Initial Environmental Examination

Document stage: Draft version
Project number:
July 2016

Republic of Uzbekistan: Tashkent Province Water Supply Development Project

Prepared by the Uzbekistan Communal Services Agency of the Republic of Uzbekistan "UZKOMMUNKHIZMAT" for the Asian Development Bank (ADB)

TABLE OF CONTENTS

LIST OF ABBREVIATIONS

ADB	–	Asian Development Bank
CPS	–	Country's Partnership Strategy
CWR	–	Clean Water Reservoir
DMA	–	District metering Areas
EA	–	Executing Agency
EH	–	Exposed Household
EIA	–	Environmental Impact Assessment
EMP	–	Environmental Management Plan
EMR	–	Environmental Monitoring Report
EMU	–	Environmental Monitoring Unit
FAM	–	Facility Administration Memorandum
FGD	–	Focus Group Discussions
GOU	–	Government of Uzbekistan
GRC	–	Grievance Redress
GRM	–	Grievance Redress Mechanism
HH	–	Household
ICB	–	International Contract Bidding
IEA	–	Initial Environmental Assessment
IEE	–	Initial Environmental Examination
IRTM	–	Interregional Trunk Main
LAR	–	Land Acquisition and Resettlement
NCB	–	National Contract Bidding
NRW	–	Non-revenue water
NWSDP	–	National Water Supply Development Program
OCC	–	Operational Control Center
O&M	–	Operation and Maintenance
PCU	–	Project Coordination Unit
PIA	–	Project Implementation Assistance
PIU	–	Project Implementation Unit
PLC	–	Programmable Logic Controllers
PMC	–	Project Management Consultant
PPMU	–	Program Preparation and Management Unit
PPTA	–	Project Preparatory Technical Assistance
PSM	–	Pumping Station Main
PVC	–	Polyvinylchloride
REA	–	Rapid Environmental Assessment (ADB checklist)
SCADA	–	Supervisory Control and Data Acquisition
SES	–	Sanitary and Epidemiological Services
SNPC	–	State Nature Protection Committee
TA	–	Technical Assistance
TPS	–	Tashkent Province "Suvokova"
TPWSDP	–	Tashkent Province Water Supply Development Project
UCSA	–	Uzbekistan Communal Services Agency
WDC	–	Water Distribution Unit
WSS	–	Water Supply and Sanitation
WT	–	Water towers
WTP	–	Water Treatment Plant
WWTP	–	Waste Water Treatment Plant

GLOSSARY

Glavgosexpertisa	State Department responsible for Conducting Environmental Expertise Under SNPC
Khokim	Governor of administrative unit
Khokimiyat	Regional government authority
KMK	National acronym for Construction norms and regulations
Makhalla	A community of neighbors, which is based on full independence and self-governance.
OVOS	National acronym for EIA assessment process
PZVOS	National acronym for Concept Statement on Environmental Impact
SanR&N	Sanitary - epidemiological norms and regulations
Som	Local currency
SNiP	Set of basic regulatory requirements and regulations governing the design and construction in all sectors of national economy of Uzbekistan
Uzbekenergo	Managerial body in the electric power and coal industries, which are major structural components of the national economy
Uzhydromet	State governing body specially authorized for the solution of tasks in the field of hydrometeorology in the Republic of Uzbekistan and in its activities it is accountable to Cabinet of Ministers
ZVOS	National acronym for Statement on Environmental impact
ZEP	National acronym for Statement on Environmental Consequences

WEIGHTS AND MEASURES

LPCPD – liters per capita per day

NOTE

In this report, "$" refers to US dollars.

EXECUTIVE SUMMARY

The project has been designed to address the water supply shortage, quality and operational and maintenance issues in two districts of Tashkent Province. Alternative technical options were analyzed and the optimum design solution for regional water supply system was identified based on the efficiency of the investment and operational expenditures and reduction of social and environmental impacts.

A new water treatment plant will produce 105,000 m^3 of drinking water daily, sufficient to cover the projected water demand of a population of 340,670 living in 58 rural and semi-urbanized settlements up to the year 2043. A 423 km network of new pipelines ranging from 76 to 1,000 mm in diameter, integrated with existing distribution system, 17 Water Distribution Centres (WDC) of which 8 newly constructed and 9 rehabilitated, will secure expanded distribution of safe drinking water on a permanent basis within the service area.

The project will also rehabilitate administrative buildings of the Tashkent Province “Suvoqova” (TPS) drinking water supply entity and install a new warehouse and two fully equipped laboratories.

Along with physical component, the Project will upgrade the operations and maintenance (O&M) of the Tashkent State Unitary Enterprise “Suvoqova” and strengthen the institutional and management capacity of the water utility.

The Project is in line with priorities set by both ADB and the GOU, namely with the ADB Country Operation Business Plan Uzbekistan 2012-2014 and the Country’s partnership Strategy (CPS) Uzbekistan 2012-2016 as well as with the Development Strategy, road Map and Investment Program for the Water Supply and Sanitation Sector of the Republic of Uzbekistan until 2020.

In accordance with ADB SPS (2009) the Project belongs to category B, as a project with site-specific impacts, few of which are irreversible, and where in most cases mitigation measures can be designed. The Project requires an initial environmental examination (IEE), which will be based on data from the feasibility study, preliminary design, site visits and interviews with technical experts, as well as primary and secondary data including thus the feedback received during the public disclosure process.

According to the Uzbek national environmental legislation, the Project is classified as a category III with moderate impact on environment. Prior to commencing construction such project requires the conduct of the Environmental Impact Assessment and receiving an Environmental Appraisal from the State Nature Protection Committee of Uzbekistan at the provincial level. The present IEE lists a number of other permissions to be received within the framework of the Project, e.g. Permission on special water Use, a Statement on Environmental Consequences and etc.

An analysis of environmental conditions and socio-economic situation showed that the project is located in the area significantly affected by an anthropogenic factor. A list of fauna of representatives in the target area is limited to those animals, who could adapt to human-impacted // anthropogenic conditions. The vegetation is represented by planted trees, bushes, fruit and vegetable crops.

According to TPS data a coverage of the Project area with centralized water supply service ranges between 72,2 % (Zangiota district) and 89.8% (Kibray), whereas the connection to a centralized sewage system varies from 16 % up to 19 %.

Anticipated environmental impacts from the Project were reviewed at pre-construction, construction and operation stages. According to the assessment, the main impacts will occur during construction and rehabilitation of the trunk main, WDCs and distribution networks.

During the pre-construction stage the following aspects may impact on effectiveness of implementation of environmental safeguards during the whole project cycle: (i) project design and procurement procedure, (ii) bidding and contracting processes with consideration of environmental aspects, (iii) institutional set up for environmental performance, (iv) receiving all required permissions. Appropriate mitigation measures on updating current IEE in case of changes in the project design and layouts of WTP and WDCs, environmental requirements for the bidding and contract documents, development of Site-specific Environmental Management Plant (SSEMP), goods procurement procedure were included in the Environmental Management Plan (EMP).

Construction of some parts of main trunk, distribution networks and Keles WDC will be done within settlement areas, and such impacts as a noise and dust will occur. This impact will be reduced through general mitigation measures for dust and noise control and proposal on installation of protection screen in Keles WDC.

Anticipated impact on water resources during construction phase will be limited and may occur during civil works on crossing the main trunk Boz Suv canal and location of construction or labor camps. Requirements for proper handling and storage of excavated soil, conduction of repair works and refuelling of vehicles and waste management were developed to mitigate the impact. It is expected that water withdraw from Boz Suv canal after project commencement would increase by 0.17% of total water intake from Boz Suv Canal. This change in water intake will not affect other water users of the canal - farmers, using water for irrigation and smaller Hydro Power Plants (HPP), located at the downstream of the canal.

It is proposed to carry out awareness program on proper water treatment to minimize anticipated impact on the ground water quality in the project area. Even there are no wells used for drinking purposes in the project area, risk of ground water pollution still exists.

An analysis of environmental conditions and socio-economic situation showed that the project covers the area significantly affected by an anthropogenic factor. The list of fauna in the target area is limited to those animals, who could adapt to human-impacted conditions. The flora is represented by planted trees, bushes, fruit and vegetable crops. In accordance with initial LARP 170 non-fruit trees and 12 fruit trees will be cut in Kibray district and 60 non-fruit and 548 fruit trees will be cut in Zangiota district under the project. LARP has calculated approximate amount of compensations. In addition to this, per national legislation[1] permission from State Nature Protection Committee needs to be received prior cutting trees and respected fees will be paid for each case (as indicated in para 9 of this IEE). Greening of WDCs' territory after completion civil works are included in the project design.

Protected areas are located more than 90 km to the north-west from the closest project component - WDC "Uzniish", which means there will be no impact on protected areas. The closest historical heritage is located in 9 km from the project site. It means that the Project will not impact on this heritage. However, since the project located in the area where physical cultural resources are expected to be found, chance finds procedure is included in EMP.

Proper handling of topsoil and prevention of soil pollution are proposed during conduction earthworks for construction WDCs and pipe lying. Excavated soil needs to refilled back as much as possible and exceeds need to be disposed at the places indicated by local government.

Since the Project involves demolishing works, including old buildings and pump stations, special attention was paid to handling and disposal of hazardous materials, such as oil from old transformers which may content PCBs, asbestos materials as a part of buildings. There are no

[1] CMR # 290 dated from 2014, "About regulation use of biological resources and on the order of procedure of getting permission for their use"

special laboratories, that could conduct analysis to identify presence of PCB in oil in Uzbekistan, therefore, 9 transformers produced before 1994 have to be specially treated – marked and kept at the special places without oil leakage from transformers. In addition, provincial Nature Protection Committee will be informed about Proposed mitigation included in the initial examination of the transformer's old oil for PCBs content and implementation the special procedure on handling and disposal of such materials.

The project involves demolishing of existing WDCs including old buildings and constructions, therefore there is a possibility of presence of asbestos materials (in roofing slate). Initial observation to identify presence of such materials is requested and in case of their identification, a detailed "Waste Asbestos-Containing Material Management Plan"is to be developed by Contractors.

Appropriate mitigation measures were also developed for handling and disposal of other hazardous materials, such as oil, fuel, chemicals, these were included into EMP both for construction camps and sites. Segregation on recyclable and non-recyclable construction and domestic wastes, selling or transferring to relevant agencies for further processing and timely disposal to the landfill are proposed as mitigation measures.

A set of mitigation measures was developed in order to reduce anticipated impact on social environment through implementation of recommended measures and establishing a dialog with local communities. Development of Traffic Management, Waste Management Plans are also proposed to minimize inconveniences related to civil works. Requirements on organization of construction works and worker camps to mitigate impact on water streams, soil contamination and conflicts with local population were included in EMP.

As part of information disclosure, in both project districts three series of public consultations (one in Kibray and two in Zangiota districts) were held with the Heads of Rural Assembly of Citizen, representatives of Provincial Nature Protection Committees, Sanitarian Epidemiological Stations, local authorities, district branches of TPS. Brief information about project activities, initial results of environmental assessment, developed mitigation measures and proposed Grievance Redress Mechanism were presented to participants using Power Point Presentation. The presentations were followed by discussions. The consultant's and representatives of district TPS contact information were shared with participants for further comments and questions. Besides these consultations, several meetings were conducted with internal and external stakeholders, such as representatives of the Tashkent Province Nature Protection Committee, district Khokimiyats and makhallas, the Tashkent Irrigation and Melioration Institute, UCSA, Uzhydromet. Comments, issues raised during such consultation were incorporated into the current IEE.

The Environmental Monitoring Plan was developed to control the implementation of EMP and assess the project' impact on environment. It consists of (i) instrumental monitoring of environment, and (ii) supervision of implementation of environmental requirements during three stages of the project cycle. The instrumental part considers the monitoring of air quality for noise and pollutants at the points located close to settlement areas; water quality monitoring at the point where the civil works will cross water bodies or will be conducted close to them. Implementation of mitigations and environmental monitoring of the project impacts will be carried out by the Contractors, Project Management Consultant's (PMC) Environmental Specialist and PCU's staff will monitor and ensure the EMP implementation and environmental compliance with UZB and ADB safeguard requirements.

According to a proposed reporting system, the Contractors will submit monthly reports to PCU, with a separate part describing an environmental performance. The PMC will present their observations with required actions in part of implementation environmental safeguards within

quarterly reports and PCU will submit semi-annual Environmental Monitoring Reports (EMR) to ADB. After approval the EMRs by ADB, the reports will be submitted to the national and provincial level national environmental agencies, then will be disclosed as part of public disclosure procedure.

As conclusion, the conducted IEE showed high demand for executing the proposed project, whilst certain positive social and environmental impacts are envisaged. At the same time, it is noted that a number of mitigation measures is required in order to prevent or minimize the anticipated adverse environmental and social impacts. The proposed measures include some physical activities along with the short- and long-term institutional strengthening.

