

- 1) identify the existing social and natural environmental conditions of the study area; and
- 2) identify potential constraints and problems for the M/P project.

#### **12.4.2 Methodology**

##### **(1) Procedure**

The IEE was undertaken in the following three stages:

- identification of the projects which needs an IEE;
- evaluation of environmental impacts using an environmental impact checklist; and
- evaluation of the level of the impacts.

##### **(2) Evaluation of Environmental Elements**

An environmental impact matrix was used as a checklist to evaluate the level of the impacts. The main aspects that were assessed were: social issues, demographic issues, economic activity, institutional and custom related issues, health and sanitary issues, cultural asset issues, biological and ecological issues, soil resources, land resources, hydrology, water quality and temperature, pollution, and landscape as natural environment issues.

##### **(3) Survey Area**

The survey area covered Greater Tirana which includes the municipalities of Tirana and Kamza, and the communes of Kashar, Paskuqan and Bexxulle.

#### **12.4.3 Proposed Projects to be included in the IEE Study**

The proposed sewerage facilities in the M/P are listed in *Table 12.4.1*.

**Table 12.4.1 Proposed Sewerage Development Plan in M/P (2022)**

<b>Item</b>	<b>Kashar STP Sewerage Area</b>	<b>Bexxulle STP Sewerage Area</b>	<b>M/P Sewerage Area</b>
1. Service Area	6,090 ha	3,030 ha	9,120 ha
2. Service Population	830,320 person	169,680 person	1,000,000 person
3. Design Sewage Flow (Average Daily Flow)	207,600 m <sup>3</sup> /day	42,400 m <sup>3</sup> /day	250,000 m <sup>3</sup> /day
4. Main and Branch Sewer 4.1 Specification 4.2 System 4.3 Laying Work	Diameter: 200 to 600 mm Concrete or Plastic Pipe Existing sewer area: rehabilitation and improvement works using existing interceptor sewers. Separate Sewer, Gravity flow Length: 109 km Open Cut Method	Diameter: 200 to 800 mm Concrete or Plastic Pipe Existing sewer area: rehabilitation and improvement works using existing interceptor sewers. Separate Sewer, Gravity flow Length: 74 km Open Cut Method	Diameter: 200 to 800 mm Concrete or Plastic Pipe Existing sewer area: rehabilitation and improvement works using existing interceptor sewers. New area: Separate Sewer, Gravity flow Length: 183 km Open Cut Method

5. Trunk Sewer			
5.1 Specification	Diameter: 450 to 1650 mm Concrete pipe	Diameter: 450 to 1350 mm Concrete pipe	Diameter: 450 to 1650 mm Concrete pipe
5.2 Flow System	Gravity flow and pressured flow	Gravity flow and pressured flow	Gravity flow and pressured flow
5.3 Laying Work	Length: 14.8 km Jacking Method or Open Cut Method	Length: 5.9 km Jacking Method or Open Cut Method	Length: 20.7 km Jacking Method or Open Cut Method
6. Pumping Station	Kashar PS	Kamza PS	Kashar PS and Kamza PS
Capacity (as the Maximum Daily Flow)	213,500 m <sup>3</sup> /day	50,700 m <sup>3</sup> /day	
7. Sewage Treatment Plant	Kashar STP	Berxulle STP	Kashar STP and Berxulle STP
7.1 Capacity (as the Maximum Daily Flow)	257,400 m <sup>3</sup> /day	52,600 m <sup>3</sup> /day	310,000 m <sup>3</sup> /day
7.2 Sewage Treatment			
7.2.1 Quality			
Design Influent Quality	BOD <sub>5</sub> /SS: 200/200 mg/L	BOD <sub>5</sub> /SS: 24/30 mg/L	
Design Effluent Quality	BOD <sub>5</sub> /SS: 200/200 mg/L	BOD <sub>5</sub> /SS: 24/30 mg/L	
7.3 Sewage Treatment Process	Screening + Grit Removal + Primary Sedimentation + Trickling Filter + Final Sedimentation + Chlorination	Screening + Grit Removal + Primary Sedimentation + Trickling Filter + Final Sedimentation + Chlorination	
7.4 Sludge Treatment Facilities	Thickener + Anaerobic Digester + De-watering (Belt Filter Press and Sludge Drying Bed)	Thickener + Anaerobic Digester + Sludge Drying Bed (supported by De-watering (Belt Filter Press))	
7.5 Treated Sewage Discharge Point	Near-by river, upstream of tributary of Lana River	Near-by river, Tirana river, end of the planning area	
7.6 Sludge Disposal	Landfill, recommended the maximum re-use of sludge for agricultural farming or cement material	Landfill, recommended the maximum re-use of sludge for agricultural farming or cement material	

The land area required for the projects is listed in *Table 12.4.2*.

**Table 12.4.2 Land Area Requirement for Pumping Station and Sewage Treatment Plant**

Name of Facility	Required Land (ha)	Existing land use
Kashar PS	0.6	Agricultural / farming land
Kamza PS	0.4	Belong to Kamuza Municipality
Kashar STP	46.8	Agricultural / farming land
Berxulle STP	39.7	Agricultural / farming land

