

## The Second Environmental and Social Considerations for Sewerage System and Sewage Treatment Plant for Greater Tirana

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### Abstract

The purpose of the Second Environmental and Social Considerations and the project itself didn't change from the first version, but in our contrary were improved with the adoptions and the approvals of Law No. 139/2015 "On Local Government", as along with some environmental laws, like the Law No.10 431, dated 9.6.2011 "On Protection of Environment", Law No. 10 440, dated 7.7. 2011 "On Environmental Impact Assessment", the Law No. 10 448, dated 14.7.2011 "On environmental permitting", "Law No. 60/2014, dated 19.06.2014 "On an amendment to Law No. 10448, dated 14.7.2011 "On environmental permitting", amended and others, non environmental laws is the same, and now with the beginning implementation of the project taking proper evaluation. Concretely the purpose is to ensure that development options are environmentally and socially sound and sustainable and that the environmental consequences of the project are recognized early and taken into account in the project design. The report follows the Albanian Laws on Environmental Protection, Environmental Permitting, and EIA and it also takes into account the JICA's Guidelines for Environmental and Social Considerations, updated some times and other legal and technical documents needed. The objectives of implementing the sewerage project in Greater Tirana are to improve the sanitary conditions of the city and to stop the flow of untreated sewage into the Lana River and improve the water quality. A sewerage project with such an objectives is associated with positive impacts for the economy, society and environment. The project, as a whole has positive impacts: to the water environment and the public health, through water quality improvement in the operation phase; and to the social environment through increase job opportunities, both in the construction and the operation phase. Following possible impacts are identified as negative impact during the construction phase, but they are only temporary and can be minimized by preventive consideration and appropriate countermeasures: impacts on traffic flow; impacts on air and noise; impacts on health of workmen and residents, near construction site; impacts on daily life of residents near construction site; and impacts on public utilities. Following possible impacts are identified as negative and continuous impact, but can be minimized by prior consideration and appropriate countermeasures: noise and odor; and sludge disposal. Overall, it can be concluded that the priority projects that will be implemented will have a positive effect on the improvement of the quality of the river. The mitigation measures, if followed correctly will not have any adverse impacts on the environment.

**KEYWORDS:** The environmental and social considerations, sewerage system, sewage treatment plant; greater, EIA, SEA, Tirana

## 1 General

### 1.1 Objective and Need for the Environmental and Social Considerations

The purpose of the Second Environmental and Social Considerations and the project itself didn't change from the first version, but in our contrary were improved with the adoptions and the approvals of Law No. 139/2015 "On Local Government", as along with some environmental laws, like the Law No.10 431, dated 9.6.2011 "On Protection of Environment", Law No. 10 440, dated 7.7. 2011 "On Environmental Impact Assessment", the Law No. 10 448, dated 14.7.2011 "On environmental permitting", "Law No. 60/2014, dated 19.06.2014 "On an amendment to Law No. 10448, dated 14.7.2011 "On environmental permitting", amended and others, non environmental laws is the same, and now with the beginning implementation of the project taking proper evaluation. Concretely the purpose is to ensure that development options are environmentally and socially sound and sustainable and that the environmental consequences of the project are recognized early and taken into account in the project design. The report follows the Albanian Laws on Environmental Protection, Environmental Permitting, and EIA and it also takes into account the JICA's Guidelines for Environmental and Social Considerations, updated some times and other legal and technical documents needed (Law No. 139/2015 "On Local Government"; JICA, 2004, 2010 & 2012; Package of the laws and regulations, from 1993 to 2015).

The major objective of this study is to establish present environmental and social conditions of the project area, through available secondary data/information supported by field studies, wherever necessary, to predict the impacts on relevant environmental and social attributes due to the construction and operation of the proposed sewerage facilities, to suggest appropriate and adequate mitigation measures to minimise /reduce adverse impacts and to prepare an environmental impact assessment (EIA) report including environmental management plan (EMP) for timely implementation and scheduling of the mitigation measures. This study has been carried out on the proposed priority projects in Greater Tirana (JICA, 2004, 2010 & 2012; Package of the laws and regulations, from 1993 to 2015; Law No. 139/2015 "On Local Government").

### 1.2 Methodology

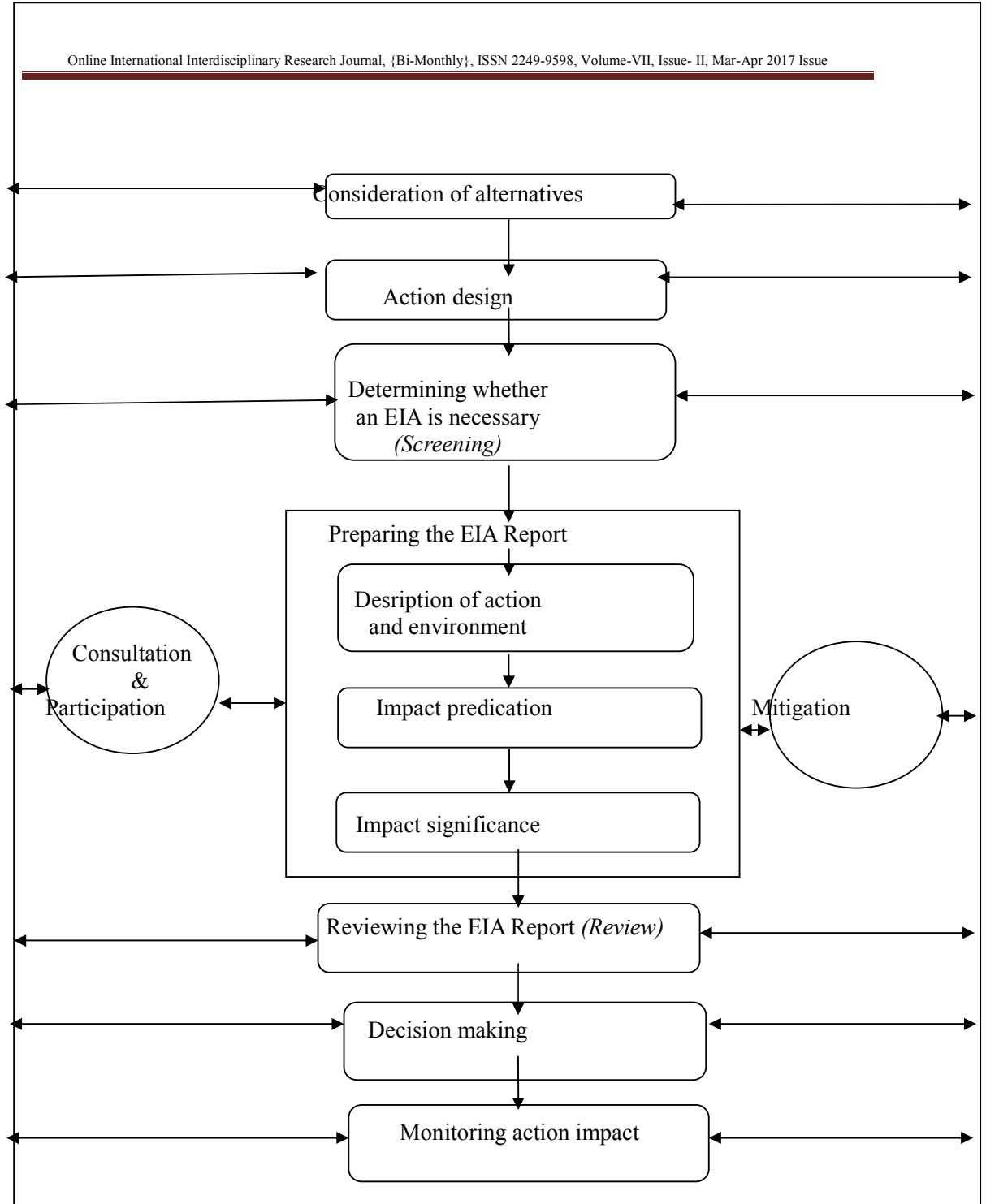
An environmental and social consideration study basically includes establishment of the present

Environmental scenario, study of the specific activities related to the project and evaluation of the probable environmental and social impacts, thus, leading to the recommendations of necessary environmental control measures.

The study, thus, necessarily includes collecting detailed data and information on the existing environmental set up for establishing "Baseline Environmental Scenario" and study of related data on the proposed activities. The environmental and social impacts associated with construction and operations of the project are predicted, and to mitigate the adverse environmental and social impacts, the necessary environmental control, protective and mitigation measures are finally recommended as "EMP" (JICA, 2004, 2010 & 2012; Bashkim Lushaj & Perparim Gashi, 2005).