Throughout the project implementation it is important to comply with all national environmental and EMP requirements, collaborate with local communities and conduct awareness program among population to ensure the sustainable operation of the rehabilitated water supply system.

1. INTRODUCTION

1. Currently, the existing water supply system of Tashkent province is in unsatisfactory condition and needs restoration and expansion. Tashkent province is the main administrative and economic center of the country. According to reports, at present less than half the population of the area receive proper water supply services, and many of them suffer from a high incidence of water off. Since the Tashkent province has a high potential for urbanization growth and the province is faced with vital problems of water supply, the government has earmarked an improvement of provincial water supply services as a priority.

2. The Government of Uzbekistan has received Technical Assistance (TA) from the Asian Development Bank (ADB) for the preparation of the Tashkent Province Water Supply Development Project (TPWSDP) which will involve rehabilitation, improvement and construction of water supply facilities and provide a stable and safe water supply in Tashkent province of the Republic of Uzbekistan.

3. The Project is in line with priorities set by both ADB and the GOU, namely with the ADB Country Operation Business Plan Uzbekistan 2012-2014 and the Country's partnership Strategy (CPS) Uzbekistan 2012-2016 as well as with the Development Strategy, road Map and Investment Program for the Water Supply and Sanitation Sector of the Republic of Uzbekistan until 2020.

4. The following regulatory documents are relevant to the implementation of the Project:

- Decree of the President of the Republic of Uzbekistan dated 6 March 2015 # PP-2313 "About the program of development and modernization of engineering communications and road infrastructure for the years 2015-2019";
- Decree of the President of the Republic of Uzbekistan dated August 6, 2013 # PP-2020 "About the measures on development of road-transport, engineering-communication and social infrastructure in the Tashkent province in 2013-2015" and the Decree of the President of the Republic of Uzbekistan dated 6 March 2015 # PP-2313 "About the program of development and modernization of engineering communications and road infrastructure for the years 2015-2019" includes the "*Reconstruction of water intake facilities for drinking water supply of Chinaz, Zangiota, Tashkent districts and part of Yangiyul district"* in the list of priority infrastructure projects
- Instruction of the President of Uzbekistan No. P-4647 dated 18 May 2016. "About measures on further extension of financial cooperation with Asian Development Bank and other international financial institutions", and related Action Plan which includes "Reconstruction and construction of water supply and sewerage systems of cities and districts of Tashkent province; feasibility study for Phase I, Water Supply".

5. The main purpose of this Project is to reconstruct the regional transmission main as well as of the distribution system and to construct or reconstruct systems of distribution of water to rural settlements within the two administrative districts: partially Zangiota and Kibray, previously served by old the regional water supply system, with continuous and safe water supply.

6. The Project is expected to be implemented within a period of five years starting from January 2017. Preparation and planning activities will be carried out during 2017. Physical works will start in January 2018 and are expected to be completed as of December 2021, the liability and insurance period extending through 2022.

7. The project will have two outputs:

(i) **Output 1: Kadirya regional water supply system improved and fully operational.** Output 1 will consist of a new potable water treatment plant (WTP) producing 105,000 m^3 of water daily, 58.3-km length of water transmission mains, eight new and nine rehabilitated pumping station mains, 27.2-km of distribution main pipes, 337.8-km of distribution pipeworks, and 49,256 household water supply connections.
9.

(ii) **Output 2: Improved financial, operational, and system management of the TPS for Zangiota and Kibray District branches.** Output 2 will consist of support for the financial, operational and system management of TPS, including the provision of training for technical and financial management, assistance with the establishment of customer care units at the Zangiota and Kibray district branches, installation of household water meters, and implementation of a computerized financial management system.

2. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK AND STANDARDS

8. In accordance with ADB SPS (2009) the Project belongs to category B, as a project with site-specific impacts, few of which are irreversible, and where in most cases mitigation measures can be designed. The Project requires an initial environmental examination (IEE), which will be based on data from the feasibility study, preliminary design, site visits and interviews with technical experts, as well as primary and secondary data including thus the feedback received during the public disclosure process.

9. In compliance with Appendix 2 of the Cabinet Ministers' Decree of the RUz No. 491, paragraph X (December 2001), more belong to Category 3 with respect to their environmental impact (moderate impact risk). Prior to to commencing construction such project requires the conduct of the Environmental Impact Assessment and Environmental Appraisal from the State Nature Protection Committee of Uzbekistan at the provincial level. The Table 1 presents approvals and permissions from national agencies need to be received prior commencement of civil works and the project operation:

Table 1: List of necessary approvals and permissions

#	Name of the document	Time of receiving permission	Responsible entity
1	Environmental Appraisal (Positive Conclusion of Environmental Expertise)	Prior commencement of the construction works	TPS
2	Permission/license for using existing borrow pits or opening new ones	Prior commencement of the construction works	Contractor
3	Permission of special water use for Water Treatment Plant (WTP)	Prior commencement of the construction works	TPS
4	Permission on cutting trees	Prior commencement of the construction works	Contractor
5	Statement on Environmental Consequences	Prior commencement of WTP operation	TPS

2.1. National Legislation

10. The State Nature Protection Committee (SNPC) of the Republic of Uzbekistan ('*Goskompriroda*') is the primary environmental regulator. The *Goskompriroda* reports directly to the Parliament and is responsible at national, regional (oblast) and local (district) levels for the development and enforcement of the national environmental and conservation policy, overseeing environmental compliance, the integrated environmental management across various sectors, and securing healthy environment conditions across the country.

8. The structure of *Goskompriroda* takes the form of a central body in Tashkent with regional branches and agencies providing scientific and technical support. Regional environmental authorities are structured similarly to the *Goskompriroda*.

9. Other state bodies of the Republic of Uzbekistan dealing with environment related issues are:

- Ministry of Agriculture and Water Resources (MAWR)
- State Committee for Land Resources, Surveys, Cartography and the State Cadastre (or Goskomgeodezkadastr)
- State Committee for Geology and Mineral Resources (or Goskomgeologia)
- Centre of Hydro-meteorological Service (or Uzhydromet)
- Ministry of Health (or MHRUz)
- State Inspectorate for Exploration Supervision, Operations Safety Supervision of Industry, Mining and Utilities Sector (or Sanoatgeokontekhnazorat)
- Ministry of Internal Affairs (or MVD).

2.1.1. National EIA requirements

10. The EIA procedure is regulated by **Law on Environmental Expertise** and The Regulation on State Environmental Expertise (SEE) approved by Decree No.491 of the Cabinet of Ministers on 31 December 2001 and amended in 2005 and 2009. The regulation defines the legal requirements for EIA in Uzbekistan. SEE is a review process conducted by the *Goskompriroda* Department for SEE ('*Glavgosecoexpertiza'*) at either the national or the regional level, depending on the project category.

11. State Committee of the Republic of Uzbekistan for Nature Protection (*Goskompriroda*) is specially authorized supreme and coordinating authority, implementing state control and intersectoral governance in Nature protection, using and reproducing nature resources. *Goskompriroda* of the Republic of Uzbekistan is under governance of and accountable to *Oliy Majlis* of the Republic of Uzbekistan.

12. *Goskompriroda* on state environmental expertise is a uniform system of State Environmental Expertise, methodological guidance of which implemented by *Glavgosecoexpertise*. *Glavgosecoexpertise* undertakes the state environmental expertise on below objects:

- Pre-project and project documentations, operating enterprises and other objects effecting negative impact on environment and population health, objects with special legal status (on activities belonging to Category I and II);
- Materials of integrated monitoring of the territory for assigning the status of conserving nature territories, emergency environment situation zone, as well as environmental disaster (Paragraph in the Cabinet Ministers' Decree of the RUz No.95 from 01.04.2005);
- Documentation on creation new types of technique, technology, materials, stuffs, productions;
- Programs of State projects, concept, schemes of location and productive forces development in economic and social sectors;
- Town planning documents for object designing with a total population of 50 thousand people;
- Projects of standard technical, instructional and methodological documents (technical specifications, standards, environmental standards, rules, instructions...), regulating economic and other activities related to the use of nature resources.

13. Pursuant to Section 10 of the Regulation on SEE, the developer must conduct the EIA assessment process ('OVOS' is the national acronym) in a staged approach, providing the *Glavgosecoexpertiza*/*Gosecoexpertisa* with OVOS documents for review at three distinct stages

of the Project. Section 11 of the Regulation on SEE outlines the information that should be within the documentation at each of these stages. The three OVOS stages and their required deliverables are summarised as follows:

14. **Stage I:** *The 'Concept Statement on Environmental Impact'* ('PZVOS' is the national acronym), to be conducted at the planning stage of the proposed project prior to development funds being allocated.

15. **Stage II:** *The 'Statement on Environmental Impact'* ('ZVOS' is the national acronym), to be completed where it was identified by the *Glavgosecoexpertiza/Gosecoexpertise* at Stage I that additional investigations or analyses were necessary. The Statement must be submitted to the *Glavgosecoexpertiza/Gosecoexpertise* before approval of the project's feasibility study, and therefore before construction.

16. **Stage III:** *The 'Statement on Environmental Consequences'* ('ZEP' is the national acronym) represents the final stage in the SEE process and is to be conducted before the project is commissioned. The report details the modifications to the project design that have been made from the *Glavgosecoexpertiza/Gosecoexpertise* review at the first two stages of the EIA process, the comments received through the public consultation, the environmental norms applicable to the project and environmental monitoring requirements associated with the project and principal conclusions.

17. SEE approval (*Glavgosecoexpertiza/Gosecoexpertise* opinion) is a mandatory document for project financing by Uzbek banks and other lenders (Section 18) at Stages I and II and for project commissioning at Stage III of the national EIA procedure. An overview of the national EIA process is provided in Figure 1.

18. All economic activities subject to SEE are classified into one of four categories:

- Categories I and II — "high and medium risks of environmental impact" (SEE is conducted by the national SNPC within 30 days, all EIA materials are required);
- Category III — "low risk of impact" (SER is conducted by regional branches of SNPC within 20 days, all EIA materials are required); and
- Category IV – "low impact" (SEE is conducted by regional branches of SNPC within ten days, only a draft EIA is required).

2.1.2. Environmental regulatory framework

19. The major emphasis of the environmental policy of Uzbekistan is on environmental safety being regarded as a strategic component of national security, and the most important aspect of protecting the vital interests of the state, society and identity. The environmental safety policy of the country is based on the Constitution, national laws, the National Security Concept of the Republic of Uzbekistan, the principles of the Rio de Janeiro Declaration on Environment and Development and the Johannesburg Declaration on Health and Sustainable Development with due regard of national commitments under international conventions and agreements, as well as legislative experience of leading countries.

20. Since the country gained independence, RUz has developed over 100 laws and regulations, and revised old Soviet legislation and policies. One of the country's objectives is the transition to sustainable social and economic development. For this purpose RUz has revised and improved the national environmental legislation, enacted new environmental laws and regulations, developed programs and action plans to address environmental issues and promoted sustainable use of natural resources.

21. Legal Framework in the field of Nature Protection and Management established in Uzbekistan, provides to the citizens the rights and duties specified in the country's Constitution. Specific articles that address environment protection issues within the Constitution are:

- Article 50. All citizens shall protect the environment
- Article 51. All citizens shall be obliged to pay taxes and local fees established by law
- Article 54. Any property shall not inflict harm to the environment
- Article 55. Land, subsoil, flora, fauna, and other natural resources are protected by the state and considered as resources of national wealth subject to sustainable use.

22. Uzbekistan has enacted several supporting laws and statutes for environmental management, and is party to several international and regional environmental agreements and conventions. The key national environmental law is the Law on Nature Protection (1992). A brief description of this law and the other supporting laws related to environmental protection is presented below.

