policy. Besides, the National Water Conservation and Pipeline Corporation has not particularly been efficient in the discharge of its mandate in order to justify the establishment of another corporation.

### **9.7.2 Limited Liability Company**

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<sup>50</sup> Chapter 446, Laws of Kenya, (Revised Edition, 1987).

This can be incorporated under the provisions of the Companies Act<sup>51</sup> and may be limited either by shares or by guarantee and be public or private. A company limited by shares may be public in which case its shares may be floated on the stock exchange and any person may become an investor therein by purchase of the shares. The number of shareholders is limited only by the share capital. A private company, on the other hand, has a limited number of shareholders; they cannot be more than fifty. Since the number of shareholders is limited only by the share capital, a public company may cater for the interests of more stakeholders than the private company. But since, in both cases, the profit motive is the driving force in the membership, this may ensure efficiency in the delivery of services.

The company limited by guarantee is a more social service oriented organization that is not motivated by the profit motive. To that extent, the company may promote community participation and involvement in its decision-making process.

The main disadvantage of a limited liability company is likely to be 'taken over' by people with the economic muscle and be used for their own selfish interest with little or no benefits enuring to the community that is supposed to be benefited. More crucial is the fact that the company will not meet the eligibility criterion for funding by the Government of Japan through JICA. Besides, in cases where companies have been incorporated to take over municipal water supplies, there have been several technical and operational problems. This is especially so in cases where the local authorities concerned have incorporated wholly owned limited liability companies where the municipal councillors have brought in political interference. Cases in point include Eldoret and Nakuru Municipal water supplies.

### **9.7.3 Co-operative Society**

A co-operative society can be registered under the provisions of The Co-operative Societies Act<sup>52</sup> Under the provisions of this Act, a society which has as its object the promotion of the welfare and economic interests of its members, and has incorporated in its by-laws the principles of (a) voluntary and open membership, (b) democratic member control, (c) economic participation by members, (d) autonomy and independence, (e) education training and information, (f) co-operation among co-operatives, and (g) concerns for community in general, may be registered as a co-operative society with or without limited liability.

The co-operative society is a business organization that would provide an effective tool for community participation and involvement in the operations of a water supply project. It would also promote commercial orientation in the sense that members would expect dividends at the end of every year.

Besides taking a considerably long time to be registered, a co-operative society does not enjoy autonomy from government control in the sense that the Commissioner for Co-operative Development, the Registrar of Co-operative Societies and other officers

<sup>51</sup> Chapter 486, Laws of Kenya (Revised Edition, 1989).

<sup>52</sup> Act No. 12 of 1997 repealing The Co-operative Societies Act, Chapter 490.

are all appointees and officials of the Government with considerable statutory powers of control of the operations of the co-operative society. To this extent, the Government would still be in control of the water sector.

#### **9.7.4 Trust Corporation**

A trust corporation may be registered under the provisions of the Trustee (Perpetual Succession) Act.<sup>53</sup> Under this Act, trustees who have been appointed by any body or association of persons established for any religious, educational, literary, scientific, social, athletic or charitable purpose, or who have constituted themselves for any such purpose, may apply to the Minister in the prescribed manner for a certificate of incorporation as a body corporate. The trust corporation has perpetual succession, can sue and be sued in its own name, and can hold movable and immovable property and any other interest belonging to or held by any person(s) for the benefit of the trust. New trustees may be appointed to succeed those deceased or retiring. Besides, the trust would enjoy considerable autonomy, but be accountable to the stakeholders in the operations and management of the project. The board of trustees stands in a fiduciary relationship with regard to the stakeholders on whose behalf they manage the trust corporation.

A detailed analysis of the above options are presented in **Table 9.1** below.