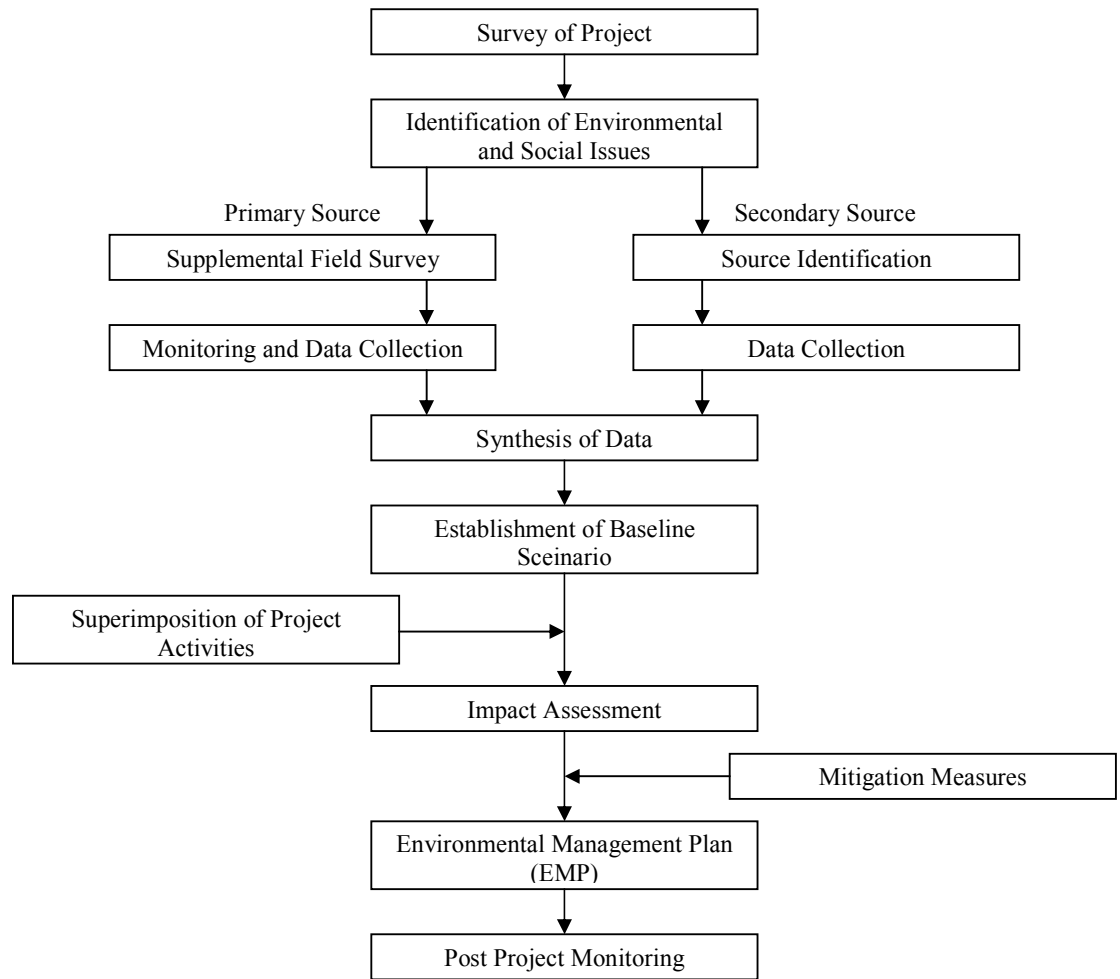
### 1.2.1 Elements of the EIA Process

While not all EIA system contain every element, the EIA process emanating from NEPA and subsequently diffused around the world can represent as a series of iterative steps: **First**, - Consideration of alternative means of achieving objectives, - Designing the selected proposal (**Alternative/Design**); **Second**, - Determining whether an EIA is necessary in a particular case (**Screening**), EIA in Albania is directly integrated in the environmental permitting process. The application for environmental permits marks the beginning of the EIA process. The application is firstly sent to the National Licensing Centre (NLC), which checks the documents and then transfers the documents to MoEFWA (now MoE) for review and final decision. The EIA process subsequently includes **Screening** for the need to apply for a permit, the preparation of the documents including the EIA report, the review and the decision on the report approval. Thereafter, a decision is taken on whether or not an Environmental Declaration is issued. In case of compliance during the construction activities, an Environmental Permit is issued after the construction phase of the project; **Third**, - Deciding on the topics to be covered in the EIA (**Scoping**). Scoping is not a required step of the EIA process; **Fourth**, - Preparing the EIA Report (*i.e. inter alia*) describing the proposal and environment effected by it and assessing the magnitude and significance of impacts (**EIA Report Preparation**); **Fifth**, - Reviewing the Report to check its decency (**Review**); **Sixth**, - Making a decision on proposal, wise using the EIA Report and opinions expressed about it (**Decision Making**); **Seventh**, - Monitoring the impacts of the proposal if it is implementing or it was implemented; (**Monitoring**), prepared by Bashkim Lushaj & Perparim Gashii, 2005, based on Law No. 8934, 5 September 2002), which was amended by Law No. 9890, date 20.03.2008 and by Low No. 8990 “On Environmental Impact Assessment” in 2003.



The methodology adopted is presented in *Figure 1.1*.

Introduction of the Environmental Impact Assessment process by elements, prepared by Bashkim Lushaj & Perparim Gashi, 2005 was the procedure used by the competent authorities, based on our laws, but it is not enough to time and requirements. The Japan methodology adopted is presented in *Figure 1.2*.



**Figure 1.1 Schematic Diagram for Approach and Methodology of EIA** (JICA, 2004, 2010 & 2012; Package of the laws and regulations, from 1993 to 2015).

Based on current legislation and on the Module of Environmental Impact Assessment, prepared before with a cycle of lectures on the scientific master level, by Brendan Barrett et al. and Bashkim Mal Lushaj, 2007 we have known one part of our environmental legislation was edited and adapted on laws. In our module, the EIA process is discussed in eleven stages, and concretely. Following this introductory stage, **Background** (*First stage*) are the following 10 stages in order, with a brief description of the purpose of each stage in the EIA process (Bashkim Mal Lushaj, 2007); **Law, Policy and Institutional Arrangements** (*Second stage*): To provide regulatory and legislative governance structures and requirements of EIA processes for project proponents, EIA practitioners and stakeholders. **Public involvement** (*Third stage*): To inform the public about the proposal and to gain the inputs of those directly affected by or interested in the proposal. Public involvement in some form may occur throughout the EIA process, although it tends to be focused on scoping and review phases of EIA; **Screening** (*Forth stage*): To decide whether or not a proposal should be subject to the EIA process and, if so, at what level of detail; **Scoping** (*Fifth stage*): To identify the key issues and impacts that are likely to require further investigation, and to prepare the terms of reference for the EIA study; **Impact analysis** (*Sixth stage*): To identify and predict the likely environmental and

social effects of the proposal and evaluate their significance. **Mitigation and impact management** (*Seventh stage*): To develop measures to avoid, reduce or compensate for impacts, making good any environmental damage; **Reporting** (*Eighth stage*): To describe the results of the EIA for decision-makers and other interested parties; **Review of EIA quality** (*Ninth stage*): To examine the adequacy of the EIA report to see if it meets the terms of reference and provides the information necessary for decision-making; **Decision-making** (*Tenth stage*): To approve or reject the proposal and set the terms and conditions under which it can proceed. The decision-maker also has the option to defer approval (e.g. until certain conditions are met or to require a proponent to redesign the project so that the environmental effects are minimized) and **Implementation and follow up** (*Eleven stages*): To check on the implementation of the terms and conditions of approval during the construction and operation phases; to monitor the impacts of the project and the effectiveness of mitigation measures; to take any actions necessary to ameliorate problems; and, as required, to undertake audit and evaluation to strengthen future EIA applications. Analyzing our situation that is missing still in the Legislation for several stages of the procedure, which is often also met ..., Based on that was mentioned above Japan Methodology was used. End in second preparation of EIA is used the same methodology as before.

## 2 Policies, Legal and Administrative Framework

### 2.1 Policy and Legal Framework

The National Environmental Action Plan (NEAP), prepared in 1993 on the bases of the National Environmental Strategy, aims at the integration of environmental protection measures in the development programs of the economic and social sectors. NEAP identified six priorities, such as monitoring industrial and urban pollution; assessing the environmental protection needs; implementing European-level environmental mechanism. NEAP is updated in 2001 (UNEAP 2001) and its priorities have been identified such as developing suitable environmental policies; improving cooperation among ministries, departments and local authorities; establishing an information system. In 2006, EX-MoEFWM, now MoE starts preparing National Environmental Strategy and it was approved in final stage (The National Environmental Action Plan (NEAP), 1993, 2001 & 2006).

The legal system is based on the following hierarchy: Constitution, primary legislation (laws) and supporting normative acts, such as by-laws, government decisions, decrees, ministerial orders, regulations, instructions and standards. The Constitution, approved in 1998, calls upon the Albanian authorities to preserve a healthy environment, ecologically suitable for present and future. Although the first basic law on the environment was approved in 1967, the development of a modern environmental legal system based on democratic principles began only in 1991.

The Law "On Environmental Protection" (No. 8934, 5 September 2002), which was amended by Law No. 9890, date 20.03.2008 is the basic law, which defines general principles and procedures of environmental management. The Law establishes national and local policies on environmental protection, requirements for the preparation of environmental impact assessments and strategic environmental assessment, requirements for permitting activities that affect the environment, prevention and reduction of environmental pollution, environmental norms and standards, environmental monitoring and control, duties of the state bodies in relation to environmental issues, role of the public and sanctions imposed for violation of the Law (Package of the laws and

regulations, from 1993 to 2015).

### **(1) Fundamental Law on Environmental Protection**

The 2011 Law “On Environmental Protection”, No. 10431, substitutes the 2002 Law No. 8934 and transposes the Directive 2004/35/EC on environmental liability. The Law entered into force in 2012. It provides a clear legal basis and framework for further transposition of a large number of environmental directives which are relevant to the protection of the environment (Package of the laws and regulations, from 1993 to 2015).

The fundamental law on the environment is the Law No. 10 431 of 9.6.2011, named “On Environmental Protection”, that has the purpose of aligning Albanian Environmental law with EU environmental legislation, and more precisely with Directive 2004/35/EC of the European Parliament and Council, dated 21 April 2004 "On environmental liability, prevent and repair damage on the environment", as amended. The Law No. 10.431 has come into force in January 2013. This Law aims at the Environmental Protection at a higher level than similar laws implemented in years 1993-2002. Among other aspects, the law aims at the protection and improvement of environment, prevention or reducing of risk for human health, insuring the prevention of human life risks, amelioration of life quality and provision of means for a sustainable development of the Country. The law makes reference to water resource protection, quality water norms, air and soil protection etc., while dealing with the goals and principles of the EIA. The law declares the National Environmental Agency as the competent authority for the definition of the conditions for the Environmental Permit. This law also underlines the obligation of any state or private entity to invite the public and the interested parties in hearings and public consultations to discuss on Environmental Protection (Package of the laws and regulations, from 2001).

### **(2) Other legislation related to Environmental Protection**

Laws regarding environmental quality, marine and natural resources and biodiversity protection are also taken into account: Law No. 10463, dated 22.09.2011 “On Integrated Management of Wastes”, which gives regulations and framework for environmental protection from waste contamination; Law No. 8897, dated 16.05.2002 “On Protection of Air from Pollution”, which refers to the measures for prevention of air pollution by several activities; Law No. 8905 dated 2002 “On Protection of Marine Environment from Pollution and Damage”, which includes the Albanian national legislation and the obligations that result from the Convention for the Protection of Mediterranean Sea and its Protocols; Law No. 8364, dated 2.07.1998 “On Hazardous Substances and Wastes”, which refers to pollution control from hazard substances generation and liquid and solid waste disposal; The Law No. 9587, dated 20.07.2006 “On Biodiversity protection”, amended in 2012, which refers to the protection of animal and plant species. The Albanian red book is followed by Albanian Red List, which categorizes species with specific status, relating to National, Regional, European and Mediterranean, as well as world wide range; The Law No 9868, dated 4.02.2008, “For some changes and Regulations of the Law “On Protected Areas”, No 8906, dated in 6.6.2002”, that regulates previous laws and by laws regarding Protected Areas. The law is in compliance with IUCN categories and structure of Protected Areas, and among others issues, treats with the integration of Buffer Zones in the peripheral Part of Protected Areas, gives land use in any subcategory of Protected Areas and defines the prohibited activities in any management sub-zones of Protected Areas; Law No. 8906, dated 6.06.2002 “On Protected Areas”, where procedures to declare the P.A. and its management zones are given; DCM No. 266, dated 24.04.2003, concerning “The Administration of Protected