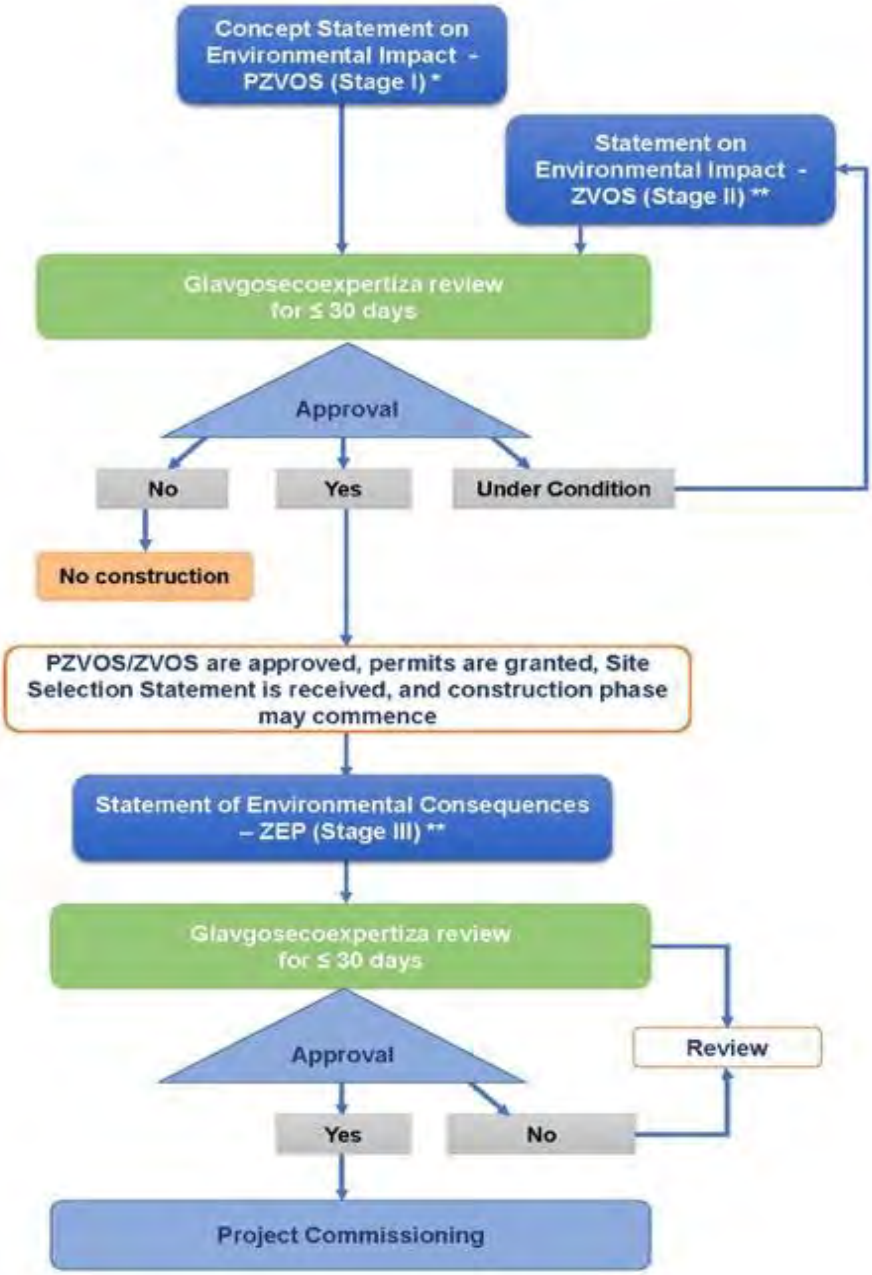


Figure 1: Uzbek EIA procedure [2]

* - Apply for Project Categories I to IV
** - Apply for Project Categories I to III

[2] (Source: Regulation on the State Environmental Expertise in the Republic of Uzbekistan No.491 of 31.12.2001, as amended on 05.06.2009)

23. **The law "On nature protection"** (1992) states legal, economic, and organizational bases for the conservation of the environment and the rational use of natural resources. Its purpose is to ensure balanced relations between man and nature, to protect the environmental system and to guarantee the rights of the population of a clean environment. Article 25 of this law states that State Environmental Expertise (SEE) is a mandatory measure for environmental protection, preceded to decision-making process. In addition, article 25 says that the implementation of the project without a positive conclusion of SEE is prohibited.

24. **Law of the Republic of Uzbekistan on Atmospheric Air Protection** (1996, amended on 10.10.2006). It describes regulations on atmosphere protection and its objectives. It specifies standards, quality and deleterious effect norms, requirements on fuels and lubricants, production and operation of vehicles and other transport means and equipment, ozone layer protection requirements, obligations of enterprises, institutions and organizations toward atmospheric protection, and compensations for damages from atmospheric pollutions.

25. **Law of the Republic of Uzbekistan on water and water use** (1993). It regulates the water relations, rational use of water by the population and economy. The law regulates the protection of waters from pollution and depletion, and prevention and liquidation of harmful effects of water, improvement of water bodies and the protection of the rights of enterprises and institutions, organizations and dehkan farms and individuals in the field of water relations.

26. **Land Code of the Republic of Uzbekistan** (1998). It aims to regulate land relations in order to ensure that present and future generations have science-based, sustainable use and conservation of land, breeding and improvement of soil fertility, conservation and improvement of the environment and creating conditions for equitable development of all forms of management, the protection of individuals and legal entities' right for land, as well as strengthening the rule of law in this area.

27. **Law on Wastes** (2002, as amended on 2011). It addresses waste management, exclusive of emissions and air and water pollution, and confers authority to the SNPC concerning inspections, coordination, ecological expertise and establishing certain parameters with regard to the locations where waste may be processed. Enterprises are responsible for their waste, but, if they recycle, they may be provided with assistance from the state budget, the National Fund for Nature Protection or voluntary payments. The principal objective of this law is to prevent negative effects of solid wastes on people's lives and health, as well as on the environment, reduce wastes generations, and encourage rational use of waste reduction techniques in household activities.

28. Other laws and standards applicable for the current project are:

- Law on Protection and Usage Objects of Archeological Heritage (2009)
- Decree of Cabinet Ministries of RUz on the procedure of issuing permits for special water use and consumption No. 171 of 14.06.2013. This Regulation establishes the procedure for issuing permits for special water use or water consumption using surface water and groundwater on the territory of the Republic of Uzbekistan;
- Decree of the Cabinet of Ministers of the Republic of Uzbekistan on Approval of the collection and disposal of used mercury-containing lamps. No. 266 of 21.09.2011;
- Decree of Cabinet Ministries of RUz on the procedure of settlement usage of biological resources and procedure of issuing permits in the field of nature use, No. 290 of 20.10.2014;
- 13.060. Water quality. O'z DST 951:2011 – Sources of centralized household water supply. Hygienic, technical requirements and classification code;
- 13.060.20. Drinking water. O'z DST 950:2011 – Drinking water. Hygienic requirements and quality control;

- Hygienic norms. List of Maximum Allowable Concentrations (MACs) of pollutants in ambient air of communities in the Republic of Uzbekistan including Annex 1. SanR&N RUz No.0179-04;
- Sanitarian Rules and Norms on collection, transportation and disposal of wastes contained asbestos in Uzbekistan SanR&N No. 0158-04;
- Admissible noise level into the living area, both inside and outside the buildings (SanR&N No.0267-09)
- "O'z DSt 1057:2004 Vehicles. Safety requirements for technical conditions" and "O'z DSt 1058:2004 Vehicles. Technical inspection. Method of control".

2.2. International Legislation

29. It is important that the Project meets international lending requirements. The following international guidelines are relevant to the Project and will be considered during the EIA process:

- ADB's Safeguards Policy Statement (June 2009)
- ADB´s Operations Manual Bank Policies: Safeguard Policy Statement (March 2010)
- ADB`s Environmental Assessment Guidelines (2003)
- IFC General Environmental, Health and Safety Guidelines (April 2007)

2.2.1. World Bank IFC Environmental, Health and Safety Guidelines

30. ADB Safeguard Policy Statement indicates that during the design, construction and operation promoter must apply pollution prevention consistent with international good practice, as reflected in internationally recognized standards such as the World Bank Group´s Environment, Health and Safety Guidelines.

31. In this project, general EHS IFC (World Bank Group) guidelines have been taken into account to:

- Provide prevention and control measures for each source of pollution applicable to this type of industry Environmental Monitoring programs;
- Provide occupational health and safety sources of threats, prevention and control measures and monitoring.

2.2.2. International conventions

32. Under international cooperation in the field of environment protection, Republic of Uzbekistan signed number of International Conventions, which should be undertaken by State Committee for Nature protection of the RUz. Those potentially applicable to the Project, and for which Uzbekistan is signatory, are outlined in Table 2.

33.

Table 2: Key applicable international conventions and protocols

Convention or protocol	Overview	Relevance to project
UN Framework Convention on Climate Change (2007). **Kyoto Protocol (1997), ratified in 1999**	The Kyoto Protocol (a Protocol to the UN UNFCCC) aims to stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.	The Project will not lead to increasing emission to atmosphere.
Convention Concerning the Protection of World Cultural and Natural Heritage (2004).	The Convention Concerning the Protection of World Cultural and Natural Heritage is the precursor to the establishment of UNESCO World Heritage Sites as a place (i.e. natural or built environment) that is listed by the UNESCO as of special cultural or physical significance.	The Project will have no interaction with these. As such, requirements under the convention will not be triggered.
The Stockholm Convention on Persistent Organic Pollutants (2004)	The Convention is a global treaty to protect human health and the environment from chemicals that remain intact in the environment for long periods, become widely distributed geographically, accumulate in the fatty tissue of humans and wildlife, and have harmful impacts on human health or on the environment.	The project will comply with national and international standards for hazardous wastes (chemicals) generation and management.

3. DESCRIPTION OF THE PROJECT

3.1. Existing situation

34. The project will cover two of 16 administrative districts of Tashkent province, namely: Zangiota and Kibray. These two districts border are situated on administrative territory of the city of Tashkent (Figure 2).

35. Currently, the project districts have several drinking water sources which supply different parts of the districts: provincial WTP Kadirya, Municipal Kadirya WTP and local wells. More detail description of water sources and percentage of coverage by centralized water supply by districts are provided in Table 3:

Table 3: Current coverage by centralized water supply and water sources in project districts

District	Area with centralized water supply (%)	Area with centralized sewage system (%)	Sources of drinking water supply	Sewage water disposal point
Kibray	89.8	16.1	Regional WTP Kadirya Municipal WTP Kadirya Water supply network of Tashkent city Local water intakes (with water intake from single wells)	Tashkent Waste Water Treatment Plant (WWTP)
Zangiota	72.2	19.0	Provincial WTP Kadirya Water supply facilities of VU-1 Water supply network of Tashkent city Local water intakes (with water intake from single wells and pumping jack) – 27.8% of population	Tashkent WWTP

Source: Provincial “Suvoqova”, 2015

Figure 2: Location of the project's districts

36. As shown in the table, main water supply sources are Regional and Municipal WTPs Kadirya, single wells, pumping jacks. Inter-regional water distribution system was put into operation in 1969. Main components of the system are water treatment plant "Kadirya-Rural" located in the south-western part of Kibray district and trunk main D = 1000-600 mm for water supply of urban and rural population in south-western part of Kibray and the main part of Zangiota districts. Data on current and forecasted population of districts are provided in the following table.

Table 4: Existing and projected population growth in four districts

District	2016	2020	2025	2030	2035	2040
Kibray	191,120	198,645	207,196	213,758	219,872	225,223
Zangiota	363,091	382,541	405,819	425,807	445,441	446,058

Source: Institute of Microeconomic Research under Cabinet of Ministries of Uzbekistan, 2016

37. Next chapters provide information on current status of water supply system in the project districts.

The Kadirya regional water treatment plan

38. The Kadirya water treatment plant (WTP) is located in the northeast of Tashkent city at an elevation of about 530 m above sea level (asl). The WTP was commissioned in 1979 and rehabilitated in 2006 for the supply of the rural communities living in the Kibray, Zangiota, Yangiyul, and Chinaz districts via regional - transmission main carrying water from Kadirya to Yallama in the Chinaz district. The WTP is constructed on a surface of 1.2 ha, on the right bank of the Boz Suv irrigation canal, which is fed from the Chirchik River (Figure 3).

39. The WTP is reportedly designed to treat up to 70,000 m3/d of raw water from the Boz Suv canal: There are no flow meters at the influent and at the distribution pumping stations of the WTP. Design or construction plans were not found. Water quality analysis of the water after treatment indicates that the treated water is conforming to the national norm (Table 5).

Figure 3: Essential components of the Regional WTP

40. Results of analysis of treated water collected at the Kadirya WTP between July 2014 and April 2016 are provided in Table 5. None of the indicators exceed the national standards for drinking water. It is noted that sulfate (SO_4) content in the raw water is relatively, high, although constantly below national standard limits for drinking water, possibly due to the lithology prevailing within the catchment area of the Chirchik River.

Table 5: Quality of water from Kadirya WTP

Parameter	Standard	9-Jul-14	6-Aug-15	15-Sep-15	4-Dec-15	Feb-16	Mar-16	Apr-16
Heating from 20 to 60	2	0	0	0	0	0	0	0
Taste	2	0	0	0	0	0	0	0
Other taste	2	0	0	0	0	0	0	0
Smell	2	0	0	0	0	0	0	0
Turbidity mg/l	1.5 – 2.0	1.30	0	0	no	no	1.8	no
Color when heated	20-25	30	0	no	no	no	no	no
Total hardness meq/l	7-10	2.5	2.2	2	2.5	2.5	2.3	2.5
Dry residue mg/l	1000-1500	344.1	342	136.8	175	267	274	264.3
Chlorides mg/l	250-350	18	16	34	15	14	14	19
Nitrate mg/l	45	38	2.1	14.1	10.1	3.4	2.2	7.6
Ammonia mg/l								
Sulphate mg/l	400-500	225.6	97	60	120	132	132	198
Calcium, mole/l		40	80	4	7	60	40.6	60
Magnesium, mole/l		6	22.4	no	6	24	24	12.6
Alkalinity, mole/l		1.4	5.8	0,4	0.4	2.4	2.4	2.3
Fluorine, mg/l	0.7	0.10	0.10	no	0.09	0.14	0.145	0.09
Polyphosphate, mg/l	3.5		no	no	no			
Oxidability, mg/l	0.2		no					
Iron, mg/l			no		no			
pH	9		7.5					

Source: Water quality laboratory of the TPS

The Regional Transmission Main

41. The Regional Transmission Main was also commissioned in 1969. It has a total length of 105 km from the headworks at the WTP in Kadirya to the endpoint at Yallama, in the Chinaz district (Figure 4).