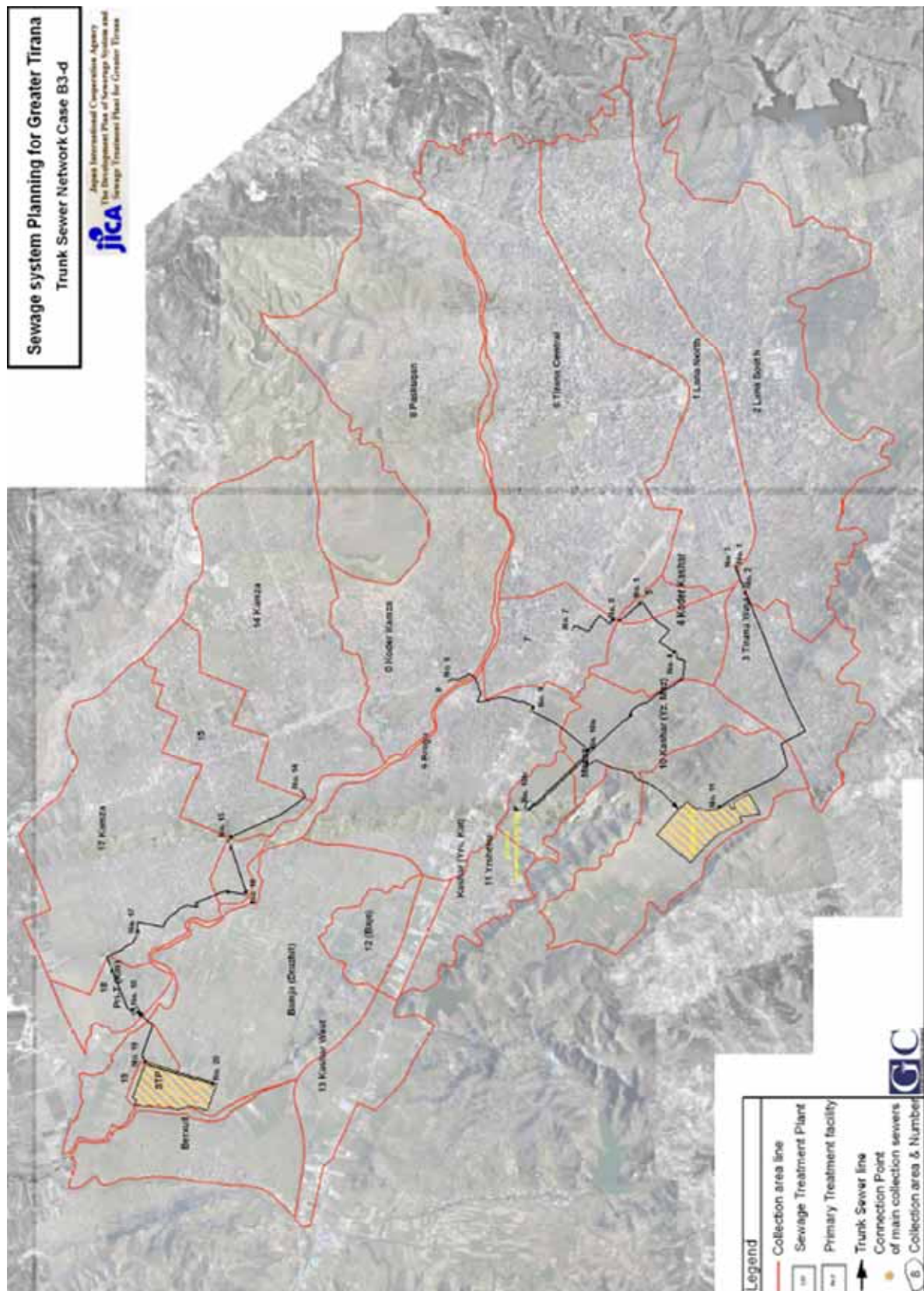


Figure 12.4.1 General Plan of Proposed Projects

#### **12.4.4 Existing Environmental Conditions**

The existing environmental conditions in Greater Tirana are presented in Chapter 2.

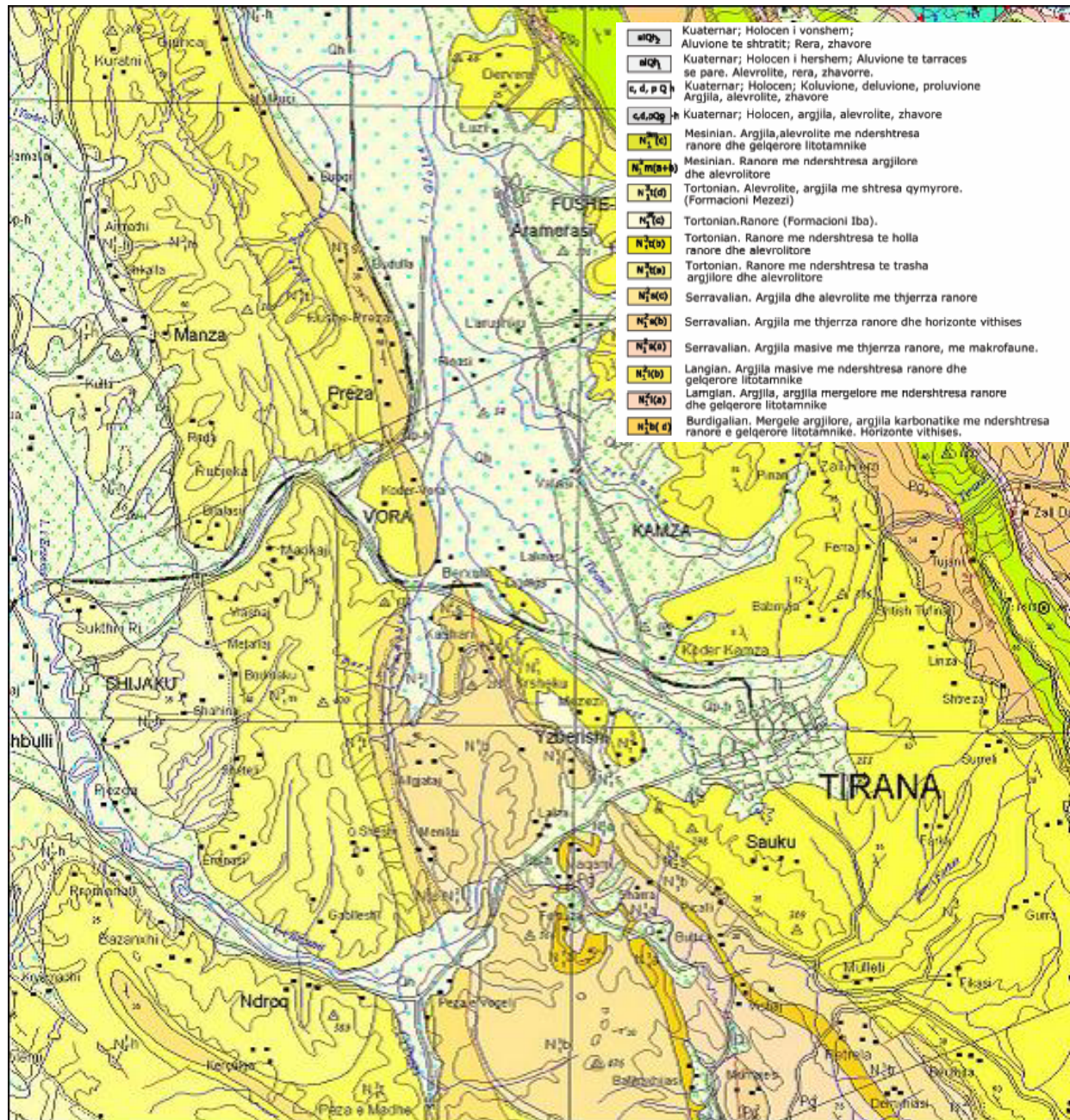
##### **(1) Topography, Geology and Hydrogeology**

Half of Tirana municipality is located on the western plain, next to the Adriatic Sea. The other half of the Tirana municipality is mountainous and hilly. The altitude of the study area ranges from 80 m to 130 m and the center of Tirana municipality is situated at approximately 110 m. The ground surface gradient ranges from 1% to 5 % and slopes towards west. The rest of Tirana is hilly and extends to Mt. Dajiti (1,612 m).