Zones”; DCM No. 267, dated 24.04.2003, concerning “Procedures Regulating Proposal and Declaration of Protected and Buffer Zones”; Law No.10006, dated 23.10.2008, “On Wild Fauna Protection”, amended in 2012; Law No. 9867, dated 31.1.2008 “On rules and procedures for international trade of endangered species of flora and fauna”, and amended in 2012; Law no. 10253, dated 11.3.2010, “On hunting”; Law no. 9385, dated 04.05.2005, “On forests and the forest service”, and amended by Law No. 9533, dated 15.05.2006; Law No. 9791, dated 23.07.2007; Law No. 9989, dated 15.09.2008 and Law No. 10137, dated 11.05.2009 “On Some Changes in Legislation in Force for Licences, Permits and Authorisations in the Republic of Albania.” This framework is expected to be amended by a new law currently in draft; DCM No. 84, dated 27.1.2009 "On the determination of the criteria for establishment of biodiversity inventory and monitoring network"; Law No. 9103, date 10.7.2003 "On protection of cross border lakes"; Law No. 8905 dated 2002 “On Protection of Marine Environment from Pollution and Damage”; Very important is the legislation dealing with cultural heritage like; Law No. 9048, dated 7.04.2003 “On Cultural Heritage”; Law No. 9490, dated 13.3.2006 “On Ratifying of the Convention on Conservation of Material Cultural Heritage”, Paris 2003”; DCM No. 795, dated 26.11.2003 “On Building up, Composition and Functioning of General Permanent Commission for Evaluation of Cultural Heritage Objects, owned by private entities, movable properties, and for scientific criteria and assessment procedures of such objects”; DCM No. 426, dated 13.07.2007, “On Approval of Albanian Restoration Chart”; DCM No. 723, dated 14.05.2008, on “Composition of National Committee of Spiritual Culture Heritage”; Guide No. 446, dated 5.07.2007, “On Approval of Standard Documents of Public Procurement for Restoration of Cultural Monuments”; Law No.8652 dated 31.07.2010 on “Organization and Functioning of Local Government” as amended; Law No.10463 dated 22.09.2011, on “Integrated public waste management”; Law No.107/2014 dated 31.07.2014, on “Territory planning and development”; Law No.9244 dated 17.06.2004, on “Protection of agricultural land”; Law No.10433 dated 16.06.2011, on “Inspection in the Republic of Albania”; Law No. 9537, dated 18.5.2006 “On the Management of Hazardous Waste”, as amended by Law No. 10137, dated 11.05.2009; and Law No. 9890, dated 20.03.2008 (Package of the laws and regulations, from 2001); Law No. 162/2014 "On protection of air quality in the environment";

### **(3) Legislation on Environmental Impact Assessment and Environmental Permit**

The introduction of the new Laws and amendments on land planning has been also very important, as: The Law No.10 119, dated 23.04.2009 “On Land Planning”, amended, which substituted the old Law Nr. 8406, dated 16.09.1998, on “Urban Planning”, amended; Law No. 107/2014 "On planning and development of the territory"; Decision Nr. 502 dated 13.07.2011 recently introduced, “On Approval of the Uniform Rules of Territory Development Control”, which goes together with Law No. 10 119; Legislation related to road construction, operation/maintenance and transport is also regarded as of primary importance. This legislation not only sets out how to improve transport, define road categories, establish auditing and evaluation institutions etc., but also defines the rules of the road code, determines methods for technical control of the roads, identifies main road authorities. All of such legislation is important for safety, reduction of pollution and, in general, for the socio-economic development of Albania (Package of the laws and regulations, from 2001).

The legislative system of road transport is currently based on three main laws and several by-laws, as: The Law “On Road Transport”, No. 8308/1998, which regulates the conditions and the modalities by which the transport of passengers and goods is carried



out, both in domestic and international road transport activities; Decision No. 1243/2008, “On Approval of rules for admission to the occupation of road transport operator of goods and passengers, driving working hours as well as recognition of official documents, set for these operators”; The Law on Road Code of the Republic of Albania, No. 8378/1998, which regulates road categories, competencies, road control agencies, maximum allowed dimensions and maximum authorized weight of vehicles; Decision of the Council of Ministers No. 153//2000, on "Approval of the Rules of Implementation of the Road Code of the Republic of Albania"; Instruction of the Ministry of Public Works and Transport No. 2 of 2010 on "Technical control of road means"; The Law no.10164/2009 “On Albanian Road Authority (ARA)”, On Article 41/4, the Albanian Constitution provides: “*The expropriations or limitations of a property right that are equivalent to expropriation are permitted only against fair compensation*”. Laws and bylaws regarding resettlement, expropriation and compensation are also taken into considerations in the study. This legislation shall be analyzed in the RPF document of this project (Package of the laws and regulations, from 1993 to 2015).

Economic activities that could have a significant impact on the environment or are connected with the use of natural resources are permitted only after an Environmental Impact Assessment (EIA), as: The newest Law regarding EIA is the Law No. 10 440, dated 7.07. 2011 “On Environmental Impact Assessment”. This law entered into force in early 2013. In the law the general procedures of EIA, the authorities which formalize and approve procedures are given. Two types of EIA, namely “full-grade” and “preliminary” are also provided and described. The classification of EIA categories in respect of investments are given in the annex I (full-grade EIA) and II (preliminary EIA) of this Law. In the law, the requirements for “Environmental Permit” for both EIA categories are defined, and the National Environment Agency (NEA), as mentioned in the environmental basic Law No. 10 431, dated 9.6.2011, “On Environmental Protection”) is re-declared the competent authority for the definition of the conditions for the Environmental Permit. The Law gives also the rules regarding Public Information during the EIA process. The Law No. 10448, dated 14.07.2011 “On Environmental Permits”, gives rules and procedures related to the EIA process, categorization and permits. This law describes the types of Environmental Permits, defines the competent authority for verification of each type of license, provides consultation procedures, etc. The Law also describes the importance of the Best Available Techniques (BAT) for the determination of the Environmental Permit category and underlines that the documentation should be presented at the National Center of Licensing (NCL) after consultation with NEA for the level of EIA (“full-grade” or “preliminary”). The required documentation needed to be delivered in the NCL for the request of Environmental Permit in respect with all EIA categories is also shown In the Law. The law categorizes activities in terms of issues, discharges and risks into three classes: A, B, and C. Regarding impact significance, the Law defines three level of Environmental Permit: a) Permit of Type A, obligatory for activities listed in category A (annex 1/A of this Law); b) Permit of Type B, obligatory for activities listed in category B (annex 1/B of this Law); and c) Permit of Type C, obligatory for activities listed in category C (annex 1/C of this Law).

The DCM No. 13, dated 4.1.2013, “On approval of the rules, responsibilities and deadlines for development of EIA procedures” gives details for the procedures, clarifies the documentation needed for Environmental Permit requests, and defines consultation procedures. The EIA should be delivered at NCL, revised by NEA and RED, with the support of technical/scientific/research institutions, and their comments will be represented at NCL, which inform the client on reviewer requests. The client, after

fulfilling the decision makers' requirements, presents the revised study at NCL, waiting for investment permission from the environmental point of view. The time period for revising of ESIA by decision makers (without the time of fulfilling requirements from revising process) is 20-30 days.

In the Guideline dated 02.12.2013, "On obligatory documentation requested to get the environmental Permit of type A, B, C, for new and existing activities", additional requirements for documentation and procedures and for environmental permitare given, regarding activities listed in annex 1/A, 1/B and 1/C of the Law No. 10448, dated in 14.07.2011, on "Environmental Permits".

DCM No. 419, dated 25.06.2014, "On approval of requests for environmental permits of type A, B and C", deals with transferring of such permits from one entity to another, conditions of respective environmental permits, as well as several detailed regulations for permits revising from competent authorities till such permissions to be delivered from NC (Package of the laws and regulations, from 1993 to 2015).

### **Procedures to ensure the environmental permits**

A range of by laws applies for the right implementation of the environmental laws.

### **Overview EIA procedure in Albania**

EIA in Albania is directly integrated in the environmental permitting process. The application for environmental permits marks the beginning of the EIA process. The application is firstly sent to the National Licensing Centre (NLC) which checks the documents and then transfers the documents to MoEFWA, today MoF for review and final decision. The EIA process subsequently includes Screening for the need to apply for a permit, the preparation of the documents including the EIA report, the review and the decision on the report approval. Thereafter, a decision is taken on whether or not an Environmental Declaration is issued. In case of compliance during the construction activities, an Environmental Permit is issued after the construction phase of the project. Scoping is not a required step of the EIA process. The other laws related to environmental management and protection are such as the Law on Protection of Wild Fauna and Hunting, the Law on Water Sources, the Law on Protected Area. The related laws are listed in Appendix 13 (Package of the laws and regulations, from 1993 to 2015).

### **2.2 Administrative Framework**

#### **(1) Ex Ministry of Environment, Forests and Water Management (ex-MoEFWM), now Ministry of Environment (MoE)**

Albania established its first Ministry of Environment in September 2001 and in 2005, Ministry of Environment is changed into Ministry of Environment, Forests and Water Management, and changed name again into Ministry of Environment. According to the Law on Environmental Protection, 2002, the main responsibilities of the Ex-Meow, now Ministry of Environment are: To cooperate and coordinate with central and local government institutions, the public and non-profit organizations to increase the level of enforcement of environmental legislations; To prepare draft agreements, conventions, protocols, projects and programs that are carried out in the framework of bilateral and

multilateral cooperation, including with international environmental organizations, and to follow their implementation when they are finalized; To study the country's needs for specialists and to coordinate the qualification and specialization activities of the personnel dealing with environmental protection; To support projects on scientific research, improvement of the state of the environment, introduction of clean technologies and promotion of activities of non-profit organization; To assist the local government bodies on environmental protection and in the preparation of local environmental action plans (Package of the laws and regulations, from 1993 to 2015).

### **(2) Main responsibilities of the National Environment Agency of Albania**

The duties and scope of activities of NEA are stipulated in Albania's environmental legislation. The Agency is the national focal point for environmental monitoring, assessment and environmental reporting at national level (including reporting to EEA and some other international organizations). It provides high quality references and laboratory services on the quality of waters, air, lands, biodiversity and forests components. NEA is also responsible for the accreditation of laboratory activities according to ISO standards. According the legislation the NEA functions are as follows: 1- It follows the procedures related with the Environmental Impact Assessments and Environment Permissions in line with the legislation in force 2- Drafting and implementing of the annual National Monitoring Programme 3- Carrying out (with its own capacities and those of the third parties contracted by NEA) of the annual monitoring programme 4-Collecting, managing, assessing and drafting the National State of Environmental Report (annual) 5-Building up and managing the PRTR, National Forestry Inventory, Environmental Information System, EIMS, etc. 6- Providing environmental information to the public and interested bodies as well as giving advice to other public institutions at national or local level on issues related to the state of environment 7- Providing information services to the public on the environmental decisions taken by the policymakers in accordance to the provisions of the laws into force 8- Making the implementation of the principles 'the polluters pays' possible 9- Other responsibilities as laid down in specific provisions.

### **(3) Regional Environmental Agency (REA)**

The MoEFWM has 12 Regional Environmental Agencies (REAs). REAs are specialized bodies in environmental protection, which operate at prefecture level. The REAs: Realize the enforcement of legislation for the protection of the environment on local level; Assist the local government bodies in the field of environmental protection and management within their jurisdiction; cooperate with the local government for the development of local environmental action plans, programs and projects; Are involved in the process of the approval of the environmental permit and declaration, by performing the duties defined by the MoEFWM in a special regulation. They provide the environmental consent and authorization for local activities; Undertake awareness activities for the protection of the environment and cooperate with the community, the public and environmental NGOs and professional business organizations (Package of the laws and regulations, from 1993 to 2015).