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<sup>53</sup> Chapter 164, Laws of Kenya (Revised Edition 19819. - 23

**Table 9.1: Analysis of Various Substantial Options**

OPTION	LEGAL BASIS	ADVANTAGES	DISADVANTAGES	RECOMMENDATION
<b>State Corporation</b>	State Corporations Act (Cap. 446)	<ul style="list-style-type: none"> <li>❖ Easy to establish</li> <li>❖ Government backing</li> <li>❖ Public Institution</li> <li>❖ Easy transfer of assets</li> </ul>	<ul style="list-style-type: none"> <li>❖ No independence autonomy</li> <li>❖ Political interference</li> <li>❖ Would be contrary to stated policy</li> <li>❖ Low motivation</li> </ul>	Not recommended
<b>Limited liability Company</b>	Companies Act (Cap. 486)	<ul style="list-style-type: none"> <li>❖ Easy to incorporate</li> <li>❖ Commercial orientation</li> <li>❖ Public can be shareholders (whose company is not wholly owned by council)</li> <li>❖ Transparency and accountability</li> <li>❖ May be exempted from taxation if limited by guarantee</li> <li>❖ Community participation and involvement</li> <li>❖ May be supported by development financiers</li> <li>❖ Separate legal entity from shareholders</li> <li>❖ No direct government involvement and control</li> </ul>	<ul style="list-style-type: none"> <li>❖ Can be easily wound-up (especially where wholly owned by Council)</li> <li>❖ Taxation may limit future investment</li> <li>❖ Can be taken over by a few rich persons purchasing shares thereby frustrating public participation (where company is public)</li> <li>❖ Transfer of assets problematic</li> </ul>	Not recommended as it raises complex logistic problems

<b>Co-operative Society</b>	Co-operative Societies Act (Cap. 490)	<ul style="list-style-type: none"> <li>❖ Effective tool for community participation</li> <li>❖ Business oriented</li> <li>❖ Profit motivation</li> </ul>	<ul style="list-style-type: none"> <li>❖ Takes too long to register</li> <li>❖ Lack of "common interest" among the co-operators</li> <li>❖ Government involvement and interference</li> <li>❖ Transfer of assets problematic</li> <li>❖ May be easily taken over by the rich</li> </ul>	Not a viable option
<b>Trust Corporation</b>	Trustee (Perpetual Succession) Act (Cap. 164)	<ul style="list-style-type: none"> <li>❖ Easy to register</li> <li>❖ Perpetual succession, hence sustainability</li> <li>❖ Independent legal status as public agency</li> <li>❖ Community service oriented</li> <li>❖ Governance by own instrument</li> <li>❖ Political interference unlikely as board of trustees is appointed by stakeholders on basis of instrument</li> <li>❖ Number of trustees based on instrument</li> <li>❖ Possible exemption from taxation</li> <li>❖ Transfer of assets not possible this being a public institution</li> <li>❖ No shares hence not amenable to acquisition by the rich</li> </ul>	<ul style="list-style-type: none"> <li>❖ All stakeholders may not be represented on the Board of Trustees</li> </ul>	This is the best option that is recommended for adoption.



## 9.8 Recommended Institutional Options and Legal Implications

In the light of the above analysis and the requirements of both the Government of Kenya and JICA, the registration of a trust corporation to take over the water supply and sanitation services would be the best option. This option not only meets the requirements of the two parties but also presents fewer logistical and operational problems.

The legal requirement will be as follows:-

- (a) Application for registration in the prescribed form accompanied by,
- (b) A statement of the objects and constitution of the trust concerned, e.g. to take over and operate the Wundanyi water supply and sanitation services, to enter into an agreement for the lease of any assets and equipment, to impose and charge tariffs for the supply of such services, to employ such personnel or such terms and conditions as may be deemed necessary, to formulate working arrangements for the effective and efficient operation of the water supply, to acquire and hold such property as may be necessary for the discharge of its functions, etc;
- (c) A statement and short description of the property or interest therein which at the date of application is held or intended to be held by the trust;
- (d) A statement as to whether the trust concerned is a society registered or exempt from registration, or is incorporated under the Companies Act;
- (e) The names and addresses of the trustees;
- (f) The proposed title of the corporate body, of which the words "trustees" and "registered" shall form part, e.g. THE REGISTERED TRUSTEES OF ----- (TOWN) WATER SUPPLY SERVICE;
- (g) The proposed device of the common seal; and
- (h) The regulations for the custody and use of the common seal.