42. At the present stage only segments of the original transmission main are still in operation. The segment supply with water 20 settlements in the southern part of Kibray district and another 44 settlements in Zangiota district.

43. Other segments of the transmission main are kept in service for the supply of villages along its axis. These segments of main are fed from different sources of water, as it will be described further. There are no flow meters in the segments of the transmission main still in operation nor at any of the off takes and local dispatching pumping stations.

The Distribution System

44. The distribution of water to the settlements included in the service area commanded from the transmission main was and still partly is, secured by means of off-takes from the main as well as 8 water distribution centers (WDC) and 9 booster pump stations.

45. Due to ageing and insufficient maintenance the 46 years old system has progressively deteriorated. Only few segments of the regional transmission main are still maintained in service. Several WDCs have deteriorated to situation beyond repair. Due to prolonged periods of being out of service significant part of the secondary and village distribution networks went progressively obsolete.

46. Additional sources of water were developed to substitute the failure of conveying water supply to remote settlements via the failing transmission main. Some small to large wellfields were developed along the water bearing alluvial deposits of the Chichik River floodplain. Non-conventional, often unsafe sources of water supply are being used by inhabitants of settlements within the territory of the four districts included in the Project.

47. Therefore, results of technical survey showed that, the most urgent problems concerning the stability and quality of drinking water supply services and development of water supply and sanitation systems are:

- dilapidated networks, often beyond repairs;
- absence of facilities for cleaning and disinfection of drinking water that meet the required standards;
- shortage of drinking water supply in rural areas;
- technological lag in production and supply of drinking water supply of suitable quality to the population;
- need for construction of sewage treatment facilities or renovation of existing facilities aimed at improvement of cleaning in order to prevent discharge of untreated sewage into water bodies that are sources of drinking water;
- need to introduce new environmentally friendly methods of water treatment directly in water bodies;
- lack of local production capacity, skilled production workers in the field of maintenance and modernization of water supply and sanitation;
- difficulty attracting and retaining skilled staff in the WSS sector.

48. Based on the conducted analysis of current situation the activities proposed within the planning project are presented into the next chapter.

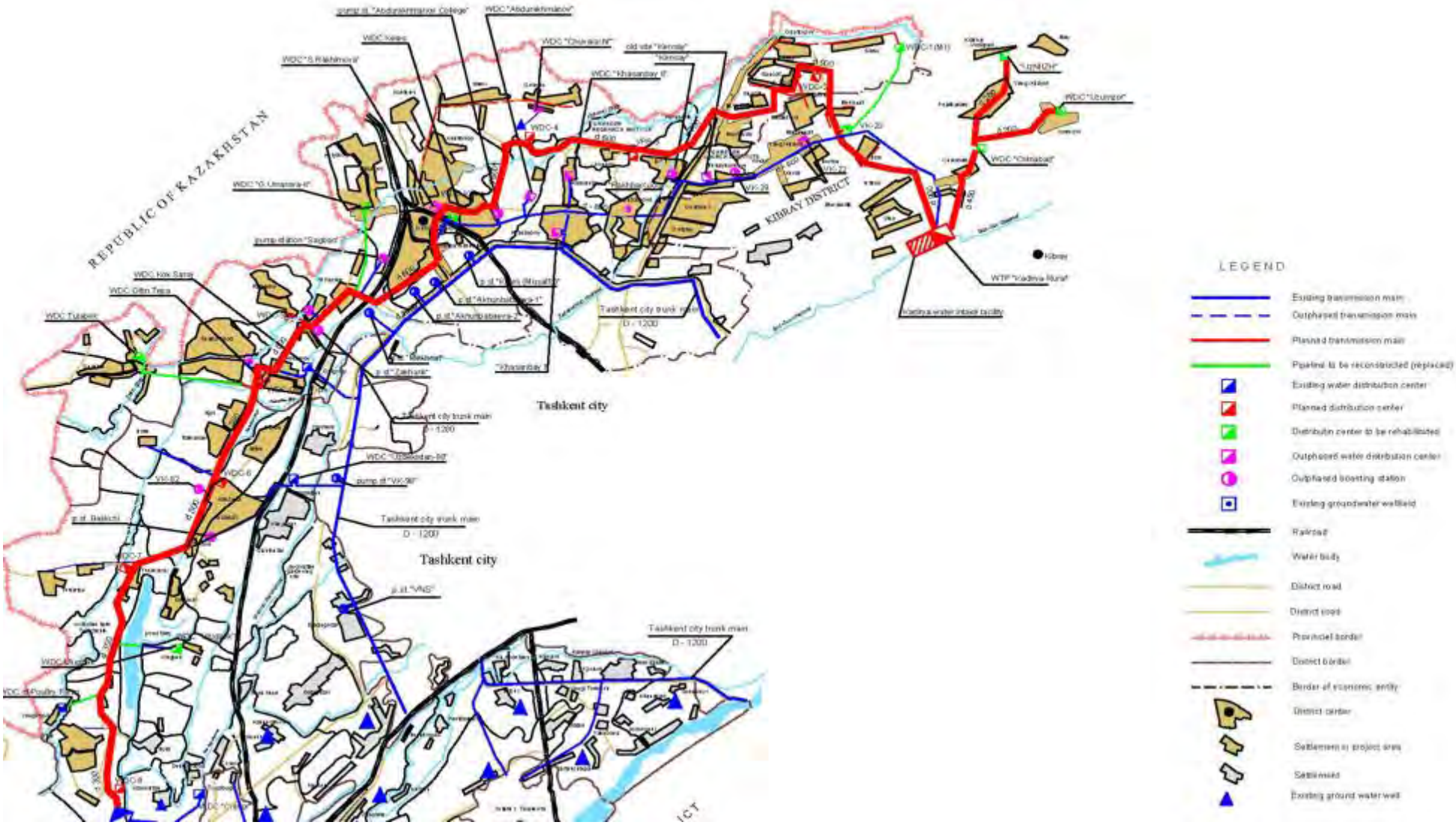


Figure 4: Project Water Supply Scheme

3.2. Project components

49. The selection of settlements being included in the development Project has been done in close collaboration with TPS and its district branches management personnel. A leading principle in selecting settlements was to secure sustainable, continuous safe water supply to 92,8% of the population living in the villages within the perimeter of the project. The final plan consists of providing water supply to 58 settlements including the urban centres Zangiota and Keles.

50. The main physical components of the water supply network system are resumed hereafter:

- **Construction of new WTP to replace the existing Kadirya** WTP with capacity 105 000 m3/day to provide piped water supply to Kibray and Zangiota districts:
  - raw water intake and pump station in the Boz Suv irrigation canal with a maximum capacity of 105 000 m^3/d;
  - Flocculation chamber;
  - addition of stabilizer Lime (if pH of raw water is below 7), and of coagulant (aluminum sulfate), with possible addition of Polymer;
  - Horizontal sedimentation tanks;
  - Filters shelter 14x72 m^2 each;
  - Backwash water reservoir 1x2000 m^3 combined with pumping station;
  - Electrolysis plant;
  - Chemical plant
  - Sludge drying beds;
  - 2 x 3000 m^3 clear water reservoirs;
  - Transmission-feeder pump station;
  - Transformer and electrical equipment;
  - Support facilities (2 Operators Offices, Guardhouse, Sheltered Storehouse, Garage for 2 vehicles (sheltered), Pit (50 m^3), In-Site Water Supply and Sewerage Network, Process automation networks, Land improvement, landscaping and roads on sites)
- **Construction of a 58.3 km transmission trunk from the water intake Kadirya WTP to WDC VU-3:**
  - D= 1000 mm, L= 0.80 km;
  - D= 900 mm L= 7.2 km;
  - D= 700 mm L= 8.4 km;
  - D= 600 mm L= 17.6 km;
  - D= 500 mm L= 3.30 km;
  - D= 350 mm L= 4.2 km;
  - D= 300 mm L= 16.8 km
- **Construction of supply trunk mains to water distribution centers**, total 27.8 km, D 450-110 mm
- **Construction of 8 new WDCs and rehabilitation of 9 existing WDCs** including full reconstruction of chlorination devices, rehabilitation of reservoirs, guardhouses and sanitary perimeter fences.
- **Construction and reconstruction of dome 337.77 km of water distribution networks with Dia 350 to 76 mm.**
- **Installation of some 49,256 house connections with metering.**

Figure 5: Layout of Kadirya Water Treatment Plant

51. Planning activities at the Kadirya WTP and WDCs are presented in below Table 6.

Table 6: Planned activities at the Kadirya WTP and WDCs

#	WDC System	Type of activity	Planning activities
Kibray District			
1	WTP Kadirya	Demolishing existing buildings, construction new facilities	Construction of water intake with 1st level pump station, sedimentation tanks, filtration station, Clean Water Reservoir (CWR), contact facilities, electrolysis, back flash reservoir, facilities or reusing, slurry tanks, support structures, (administrative buildings, garages), fence Reconstruction of 2nd level pump station,
2	WDC Chinabad	Rehabilitation	Construction: CWR, chlorination unit, fence, automation networks, entrance, restroom, security lighting system Reconstruction of 2 CWRs, pump station, chlorination units, entrance, technological communications, internal electricity network, fence
4	WDC Uzumzor	Rehabilitation	Demolishing of existing pump station, Construction of pump station with chlorination units, one CWR, restroom, security lighting system. Reconstruction: one CWR, entrance, technological communication, internal and external electricity supply, fence
3	WDC Uzniish	Rehabilitation	Demolishing of existing pump station, Construction of chlorination units, one CWR, restroom, security lighting system, automation networks Reconstruction of 2 CWRs, entrance, technological communications, internal electricity network, transformers substation, fence
5	VK-20	Rehabilitation	Demolishing of existing pump station Construction of pump station with chlorination units, two CWRs, entrance, technological communication, fence, automation networks, entrance, restroom, security lighting system
Zangiota district			
1	WDC-1 (M-1)	Rehabilitation	Demolishing: existing metal tank Construction: chlorination units, two CWRs, entrance, technological communication, fence, transformer substation, automation networks, entrance, restroom, security lighting system, access road
2	WDC 2	New construction	Construction of pump station with chlorination units, two CWRs, entrance, technological communication, fence, transformer substation, automation networks, entrance, restroom, security lighting system, access road Construction of pump station, chlorination unit, fence, access road.
3	WDC 3	New	Construction of pump station with chlorination units, two CWRs, entrance, technological communication, fence, transformer substation, automation networks, entrance, restroom, security lighting system, access road
4	WDC 4	New	Construction of pump station with chlorination units, two CWRs, entrance, technological communication, fence, transformer substation, automation networks, entrance, restroom, security lighting system, access road
5	WDC Keles	Rehabilitation	Demolishing: existing metal tank Construction: one CWR, restroom, security lighting system, automation system, Reconstruction: CWR, pump station, chlorination unit,

			entrance, technological communication, transformer substation, internal and external electricity supply, fence
6	WDC Umarova-II	Rehabilitation	Demolishing: existing building, Construction: pump station with chlorination unit, fence, security lighting, restroom, automation Reconstruction: 2 CWRs, entrance, technological communication, transformer substation, internal and external lighting
7	WDC 5	New	Construction: two CWRs, pump station, chlorination unit, entrance, technological communication, transformer substation, internal and external electricity supply, fence, restroom
8	WDC 6	New	Construction: two CWRs, pump station, chlorination unit, entrance, technological communication, transformer substation, internal and external electricity supply, fence, restroom
9	WDC Oltin Tepa	New	Construction: two CWRs, pump station, chlorination unit, entrance, technological communication, transformer substation, internal and external electricity supply, fence, restroom
10	WDC Tulabek	Rehabilitation	Construction: chlorination unit, security lighting, automation, Reconstruction two CWRs, entrance, technological communication, transformer substation, internal and external electricity supply, fence, restroom
11	WDC 7	New	Construction: two CWRs, pump station, chlorination unit, entrance, technological communication, transformer substation, internal and external electricity supply, fence, restroom
12	WDC 8	New	Construction: two CWRs, pump station, chlorination unit, entrance, technological communication, transformer substation, internal and external electricity supply, fence, restroom
13	WDC Ulugbek	Rehabilitation	Construction: chlorination unit, entrance, security lighting, automation, restroom, security lighting Reconstruction two CWRs, entrance, technological communication, transformer substation, internal and external electricity supply

Other physical components to the Project

Administrative buildings and warehouse

52. The administrative buildings of TPS as well as district branches will be renovated in order to make convenient space for all administrative personnel. Two rooms will be reserved at the TPS building for the installation of monitoring devices as part of the operation Control Centre.