### **(4) Local Government**

The local government authorities represent the most important governmental structure for the administration and the protection of the environment that they have under jurisdiction, by implementing the responsibilities, rights and duties given to them by the Law "On the Organization and Functioning of Local Government, No. 8652, 31 July 2000" and Law No. 139/2015 "On Local Government". In the field of environmental protection, they

have the following duties: Realize the implementation of the environmental legislation; Draft local plans for the environmental protection and plans for the territory adjustment; Inform the public on the state of environment and local activities that are subject to the environmental impact assessment; Define the sites for the collection and elaboration of the production and human life wastes, in accordance with the environmental criteria and development plans; Organize the deposit of the wastes and hazardous substances as well as the protection of green areas in urban centers and around them; Administer the urban wastes, the waste water treatment and solid wastes plants; Discipline the transport and the constructions in the urban environment (Package of the laws and regulations, from 1993 to 2015).

### **2.3 Environmental Approval and EIA Procedure**

#### **(1) Environmental Approval**

The Albanian Law on Environmental Protection requires that any project or activity that will affect, or be likely to affect the environment, have to receive an Environmental Declaration, Environmental Permit, Consent or Authorization by the MoEFWM before implementation may commence. A decision by the Council of Ministers has defined the projects to which this process is applied. Without a positive Environmental Declaration the Council for Adjustment of Territories (KRT) for the locality will not grant a construction permit. Each kinds of approval may include mandatory conditions and procedures to be implemented, so that pollution and damage to the environment do not exceed the allowed norms. All applications for environmental approvals are submitted to the REA of the region in which the project will be implemented or the activity will be exercised. The REA is responsible for reviewing documentation and forwarding the request to the MoEFWM for processing with recommendations for approval, rejection or enhancement.

For this study, the Environmental Declaration should be obtained at the Feasibility Study stage. To obtain the Environmental Declaration, the request and relevant documentation including EIA report should be submitted (Package of the laws and regulations, from 1993 to 2015).

#### **(2) EIA Procedures**

Environmental Impact Assessment (EIA) was introduced in the 1993 framework Law “On Environmental Protection”. A Law on Environmental Impact Assessment (No. 8990) was approved on 23 January 2003 and it defines the rules, procedures and deadlines for identifying and assessing the direct or indirect impacts of project or activities on the environment. The Law established the steps necessary to implement EIA procedures; presentation of the application, preliminary review, selection and classification criteria, public hearing and consultation, access to information, duties and rights of other bodies. The MoEFWM is the legal competent authority for requesting, reviewing and approving EIA documentation. The Law also provides the list of activities that should be subject to the Profound (advance) process and Summary (outlined) process of impact assessment on environment.

Under the regulations, waste water treatment plant with a higher capacity than 150,000 equivalent inhabitants shall conduct “Profound (advanced) process of impact assessment” on environment. The contents that profound EIA report shall contain are described in Appendix 13.

The project applicant is responsible for submitting the application including the EIA

report for environmental approval to the MoEFWM. Any EIA report shall be prepared by an expert certified by the MoEFWM for preparing such reports and for environmental auditing (Japanese Team & Bashkim Lushaj: Major International Project, 2006; Package of the laws and regulations, from 1993 to 2015).

The procedures of EIA are summarized in the table below.

**Table 2.1 EIA Procedures**

Procedure	Description
1) Classification	Judgment of the EIA level based on the Law and consultation with MoEFWA (Profound process or Summary process)
2) Preparation and Submission of the EIA Report	Reports shall be compiled by licensed natural and juridical persons. Profound reports shall contain the items mentioned above.
3) Initial Review, Inspection and Opinion by the Regional Environmental Agency (REA)	<Within 5 days> REA shall conduct the initial review. EIA level of the project shall be finalized. <Within 20 days> Approval / refusal and opinion by REA shall be forwarded to MoE.
4) Review by MoEFWM	Review by the MoEFWM shall be conducted within 3 months. Following procedure is needed for profound EIA. 1) Establishment of the commission 2) Consultation with Interested Parties (Central organs, Urban and Tourism Development organs, Local government organs, Specialized institutions in the environmental field) 3) Public Debate organized and directed by local government organ (Central and local government organs, specialized institutions, interested people, environmental NPO and applicant) - 1 month notification of EIA report - 1 month deadline to organize debate and notification to the participants within 10 days in advance
5) Decision – making and Notice / Appeal of Decision	- Within 5 days from the submission of the commission report MoE shall take the respective decision announcing the environmental declaration or permit - The decision shall be published and shall be delivered to the applicant, state and local organs - Against the decision the proposes may appeal within 30 days of its publication

(Package of the laws and regulations, from 1993 to 2015; Japanese Team & Bashkim Lushaj: Major International Project, 2006).

Regarding impact significance, the Law defines three level of Environmental Permit: a) Permit of Type A, obligatory for activities listed in category A (annex 1/A of this Law); b) Permit of Type B, obligatory for activities listed in category B (annex 1/B of this Law); and c) Permit of Type C, obligatory for activities listed in category C (annex 1/C of this

Law).

Based on the legislation renewed, aligning with European ones, therefore, everything is arranged, and the easement environmental impact has been updated, as well as the Environmental Permit is updated. For our project the Permit of Type A, was an obligatory for our activities, as it is listed in category A (annex 1/A of this Law, mentioned above (Package of the laws and regulations, from 1993 to 2015).

**2.4 Environmental Standards and EU Directives**

**(1) River Water Quality Standards**

In Albania, water quality standards for the rivers and sea have not yet been defined.

**(2) Effluent Standards**

The draft of the effluent standard is ready and at the approval stage. However, the effluent standard is for industrial effluent and that of municipal wastewater is not included.

Since the Albanian Government is considering joining the EU in future and will take the necessary measures to achieve the EU Directives, EU Directives should be set as a goal to be satisfied in the future (Package of the European Community Directives, from 1991 to 2015).

**Table 2.2 Effluent Standards of EU**

	Concentration (mg/L)	Minimum reduction Percentage (%)	Measurement method
BOD	25	70 – 90	Unfiltered Nitrification inhibited
COD	125	75	Potassium dichromate
TSS	35	90 under	- 0.35 µm of membrane filter Drying at 105 °C - Centrifuge for at least five minutes with 2800 to 3200 G Drying at 105 °C

(Japanese Team & Bashkim Lushaj: Major International Project, 2006)

**(3) Air Quality**

The national norms and EU norms of air quality is as below:

**Table 2.3 National Norms of Air Quality**

Measuring station	LGS	PM10	SO <sub>2</sub>	NO <sub>2</sub>	O <sub>3</sub>	Pb
National Norms	140	60	60	60	120	1.0
EU Norms	80	50	50	40	120	0.5

(Japanese Team & Bashkim Lushaj: Major International Project, 2006)



#### **(4) Noise**

No standards for noise exist in Albania.

#### **(5) EU Directives**

EU Directives / Code / Standard shall be respected in the plan / design. Main EU directives related to the project are as follows:

- Directive 91/271/EEC on Urban Waste Water Treatment
- Directive 98/15/EEC amending directive 91/271/EEC
- Directive 2002/60/EU Water Framework Directive
- Directive 96/61/EC Integrated Pollution Prevention and Control (IPPC)
- Directive 97/11/EC Environmental Impact Assessment (Albanian EIA system has been harmonized already)
- Directive 86/278/EEC protection of the environment, and in particular of the soil, when sewage sludge is used in agriculture
- Directive 76/160/EEC Bathing Water Quality
- Directive 98/83/EC Quality of Water intended for Human Consumption
- Directive 2001/42/EC (known as 'Strategic Environmental Assessment
- Directive 2011/92/EU (known as 'Environmental Impact Assessment' – EIA Directive) or for public plans or programmes on the basis of Directive 2001/42/EC (known as 'Strategic Environmental Assessment
- Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment Text with EEA relevance
- Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014, amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment Text with EEA relevance (Package of the European Community Directives, from 1991 to 2015).

### **3 Description of Proposed Priority Project**

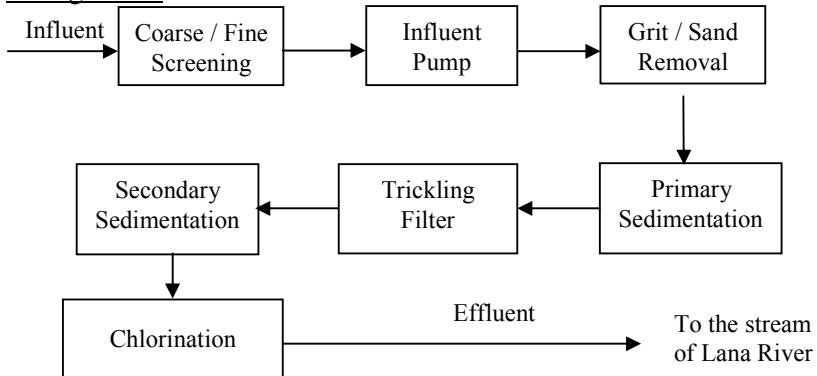
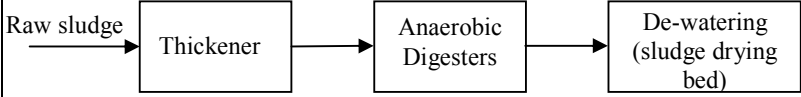
#### **3.1 Existing Sewerage System in Greater Tirana**

The present existing sewer area is in approximately 90 % of Tirana City and some area in Kamza city. Existing drainage / sewerage facilities were constructed in 1962. It seems that almost all of existing facilities are not keep in good conditions. The detail is described in Chapter 5 of Master Plan.

#### **3.2 Proposed Sewerage System in Greater Tirana**

The proposed project is summarized in the table below.