Tirana overlies a significant syncline, which slopes in a northwest direction toward the Adriatic Sea. The lower part of the Tirana syncline is composed of Cretaceous and Palaeogene carbonate formations and Paleogene flysch formation. The upper part of the central area of this syncline is the Tirana plain. It is mostly filled with Quaternary alluvial deposits formed by the Tirana and Lana Rivers.

The Tirana region is situated on an intermountain syncline of Neogenic. It mainly consists of Tortonian and Quaternary sediments which are placed on Cretaceous and Paleogene carbonate formations, and on a Paleogene flysch formation. This depression is about 10 to 12 km wide and about 70 to 80 km long. It is aligned in a northwest direction, extending towards the Adriatic Sea. This depression is an artesian basin, consisting of Tortonian and Quaternary aquifer systems, which are of Cretaceous-Paleogene age. The Quaternary deposits are mainly of alluvial origin and consist mostly of gravely-sandy layers covered by silty and clayey layers.





**Figure 12.4.2 Geological Map of the Tirana Area**

## (2) Meteorology

The Albanian climate is characterized by hot, dry summers, and mild, wet winters. The area can be divided into three main climatic zones, which are influenced by the changes in topography. The Tirana area extends to the western part of Mt. Dajti, which is nearly in the middle of Albania. This area consists of small rolling hills. This area extends inside the border of the Field Mediterranean Climatic Sub-zone and the Hilly Mediterranean Climatic Sub-zone. This area typically experiences humid, mild winters, and dry, hot summers.

The mean annual atmospheric temperature is 15.2 °C. The coldest month is January, with a mean atmospheric temperature of 6.7 °C. The hottest month is July or August with a mean atmospheric temperature of 24 °C. The mean annual rainfall is 1,270 mm, with fluctuations ranging from 800 mm to 2,060 mm. The rainfall is not uniform throughout the year. Approximately 60 % of the annual rainfall occurs during winter. The highest monthly rainfall (an average depth of 1,774 mm) occurs in November and the lowest monthly rainfall (42 mm) occurs during July.

### **(3) Water Environment**

The two major river systems in the study area are the Tirana River and the Lana River. Tributaries of the Lana River are located in the southeastern and southern part of Tirana municipality. A detailed description of the water environment is provided in Chapter 4.

### **(4) Atmospheric Environment**

There are eleven meteorological monitoring stations in Albania and one of them is located in the Tirana municipality. The monitoring began in 1998. The meteorological measurements are conducted monthly. The parameters monitored are SPM and SO<sub>2</sub>. Measurement of NO<sub>x</sub> began in 2006.

### **(5) Land Use**

The existing land use in the study area differs considerable between Tirana municipality and the surrounding areas. Tirana municipality has a radial urbanization pattern along major roads, centering on the government office area. The residential suburbs in the study area are mainly found in rural areas. Some of these rural areas are undergoing rapid residential development. This trend began in 1990.

The medium housing density in residential area is 3.4 %, in informal housing areas it is 3.9%, in villages it is 6.3 %, and in industrial areas it is 2.2 %. The two main land uses, other than urban development is, agriculture (39.0%), and scrub (18.2 %).

### **(6) Environmentally Protected Areas**

There are no protected areas in or around the project area. No endangered or valuable species have been reported in the project area.

## **12.4.5 Analysis of Alternatives**

### **(1) Project Benefits and Positive Impacts**

The main objective of the sewerage project is to improve public health and hygiene, improve the standard of living, and encourage economic growth. Therefore, the project is expected to have the following benefits and positive impacts:

- Collection and treatment of untreated sewage prior to its discharge to rivers will improve the water quality in the rivers and will improve the river environment.

- A proper collection, treatment and disposal system for the sewage will reduce the risks of parasitic infections and prevalence of various diseases including typhoid.
- Appropriate sewage handling and disposal will minimize the chances of contamination of ground and surface water.
- The ecological environment will be maintained by minimizing damage to flora and fauna.
- Beneficial reuse of sewage and sludge e.g. for agricultural activities, greenbelt developments, cement.
- Reduced road blockages and improve aesthetics.
- Increased economic activities (such as commercial and industrial), improved employment opportunities, and economic growth.
- Enhanced tourism which would boost the local economy.
- Improvements to public health which will then result in higher economic activity and productivity.
- Local employment opportunities during the construction phase of the project, either as direct labor for construction or to provide services at the construction camps.

## **(2) River Water Quality With/Without Project**

The results of either proceeding or not proceeding with the project are assessed in chapters 10 and 11.

If the proposed projects in the M/P are implemented, the sewage will be treated and the river water quality will be improved. If any project is not implemented no sewage will be treated and this would degrade the water quality and river environment. Preliminary assessments indicate that if the project does not proceed, the BOD<sub>5</sub> in the Lana River could increase to 105 – 130 mg/l, and 45 – 65 mg/l in the Tirana River. The current BOD<sub>5</sub> level is between 95 – 125 mg/l and 31 – 53 mg/l in the two rivers respectively. The BOD<sub>5</sub> level is expected to decrease to 13 – 28 mg/l in the Lana River and 7 – 16 mg/l in the Tirana River if the project is implemented.

## **(3) Alternative sewerage system plan**

When planning the sewerage system network the following issues were considered: location and available space for the treatment plant, timeframe, early start of sewage treatment, construction costs, and O&M cost.

Existing plan identify only one potential sewage treatment plant (STP). The proposed location of this STP is at the western edge of the study area, 15km from the urban center of the Tirana municipality.