53. A new warehouse will be installed at Urtaovul settlement in Zangiota district, or at a suitable location. The warehouse will include garages for utility machineries, central mechanical and electromechanical workshop, spare parts.

54. It is also foreseen to constitute a project information centre either at the TPSA or at the new warehouse. The information shall be equipped with audio-visual devices and other communication tools needed for the divulgation of the Project, the benefits expected from it for the communities, the involvement and responsibilities of Government, local communities

and ADB. Activities connected to the information centre will include also dissemination workshops on economic use of water for domestic use and environment. The information centre will be constituted during 2019 – 2020 years, simultaneously with the implementation of the capacity building program. The PMC and Project Management Consultant will supervise its realization.

4. DESCRIPTION OF THE ENVIRONMENT

4.1. Physical conditions

Climatic data

55. The project area is defined with extreme continental climate with long hot summer (max temperature during this period reaches +35,77 ^{o}C) and short winter with little snow (min temperature –2,18). Seismicity of this district is 8 points. The average annual air temperature is equal to 15.26°C, the average temperature of the hottest month of July - + 27.67°C, the average temperature in January is the coldest month - 2.65°C. The sharpest rise in temperature observed in April, starting in August, there is its sharp decrease.

56. The depth of seasonal frost penetration up to 0,7 m. The wind conditions analysis shows that on reviewed area during whole year eastern (E, NE, SE – 50,4 %) and western (W, NW, SW – 33,3 %) winds prevail. The average annual relative humidity is 58%. The average annual atmospheric pressure is 720.6 mm Hg (96.05 hPa). In the average annually, it is marked 1 day with ice-covered ground and 2 -11 days with rime. The earliest frost in some years are being observing in the middle of October, the latest – at the beginning of April. The duration of frost-free season is 210 days.

57. The district area is characterized by small rates of wind speeds from 1.2 to 5 m / sec. Wind with a few high speed is a cleansing factor. Average annual repeatability wind with a speed in 1.2 m/sec is 80.45%. Annual amount of precipitation for the period 2001-2013 was 557,3 mm. The largest amount of them is in April and December (97,2 mm and 84,2 mm).

58. Rainfall in project area averaged 398 mm over the 13 year period 2001 to 2013. Precipitations occur rather consistently from January to May and again from October to December, and are almost negligible between June to September.

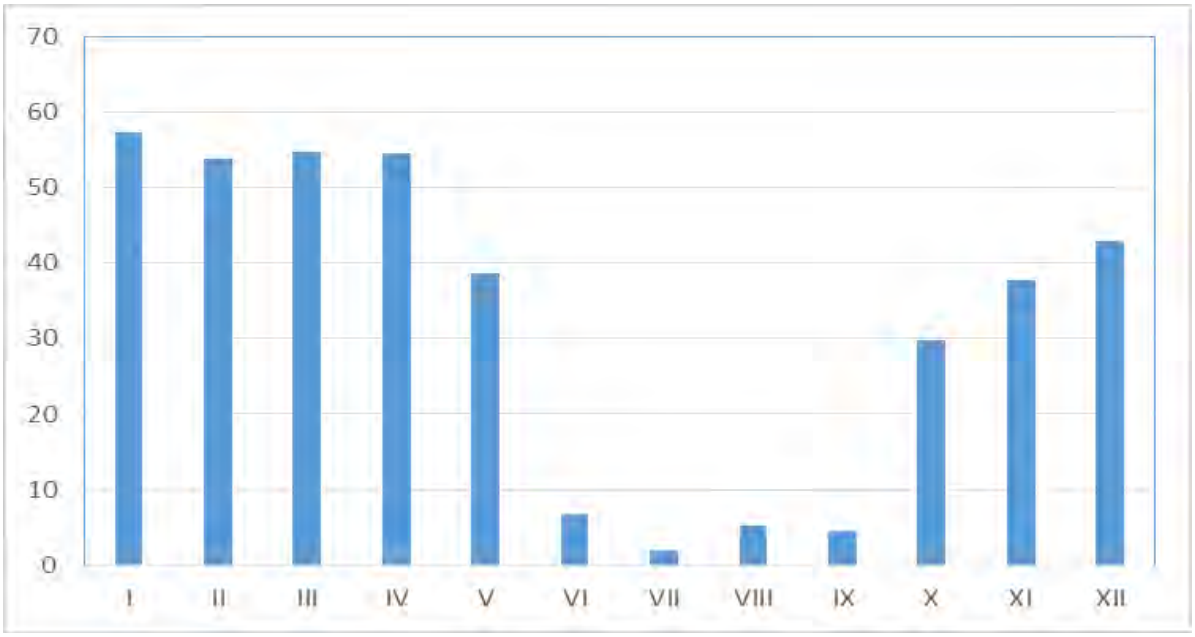


Figure 6: Average monthly precipitation in the project area 2001-2013, mm
Source: Survey of Hydrogeological expeditions

Lithology

59. In lithological respect the project area is consists of a thick layer of gravel sediments, covered a thin layer of loess loams. The level of soil salinity, lying to the soles of foundations, characterized by the thick residue of water-soluble salts in the dry soil from 894 to 1468 mg. kg.- at a content of chlorine ions in 70-87 mg kg and sulfate ions - 291-645 mg.kg. In accordance with classification adopted on methodology of ecological hygienic zoning, condition of soil area can be considered satisfactory.

4.2. Water resources

Surface water

60. The main water course in the project are is Chirchik river. The Chirchik river which is formed due to confluence of Chatkal and Pskem river is the main natural waterway in the survey area. The flow of Chirchik river is regulated by Charvak water reservoir with a usable capacity of 2 billion m3. Along its route the river receives only two comparatively big inflows: on the right side – Ugam river, on the left side– Aksakata river. Other tributaries have the character of small inflows including biggest ones such as on the right- Aktash, Shurabsay, Tavaksay, Azatbash, on the left – Chalibsay, Parkentsay and Bashkizilsay.

61. Not taking virtually any tributary within plain region, the Chirchik river is heavily diverted for irrigation by channel networks. Most major channels are Zakh, Boz-Suv (right) and Northern Tashkent channel (in the upper part it is called Left Bank Kora-Suv). Channels are characterized by high flow capacity and they have a view of real rivers.

62. Waters of Chirchik river are taken for irrigation and are used for hydropower needs (diversion channel of Chirchik Hydropower Plant drops some of its water through Boz-Suv channel directly into Syrdarya river). The Chirchik river gradually reduces its flow and goes to Syrdarya river. Length of Chirchik river is 174 km, the basin area is 14 240 km^2.

63. According to data of Uzhydromet the surface flow of water was monitored during the whole year (Table 7) at the Gazalkent and Chinaz stations. Maximum flow volumes were recorded during October – March period and minimal volumes were recorded during May – July (sometimes August). During April – September period of 2013 (during vegetation period) the minimal flow of water was 11,5 m^3/sec.

Table 7: Average monthly flow of Chirchik river at Gazalkent and Chinaz stations

Years	Months												Average annual
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
Chirchik river – Gazalkent station													
2011	215	163	179	71	157	159	224	251	103	101	128	126	156
2012	175	106	107	82	173	233	269	242	107	96	80	92	147
2013	130	178	188	193	286	358	323	251	174	125	114	146	205
Chirchik river – Chinaz station													
2001	43,1	38,0	33,1	26,7	6,34	6,8	8,4	10,5	21,0	35,0	81,5	10,1	26,7
2002	94,9	76,0	103	204	22,2	35,5	34,2	34,0	25,2	29,8	32,0	142	69,4
2003	123	119	122	338	17,3	34,8	26,0	19,5	35,6	57,8	135	124	96,0
2004	175	239	273	162	90,8	57,9	31,0	29,5	55,9	57,0	59,2	114	112
2005	109	197	273	157	152	28,6	11,4	35,7	45,1	53,1	97,0	139	108,1
2006	176	311	136	52,8	20,6	38,0	32,8	25,2	54,2	60,8	90,4	128	93,8
2011	98,6	90,7	126	48,3	9,72	12,5	12,5	21,5	42,6	45,8	119	164	65,9
2012	135	125	82	48,4	60,1	28,4	87,5	21,2	41,8	49,4	62,0	103	91,6
2013	85,2	55,0	59,4	32,9	13,0	73,3	14,6	11,5	28,2	37,4	44,9	92,8	45,7

Source: Survey of Hydrogeological expeditions

64. Average flow of Chirchik river at Gazalkent hydro station is 229.43 m^3 during the whole period of observations since 1901 and since start of Charvak hydropower plant in 1972 – 227,32 m^3/sec. In 2013, flow volume at Gazalkent station was 205 m^3/sec, which is 90% of average annual flow.

65. The chemical composition of the river water is formed to a large extent under the influence of pollution coming from wastewater of industrial enterprises of Tashkent, Gazalkent, Chirchik, Chinaz such as Salar Aeration Station,"Sredazkabel" TAPOiCH, UzKTZhM, "Electrokhimprom", Chirchik Transformer Factory, etc. The river can be attributed to the water streams with low mineralization.

66. Total mineralization of water in the Chirchik river during the period of observations varied in the range 0.4-0.6 g/l, total hardness - 5,7-9,0 meq/l. The maximum values recorded in May and lowest in July. In most samples, values of salinity and hardness in the samples are respectively 0.5 g/l and 5.2 meq/l, pH -7-8. Water includes hydrocarbonate-sulphate sodium-calcium-magnesium (or magnesium-calcium).

Ground water

67. According to hydrogeological zoning the project a completely belongs to the Near Tashkent Artesian Basin. Explored sites are considered as part of deposit of drinking water source of current Chirchik river valley. The Chirchik deposit of ground waters is developed within the lower I-II terrace of the river as well as III above the flood plain terrace. Ground waters are confined to the alluvial gravel of quaternary age.

68. The main source of supply of ground waters of the aquifer is areal infiltration of irrigation waters from irrigated lands and groundwater inflow from the upper sections of the Chirchik. Ground waters are fresh. Mineralization level is mainly up to 0,6 g/l; total hardness up to 7,0 meq/L. Type: mostly sulphate-bicarbonate-calcium-magnesium.

69. Due to frequent change of the section by gravels conglomerates, more rarely by loam the aquifer contains sub-confined groundwaters, piezometric level of which is determined on the level of 0,2-4,7 m below the surface.

70. High level is observed in July-September, lowest in April. The annual amplitude of fluctuations is: a 1.0-2.0 to 5.0 m. Exit of groundwaters is carried out by groundwater outflow in the southwest direction towards the valley of Syrdarya river.

71. The aquifer can serve as additional source of organization of economic-drinking water supply of separate settlements and agricultural facilities with limited needs for water.

4.3. Biological conditions

72. The project area was significantly influenced by anthropogenic factor. The list of representatives of fauna of reviewed district is limited those type of animals, who could adapt to the life in anthropogenic conditions. Big mammals are fully absent, typical for unpopulated districts. Representatives of rodents are frequently found here: myagrum, house mouse, common rat, sometimes could be found the eared hedgehog. Typical village representatives inhabit here from the birds family. They are rook, jackdaw, hooded crow, starling, and different species of sparrows, my-lady's-belt, pigeons and others.

73. The vegetation is represented by artificial planting of trees, bushes, fruit and vegetable crops. Eastern plane, European ash, Catalpa, White poplar, Maple, Thuya; Asian sumac; Sophora and others grow within settlement area and along the central and country roads.

74. In whole it could be stated, that the reviewed districts are characterized as an area with those fauna species found their niche and adapted to the environment, where dominate place is occupied by human and one's business activity.

Ugam-Chatkal State Natural National Park

75. Ugam-Chatkal State Natural National Park was established in 1970 (re-organized in 1990 after preliminary surveys) and is located in the Tashkent Province area of 574,000 hectares, covers almost all the south-western spurs of the Western Tien Shan: Koksu, Ugam, Maidantal, Pskem and Chatkal ridges. The range of heights varies from 900 to 4000 m above sea level, which includes the midland, forest and alpine zones. It is situated in more than 92 km to north-west from WDC "Uzniish" (Kibray district) which is the closest object among the Project components to the protected area, which means no impact on this (Figure 7).