**Table 3.1 Summary of Proposed Sewerage System in Greater Tirana**

Item	Description of Proposed Sewerage System
1. Location	The proposed STP site with about 46.6 ha is located at Mezezi Stalla in Kashar Commune, the south-west of the Tirana city ( <i>Figure 6.3.1</i> )
2. Capacity etc.	Service population in the year 2014 : 342,500 Service area : 2,343 ha Capacity (max. daily) : 97,000 m <sup>3</sup> /d Design average daily flow : 85,600 m <sup>3</sup> /d Design maximum daily flow : 106,200 m <sup>3</sup> /d
3. Sewage characteristics	Design influent quality    Design effluent quality    Standard of EU BOD: 200 mg/l                24 mg/l                        25 mg/l SS : 200 mg/l                30 mg/l                        35 mg/l
4. Sewers	Trunk sewer : Dia.: 900~1,500 mm, Length: 4.4 km Main sewer : Dia.: 400~600 mm, Length: 1.4 km Branch sewer : Dia.: 200 mm, Length: 28 km
5. Treatment Method	Treatment Method : Trickling filter Treatment process flow diagram :  <u>Sewage Flow</u>  <pre> graph TD     Influent --&gt; Screening[Coarse / Fine Screening]     Screening --&gt; Pump[Influent Pump]     Pump --&gt; Grit[Grit / Sand Removal]     Grit --&gt; Primary[Primary Sedimentation]     Primary --&gt; Trickling[Trickling Filter]     Trickling --&gt; Secondary[Secondary Sedimentation]     Secondary --&gt; Chlorination[Chlorination]     Chlorination -- Effluent --&gt; Stream[To the stream of Lana River]     </pre> <u>Sludge Flow</u>  <pre> graph LR     RawSludge[Raw sludge] --&gt; Thickener[Thickener]     Thickener --&gt; Digesters[Anaerobic Digesters]     Digesters --&gt; Dewatering[De-watering (sludge drying bed)]     </pre>
6. Sludge Production and Disposal	Wet / Dewatered sludge production : 26.9 ton/d, 9.0 ton/d Disposal method : landfill at the disposal site which WB proposed
7. Receiving water body	Stream near-by, meeting the Lana River at Kashar

(Japanese Team & Bashkim Lushaj: Major International Project, 2006)



Total of Indirect Cost	2,888
Total Project Cost	9,268

(Japanese Team & Bashkim Lushaj: Major International Project, 2006)

## 4 Baseline Environmental Data

### 4.1 Physical Environment

Albania is situated on the western edge of the Balkan Peninsula, with 28,748 km<sup>2</sup>; Albania is one of the smallest countries in Europe. It is situated in a geographical position between latitude 39 degree's 38' – 42 degree's 39' North and longitude 19 degree's 16' – 21 degree's 4' East. Its total border length is 1094 km., out of which 476 km are coastal line on the Adriatic and Ionian Seas to the west. Tirana Municipality is the center of the country. It lays in 40 degree's 21'20" North Latitude and 20 degree's 14'30" East Longitude. (Shouko Yamada, Senro Imai & Bashkim Lushaj, 2006).

#### (1) Topography

Albania is mostly a mountainous country as mountains and hills over 300 m cover approximately 77 % of the total land area (28,748 km<sup>2</sup>). The medium altitude of the country is about 710 m which is about two times higher than that of Europe. Albania is topographically characterized into four natural regions: the Albanian Alps, the central mountain regions, the southern mountain region and the western plain. The Tirana City is located half over the western plain next to the Adriatic Sea and the other half over the mountain and hilly area. The altitude of the study area ranges from 80 m to 130 m and the center of Tirana are situated at about 110m. The ground surface gradient is ranging from 1 to 5 % declining to western direction. In the east of Tirana, hilly area is extended to Mt. Dajti (1,612 m) (Shouko Yamada, Senro Imai & Bashkim Lushaj, 2006).

#### (2) Geology

In Albania, two distinct formation types are seen; the western domain consists of Monotonous Permian to Mesozoic Sediments, while the eastern domain is characterized by Paleozoic to Mesozoic basis, acidic volcanic rocks and ultramafic massifs (Shouko Yamada, Senro Imai & Bashkim Lushaj, 2006).

The Tirana syncline presents a depressed area, as a lateral basin, filled with molasse deposits of serravallian – tortonian. Tirana depression is over put completely on the Kruja tectonic area. Its western border partly coincides with the over put front of the Kruja tectonic area. So is understandable that Tirana synclinal presents a depressive unit superposed over the more western part of the Kruja tectonic area. This depressed unit is created during the wrinkling period pre- Serravallian and Tortonian, where this location is included and later sedimentation phenomena happened in its basement. Tirana synclinal was formed in such conditions, presenting a molasse synclinal over put on Kruja tectonic structure area. It represents a structural unit formed in geological newest period, during Serravallian – Pliocene, which confirm the new tectonic removal, where the area is included. This synclinal is characterized by a quiet east flank, with a smooth western downfall and by a hard western flank up to overturn, which is confirmed also by the seismic crosscuts. This tectonics is reflected also in the late tectonic and neo-tectonic map of the area (Shouko Yamada, Senro Imai & Bashkim Lushaj, 2006).

### (3) Climate and Meteorology

The Albanian climate is characterized by hot and dry summers, whereas the winter months tend to be mild and wet. Owing the prominent diversity of inland topography, the climate is divided into three main climatic zones. The Tirana area consists of small rolling hills and also extends inside the border of the Fieldly Mediterranean Climate Sub-zone and Hilly Mediterranean Climate Sub-zone. A humid and mild winter as well as a dry and hot summer is the typical characteristics of this area (Shouko Yamada, Senro Imai & Bashkim Lushaj, 2006).

#### 1) Temperature

The mean annual atmospheric temperature is 16.8<sup>o</sup> C in 2004. The coldest month in winter is January with a mean atmospheric temperature of 7.9<sup>o</sup> C, while the hottest month is July with a mean atmospheric temperature of 26.3<sup>o</sup> C as of the year 2004. The table below shows the annual average temperature in Tirana Municipality from 1992 to 2004.

**Table 4.1 Data on Temperature in Tirana Municipality**

Yearly average temperatures	1992	1998	2000	2002	2003	2004
Tirana	15.3	15.3	16.4	16.7	17.3	16.8

Source: Agriculture, Livestock, Agro-industry, Fishery, Forestry, Ministry of Agriculture and Food, 2004

Unit: □

#### 2) Rainfall

The mean annual rainfall is 1,310 mm as of the year 2004. Monthly rainfall in the year is not uniform. During the cold weather, approximately 60 % of the annual rainfall is observed. The highest monthly rainfall occurs in November with a value of 216.5 mm, while the lowest monthly rainfall of 14.7 mm occurs during August in 2004 (Shouko Yamada, Senro Imai & Bashkim Lushaj, 2006).

**Table 4.2 Data on Rainfall in Tirana Municipality**

	1992	1998	2000	2002	2003	2004
Annual Rainfall (mm)	787	1,173	1,014	1,188	718	1,310

Source: Agriculture, Livestock, Agro-industry, Fishery, Forestry, Ministry of Agriculture and Food, 2004

Unit: mm

#### (4) Wind Pattern in the Region

According to the information from Institute of Hydrometeorology, the wind of the study area is distinguished relatively low value; the average annual wind speed is 1.5 m/s from the period of 1951 to 2000. The calmness accounts for 56 %. The dominant directions of wind are northwest and southeast with the frequencies 14.6 and 12.0 % respectively (Shouko Yamada, Senro Imai & Bashkim Lushaj, 2006).

### (5) Surface Water

The study area is located in the upstream area of the Ishmi Basin, which shares around 50 % of Erzeni-Ishmi Basin area (1,439 km<sup>2</sup>) and relatively flat basin surrounded on three sides by mountains with the average altitude of about 120m.

The major river in the study area is the Lana River. The Lana River runs through the southern part of Tirana City from east to west and joins the mid-part of the Tirana River, which join the Ishmi River and then the Ishmi River flows into the Adriatic Sea. The Lana River is severely polluted by direct discharge of untreated sewage and uncontrolled garbage dumping. The Lana River has a length of 29 km with some 3.5 km of concrete embankment in the central part of Tirana City. Upstream area of the Lana River is thinly populated area and the major activities in this are in olive oil cultivation. In the mid-part of the river, central part of urban area, where is covered by concrete embankment, is densely populated and significant volume of sewage discharges into the river directly from household or small to mid-scale commercial area. Referring to the BOD data for last two years in the Lana River, BOD value in unpopulated upstream area shows relatively low organic pollution level. However, BOD after the central part of urban area shows some 50 to 60 mg/l and its maximum value exceeds more than 100 mg/l (Shouko Yamada, Senro Imai & Bashkim Lushaj, 2006).

### (6) Groundwater

The combination of the sand and conglomeratic packages with the argillaceous ones gives the possibility to the agglomeration of the considerable amount of the groundwater. There are two groups of groundwater complexes: (i) the compact rocks groundwater, and (ii) loamy rocks groundwater. Based on the geologic formation and their facial nature, there are two types of water aquifers in the study area:

- Tortonian aquifer complex
- Quaternary aquifer complex (Shouko Yamada, Senro Imai & Bashkim Lushaj, 2006).

### (7) Ambient Air Quality

Air quality data are reported to the MoEFWM by the monitoring institutions, namely the Institute of Public Health and the Institute of Hydrometeorology. Air monitoring samples for PM<sub>10</sub>, black smoke, SO<sub>2</sub>, NO<sub>2</sub>, O<sub>3</sub>, and Pb are taken five days per month in Tirana (5 stations) and other cities (Korçe, Durrës, Elbasan, Shkodër, Fier and Vlorë) by the Institute of Public Health (Shouko Yamada, Senro Imai & Bashkim Lushaj, 2006).

**Table 4.3 Annual Average Results of Air Pollution in the City of Tirana for 2004**

Measureing station	Measured pollutant (concentration in µg /m <sup>3</sup> )					
	LGS	PM <sub>10</sub>	SO <sub>2</sub>	NO <sub>2</sub>	O <sub>3</sub>	Pb
Tirana 1 (center)	280	126	16	40	97	0.2
Tirana 2 (Nju Bazar)	233	108	13	31	100	0.16
Tirana 3 (PHI)	151	67	14	23	102	0.13
Tirana 4 (21 Dhjetori)	965	432	26	57	93	0.3
Tirana 5 (Liceu Artisitk)	219	99	13	21	103	0.2
National Norms	140	60	60	60	120	1.0
EU Norms	80	50	50	40	120	0.5



Source: Komete per studimin e cilesise se ajrit ne Shqiperi, viti 2004, MoEFWM

### **(8) Ambient Noise**

Noise is measured at 15 points in Tirana District. The monitoring data shows that the noise level during the day and night is quite high. The monitoring data of the urban noises in 2005 are shown in the Appendix 13 (Shouko Yamada, Senro Imai & Bashkim Lushaj, 2006).

## **4.2 Biological Environment**

The climatic features, geographic position, its relief and geological, hydrological and pedological factors favor a very high diversity of natural habitats and sub-ecosystems in Albania. Albania's biological environment is suffering from the adverse impacts of unsustainable agricultural and forestry practices, as well as from industrial pollution and uncontrolled building. Since the 1950s, the forest area has decreased from 45 % to 36 % of the territory, with consequent soil erosion.

During the last 5 years, considerable damage has been happened on spontaneous flora, forests of laurel, birch and oak in particular. This situation in general is a consequence of the uncontrolled development of human activities and especially of illegal constructions (Shouko Yamada, Senro Imai & Bashkim Lushaj, 2006).

### **(1) Environmentally Protected Area**

The general surface of the protected areas is 183,749 ha, which is over 6 % of territory of Albania. According to the MoEFWM, there is no protected area in/around the study area. There are 14 monuments and natural sites of historical significance in District of Tirana, and none of them exists in the study area (Shouko Yamada, Senro Imai & Bashkim Lushaj, 2006).