To improve this existing plan, the following two issues were considered:

- There is a need to start treating the sewage as soon as possible to improve the water quality in the Lana and Tirana rivers.
- The plan should provide sufficient space for the STPs, minimize energy consumption, minimize costs, ensure operation and maintenance activities are simple and easy to undertake, and provide for



beneficial reuse of the sludge.

The following two alternative plans are suggested:

- Case A: A single STP System which includes two primary treatment plants (one for Kashar and one for Kamza); and
- Case B: A multi STP System.

A detail comparison of the options is provided in Chapter 10.

#### **(4) Possible alternative site for the sewage treatment plant (Beroxulle)**

The 1998 JICA study proposed a site in Berxulle for the sewage treatment plant. The site is shown in *Figure 12.4.3* (site 1). However, construction of a new road to the airport began in 1998. The new road passes through the proposed site. Therefore, the land now available for the STP is less than originally proposed. Also, the Berxulle site contains many houses meaning resettlement would be required. The environmental and social impacts associated with resettlement are expected to be significant. Therefore, an alternative site was identified.

The alternative site is shown in *Figure 12.4.3* (Site 2). Site 2 is the same size as Site 1. Construction of the STP on Site 2 would avoid the houses, meaning resettlement would not be required. Site 2 is the preferred site for the STP in Berxulle, from environmental, social and technical perspectives.



**Figure 12.4.3 Alternative Sites for the STP in Berxulle**



#### 12.4.6 Checklist of the IEE Study

The environmental items assessed as part of this study includes both the natural and social environment, and their interactions. The impacts on the environment that may result from the proposed M/P projects have been assessed. The important environmental issues are identified and shown in the following checklist. Each item has been scored or evaluate as either A, B, C, or D.

#### 12.4.7 Evaluation and Conclusions of the IEE Study

The IEE study results are summarized in *Table 12.4.3*.

**Table 12.4.3 Scoping Check List**

No	Environmental Items	Evaluation	Reason
<b>Socio-Economic Environment</b>			
1	Resettlement	C	Land acquisition is necessary but human resettlement could be avoided by selecting vacant land. Further study is required.
2	Economic Activities	B	Negative impacts on the living conditions for the locals could result from the land use changes. However, potential employment would be a positive economic impact.
3	Traffic / public facilities	B	There could be increased traffic during the construction stage.
4	Separation of Communities	D	No large-scale construction is required therefore separation of communities is not expected.
5	Cultural Property	D	No cultural properties have been identified in or around the project area.
6	Water rights / Common Rights	D	No issues with water rights are required.
7	Public health condition	D	Improvements to public health are expected.
8	Waste	B	Sludge from the STP will be generated. The sludge can be re-used in building materials (e.g. cement) or disposed at a landfill. Disposal of construction waste and excavation material will required.
9	Hazard	D	No significant hazard impacts are expected. Since industrial wastewater is not accepted for treatment the treated sewage and sludge is not likely to contain chemicals that could cause environmental harm.
<b>Natural Environment</b>			
10	Topography and Geology	D	No significant impacts are expected especially since the facilities are likely to be small in size.
11	Soil Erosion	D	No significant soil erosion is expected because the facilities are located on flat land.
12	Groundwater	C	No significant impacts on the groundwater are expected, however further studies are required to confirm that there will be no impact.
13	Hydrological situation	B	No significant hydrologic impacts are expected because the treated sewage will be discharged to the Tirana and Lana Rivers. However, the upper section of the Lana River (especially during the dry season when the natural flows are low) may experience some negative impacts.
14	Coastal zone	D	There is no coastal zone in the study area.

15	Fauna and flora	C	No endangered species or conservation areas have been identified within the study area.
16	Meteorology	D	No significant meteorological impacts are expected due to the small scale of the facilities.
17	Landscape	C	The facilities will be small and they will be designed to minimise visual impact. Therefore, no significant landscape impacts are expected. The design of the sewerage facilities shall be harmonized with the surrounding environment.
<b>Environmental Pollution</b>			
18	Air pollution	D	No significant air pollution impacts are expected.
19	Water pollution	B	Treated sewage, secondary level by biological process, will be discharged into the Tirana and Lana Rivers. The water quality of the receiving water body will be improved. But localized deterioration of water quality may be occurred during power failure without appropriate back-up generator installation.
20	Soil contamination	D	No soil contamination is expected to result from the proposal.
21	Noise and vibration	B	Some noise and vibration during the construction period is expected.
22	Land subsidence	D	Since no ground water will be used for the Project, land subsidence is not expected to occur.
23	Offensive odor	B	Some odor is expected to be generated at the treatment plants.

A: Significant impact anticipated

B: Slight impact anticipated

C: Unknown

D: Almost no impact anticipated

### **(1) Resettlement**

As stated in section 4.5 above, two sites for the sewage treatment plant in Bexxulle were considered in terms of technical, environmental and social suitability. The assessment indicated that site 2 would be most appropriate. Therefore, no resettlement issues are expected. However, some houses are located near the proposed STP site in Bexxulle and Kashar, therefore further investigation is required.

### **(2) Economic Activities**

The improvements to the sewerage system are expected to have the following positive economic impacts:

- improved standard of living and sanitary conditions in the Greater Tirana area; and
- improved urban sanitation could enhance tourism in Albania.

However, the proposed sites for the STPs in Bexxulle and Kashar are currently used for agriculture and farming. Land acquisition will therefore be required for construction of these STPs, meaning landowners' economic activities may be affected. Further study of this issue is required.

### **(3) Waste**

The following waste will be generated as a result of the project: construction waste, excavation material and sludge. Disposal and management of the waste will be in accordance with the prevailing laws and regulations. The sludge from the STPs will either be re-used when making cement or disposed of at the

landfill.

#### **(4) Groundwater**

No significant groundwater impacts are expected. However because drinking water in Berxulle is sourced from the groundwater the community has expressed concern that their drinking water quality may be affected. In this area, the groundwater table is 25 m below the surface. The trunk sewer pipes will be constructed at a maximum depth of 10 m. Therefore, it is not expected that the drinking water quality will be affected, however further investigation will be undertaken.

#### **(5) Hydrological situation**

The geomorphology of the rivers will not be affected by this project. However, the discharge of treated effluent into the Tirana and Lana Rivers will change the flow rates in the rivers (except in the upper section of the Lana River during the dry season). A more detailed assessment of the hydrologic impacts will be undertaken once the facility plans are further progressed.