Figure 7: Distance between WDC "Uzniish" (Kibray district) and Ugam Chatkal national park

4.4. Socio-economic conditions

General district information

76. **Zangiota district.** The district was established in 2010 with administrative center in Keles city. District area is 381,6 km^2 (38164 ha), including: agricultural land – 17831 ha, including: arable land - 13291 ha, perennial plantations - 4011 ha, pastures - 529 ha, quality of soil rate – 60,3 scores; houses, household plots – 7555, highways – 228, forests – 182, social facilities, streets – 1907, other land (rivers, hills, industrial areas, transmission lines) – 10461 ha.

77. National composition: District population is 246195[3] people, from them Uzbek – 78,5 %, Kazakh – 7,5 %, Tajik – 4,3%, Russian – 2,1 % and others – 7,6%.

78. Borders: It borders with Kazakhstan northwardly (88,06 km), and also with Yangiyul, Yukori Chirchik, Kibray districts and Tashkent city. The district is specialized on agricultural and industry production.

[3] PPTA, Social survey, 2016

79. Enterprises facilities (11): JSC «Uskuruvchi» (production of spare parts for farming machines), “Farovon”, LLC (production of alcoholic products), OE “Samarkand – Singapore” (ice-cream production), ПП “Meva Sharbat” (production of alcoholic products), JV “High Tech Cable” (production of cable products), “Mehnat pivo”, LLC (production of alcoholic products).

80. JV (107): JV “FAR-VAB” (production of alcoholic products), JV “Muzimpeks” (production of tinned food), JV “East West Asia” (pumps production), JV “Fayz Decor Business” (confectionery production), JV “Yangi Asr” (production of construction materials).

81. **Kibray district.** The district was established in 1933 with administrative center in Kibray city. District area is 559,8 km^2 (55978 ha), including: agricultural land – 18437 ha, including: arable land - 14264 ha, saline land - 2 ha, (0,01%), perennial plantations - 3182 ha, pastures - 989 ha, quality of soil rate –64,9 scores; houses, household plots – 3957, highways – 163, forests – 526, social facilities, streets – 1082, other land (rivers, hills, industrial areas, transmission lines) – 31813.

82. National composition: The district’s population is 52231[4] people. Among them - Uzbek – 77,8 %, Kazakh – 8,3 %, Tajik – 1,8 %, Russian – 3,0 % and others – 9,1%.

83. Borders: It borders with Kazakhstan northwardly (56,1 km), and also with Zangiota, Yukori Chirchik, Bostanlik districts, Chirchik and Tashkent cities.

84. Enterprises facilities (13): JSC “Tashkent Tibtekhnika” (maintenance of medical equipment), CP-1 (concrete production), “Vostokoenergoteploizolyaciya”, LLC (services on pipe lining). JV (53): JV “Inter-Rohat” (production of beer and soft drinks), JV “Afsar LTD” (production of alcoholic products), JV “Karvon” (production of alcoholic products), JV “Bou Ko LTD” (bags production), JV “Arje Fasion” (knitted wear production).

Public Health. Waterborne disease-related data

85. Records of diseases typically related to insufficient water supply and sanitation over the period 2006 to 2015 from the Sanitary and Epidemiological Services (SES) of the Ministry of Health (MOH) are displayed in Appendix 1. The time-dependent graphics in Figures 8 to 10 reveal some increasing trends of some indicators, particularly Acute intestinal disease, however not systematically in all districts.

[4] PPTA, Social survey, 2016

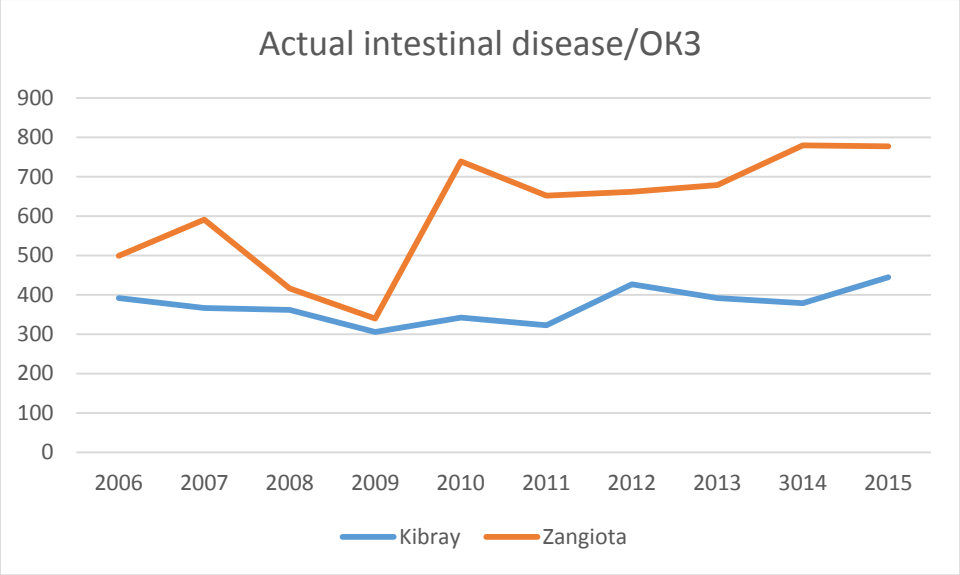


Figure 8: Trends of acute intestinal disease (cases/100,000)

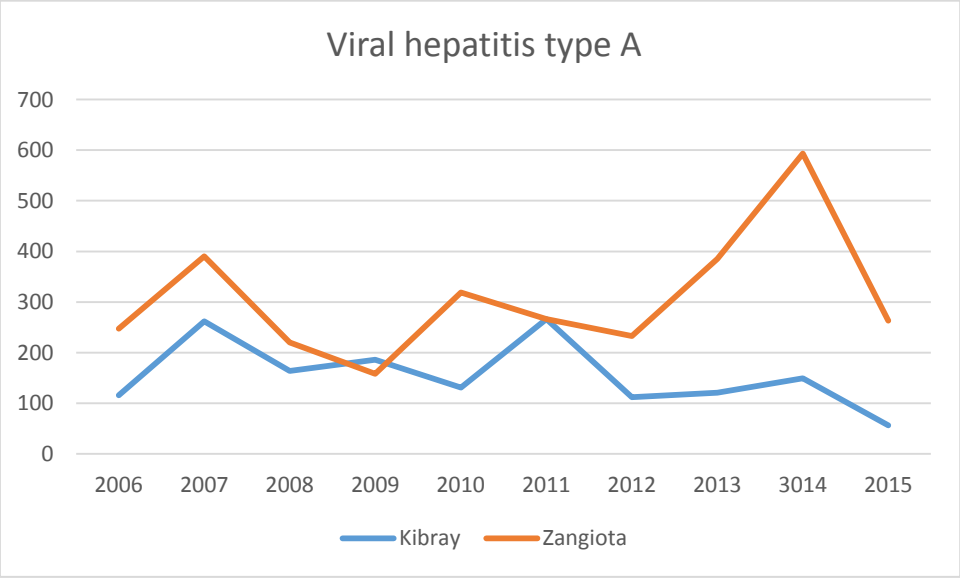


Figure 9: Trends of viral hepatitis (cases/100,000)

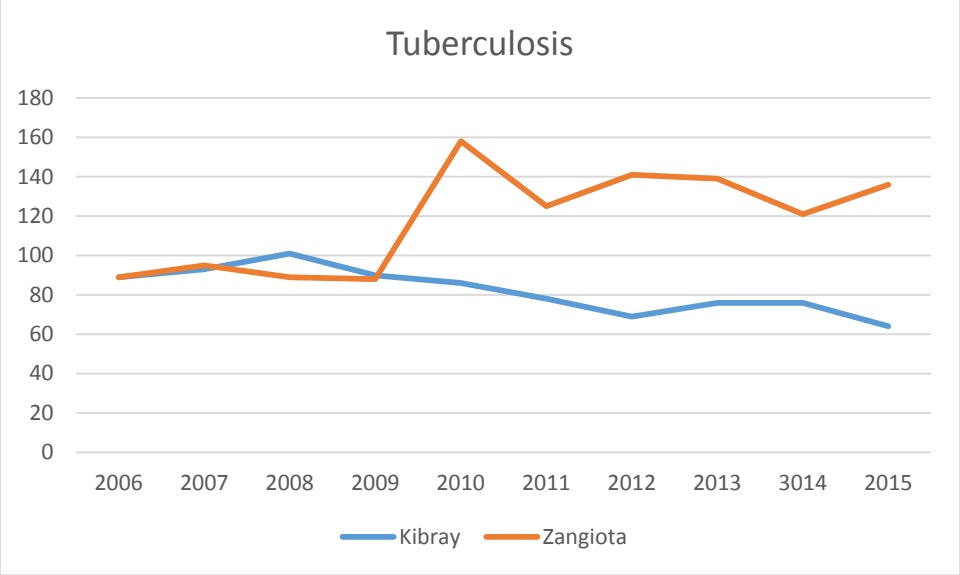


Figure 10: Trends of tuberculosis (cases/100,000)

4.5. Cultural Heritage

86. About 20 kilometers from Tashkent city center along the old road to Samarkand in the eponymous village of Tashkent province there is one of the most interesting historical and architectural monuments of XIV century - a complex of mausoleums Zangi – Ota (Figure 11).

87. Mausoleum Zangi-Ota is a part of the architectural and religious complex named Zangi ota, which combines the tomb of the saint, a huge garden, madrasas, memorial mosque and minaret. Being one of the unique sights of Uzbekistan, this complex uses a broad popularity among the visitors from over the world

Figure 11: Zangi-Ota Memorial Complex

88. The Memorial complex is situated in 9 km from the project site (Figure 12). It means that the Project will not impact on this heritage.

Figure 12: Location of Zangi-Ota Memorial Complex

5. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATE MEASURES

89. Anticipated the project's environmental impacts were reviewed at the three stages – pre-construction, construction and operation stages.

5.1. Pre-construction stage

Impact

90. During pre-construction stage the following aspects may impact on effectiveness of implementation of environmental safeguards during whole project cycle: (i) project design and procurement procedure, (ii) conduction bidding and contracting processes with consideration environmental aspects, (iii) institutional set up for environmental performance, (iv) receiving all required permissions.

91. For the current project design locations of all new WDCs have been selected in accordance with national requirements indicated in regulation KMK 2.04.02-97 "Water Supply. External network and facilities". For all WDCs and WTP the condition for first level of sanitarian zone was met.

92. Some changes in WDCs location, WTP layouts could be done at the stage of the project details design. It may lead to generating new impacts which requires updating IEE.

Mitigation measures

- During detail design stage layout of WTP and WDCs, route of main trunk and water distribution networks will be updated with consideration of minimizing impact on environment and population during construction and operation phases.
- IA with assisting Project Management Consultant's (PMC) environmental specialist will ensure inclusion environmental provision along with EMP in the bidding documents and the contracts for Contractors;
- During bids evaluation needs to be done with consideration of: capacity of bidders to meet EMPs requirements, proposing adequate budget efficient for implementation EMP, existence of good practice in environmental performance within other similar projects;

- Hiring Environmental Expert in PCU and assistance of PMC's environmental staff at the beginning stage of the Project;
- Within 30 days after contract award and prior to commencing any physical works, Site-specific Environmental Management plans (SSEMPs) will be developed by the Contractors under the guidance of the PMC, and be endorsed by PMC before submission to PCU for approval;
- In addition to SSEPMs, Specific SEMPs need to be prepared by Contractors, endorsed by PMC and approved by PCU for the following activities: Traffic Management Plan for construction of distribution network within settlements, Waste management Plan for sites with demolishing works, Hazardous Wastes Management Plans as described in the next sub-section;
- Goods procured for project implementation will be done in compliance with ADB Prohibited Investment Activities List set forth at Appendix 5 of the Safeguard Policy Statement (2009).

5.2. Construction stage

5.2.1 Physical resources

Impact on air quality

93. During construction stage pollutants emissions will be caused by earth works, construction/demolishing activities and exhaust gases from vehicles. It is expected that dust pollution will occur more frequently. At the same time equipment and vehicle with improper technical characteristics or in poor conditions also may lead to pollution by exhausted gases. In addition, improper waste management, particularly burning of construction and domestic wastes may lead to air pollution.

94. The project will be implemented both: in sparsely populated area and inside towns and villages, therefore, more stringent mitigation measures need to be implemented in the settlements.

95. Baseline survey of air quality was conducted during the IEE preparation. Results of air quality measurement is presented in Table 8.

Table 8: Results of background measurement of air quality (June 1, 2016)

#	Location	NO_2 mg/m^3	SO_2	CO	Dust
1	Kibray	0,01	0,005	2,0	0,1
2	Kibray	0,02	0,003	1,0	0,1
3	Zangiota	0,05	0,008	3,0	0,1
4	Zangiota	0,06	0,003	1,0	0,0
Uzbek Standards[5] (30 min)		0,085	0,5	5,0	0,5
IFC standards[6]				-	
10 min			0,5		
1 hour		0,2			0,05
24 hours			0,02		

Source: Baseline survey, May 2016

[5] Hygienic norms. List of Maximum Allowable Concentrations (MACs) of pollutants in ambient air of communities in the Republic of Uzbekistan including Annex 1. SanR&N RUz No.0179-04.