### **(2) Fauna and Flora**

As far as the information from MoEFWM is concerned, there is no endangered fauna or flora existing in the study area. The Tirana City has a rich Flora. More than 1,600 different plant species grown in the Tirana Region. A forested area of some 4,200 ha surrounds the city. The main species are beech, oak, alpine meadows etc. In the area of Tirana-Durres, there are 10 different species of amphibians, which means 60 % of the total species found in Albania. About the reptiles there are observed 25 species, which means 70 % of the total registered in all Albania. The list of the amphibians, reptiles and mammals are attached in Appendix 13 (Shouko Yamada, Senro Imai & Bashkim Lushaj, 2006).

## **4.3 Socio-Cultural Environment**

### **(1) Population**

According to the Population Census 2001, the Albanian population was 3,069,275 as a whole as of 2001, including 519,720 of Tirana District consisting of Tirana Municipality (341,453) and other communes.

The Tirana District is one of 2 districts of the Tirana Region (the other one is Kavaje District), and consists of the Tirana Municipality and 16 communes. Among them, Tirana Municipality and Kashar commune are related with the targeted area of the Project.

Those Municipality and communes have a section for civic registration, and they register all the name of people living in each territory. According to such civic registration data, the actual populations of Municipality and communes concerned the targeted area of the Project are as shown in the following table.

**Table 4.4 Population of Territories Concerned**

Administrative Unit	2001	2002	2003	2004	2005
Tirana Municipality	478,424	494,904	518,243	552,336	581,414
Kashar Commune	16,810	17,058	17,202	17,347	18,228

(Japanese Team & Bashkim Lushaj: Major International Project, 2006)

Figures between the census and civic registration list are different with each other, but this may often be able arrive because of different methodology and / or different purposes. For purposes of the project, the data from the civic registration has a better reliability to apply.

## (2) Traffic

The roads under the administration of the Tirana Municipality are 160 km in which is included 258 roads. The actual road condition and that of pavements presents as follows: Paved streets 140 km; unpaved streets 20 km; public squares 43,682 m<sup>2</sup>; Pavement with tiles and baton 384,510 m<sup>2</sup>; paved pavement 147,561 m<sup>2</sup>

## (3) Socio-Economic

In Albania, the mandatory education is fixed at 9 years, elementary and primary education. Distribution of primary and secondary schools and access to basic education in the region of Tirana are quite good. The regional net enrolment rate for primary education is 98 % in the 2003/2004 academic year. The level of illiteracy in the region of Tirana is 1.2%, which is lower than the national average, 1.6 %.

According to the 2001 Census, the economic active population is counted at 1,347,281 as of 2001 in the nation with 22.68 % of unemployment rate. The unemployment rate is rather high comparing with the other developing countries. The economic active population in Tirana District and Tirana Municipality are 235,482 and 160,450 with 25.31% and 25.84 % of unemployment rate respectively

## (4) Public Health

Average times to visit to hospitals and / or clinics per visited persons in Tirana District can be estimated at 2.40 times (or days) per year. And, average days in bed per hospitalized person also can be estimated at 7.62 days in Tirana District. According to the data from INSTAT in Tirana City, the following public health institutions exist with hospitals, policlinics, women consultancy, child consultancy etc. During 1993-2004 according to the information by the Ministry of Health there have been licensed 1,491 private subjects with medicines, pharmacists, dentists, medical clinics, medical laboratories, pharmaceuticals store, dental laboratories, optometry etc.

## 5 Impact Identification

### 5.1 General

The basic purpose of EIA is its use as a planning tool so that the environmental and social

considerations are incorporated in initial stages of project planning and the cost of environmental protection measures are treated as an integral component of the total project cost. The impact of the proposed project may be grouped into two categories namely (1) construction phase impacts, (2) operation phase impacts. The impacts during construction will be short period while the impacts during operation phase would be long term.

The EIA is to identify the potentially significant impacts. The various aspects considered in impact identification of the project are as follows: project components; project phases, impact generating activities, type of impact.

The overall identification of the impacts has been done by using a matrix table that is a common tool to identify and present in a compact way the various impacts of a project. Therefore the impacts are being described in more detail for the construction phase and the operation phase.

In the matrix table, the activities are arranged in columns and environmental parameters in rows (*Figure 5.1*). The matrix thus identifies the environmental factors likely to be affected, and the activities responsible for this. The cells which fall at the junction of an activity and an affected parameter have been shaded. The impacts may be negative and positive. This will be analyzed in further section.

#### **(1) Activities during the construction phase**

During the construction phase, the following activities are likely to contribute the significant environmental impacts: Site preparation (fencing, grading and clearing of site); Excavation (leveling of ground, digging of foundations, etc.); Construction of connecting roads, pumping station, STP and trunk sewers, etc.; Transportation and disposal of earth materials and construction spoils; Soil compaction; Construction camps (temporary site office, maintenance workshops, facilities and other infrastructure to support all these activities and also workers camps); and employment of people. All these activities will have impact on environmental parameters as identified in the preceding section.

Several types of negative impacts upon environment may be caused during construction phase, primarily due to negligent practices. Appropriate techniques and responsible supervision is needed to avoid / minimize / mitigate these adverse impacts.

#### **(2) Activities during operation phase**

The major project activities which are likely to impact the environment when the project is operational are: Energy utilization; O&M of STP; Treated effluent discharge from the STP; and Sludge disposal from the STP. *Figure 5.1* gives a visual representation of the parameters affected at construction and operation phase.

Phases	Construction Phase				Operation Phase						
Parameter	Site Preparation	Excavation	Construction	Transportation and disposal of earth	Soil Compaction	Construction Camps	Employment of People	Energy Utilization	O&M of treatment plant	Treated Effluent Discharge	Sludge disposal
Air Quality	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded
Noise / Vibration	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded
Water Environment	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded
Soil Quality	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded
Flora & Fauna	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded
Land use	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded
Socio-Economic	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded
Public Health	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded
Land Acquisition	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded
Traffic	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded
Worker Health	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded	Shaded

**Figure 5.1 Impact Identification Matrix**  
 (Japanese Team & Bashkim Lushaj: Major International Project, 2006)

## 5.2 Positive Impacts

The new construction of sewerage facilities and the treatment of the sewage generated in Tirana City will improve the quality of life and the life style of the people. Better sanitation facilities mean better health conditions and a cleaner environment. The risk of contagious diseases can be minimized and to an extent even mitigated. Laying the sewer would reduce the chances of contamination of the groundwater and in the water supply pipelines leading also to reduced incidence of diseases, improved health and economic well being of the community. Also, the discharge of sewage in the road drains, streams and the Lana River, which emanate foul smells and are unsightly, will be eliminated. The overall aesthetics of the city will improve which will have a positive impact on the economics of tourism industry. The collection and treatment of untreated sewage before entering the Lana River and its streams will improve the river water quality; Proper collection, treatment and disposal system of sewage will reduce the risks of parasitic infections, incident of various diseases including malaria, typhoid etc; A proper sewage handling and disposal arrangement will minimize the chances of contamination of ground and surface water and piped water; Such provisions assist to maintain ecological balance by reducing damages to fauna and flora. Controlled reuse of sewage supplements agricultural / farming activities and sustenance of environmental protection components; Development of the project will encourage increased economic activities like commercial, industrial, etc. and will generate enhanced employment alternatives and economic growth for the city; Nutrient rich treated water is used for irrigation.

Beneficial impacts of the project will not be visible during the construction phase, when most of the impacts are usually adverse, though of short duration and temporary. The beneficial impact of the construction phase of the project would be the potential for employment of local population during construction stage, and the associated increase in trade and business, which would have a positive impact on the economy and the population, as long as it lasts.

In sum, the overall impact of the project on the socio-economic environment is expected to be beneficial and positive. The residents within the project area will benefit from great improvements in public health.

## 5.3 Impacts on Socio-Economic Environment

### (1) Land Acquisition / Resettlement

The main impacts of construction phase are loss of village houses and agricultural land. 47 ha of Land acquisition are necessary for the proposed STP. The map of land use of the area of proposed STP is obtained from Real Estate Registering Office but it is very difficult to obtain the name of each landowner. The map shows that the site is divided into many parcels / blocks and assuming that each parcel / block belongs to a landowner, more than 80 landowners shall be affected by the expropriation of the proposed STP site. The effort to avoid the resettlement is made and no resettlement occurs by the proposed project.

### (2) Economic Activities

In general, the construction of the STP and sewer lines will have some positive impact on the economy of a few families who may get financial benefits improving their annual income. It may create temporary job opportunities for a few persons in the area as construction laborers, traders and contractors etc. for that period. The impact will be beneficial. The sale of private lands may also bring profits to landowners in the area.

### **(3) Traffic and Public Facilities**

Currently the traffic in Tirana city is heavy and it is expected that the construction materials have to be transported through the city. This will lead to traffic congestion within the city limit. Hindrance to pedestrian movement will occur due to the construction of sewer lines. The road passing near the proposed STP site is narrow and unpaved which will make vehicular traffic difficult during the construction phase both for villagers and construction staff. Though the impact will be temporary and of short duration.

There are three steel towers of electricity in proposed STP site, and these should be moved to another place. The removal and transfer of these towers should be done in close consultation with electric company.

### **(4) Cultural Property**

There will not be any impact on the cultural assets in the project area because there are no such assets near the proposed site. In any case, construction activity will not last long and will not involve any blasting or other techniques which might damage or weaken the nearby archaeological heritage.

### **(5) Public Health Condition**

There will be slight adverse impact on the public health of the residents near the proposed facilities during construction due to deteriorated air quality and noise etc. However the effect will be temporary. Once the proposed facilities starts operation, it will provide positive impact on the public health conditions because some sewage currently discharged into rivers or streams without treatment will be collected and be treated.

### **(6) Waste**

The spoil will be generated during construction by way of rejected plant materials, bushes during site clearing, excess earth, excavation, etc. The spoil will have to be disposed of in a proper manner at the pre-identified safe disposal sites.

On average the sludge production will be 27.0 t /day from the STP. It will be dried on the sludge drying bed or by using de-watering machine. The dried sludge can be used as manure by farmers if there is the demand or should be disposed of in specific landfill sites. Disposal of sludge with domestic waste is acceptable. The existing landfill site, Sharra has capacity to receive the sludge from the STP for a few years. The World Bank proposed the new landfill site in the “Strategic Plan for Greater Tirana” in 2002, and new landfill site will be able to receive sludge from the STP.

## **5.4 Impacts on Natural Environment**

### **(1) Soil Quality**

The proposed construction works of sewers along the river may cause soil erosion without proper construction method be applied and comprehensive construction management during construction.

During laying the sewers, topsoil will be displaced and permanent loss of topsoil may occur if it is not stored and replaced. Once excavation is completed and overburden is disposed of in an environmental safe manner, the soil quality will get restored. Whatever the alternative of STP site, the topsoil of the area that will be covered by the treatment units (sedimentation tank and trickling filter structure) and will be definitely lost.