#### **(6) Water Pollution**

One of the objectives of the project is to improve the water quality in the rivers. Therefore, the project is expected to have a positive impact on the river water quality. However, localized deterioration of water quality at the effluent discharge points may occur infrequently during power failures if back-up generators are not provided. A further study is required to better understand the water quality impacts at a local scale.

#### **(7) Noise and vibration**

Some noise and vibration is expected during the construction period. Noise and vibration is not expected to be significant during operation.

#### **(8) Offensive odor**

Some odor is expected to be generated from the STPs during operation. A further study is required to better understand the odor impacts.

### **12.5 Requirement for an EIA Study**

The IEE results categorize the proposed sewerage plan as a “B” level project, as defined by the JICA Guidelines. This means an EIA is not required but should be undertaken if thought to be necessary. However, Albanian legislation requires a profound (advanced) EIA to be undertaken and DPUK has to obtain the Environmental Declaration. To obtain this Declaration, DPUK has to submit the application including the EIA report which was stipulated by the Law No. 8990 on EIA (ref. Page M.12-3) to the MoEFWM. Therefore JICA Study Team will conduct the environmental and social consideration study at EIA level in F/S stage in accordance with JICA Guidelines, and it will help DPUK prepare the EIA report for the Environmental Declaration.

### **12.5.1 Terms of Reference for the Environmental and Social Consideration Study at EIA Level**

#### **(1) Objectives of the environmental and social consideration study at EIA level**

The objectives of the environmental and social consideration study at EIA level for the proposed projects are:

- To review the existing environmental conditions in the area affected by the Priority Project;
- To assess any significant negative construction and operation impacts; and
- To propose mitigation measures and an environmental monitoring plan.

#### **(2) Study Area**

The study area will be defined as the area that is expected to be developed by the year 2022 in Greater Tirana. This area includes the municipalities of Tirana and Kamza, and the communes of Kashar, Paskuqan, and Bexhëlle.

#### **(3) Study Period**

The environmental and social consideration study at EIA level will require about two months during the feasibility study of the Priority Project.

#### **(4) Scope of Work**

The following issues will be covered by the environmental and social consideration study at EIA level:

- A review of the IEE results;
- A description of the relevant aspects of the existing natural and socio-economic environment;
- Identification and quantification (to the extent possible) of the potential positive and negative impacts during construction and operation phases of projects;
- A comparison of project alternatives in terms of environmental and socio-economic impacts;
- Recommendation of possible mitigation measures for any significant impacts that are identified; and
- Formulation of a monitoring program for the significant environmental issues.

The following box is an example table of contents for the environmental and social consideration study at EIA level. The collection and analysis of baseline environmental data will be based on existing sources of information, where possible. Also, a site survey will be undertaken to collect data and information on specific site conditions. A water quality survey on the receiving water body (the Tirana River near the STP site) will be undertaken.



**Box 1 Example of Table of Contents**

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| <ul style="list-style-type: none"><li>(1) Analysis of Guidelines, Policy, Legal and Administrative Framework<ul style="list-style-type: none"><li>1) Legal framework and Procedures</li><li>2) Environmental Protection Standards</li><li>3) Administrative Framework</li><li>4) EIA Guideline<ul style="list-style-type: none"><li>- Albanian Guidelines</li><li>- Japanese Guidelines (These will be provided by the JICA Study Team.)</li></ul></li></ul></li><li>(2) Collection and Analysis of Baseline Environmental Data<ul style="list-style-type: none"><li>1) Physical Environment</li><li>2) Biological Environment</li><li>3) Socio-Cultural Environment</li><li>4) Socio-Economic Status of the Population</li></ul></li><li>(3) Identification and Prediction of Impacts<ul style="list-style-type: none"><li>1) Impact Identification for the Construction and Operation Phase</li></ul></li><li>(4) Analysis of Alternatives and Mitigation Plan<ul style="list-style-type: none"><li>1) If negative impact are expected, alternative options (such as a different treatment method or facility relocation) will be compared and a preferred option recommended.</li><li>2) Analysis of mitigation, monitoring and institutional arrangements to be implemented during the construction and operation phases. The aim will be to minimize negative impacts, offset them, or reduce them to acceptable levels.</li></ul></li><li>(5) Risk Analysis / Contingency Plan<ul style="list-style-type: none"><li>1) Accidents related to Construction and Operation (Power cuts) and associated impacts</li></ul></li><li>(6) Environmental Management, Training, and Monitoring Plan<ul style="list-style-type: none"><li>1) Environmental Management Group</li><li>2) Monitoring Plan (Environmental quality, monitoring parameters, schedule and duration of monitoring, and responsible organizations)</li><li>3) Environmental Testing Laboratory</li><li>4) Environmental Training</li><li>5) Recommendations regarding existing environmental departments, their role and needs for future expansion</li></ul></li></ul> |
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**CHAPTER 13**

**INSTITUTIONAL REFORM FOR**

**IMPLEMENTATION OF**

**THE SEWERAGE PLAN**

## **CHAPTER 13 INSTITUTIONAL REFORM FOR IMPLEMENTATION OF THE SEWERAGE PLAN**

### **13.1 Related Laws**

Several laws relating to water and sewerage and the development of the system in Greater Tirana need to be changed or reviewed as follows:

#### **(1) Law on Membership of Supervisory Councils**

The law originally issued as Law No. 7926 (1995) and amended by Law No. 8099 (1996) is designed for central government control and is inappropriate and unacceptable to local government. This law should be further amended to ensure that local governments are the controlling majority on the SC for water & sewerage authorities since the assets are owned by them and they have the responsibility to provide the services. It is further suggested that this law should provide for representation on the SC to be by suitably qualified persons appointed by the local authorities, say for a maximum of 2 terms of 4 years. This would provide both the required expertise and continuity.

#### **(2) Late Payment of Bills, Disconnection & Enforcement**

In DCM No. 23 dated 10/05/1993, the penalties for none or late payment are punitive and have a negative effect on low income customers and legalizing the illegal users. A fair and realistic penalty should be imposed and disconnection of continuing defaulters properly enforced.

#### **(3) Compulsory connection to sewers**

There must be a law that makes it compulsory to connect to the sewer networks when they have been constructed. All future buildings in the proposed service area should have provision for a sewer connection.

#### **(4) Approval of the Tariff**

Currently the laws provide for the tariff to be set by local government service providers in accordance with the methodology laid down by the National Regulatory Agency. It is suggested that the ultimate responsibility for approval of the tariff should rest with the National Regulatory Agency because the service provider should not have this control over the customers. The NRA should be the deciding authority to protect the interests of the service provider and the customers equally. This would require a change to the present law (DCM No. 479, 1998).