[6] WHO Ambient Air Quality Guidelines (General IFC Guidelines, 2007)

96. Samples were taken in the two points of each the project districts center, particularly in Kibray and Zangiota. Location of measurements points are presented in Appendix 2. According to data presented in Table 8, air quality in the project areas complies with national standards and IFC requirements.

Mitigation measures:

97. During construction period regular mitigation measures shall be used in the most of the cases:

- apply watering of construction sites and roads inside settlements during dry season;
- cover transported bulk materials;
- control speed limitation for vehicles during movement inside of settlements;
- all vehicles and techniques must comply with technical requirements and have to pass regular inspection as indicated into the national standards[7];
- prohibit open burning of solid wastes generated particularly from labor camps and construction activities;
- Clean wheels and under carriage of haul trucks prior to leaving construction site;
- Restrict demolition activities during period of the high winds or under more stabile conditions when winds could nevertheless direct dust towards adjacent communities.

98. For the Keles WDC located next to living houses (less than 30 meters (Figure 13)) additional measure shall be apply, such as: development Site Specific Environmental Management Plan (SSEMP) with consideration location of sensitive receptor (living houses), and indication specific measures for protection from dust for conduction of demolishing works (such as installation material screen).

Picture 13: Location of living houses (2) next to Keles WDC (1)

Noise and vibration

99. Noise pollution and excess norms for vibration will occur mainly during construction phase and an impact is expecting due to the very nature of the work at the sites located close to settlement areas.

100. To review baseline situation, noise measurements were conducted in May 16-19, 2016 during the night and day time at the living areas located at the closest distance to the territory of planning construction works. Locations of noise measurement points is presented in Figure 14.

[7] "O'z DSt 1057:2004 Vehicles. Safety requirements for technical conditions" and "O'z DSt 1058:2004 Vehicles. Technical inspection. Method of control".

Point 1. Kibray dsitrcit, Kadirya WTP: 1-exisitng WTP, 2 – closest house – measurement point, 3 - fields

Point 2. Zangiota district, WDC Keles: 1- WDC, 2 – closest house 2 – measurement point, 3- other houses

Point 3. Zangiota district WDC Oltin Tepa: 1- Construction site, 2 – Closest house – measurement point, 3 – houses, 4 - workshop

Point 4. Zangiota district WDC-7: 1 – construction site, 2,3 - closest house – measurement point, 4- agriculture land

Figure 14: Location of noise measurement points

101. Results of noise survey (Table 9) showed that apart from 4 samples in 1 cases (point # 4) noise level exceeded national standards for living area. In point #4 noise level exceeded standards during the night time as well.

Table 9: Results of background noise measurements

Point	Uzbek Standards[8]		IFC standards[9]		Measurements results		Exceeding	
	Day time (7am – 23pm)	Night time (23pm – 7am)	Day time (7am – 22pm)	Night time (22pm – 7am)	Day time (7am – 23pm)	Night time (23pm – 7am)	Day time (7am – 23pm)	Night time (23pm – 7am)
P 1	55	45	55	45	54	39	-	-
P 2	55	45	55	45	45	37	-	-
P 3	55	45	55	45	42	41	-	-
P 4	55	45	55	45	58	48	3	3

Source: Baseline survey, May 2016

102. During construction of Kadirya and WDCs and temporary noise emissions may be caused from the following equipment:

a. Decommissioning equipment
b. Construction equipment

[8] The "Sanitarian Rules and Norms on providing allowed noise level into the living building, public building and territory of living area" (SanR&N No.0267809)
[9] Maximum Allowable Noise Levels (General IFC Guidelines, 2007)

c. Pile driving for construction
d. Earth moving activity
e. Generators
f. Vehicles used for material transport

103. Modeling and assessment of the noise, caused by construction activities is based on existing information about operation of various equipment at various stage of construction. Level of noise generated by various equipment was used based on existing standards[10]:

Table 10: Noise level form various techniques

Noise source	Equivalent noise level, dBA
Excavator (cabin - 7 meters)	95-92
Bulldozer (cabin - 7 meters)	84-85
Grader (cabin - 7 meters)	85-92
Electric compressor (cabin - 7 meters)	93-80
Pile boring equipment (cabin -7 meters)	72-82

104. As a rule, noise caused by moving equipment is reduced at some distance. Such reduction has logarithmic properties. In case of noise caused by construction activities, noise spread pattern from the noise point is used, that can be determined as: Noise level1-Noise level2=20 log r2/r1, meaning that by doubling of distance noise is reduced by 6 dBA.

Table 11: Noise levels at distances

Distance	Equivalent noise level (maximum), dBA
14	89
28	83
56	77
112	71
224	65

105. As shown in the Table 11, after 115-120 m from noise sources, the noise level is acceptable without implementation of mitigation measures, (70 dBa is requirements per IFC standards[11]). It can be assumed according to rough calculations, that noise impact will not exceed 130 m and increase of noise level within this distance is assessed as acceptable impact. For the conduction project works at the area located closer than 130 m to construction sites, the contractor should implement all mitigation measures mentioned in the document.

[10] M. Nechaev, V. Gister, V. Silkin Environmental protection during design and construction roads, Moscow, 2004
[11] Maximum Allowable Noise Levels (General IFC Guidelines, 2007)

Mitigation measures:

106. The following measures need to be implemented to avoid noise and vibration impacts on project sites located within settlements:

- operation of heavy equipment shall be conducted between 7 am and 7 pm only, limitation on speed for vehicles;
- In case of receiving any complaints from population, noise measurements need to be conducted and in case of exceeding established standards, additional mitigation actions for decreasing noise level need to be undertaken (establishing temporary sound absorbing barriers and others);
- Schedule construction so as to minimize the multiple use of the most noisy equipment near sensitive receivers;
- Use of Personal Protective Equipment (PPE) by workers involving in demolishing and construction works in conditions of increased noise level is mandatory;
- Inform population about anticipated works.

107. Therefore, above described impacts on air quality, noise and vibration will be temporary and it could be mitigated by implementation of recommended measures.

Impact on water resources

108. The surface water may be polluted due to improper placement of the excavated soil, poor management of construction camps, and improper storage of construction materials, leakage of fuel and lubricates from construction machinery, washing of vehicles and techniques without proper treatment. Temporary contamination of Boz Suv canal during construction water supply pipelines at the river crossing is also anticipated. Labor camps also may be potential source of water contamination with waste water.

109. Baseline survey showed that construction of new WDCs and rehabilitation of existing ones will be implemented in the areas remote from water bodies. Construction of main trunk in two points will cross Boz Suv canal. Baseline water quality survey was conducted at the 2 selected points, locations of which is presented at the picture 12. In addition, small part of main trunk (around 360 meters) will be laid out next to Boz Suv canal (point 3, Figure 15).

Point 1. Zangiota district, main trunk route 41°11'22.227" N 69°04'18.192" E

Point 3. Zangiota district, main trunk route, Ortaoul settlements, 41°12'42.296" N 69°05'43.663"

Figure 15: Water samples points

110. There are several standards for water quality in Uzbekistan, which depend on purpose of usage water body (Appendix 3). Reviewed canals are used for communal and service purposes (swimming during the summer); therefore, stricter standards were used for comparison. As showed results of analysis, samples almost fully complied with national standards. There are only exceeding of limits for BOD5 and ammonia ions in water samples from point 3 in Zangiota district (Table 12).

Table 12: Water quality in points close to construction sites

Component	**Zangiota district**		**Standards**
	P 1	**P 3**	
Suspended matter, mg/l	22	32	shall not be increased by more than 75 mg/l
pH	6,5	7,0	6,5-8,5
Dissolved oxygen, mg/l	7,7	2,9	No less than 4
BOD_5		4,1	3
Hardness mgecv/l	4,6	6,6	3-7
Dry residual, mg/l	296	626	1000
Ca^{2+}	48,1	80,1	180
Mg^{2+}	26,7	31,6	50
Fe total	0,11	0,52	0,5
Cl^-	16	34	350
SO^{2-}_4	75	240	500
NH_4^+	2,0	6,0	2
NO^-_2	0,05	0	3,3
NO_3^-	3,5	0,53	45
Oil products	n/a	n/a	0,3

Source: Baseline survey, May 2016

111. Even the project will have a moderate impact on water resources, implementation of the mitigation measures are essential

Mitigation measures:

112. The following mitigation measures shall be implemented to minimize impact on water bodies:

- Construction and labor camps, including storage places for lubricant, fuel and other oils will be located 100 m away from water bodies;
- Conduction of refueling, oil replacement or repairing works will be banded at the area within 50 m from water streams;
- Sanitary water and solid wastes will not be released directly into water streams;
- Topsoil stripped material shall not be stored where natural drainage will be disrupted;
- Water samples will be taken and analyzed based on the baseline monitoring results obtained in the preconstruction stage.

113. Groundwater table level within the Project zone is 3-5 meters. Therefore, potential impact arises from maintenance of contractors' camps, transport, maintenance of vehicles and handling and storage of lubricants and fuel. The required provisions for construction camps are described in the chapters on impacts and mitigation measures concerning quality of soils and waste management.

Impact on soil

114. The main anticipated impacts on soil during construction stage will be: disturbance or loss of top soil, its compaction and pollution. For pipe lying works, earth excavation, pipe laying and backfill of material including compaction will be implemented. Excavated soil will be temporary stored alongside the trench and refilled after pipe lying. Gravel will be used as a bed for the pipes and excavated soil will be placed back to fill tranche and be compacted. Certain amount soil will surplus due to pipes and gravel in trench.

115. Surplus excavated soil will be generated during construction of WDCs particularly for Clean Water Reservoir and pump station construction. Even surplus materials will be used as embankment fill as far as possible certain amount of earth will remain.

116. The movement of equipment and the temporary storage of materials on the ground during the construction may lead to compaction of the soil. This compaction will take place in the area affected by the construction and rehabilitation works, in its vicinity, in the access areas, pipelines, etc.

117. Gravel and sand will be required for pipe lying and rehabilitation of damaged roads. Unauthorized excavation of such construction materials and improper restoration works on closing used carriers will negatively impact on soil.

Mitigation measures:

118. To minimize this impact on soil quality the following measures shall be implemented:

- The top soil of about 30 cm depth shall be removed and stored separately during excavation work, and after the construction of the main trunk the same soil shall be replaced on the top, in unpaved areas;
- The excess top soil and earth reminded after construction new WDCs will be used at other project sites or disposed at the places prior approved by local government authorities and Nature protection committee;
- To minimize soil compaction, movement of all type techniques will be allowed only through identified assess roads;
- Contractors will be required to use only authorized carriers with getting all necessary permissions per respective national legislation.

119. Pollution of soil during construction phase maybe caused by improper handling of fuel and oil during refueling and poor waste management which is reviewed in the next chapters.

Waste management

Hazardous construction wastes

120. During construction phase hazardous wastes will be generated from vehicle operation and maintenance, rehabilitation works at the 9 WDCs, particularly replacement of old transformers. In addition, there is possibility of presence of asbestos materials in remaining buildings and facilities of rehabilitated WDCs.

121. Among 11 transformers in 9 rehabilitating WDCs, 9 transformers have been produced before 1994[12] and there is a possibility that oil contained PCB was used for such equipment. Due to specific of nature of works on transformers demolishing, replacement and further hand over of installed new transformers to TPS, such works could be conducted only by eligible organizations with appropriate certificates/license. Therefore, this activity will be

[12] In Russia, Last transformer contained PCB was produced in 1993. all transformers used at WDCs were produced in Russia.

implemented by SJC “Uzbekenergo”, owner of the electricity facility. Demolishing transformers will be transferred to SJC “Uzbekenergo” as well for further storage and disposal.

122. There is procedures on disposal of used oils and transformer in Uzbekistan[13], however taking in consideration a possibility of PCB content in transformer oil, disposal of this equipment requires special approach. This approach was developed within Framework of the “Modernization and Upgrade of Transmission Uzbekistan” project in 2015 and approved by Uzbekenergo Substations. The framework requires conduction of laboratory testing transformer oils on PCBs. However, as showed baseline survey, there are no certified laboratory, conducted such analysis.