Under the constitution in (b) above, provisions can be made for the number of trustees to be registered and how these may be appointed do as to be representative of all the stakeholders.

Organizationally, the Board of Trustees will have the overall management of the trust in order to ensure efficient delivery of services to the consumers. To this extent, it will be its responsibility to hire the management staff and such other personnel as may be required. To ensure transparency and accountability, the Board of Trustees will be expected to consult regularly with the major stakeholders on the progress achieved in implementing the mandate of the Trust. This consultative process will be provided in the trust instrument.

## **9.9 Institutional Framework for the Proposed Wundanyi Urban Water Supply Service.**

In this section we develop the organisational structures and operating mechanism for the Trust Corporation, which is the recommended institutional and legal option for Wundanyi Urban Water Supply Service.

### **9.9.1 Organisational Structure**

The proposed institutional framework comprises the following structures:

- (a) The Board of Trustees (BOT)
- (b) Management

The role of these structures is now defined.

### **9.9.2 Board of Trustees**

The Board of Trustees will be the governing body of the Trust Corporation. It will acquire and manage assets on behalf of the stakeholders; and will be responsible for policy guidance and the strategic direction of the Trust Corporation. The Board of Trustees will be appointed from the current stakeholders of Wundanyi Urban Water Supply. Major stakeholders are:

- (a) Wundanyi Town Council;
- (b) District Water Officer (DWO);
- (c) Major consumers, especially the co-operative societies , business enterprises and institutions (educational and health);
- (d) Development partners;
- (e) Religious organisations;
- (f) Community water projects;
- (g) District Social Development Officer (DSDO)

The initial appointment will be facilitated by the Inter-Ministrial Core Team. Thereafter, replacement within the Board of Trustees shall be effected by the Trustees themselves on the basis of agreed procedure. This renewal process will be detailed in the constitution of the Trust Corporation.

Other provisions enshrined in the constitution of the Trust are:

- (i) That the number of trustees shall be between 5 - 7;

- (ii) That Government representation shall be provided in BOT to safeguard public interest;
- (iii) That BOT can co-opt, for particular purpose, an expert on issues of relevance to the Trust or beneficial to the advancement of the interests of the Trust;
- (iv) That the Board of Trustees shall convene a stakeholders consultative forum every year to keep stakeholders closely informed of the progress in the affairs of the Trust Corporation.

The specific duties of the Board of Trustees are:

- (a) To lease and / or acquire and own assets on behalf of the stakeholders;
- (b) To appoint the General Manager and senior managers of the Trust Corporation and to fix their remuneration;
- (c) To approve the organisational structure and the establishment level of the management and operational staff;
- (d) To approve policy and strategy of the organisation;
- (e) To approve the capital and operating budgets of the Trust Corporation;
- (f) To monitor management performance in accordance with the agreed plans;
- (g) To prepare and submit reports to the Stakeholder Council in the manner provided by law and the Trust Instrument.

### **9.9.3 Management**

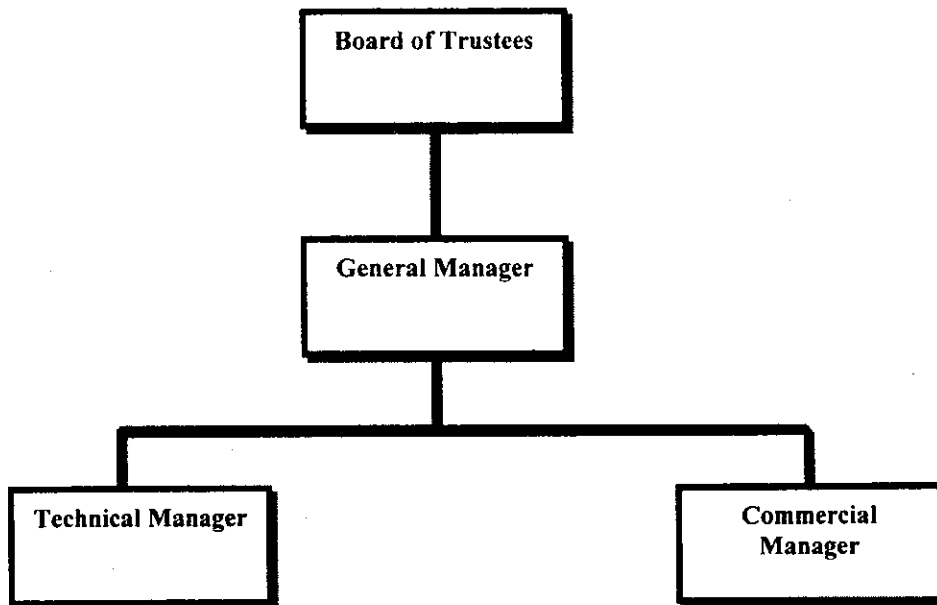
It should be noted that the Trust can operate the water supply and sewerage system in the Town. Alternatively, the Trust can contract out this function to a private operator. In the event the BOT decides to manage these services, it will appoint senior members of the Management Team.