#### **(5) Law regarding urban planning**

Regarding the Strategic Plan for the development of the Greater Tirana area, a new law for Urban Planning and Development requires completion for the basic concepts of the autonomy of local government.

## **(6) Local government Financing**

As indicated by the World Bank the matter of laws regarding investment and borrowing by local government needs to be addressed. At the moment these functions are performed by central government by way of subsidies and financing.

## **(7) Legal base for VAT**

It is suggested that the legal base for VAT should be revised to be applicable to revenue collection and not billed amounts to encourage the increase in connection rates without disadvantaging both the enterprise and low income and poor customers. The practice of applying VAT to essential services may also be reviewed by government.

## **13.2 Project Implementation Organization**

### **13.2.1 General**

This Master Plan will propose the major sewerage system and treatment facilities required for the existing mixed sewerage and drainage network of Tirana Municipality and the largely un-sewered municipalities and communes that lie within the development area defined by the Strategic Plan for Greater Tirana. Greater Tirana is an integrated development area and not a local government authority.

Currently, the water supply and sewerage service area of the proposed Greater Tirana, with the exception of Kamza municipality, is under the jurisdiction of central government through the MoPWTT and its directorate DPUK with UKT as the operator. For implementation of the Master Plan organizational reform is necessary as follows:

### **(1) Central Government**

During the transition phase of decentralization MoPWTT and its Directorate for water supply and sewerage services DPUK should be planning the change from that of service provider to policy and strategy for the water sector. These institutions should also assist with transfer of authority to local government.

### **(2) Local Governments in Greater Tirana**

In accordance with the Laws of Albania, local government units are both the owners of the assets of the water supply and sewerage system facilities and they are also responsible for the provision of the services. Therefore the executing agency for project implementation should be the relevant Joint Authority of local governments that will own the assets and be responsible for the provision of water supply & sewerage services. No such authority exists as yet.

### **(3) Strategic Plan for Greater Tirana**

The sewerage master plan follows the basis of development in accordance with the Strategic Plan for Greater Tirana. It would be advantageous to have a Greater Tirana Development Authority (or Greater Tirana Metropolitan Council) since this Joint Power Authority would bring together the mayors or senior



executives of local governments to coordinate development and rationalize the expansion of the water supply and sewerage system in Greater Tirana. The mayors or senior executives delegate their powers to their selected professionals on the Supervisory Council who in turn control the operator. No such Joint Power Authority exists. Presently, piecemeal development is causing problems for UKT.

#### **(4) UKT**

##### **1) Overall Organization & Management**

UKT is currently a financially autonomous run state owned enterprise and its management systems have been improved under the Technical & Financial Assistance provided through Italian Cooperation. This reform should be continued by the staff of UKT to improve and extend the management information system for both technical and financial control.

The organizational structure was revised only a few months ago in May 2006, and should be adequate until reorganization again takes place when part of UKT becomes GTW&SA under the control of local government. There is little point in recommending changes to the organization and management structure until this event occurs.

##### **2) Commercial Organization**

The Finance Sector must extend its financial horizon from the current limitation of the next years' budget to a short, medium and long term financial forecasts. Such information should be used to formulate a business plan for UKT to transform itself to a financially sustainable service provider to a Joint Authority of local governments in Greater Tirana (GTW&SA). The Sales Sector has separate units for the village water supplies and this will facilitate the total separation of these supplies to a new organization under the proposed RAWSS.

##### **3) Engineering Organization**

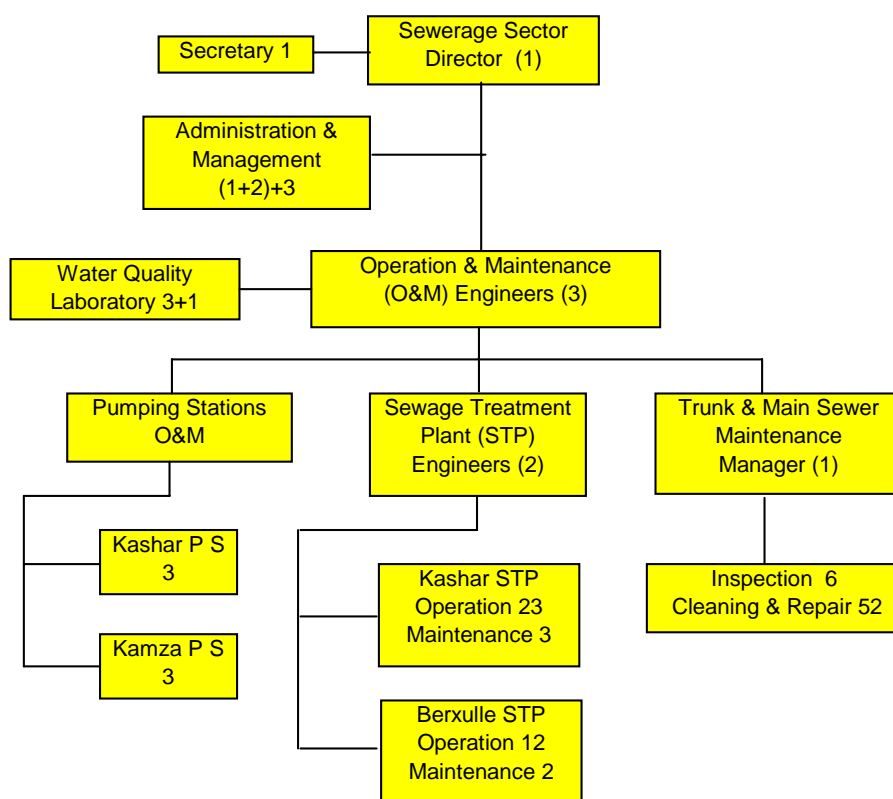
The Technical Department is organized into four engineering sectors of Technical, Water Supply, Electromechanical and Sewerage. As per 2) above separation of the village water supplies should be easy as separate units already exist. As when decisions are taken by government that will drastically reduce the loss of water outside the city limits, the operation of the water system should be simplified. Revenue should increase which will release more funds to change most of the maintenance functions from urgent repairs to planned preventative maintenance.