**(2) Groundwater**

There is no aquifer runs through the proposed STP site and the chance of ground water contamination is quite low. However, there exists two wells near the site according to the hydro-geological map, thus the monitoring of effluent should be required.

**(3) Hydrological Situation**

In all, the impact of the sewage treatment on the receiving water bodies will be highly positive, as no sewage will be discharged untreated into rivers, streams and drains any more. The water quality data showed that most part of the Lana River is polluted. The operation of the STP will reduce 15 tons BOD / day, and it will contribute to improve the deteriorating water quality of the Lana River in Greater Tirana.

The effluent will be discharge into the stream nearby the STP and it flows into the Lana River. The present condition of the stream is polluted with sewage and solid waste and flow is small. Thus, the effluent which meets the EU standards will improve the present water quality of the stream. The amount of effluent is 97,000 m<sup>3</sup>/d and the stream has enough capacity to receive that amount.

**5.5 Environmental Pollution****(1) Air Pollution**

No serious impacts on air quality are expected. The most significant air quality impacts attributable to the implementation of the project are fugitive dust emission accompanied with the construction activities. The increase of traffic around the site during the construction phase is also another source of fugitive dust. The fugitive dust emission can be controlled by applying appropriate construction method such as spraying with water on sites and roads, etc. Overall, both during construction and operation periods no appreciable adverse impacts on air quality are expected.

**(2) Water Pollution**

During construction period, sediments and soil generated by construction activities may cause the turbidity in the river.

The sewage pollution load discharged to the Lana River at F1 (refer the chapter 11 of Master Plan) in 2005 shows that 7,949 kilograms of BOD will be reduced by the proposed STP. The sewage pollution loads presently reaching the Lana River and its stream will be reduced by the proposed project resulted in improvement of the quality of life for those living in the proposed project area.

**(3) Noise and Vibration**

The noise levels during construction phase will be due to laboring activity and the operation of light & heavy construction machineries including pneumatic tools (bull dozers, scrapers, concrete mixers, pumps, vibrators, cranes, compressors etc.), vehicles etc. The noise level may reach up to the range of 80 – 95 dB (A). Noise generated from sources mentioned above will be intermittent and of short duration mostly during daytime. Therefore, no significant impact is anticipated on account of noise generation around the project site.

**(4) Odor**

STP will generally generate odor without proper operation. In STP, the majority of the odor comes from the sludge handling system such as sludge drying beds and de-watering machine.

## 6 Analyses of Alternatives

### 6.1 With and Without Proposed Project

The zero alternative of no project will increase the risks of public health degradation; decrease of biodiversity values, and decline of local economy.

If the project are I, implemented (with the project scenario), sewage discharged to the rivers at present will be treated in 2014 while if the project are not implemented (without the project scenario) no sewage is treated and all the sewage discharged finds its way to the Lana River degrading its water quality and river environment. The estimation shows that the BOD value will be increased to 101 mg/l at the Lana River without the project, while the present value is 95 mg/l. The BOD value will be decreased to 13 mg/l at the Lana River with the project.

### 6.2 Alternatives

The analysis of alternatives of proposed project site, treatment method and routes of trunk sewer are studied deeply in the preparation of Master Plan and described in the Chapter 10 of Master Plan.

In the Feasibility Study, three options are considered as the priority project considering financial cost, targeted service area and sewage treatment level.

- Option 1: the proposed first stage project, with primary sewage treatment process
- Option 2: Service area of Lana River basin, with secondary sewage treatment process
- Option 3: Service area of Lana River basin, with primary sewage treatment process

Item	Option 1 (Primary Treatment)	Option 2 (Secondary Treatment)	Option 3 (Primary Treatment)
<b>1. Basic Information</b>			
1.1 Service Area	6,207 ha	2,343 ha	2,343 ha
1.2 Service Population	695,800	342,500	342,500
1.3 Sewage Flows	Ave. Daily:156,567 m <sup>3</sup> /d Max. Daily:194,835 m <sup>3</sup> /d	Ave. Daily:77,058 m <sup>3</sup> /d Max. Daily:95,893 m <sup>3</sup> /d	Ave. Daily:77,058 m <sup>3</sup> /d Max. Daily:95,893 m <sup>3</sup> /d
<b>2. Outline of Sewerage System</b>			
2.1 Sewers	Trunk: 13.4 km Main: 28 km Branch: 31 km	Trunk: 4.4 km Main: 1.4 km Branch: 28 km	Trunk: 4.4 km Main: 1.4 km Branch: 28 km
2.2 Pumping Station	Capacity: 148.2 m <sup>3</sup> /min, at Kashar		
2.3 STP:Kashar STP			
2.3.1 Treatment Level:	Primary Treatment: 30/40 %	Secondary Treatment: 88/85 %	Primary Treatment: 30/40 %

Item	Option 1 (Primary Treatment)	Option 2 (Secondary Treatment)	Option 3 (Primary Treatment)
BOD and SS Removal Rate			
2.3. Water Quality, 2 BOD and SS conc.	Raw sewage: 200/200 mg/L Treated sewage: 140/120 mg/L	Raw sewage: 200/200 mg/L Treated sewage: 24/30 mg/L	Raw sewage: 200/200 mg/L Treated sewage: 140/120 mg/L
2.3. Capacity of STP 3	Max. Daily: 260,000 m <sup>3</sup> /d	Max. Daily: 97,000 m <sup>3</sup> /d	Max. Daily: 97,000 m <sup>3</sup> /d
2.3. Sludge 4 Generation	Wet: 22.1 ton/d Dry: 8.1 ton/d	Wet: 22.6 ton/d Dry: 8.2 ton/d	Wet: 6.7 ton/d Dry: 4.0 ton/d
<b>3. Preliminary Cost Estimate</b>			
3.1 Project Cost (except land)	13,312 (10,244)	11,002 (7,973)	8,197 (5,168)
3.2 Annual O&M Cost	114 Mil Lek/y	91 Mil Lek/y	67 Mil Lek/y

Three options are compared and evaluated with the following criteria selected: Beneficiaries: Direct and Indirect; Pollution Load Reduction; Treated Sewage Quality and Flow; Operation and Maintenance Requirements; Project Cost (Direct and Indirect Cost); Operation and Maintenance (O&M) Cost; Environmental and Social Impacts; Effects on the Sewerage Project Promotion and Public Awareness.

Taking the difference of construction and O&M costs among options, the effluent quality and BOD load reduction, environmental and social impacts and effects of sewerage project promotion and public awareness into account, it is concluded that Option 2 is favorable for the Priority Project to be Studied its feasibility to implement the project for the Greater Tirana. The detailed analysis is conducted in Chapter 2 of this report.

## 7 Environmental Mitigation Plan and Environmental Management Plan

The objective of preparing an Environmental Mitigation Plan (EMP) is to formulate measures, whose implementation will: Mitigate adverse effects on various environmental components and resources as have been identified in the EIA study; Protect Environmental Resources wherever possible; Enhance the value of the environmental component wherever possible.

The EMP also includes a plan for monitoring so as to enable evaluation of the success or failure of environmental management measures and reorientation of the plan if found necessary. It is necessary that the resources required for the mitigatory / protection / enhancement measures, as also for monitoring are provided for in the cost estimates of the project so that their implementation is ensured.

### 7.1 General Mitigation Measures

#### (1) Construction Phase

The construction phase impacts have been outlined in chapter 6.5. All these adverse impacts have been taken into consideration. Following measures should be adopted in general for all activities: Minimum damage to existing flora and fauna, structures,

electricity and telephone cables. Minimum disturbance to the local activities and business should be ensured; The sewer pipes should be stacked properly in the pre determined location and should not be cluttered around blocking the pedestrian area alongside the roads; Excavated earth should be prevented from getting washed into drainage channels, rivers and canals; Surplus excavated earth should be disposed of immediately; Measures should be taken to prevent direct discharge of polluted waters from construction activities into lake, rivers and irrigation canals; Dust pollution should be controlled with the measures outlined in the Appendix 13; Pavements and roads should be repaired immediately following the construction activity and the project and surrounding area should be restored to as near as possible pre-project conditions; Adequate measures should be taken to minimize construction related noise; Proper precautions should be taken against risk of accidents.

## **(2) Operation Phase**

The operation phase impacts have been outlined in chapter 6.5. All these adverse impacts have been taken into consideration. The following measures should be adopted in general for all activities: The treated water quality should be maintained as per the requirements at all times; Air, noise and odor quality should be monitored and corrective action taken in case it exceeds applicable norms; The sludge drying bed should be maintained properly and the sludge should be disposed of in an environmentally sound manner; Proper precautions should be taken for the good health of the operatives and the population.

### **7.2 Environmental Management Plan**

The success of the Environmental Mitigation Plan depends on the efficiency of the organizational set up responsible for the implementation of the program.

The Environmental Management Plan will consist in: Setting up the organizational set up to implement the mitigation measures in operation phase; Ensuring a proper operation and maintenance of the treatment works; Ensuring a proper maintenance of the sludge drying beds and the disposal of dry chemical sludge in a proper landfill site; Monitoring the waste and treated water quality; Monitoring the built in pollution control equipment, for vehicles and equipment; Maintaining tree plantations around the treatment plant

During construction phase, the responsibility to take mitigation measures should be fallen on the contractor under the supervision of the consultants and GTW&SA. When treatment plant starts operation, the Manager will take the responsibility to conduct Environmental Management Plan, who will be main person in charge of the operation and maintenance of the treatment plant. The Manager shall have responsibility to monitor these works: Collecting waste and effluent quality; Implementing the environmental control and protective measures; Controlling the sludge treatment, disposal and re-use; Collection statistics of health of workers and the population of surrounding areas; Ensuring the development and maintenance of the green belts; Monitoring the progress of implementation of Environmental Management Program; Coordinating the environment related activities within the project as well as with outside agencies.

### **7.3 Monitoring Plan**

To evaluate the effectiveness of the Environmental Management Plan, regular monitoring of the important environmental parameters will be taken up by GTW&SA (ex-UKT) with the help of outside agencies. The schedule duration and parameters to be monitored by GTW&SA (ex-UKT) are described below.

**(1) Sewage and Effluent Quality**

The sampling of inlet and outlet will be carried out to check the performance of treatment plant. The parameter such as pH, transparency and SS will be analyzed daily and such as BOD and COD will be analyzed one a week in the treatment plant. These data should be delivered to the Manager to check that the treatment plant operates properly and no environmental pollution occurs.

**(2) Water Quality of Receiving Body**

The monitoring of river water quality is conducted by Ex-Institute of Hydrometeorology (Institute of Energy, Water and Environment), and analysis parameters are such as pH,  $\text{Cl}^-$ ,  $\text{SO}_4^{2-}$ , COD, BOD,  $\text{NH}_4$ ,  $\text{PO}_4$ , T-P. Institute of Environmental Protection also monitors the river water quality, aiming to control industrial wastewater discharge. In close cooperation with these institutions, GTW&SA should collect the monitoring data to check the water quality of receiving body.