These are:

- (a) The General Manager
- (b) The Technical Manager
- (c) The Commercial Manager

Other positions will be approved by the BOT but will be recruited by the Management Team. The high level organisational structures of the Trust Corporation are illustrated in **Fig. 3.1**.

**Fig. 3.1: High level organisational structures for Wundanyi Water Supply Service.**



**The General Manager:** will be responsible for all aspects of the management and operations of the Trust Corporation. These include policy and strategy formulation for BOT approval and subsequent implementation after BOT approval.

**The Technical Manager:** will be responsible for operations and maintenance; and assets replacement for efficient supply of water and sanitation services.

**The Commercial Manager:** will be responsible for billing and revenue collection; accounting and financial management of the Trust Corporation. He / She will also approve water supply and sanitation connections and oversee customer service standards.

#### **9.9.4 Syndication of Water Supply and Sewerage Services Management**

It is quite possible that some of the smaller towns could derive economies of scale from syndication of the water supply and sewerage services management. This essentially means forming a management company to manage the water and sewerage services in two or more local towns.

The proposal to form a trust corporation on a syndicated basis must be seen against the need to ensure that stakeholders in the "catchment area" of the local town have a common interest in water and sewerage issues that directly affect them. It is unlikely that stakeholders in different local towns could show a common interest that would sustain the formation of a Water and Sewerage Services Trust Corporation

encompassing these different towns. In the event, therefore, where syndication could be a feasible option in the management of the water and sewerage services, this should be confined to the operational management aspects. In effect, therefore, Water and Sewerage Trust Corporations in the concerned local towns could contract out the operations and management of the water supply and sewerage services to a professional private sector operator. This is a feasible option in areas where expertise in the management of these essential services is limited. It is also a more practical and simpler solution than the formation of a management company by the Trust Corporation in the local towns. The latter is likely to suffer from over-politicisation of the leadership and management role of such a company.

### **9.9.5 Operating Mechanisms**

The operations of the Trust Corporation will be as follows:

- (a) The initial appointment to the Board of Trustees will be facilitated by the Interministerial Core Team. Appointment will be from current stakeholders and will include Government representation. A woman representative should also be appointed. Subsequent appointments to fill vacancies in the BOT shall be provided in the constitution of the Trust. The relevant provision should allow BOT to renew itself by appointing replacements from specified stakeholders. To obtain ownership and support of stakeholders to the proposed Trust and the appointment thereof, a sensitization and consensus building workshop involving major stakeholders should be held before the Trust Corporation is registered.
- (b) The Board of Trustees will "hire and fire" the Senior Managers of the Trust Corporation. The BOT can also contract out the management of the water supply and sanitation system to a private operator. BOT must, however, ensure that the services of the Trust Corporation are not harmed by such an arrangement and will ensure that safeguards are in place to provide services in a sustainable manner. The BOT will own or lease assets and properties on behalf of the Trust Corporation and will enter into contracts with third parties. The BOT will sue and be sued on behalf of the Trust Corporation.
- (c) The management (and / or management agent) will manage the day to day operations of the Trust Corporation. Management will be accountable for their performance to the Board of Trustees through regular reports and meetings of the Board of Trustees.