##### **4) GTW&SA (Ex-UKT) Sewerage Organization**

The Sewerage Sector will undergo a major transformation with the implementation of the Master Plan which will bring in new features such as the Sewage Treatment Plants and Pumping Stations, as well as major extensions to the trunk sewers and networks particularly in the development areas outside of Tirana Municipality. The O&M staff requirements for the Master Plan will be integrated with the existing Sewerage Sector which will also require new divisions for new sewer network construction and maintenance (sewer networks do not form part of this project).

The staff requirements for the operation and maintenance of the Master Plan works are detailed in section 11.5.3 and *Figure 11.5.1* in Part I Master Plan. The total number of staff required is 101 and details of their deployment are shown in *Figure 13.2.1*. The sewerage sector is headed by a director responsible for all operation and maintenance matters. He should be a qualified engineer with good

management skills. The director will be supported by a secretary and a small Administration & Management Unit.



Total Staff: 120

**Figure 13.2.1 Organization Chart for Sewerage Sector of GTW&SA (Master Plan)**

i) Administration and Management Unit

The manager of this unit will be responsible for the overall planning, record keeping, and administration and should have environmental management training since he will be required to monitor all matters related to the environment, in particular the quality of the effluent discharge from the sewage treatment plants.

ii) Operation & Maintenance Unit

This unit will have three qualified engineers to oversee the operation & maintenance of the Kashar and Bexulle STP's, the Kashar and Kamza pumping stations and the maintenance of the trunk and main sewers as well as the existing sewer network. Water quality of the influent and effluent as well as the sludge properties at all stages of treatment will be monitored in laboratories located at the Kashar and Bexulle STP's, and any necessary adjustments to plant running will be advised to the operators.

iii) Kashar and Bexulle STP's

The operation of both of the STP's will be headed by an engineer with a foreman and mechanic to

oversee the two operators for each of 3 shifts per day backed up by a standby crew. The operators will have general workers for assistance during the day shift. Regular routine maintenance will be carried out by qualified mechanics assisted by general workers.

iv) Kashar & Kamza Pumping Stations

Daily operation of these pumping stations will be carried out by two operators and regular routine maintenance will be carried out by a mechanic assigned to each station. The stations are to be linked by telemetry to the Kashar STP which can provide back up support should there be any problems with the pumping procedure to the treatment plants.

v) Sewer Maintenance

Trunk and main sewer maintenance will be controlled by a manager with a small team to carry out regular inspections supported by a cleaning and repair team. He will be responsible for carrying out routine inspections in accordance with a planned maintenance schedule drawn up by the operation & maintenance engineers, for the necessary routine cleaning and repairs required as determined from the inspections.

vi) Sewer Network Extensions

Extensions to the sewer network, will be the responsibility of the new GTW&SA and there will be a need to establish a new unit for this. This unit may be sub divided into divisions to generally correspond with the municipalities and communes forming the Greater Tirana development area.

The sewerage sector will be fully serviced by the Economic Department as regards finance and sales as per the current organization for the water sector in UKT, and will also be served by all other relevant supporting units such as IT and Customer Services.

### **13.2.2 Institutional Options**

Decentralization of water supply & sewerage services to local government is not an option. It is enshrined in the Albanian constitution and in Albanian law. Devolution of power is also an EU requirement. Various options have been proposed for the institutional structure for the implementation of the provision of water supply and sewerage services to Great Tirana as follows:

#### **(1) Strategic Plan for Greater Tirana**

The Institutional structure recommended in the Strategic Plan (SP) for the implementation of the Greater Tirana development is that the local governments (three municipalities and eight communes) create a Joint Powers Authority to act as the main implementing agency. This authority may be constituted as the Greater Tirana Development Authority or as a Greater Tirana Metropolitan Council. No such authority has yet been formed.

The SP also considers institutional options for water supply and sewerage services. These options are shown together in the following *Table 13.2.1* since by law, water supply and sewerage services are combined.

**Table 13.2.1 Strategic Plan for Greater Tirana - Institutional Options**

<b>Option 1</b>	
Water Supply	Sewerage
UKT expands its bulk water supply to the entire Greater Tirana area. Each commune is responsible for its own water distribution Or Communes combine to form a Joint Powers Authority.	No parallel option.
<b>Option 2</b>	
Water Supply	Sewerage
UKT provides bulk water supplies and distribution to all communes and does all billing and collection.	UKT services the entire Greater Tirana area for sewage collection, transmission and treatment.
<b>Option 3 (Recommended)</b>	
Water Supply	Sewerage
Form a new company for bulk water supplies.  Municipalities and communes buy water and distribute, and do billing and collection.	Form a new company to construct main sewers and treatment plant. Municipalities and communes provide sewage collection services.

Source: Urban Land Management Project Strategic Plan for Greater Tirana

These options were proposed in 2002 at a time when service provision by individual authorities appeared to be the preferred option. The objective of placing responsibility for public service provision at local level was to ensure that decision making and control was consistent with local needs ensuring that the best interests of the population (customers) are served. However, fragmenting the services to small local authorities which lack human and financial resources will in itself lead to poor service delivery, poor financial control, uneconomic operation and lack of opportunity for investment. This was the subject of debate between the stakeholders, and finally in April 2006 central government and other stakeholders agreed to decentralization considering aggregation of water supply and sewerage services.

## **(2) Proposal by the Mayor of Kashar Commune**

At the Conference on “Water Vision Beyond Supply” held in Tirana in October, the mayor of Kashar put forward a proposal to create a Northern Greater Tirana Water Supply & Sewerage Authority. The aggregation of the municipalities/communes of Vore, Berxulle, Kamza, Kashar, Paskuqan, and Zall Herr with an estimated total population of 300,000 in 2025 is considered. In 2004/2005 all communes were in broadly in favour of this proposal and most were ready to sign a joint agreement. There was a mutual understanding that the Municipality of Tirana would not be included in this Joint Authority.

The six mayors would form a Supervisory Council, and recruit a General Director who would in turn recruit staff for the complete provision of services. This authority would build its own office for operation and maintenance. Applications would be made to both government and donors for loan finance. This proposed Joint Authority would develop its own source of supply and purchase bulk water from UKT. Development would be in conformity with the land use proposed in the Strategic Plan for Greater Tirana. It was not made clear how the financial liability for the construction of bulk sewerage disposal



facilities for its newly constructed sewer networks would be dealt with.