**(3) Air Quality, Noise Monitoring, Groundwater and others**

The monitoring of environment is conducted by other institutions under MoEFWM. The monitoring of river water quality, air, noise and meteorology is done by Institute of Hydrometeorology, and Geological Survey is in charge of groundwater. GTW&SA should monitor the air quality, noise and groundwater with the close cooperation with these institutes.

**7.4 Environmental Training**

The environmental monitoring plan will be successful only if it is implemented by trained and skilled staff. The training of the qualified staff should be necessary not only in day to day operation and maintenance of the STP, but also in environmental aspects. It will be essential to involve the staff who will be responsible for the execution of the Environmental Management Plan, in the construction phase, as well as to train the staff in practicing the mitigation actions and the day to day monitoring program during the operation phase.

The training should include: Basic concepts of pollution control techniques in the various methods of sewage treatment; Operation and maintenance of the sewage treatment plant; Emergency preparedness to handle adverse situations; Principles of wastewater analysis; Other environmental monitoring techniques; Development of green belt and its maintenance; Communication with farmers and general public. This training is different from the mandatory training required for operation and maintenance of the sewerage treatment plant.

**7.5 Risk Analysis and Contingency Plan****(1) General**

The sanitation project comprises sewer laying, construction of pumping stations and sewage treatment plant and their operation. The risk involved in laying the sewers is mainly for larger pipelines which require lifting by cranes. The risk of mechanical equipment failure and thereby occurrence of accidents cannot be overlooked.

Contingency measures plans have been prepared for: sewage treatment works that could reasonably be expected to cause significant environmental impacts as a consequence of operational disruption (i.e. maintenance, etc. or breakdown); accidents which may occur while laying sewers or during construction of the treatment works; discharge of

sub-standard wastewater into the environment from STP which could cause a significant public health impact and which therefore requires a continuous system of influent / effluent monitoring to identify potential problems as and when they arise.

In the preparation of the contingency measures: the most likely causes of process disruption / breakdown have been identified; an attempt has been made to estimate their probability of occurrence; the possible resultant environmental adverse impacts are presented; the recommended courses of action to minimize the severity of the impacts have been highlighted; the responsible agency who will act in case of emergencies has been indicated. Table 13.8.1 of Appendix 13 gives the potential risks due to construction, operation and maintenance and corrective actions.

## 8 Public Consultations

### 8.1 Objectives

In accordance with the new “JICA Guidelines for Environmental and Social Considerations”, and Albanian Regulation No. 1, dated 17.08.2004 on “Public Participation of EIA Process”, public consultation has been incorporated into this project from an early stage.

The objective of the JICA guidelines is to encourage the recipient governments to take appropriate considerations of environmental and social factors. The basic principles regarding environment and social considerations are: Cover a wide range of the environmental and social impacts; ensure the accountability and transparency of decision-making; ensure a wide range of meaningful participation of stakeholders; Disclose information; Enhance organizational capacity.

The purpose of the Albanian Regulations Nr. 1, dated 17.08.2004 is to guarantee the public participation in the process of evaluation of environmental impact based on the requirements of the new environmental legislation; the Convent of AARHUS and the respective directives form the European Union (EU).

Based on the guidelines and regulation, the public consultation is conducted.

### 8.2 Process of Public Consultation

It is important to consult with the stakeholders to foster support for the projects. Four stakeholder meetings shall be held during the study period after each important stage.

Each stakeholder meeting is scheduled as shown in the table below.

Stakeholder Meeting	Contents	Timing
1 <sup>st</sup>	- Explanation on JICA Study - JICA Guidelines for Environmental and Social Considerations - Plan of Public Consultations, Scope of IEE	4 November 2005
2 <sup>nd</sup>	- Progress of the Study - Explanation of the Proposed Sewerage System - Result of IEE	7 December 2005
3 <sup>rd</sup>	- Explanation of M/P - Explanation of Priority Project selected in M/P	24 February 2006



	- Scope of EIA level study	
4 <sup>th</sup>	- Explanation on Priority Project - Result of Environmental and Social Considerations - The result and recommendations of JICA Study	12 July 2006

In the F/S stage, 4<sup>th</sup> stakeholder meeting is held.

### 8.3 4<sup>th</sup> Stakeholder Meeting

The fourth stakeholder meeting was organized by DPUK, MoPWTT, and held on 12 July 2005 at Tirana International Hotel. The aim of the meeting was to inform the JICA Study, to explain the M/P and F/S, to inform the environmental and social considerations for the proposed project and to consult with the public.

#### (1) Participants

The stakeholders were selected by DPUK in collaboration with JICA Study Team and invitation letters were sent to the invitees directly by DPUK.

Participants	Number
Ministries, relevant government agencies (MPWTT, Min. of Environment, DPUK etc.)	8
Representative of Municipalities, communes	6
UKT, UKK	6
Universities, Institute	2
NGO	1
International Organization, Donors	4
JICA Study Team	11
<b>Total</b>	<b>38</b>

#### (2) Program

During the meeting, the main language used was Albanian and English-Albanian translation was done when necessary. For their handout, the presentation material translated to Albanian was distributed to the participants.

10:10 – 10:15	Opening remarks (Mr. Fahri Maho, General Director, DPUK)
10:15 – 11:20	Presentation: Explanation of Priority Project and result of EIA Study
11:20 – 11:45	Coffee Break
11:45 – 12:45	Questions and Answers
12:45 – 12:50	Closing Remarks (Mr. Fahri Maho, General Director, DPUK)

#### (3) Main Topics Discussed

The main topics discussed in the meeting are summarized as below: The sludge should be disposed of, but how many areas are required for sludge disposal? The 27 ton of sludge will be generated everyday and it will be 8,000 ton / year. If you imagine the 1-meter deep disposal site, total 8,000 m<sup>2</sup> of land will be required for sludge disposal. This is the rough estimation and exact amount will be calculated in the detailed design stage. The effluent will be discharge into the small stream near the STP site. Is the plan such as cleaning of garbage or construction of the bank included? Solid waste management is not included of this study but we will make the recommendations about the solid waste management as well as public awareness campaign such as connecting sewers and

garbage disposal stop. The sludge is proposed to use as material of cement or fertilizer, how is the quality of sludge? The sludge will be stabilized by aerobic tank thus no serious problem with the re-use of sludge. As no industrial wastewater will not be treated in the SPT, the sludge does not include any chemical items. If you propose the water supply and sewerage tariff revision for the future, could you explain it? The tariff will be revised and now still under calculation. 1 % of the average income is the international standards for the water supply and sewerage charge. Now the charge is only 0.25 % of the income level, so the charge will gradually revised till it reaches to 1 % for 2022.

## 9 Conclusions

The objectives of implementing the sewerage project in Greater Tirana are to improve the sanitary conditions of the city and to stop the flow of untreated sewage into the Lana River and improve the water quality. A sewerage project with such an objectives is associated with positive impacts. The project as a whole has positive impacts: to the water environment and the public health through water quality improvement in the operation phase; to the social environment through increase job opportunities both in the construction and the operation phase; Following possible impacts are identified as negative impact during the construction phase but they are only temporary and can be minimized by preventive consideration and appropriate countermeasures: Impacts on traffic flow; Impacts on air and noise; Impacts on health of workmen and residents, near construction site; Impacts on daily life of residents near construction site; Impacts on public utilities.

Following possible impacts are identified as negative and continuous impact but can be minimized by prior consideration and appropriate countermeasures: Noise and odor; Sludge disposal etc.

Overall, it can be concluded that the priority projects that will be implemented will have a positive effect on the improvement of the quality of the river. The mitigation measures, if followed correctly will not have any adverse impacts on the environment.

## 10 References

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dated 20.07.2006 “On Biodiversity protection”, amended in 2012, which refers to the protection of animal and plant species. The Albanian red book is followed by Albanian Red List, which categorizes species with specific status, relating to National, Regional, European and Mediterranean, as well as world wide range; The Law No 9868, dated 4.02.2008, “For some changes and Regulations of the Law “On Protected Areas”, No 8906, dated in 6.6.2002”, that regulates previous laws and by laws regarding Protected Areas. The law is in compliance with IUCN categories and structure of Protected Areas, and among others issues, treats with the integration of Buffer Zones in the peripheral Part of Protected Areas, gives land use in any subcategory of Protected Areas and defines the prohibited activities in any management sub-zones of Protected Areas; Law No. 8906, dated 6.06.2002 “On Protected Areas”, where procedures to declare the P.A. and its management zones are given; DCM No. 266, dated 24.04.2003, concerning “The Administration of Protected Zones”, amended; DCM No. 267, dated 24.04.2003, concerning “Procedures Regulating Proposal and Declaration of Protected and Buffer Zones”; Law No.10006, dated 23.10.2008, “On Wild Fauna Protection”, amended in 2012; Law No. 9867, dated 31.1.2008 “On rules and procedures for international trade of endangered species of flora and fauna”, and amended in 2012; Law no. 10253, dated 11.3.2010, “On hunting”, amended; Law no. 9385, dated 04.05.2005, “On forests and the forest service”, and amended by Law No. 9533, dated 15.05.2006; Law No. 9791, dated 23.07.2007; Law No. 9989, dated 15.09.2008 and Law No. 10137, dated 11.05.2009 “On Some Changes in Legislation in Force for Licenses, Permits and Authorizations in the Republic of Albania”. This framework is expected to be amended by a new law currently in draft; DCM No. 84, dated 27.1.2009 "On the determination of the criteria for establishment of biodiversity inventory and monitoring network"; Law No. 9103, date 10.7.2003 "On protection of cross border lakes"; Law No. 8905 dated 2002 “On Protection of Marine Environment from Pollution and Damage”; Very important is the legislation dealing with cultural heritage like: Law No. 9048, dated 7.04.2003 “On Cultural Heritage”; Law No. 9490, dated 13.3.2006 “On Ratifying of the Convention on Conservation of Material Cultural Heritage”, Paris 2003”; DCM No. 795, dated 26.11.2003 “On Building up, Composition and Functioning of General Permanent Commission for Evaluation of Cultural Heritage Objects, owned by private entities, movable properties, and for scientific criteria and assessment procedures of such objects”; DCM No. 426, dated 13.07.2007, “On Approval of Albanian Restoration Chart”; DCM No. 723, dated 14.05.2008, on “Composition of National Committee of Spiritual Culture Heritage”; Guide No. 446, dated 5.07.2007, “On Approval of Standard Documents of Public Procurement for Restoration of Cultural Monuments”; Law No.8652 dated 31.07.2010 on “Organization and Functioning of Local Government” as amended; Law No.10463 dated 22.09.2011, on “Integrated public waste management”; Law No.107/2014 dated 31.07.2014, on “Territory planning and development”; Law No.9244 dated 17.06.2004, on “Protection of agricultural land”; Law No.10433 dated 16.06.2011, on “Inspection in the Republic of Albania”; Law No. 9537,

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