### **(3) Master Plan Proposal**

Full consideration has been given to finding a balance between serving the interests of the customs by service provision at local level and utilizing economies of scale through a larger authority where it is possible to achieve financial sustainability and move towards cost recovery, to attract investment, and provide opportunities for both local and international private sector participation. Furthermore, the differences in attitude between the larger Municipality of Tirana and the smaller surrounding municipalities and communes has been recognized, together with the difficulty of asset transfer and sharing of multi-user water supply source and the finance required for the planned bulk removal of sewage have also been considered. This proposal is based on all these considerations and it is believed that the optimum solution may be achieved by the following;

- All local authorities in the Greater Tirana area agree to form a Joint Authority.
- Assets (or shares) are transferred to each member of the Joint Authority.
- UKT is transformed into an efficient commercial operating company and provides bulk water supplies, distribution, billing and collection (for water & sewerage charges), and the proposed sewerage collection, and bulk sewage transmission system and treatment plants.
- A supervisory Council (SC) is formed under an amended law 8099 to allow majority representation from all municipalities and communes plus central government representation. Members nominated by the local authorities should have appropriate qualifications and experience.
- A Service Contract is drawn up between the Joint Authority setting out the duties and responsibilities of a transformed and renamed UKT to the new shareholders.
- The independent National Regulatory Agency should have the final authority to approve a tariff proposed by the SC. The methodology of the tariff structure must allow for water supply and sewerage services to be available for low income and poor users.

Using this option the local governments will have the authority through the SC to appoint a Director General, effectively supervise the operator for levels of service delivery, and draw up a tariff which may allow for the diverse conditions in the municipalities and communes. A desirable feature of the new operating company would be to have branch offices at the municipal headquarters in all municipalities and communes for at least the billing and collection, and the customer services functions of the operator.

A single operator would bring economies of scale while maintaining close relations with the local authorities and the customers through the branch offices. A single Joint Authority would avoid fragmentation and the need to form small service providers in local authorities where there is no capacity and little chance of economic operation or investment for expansion.

With a step by step approach, the village water supplies currently operated by UKT could be transferred to a new authority under the Rural Agency for Water Supply and Sanitation and, if desirable a separate company could be formed at a later date for bulk water supply and bulk sewage removal.

Economies of scale, and a transformed, and efficient operator will create the conditions to attract private sector participation. The SC controlled by the local authorities has the responsibility to enter into Management Contracts, Lease Agreements, Concessions or other forms of privatization when the time is right. The new company could also be split into an Asset Holding Company for investment and a separate Operating Company if the operations are privatized (See Volume III Supporting Report Appendix-11).

**CHAPTER 14**  
**CONCLUSIONS AND**  
**RECOMMENDATIONS**

## **CHAPTER 14 CONCLUSIONS AND RECOMMENDATIONS**

### **14.1 Conclusions**

The study has:

- a) prepared a sewage development plan for Greater Tirana. The plan will improve the water and living environments. The plan was prepared based on comparisons of several alternatives.
- b) formulated an implementation plan (up to the year 2022) for the Sewerage System M/P. This includes three consecutive stages for implementation. Preliminary financial and economic evaluations and recommended institutional reforms to assist with the implementation of the program are provided.
- c) identified the Priority Projects for the F/S.

The proposed Priority Projects will be studied in more detail in the subsequent F/S phase. The study includes preliminary engineering design, system O&M plan, financing plan, cost estimation, EIA, implementation plan and evaluation of the projects.

### **14.2 Recommendations**

#### **14.2.1 Land Acquisition for the STP, PS and Trunk Sewer Connection Points**

The availability of land for construction of the proposed STPs, PSs and sites for construction of the vertical shafts of the trunk sewer using the jacking method of construction is vital for the implementation of the proposed Sewerage M/P. The available land area determines which sewage and sludge treatment processes (e.g. trickling filter, sludge drying beds) can be operated, and affects the cost of construction and O&M. Therefore, it is strongly recommended that considerable efforts be made to obtain the recommended land area.

#### **14.2.2 Decentralization of the Organization of the Water Sector**

It is recommended that the organization of the water sector be decentralized. The following issues were considered when making this recommendation:

- The local governments in Tirana and the surrounding municipalities and communes strongly object to having UKT as a service provider.
- Some local authorities would like to form their own water and sewerage authority.
- There is a proposal to form a Joint Authority for the Northern Greater Tirana Area, which excludes the municipality of Tirana.

Clearly UKT is not favored as a service provider by Tirana municipality or the surrounding local authorities. This is because it currently fails to provide a 24 hour supply to the city and to provide

adequate water supplies to the smaller local authorities. There are two key reasons for these failures:

- Up to 40% of the UKT water supply is illegally taken for domestic and irrigation uses before the water reaches the city limits.
- The low tariff levels limit the revenue, meaning proper O&M and extensions to the network into the surrounding local authorities is not possible (no application to increase the tariff levels has been made to the NRA in the last three years).

The issues of illegal use of water from the transmission mains, no matter how complex it may seem, must be addressed immediately with a stronger law and better enforcement. At the same time a solution must be found to providing formal connections for domestic use and to resolve the issue of irrigation water. With more water in the system the intermittent city supply should be resolved and water should be available for system extensions into the communes which may be financed by increased revenue.

These are critical issues in the context of convincing the local authorities that a reformed UKT can provide a proper service given the supply capability and the necessary finance. Clearly small authorities will fail financially in the medium to long term. Even a Joint Authority of six local governments, excluding Tirana, is likely to fail financially considering the low projected population at 2025 of about 300,000 and the huge investment require particularly for this sewerage Master Plan.

The differences between central and local governments, the Municipality of Tirana and its surrounding smaller authorities, should be seen as a challenge and not a permanent obstacle. A roadmap on how to progress can only be resolved by central government initiating a program of dissemination aimed at increasing the awareness of local governments to the practical issues related to the sustainable delivery of water supply and sewerage services as promised in the consensus document signed on 27<sup>th</sup> April 2006 (See Volume III Supporting Report Appendix-11).

A realistic time frame is needed to resolve the decentralization issue in consideration of the need to have an executing agency for this project. Loan negotiations are scheduled to commence in early 2007.

UKT should integrate the Sewerage Sector into its mainstream activities in the head office, before the transformation to GTW&SA, which needs to coordinate the implementation of the sewerage construction contracts and provide all of the management and financial support systems to this important sector which will operate and maintain the sewerage system and sewage treatment plant.