Mitigation measures:

- Because of absence of possibility to conduct analysis on content of PCBs in oil, all transformers produced before 1994 have to be carefully handled and disposed without pouring oil and avoiding oil leakage. All transformers have to be labeled with sign “Content PCB” and disposed in accordance with ""Guidebook on Environmental Sound PCB Management in Electrical Equipment” (prepared under Moldova POPs Stockpiles Sustainable Management and Destruction project)". Notification on presence of such equipment will be sent to State Nature Protection Committee and Sanitarian Epidemiological Station for their further actions;
- A separate Waste Management Plan needs to be developed by Contractor, endorsed by PMC and approved by PCU for the construction sites with demolishing works. The Plan has to include information about type of generating wastes, procedure of their collection and disposal;
- Used oil shall be collected into containers placed at the concreted sites and disposed to national oil company designated for accepting and treatment of used oils;
- Refueling vehicles and replacement oils also have to be conducted in special designated and properly equipped places. Emergency facilities have to be at the place for elimination of accident of oil spills.

123. The project involves demolishing of existing WDCs including old buildings and constructions, therefore there is a possibility of presence of asbestos materials (in roofing slate).

Mitigation measures:

- Prior to commencement of rehabilitation works at the WDCs, EO with NES of PMC will conduct vision observation of old buildings and facilities on presence of asbestos materials.
- In case of presence such materials, will developed by Contractor a detailed “Waste Asbestos-Containing Material Management Plan” is to be developed by Contractors (Appendix 11).

Non-hazardous wastes

Municipal wastes

124. Municipal solid wastes and waste waters will be generated at the construction and camp sites. Mainly this is rubbish, plastic or glass bottles, glasses, waste food, etc. Improper wastes management may cause the spread of infectious diseases, emergence of insects and parasites in construction camp sites. In addition, it may lead to conflict with local population.

[13] Safety regulations for the maintenance of electrical consumers, Approved by State Inspection under Uzenergonadzor, 2004 and Regulation guideline 34-301-941:2007 Individual norms for oil usage for repairing and maintenance needs for equipment of energy enterprises

Mitigation measures:

125. The followings shall be implemented for proper waste management:

- Segregation of wastes on recyclable and non-recyclable wastes;
- Selling recyclable wastes to relevant organizations (paper, scraps, accumulators) and timely disposal of non-recyclable wastes to the landfill, determinate by local hokimyats.
- Providing hydro isolated septic tank for collecting waste waters at the camp sites and bio toilets for workers at the construction sites and timely disposal of waste waters to the local waste water treatment plants.

Construction wastes

126. Construction wastes in significant amounts will be generated during demolishing of existing buildings and facilities at the WDCs. Storage of such wastes in area close to settlement and untimely or improper disposal may impact on air quality, dust generation and disturbance of neighboring settlements. Besides this wastes, used welding rods, packing materials, woods will be generated as well.

Scrap metals

127. Old equipment from rehabilitated WDCs, such us old pumps, pipes and etc. will be handed over to Tashkent Province Suvoqova (TPS) for further use, recycling or disposal. As mentioned above, old transformers produce before 1994 will be kept in a safe storage in accordance with establish procedure for PCBs without releasing the oils.

Mitigation measures:

- Segregation of wastes on recyclable and non-recyclable wastes;
- Selling recyclable wastes to relevant organizations and timely disposal of non-recyclable wastes to the landfill, determinate by local hokimyats.
- Burning of waste on any construction site is forbidden with the exception of stub and small branches from felled trees and bushes, which is better to be burned in order to avoid pest dissemination
- Create a safe (sheltered with concrete foundation) storage facility

5.2.2 Biological resources

128. It is expected that during the construction works limited impact on biological resources may occur. Project sites are combination of populated area and agricultural lands represented by typical urban and agro- biocoenosis. There are no natural protected areas or sensitive environmental receptors close to project sites. The nearest natural protection zone – Chatkal reservation is located 60 km to north-west from WDC “Uznihi”, which means no impact on the reservation.

129. Impact on flora may occur due to cutting trees and removal bushes during construction of main trunk, distribution water supply network and construction or extension of existing WDCs.

130. In accordance with initial LARP 170 non-fruit trees and 12 fruit trees will be cut in Kibray and 60 non-fruit and 548 fruit trees in Zangiota districts within the project. Two types of non-fruits trees will be cut within the project - mulberry (80 trees in Kibray district) and poplar (90 and 60 trees in Kibray and Zangiota districts accordingly). Both these types of trees do not belong to category of plant with biodiversity value and compensation for cutting trees should be calculated based on Attachments 1 and 2 to Decree of Cabinet Ministries of RUz on the procedure of settlement usage of biological resources and procedure of issuing permits in the field of nature use, No. 290 of 20.10.2014;

131. Per national legislation[14] permission from State Nature Protection Committee needs to be received prior cutting trees and respected fees will be paid for each case (as indicated in para 9 of this IEE). The permission will be granted after payment of compensation. LARP has identified draft amount of money needed to be paid for cutting trees.

132. In addition to this, greening of WDCs territory (which considers planting trees as well) after completion civil works are included in the project design. In addition, trees have to be replanted along with pipe alignment.

133. The project works will be implemented in the populated areas and agricultural lands with limited presence of wild animals, therefore impact on flora is considered as insignificant.

134. Implementation of civil works related to pipe lying along with Boz Suv canal and at the two points crossed canals, and location of campsites close to water streams Boz Suv canal may impact of aqua fauna of Boz Suv canal. However, taking in consideration, that the canal is used for irrigation and electricity production on the number of small hydropower plants, this impact is assessed as insignificant.

Impacts on land use

135. Impact on land use will occur during the construction of the Kadirya WTP, new WDCs and reconstruction of existing ones, laying main trunk and distribution networks.

136. The feasibility design attempted to minimize the land acquisition and involuntary resettlement. The impacts are categorized as permanent and temporary. Permanent impacts occur in terms of land acquisition for Kadirya WTP and WDCs (new and reconstruction with extension). According to initial LARP, total 7,04 ha in Kibray district and 8,91 ha of land in Zangiota districts will be acquired for permanent use.

137. Temporary impacts occur in terms of loss of crops during the construction/reconstruction of pipe lines especially the transmission mains and distribution mains which pass through agricultural land. The land will be restored to the previous use post the construction and the users will be allowed to continue their cultivation.

5.2.3. Socio-economic resources

138. The project will have positive effect and may have some negative impacts on socio-economic resources during construction works.

139. Personnel with different qualifications will require for construction works, and local population could be hired for some of activities, which means creation of new jobs. Moreover, indirect services will be needed to provide needs for housing, catering, petrol stations, etc. This temporary positive impact will contribute overall project positive impact.

140. Construction of the main trunk and pipelines will pass through mostly agricultural fields, some orchards, and vineyards. The impact related to construction of pipelines is temporary in terms of losses of standing crops if unavoidable. Cutting trees and vineyards may also lead to loss of people incomes.

141. Small enterprises (shops, barbers and etc.) and people properties may be affected during pipe lying of distribution network in settlements. It could be caused by limited or access to them, techniques movement, temporary closing roads. This impact will be temporary, no resettlement including demolishing such enterprises are expected.

[14] CMR # 290 dated from 2014, “About regulation use of biological resources and on the order of procedure of getting permission for their use”

Mitigation measures

142. The following measures need to be undertaken to minimize or compensate this impact:

- Construction during agricultural off- season may further minimize the impact (loss of agricultural income). Major crops in the project affected are wheat, sunflower, vegetables and cotton, which growing seasonally;
- If cutting trees is unavoidable, to compensate losses as indicated in the LARP for this project;
- Inform community in advance about planning works;
- Schedule and conduct civil works in the way to minimize period with limited access to enterprises and closing roads;
- Provide safe access to affected properties.

Health and safety issues

143. Besides impacts on air, water and soil quality, described in previous chapters, certain risks may take place related to community health and safety, for workers in campsites.

For community

144. Inadequate lighting and fencing of construction sites inside of settlement areas can be dangerous for pedestrians and vehicles especially during the night time. Increasing of traffic due to trucks and vehicles movements to construction sites, temporary closing of roads during pipe lying inside of settlements may cause inconvenience for local population as well. In addition, pipe lying will cause temporary blockage of household access.

145. Untimely and inefficient disposal of solid waste and improper sanitary conditions generated by the construction workers at construction sites and labor camps may cause pollution of the surrounding environment and affect the health of local people. There could also be some social problems due to irresponsible behavior of the outside work force such as gambling, alcoholism and disrespect to local people and their culture.

146. Cultural interference workers with local communities may cause HIV and sexually communicable diseases (STD) spreading in case of law awareness about these diseases among workers and community

Mitigation measures

147. The following measures need to be undertaken to minimize this impacts:

- Contractor and PMC will inform population about anticipated works in the settlement in advance;
- Contractors will require to develop a Traffic Management Plans with clear indication routes of vehicles' movements, placement special signs, and speeding allowance inside of the settlements and schedule transportation activities by avoiding peak traffic periods
- The Traffic Management Plans will be approved by Traffic Police and disclosed to local communities prior commencement of construction works on respective sites;
- Clear signs will be placed at construction sites in view of the public, warning people of potential dangers such as moving vehicles, hazardous materials, excavations etc. and raising awareness on safety issues.
- Contractor will require to install temporary bridges and effectively organize works, which will allow avoid unreasonable delaying of construction works;
- All construction sites will be properly lightened and fenced;
- Development of Site Specific Plans for campsites;
- After completion works all roads shall be rehabilitated at least up to condition of pre-construction stage;

- Carry out regular awareness campaigns among work staff, including specific hazards associated with the spread of HIV/AIDS.

For workers

148. Separate Site Specific EMP for labor/construction camps will be developed by Contractors, endorsed by PMC and approved by the Environmental/Social Specialist of Project Coordination Unit's prior commencement of works. SSEMP for labor/construction camps will describe waste collection and disposal procedure, set up of camp facilities (such as a storage place for construction materials and techniques if any, laundry and toilets, access roads) in the way, which will allow to minimize disturbance of local population. If washing equipment and vehicle is planning to be conducted at the labor/construction camp's site, appropriate wastewater treatment facilities have to be organized on the camp and respective permissions on water intake and waste water disposal need to be received by Contractor from relevant government agencies. At the same time, labor camps have to provide safe and adequate living conditions for workers, such as dining rooms, toilets, shower rooms emergency medical kits. Other measures for fire-fighting and preventing electric shocks etc. In addition, the Contractors shall instruct all the workers to act in a responsible manner. After completion works, construction camps

149. At the completion of work at a particular site, Contractor will remove all equipment and structure, clean up and dispose all waste materials, rehabilitate all construction sites and work areas so that these can be returned as possible to their previous use. Safety and health non-compliance may create a risk for construction workers. The Contractors will require to develop Occupation Safety and Health Plan, which covers among others the following topics: usage of PPE, working procedure with hazardous materials (such as asbestos materials, PCBs etc.), training activities and others. The workers have to be provided with appropriate living conditions: safe water supply, washing conditions.

5.2.4. Cultural heritage

150. The land and vegetation clearing, earthmoving activities during the construction of the new WDUs and extension of existing ones, pipelying works may affect the archaeological heritage in the project areas.

151. As showed the baseline study, there is one important archaeological heritage in Zangiota district – Zangiota Graveyard. The heritage is located 9 km to north from rehabilitated main trunk's route.

152. For the rest of the project area mitigation measures will be undertaken in accordance with the procedure indicated in the Law of RUz "On Protection and Use of Objectives of the Archeological Heritages" (2009).

Mitigation measures

153. The following measures need to be undertaken in case of possibility to chance of finding heritage:

- Excavation and other works need to be suspended immediately;
- Area with possible heritage shall be fenced with fencing tape;
- A designated focal point from a local administration (khokimiyat) needs to be informed and invited for assessment of potential heritage and undertaken necessary actions;
- Civil works at the finding place could be recommenced after obtaining permission from the focal point.

154. Construction sites and areas used for construction camps without proper cleaning and reinstatement works will cause damage and inconvenience to local communities due to debris, spoils, excess construction materials.

- After completion of the main construction Contractor shall provide full reinstatement of the construction and camp sites by bringing them to its primary condition;
- Remove all rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required; and
- All disrupted utilities restored All affected structures rehabilitated /compensated;
- The area that previously housed the construction camp is to be checked for spills of substances such as oil, paint, etc. and these shall be cleaned up;
- All hardened surfaces within the construction camp area shall be ripped, all imported materials removed;
- PMC will conduct post-construction audit during defect liability period to make sure that construction sites and camps are properly cleaned and restored to pre-project conditions before acceptance of works before hand-over to TPS and local khokimiyats.

5.3. Operational stage

Impact on the air

155. Operation of WTP and pumping station may cause disturbance, nuisance and noise. Some temporary impact may occur during maintenance works on WTP, WDCs and water supply network. No permanent impact on air is expecting during operation phase.

Mitigation measures

Watering of earth during maintenance works

- Design of pump station and WDCs will be done to ensure compliance with national and IFC's standards on noise and vibration level for public and worker places;
- Per national legislation assessment of working places conditions will be implemented once per three years;
- During maintenance works periodically water down temporary roads on site;
- Immediately replacing defective equipment and removing it from the work site;
- No truck movements in inhabited areas between 22:00 and 6:00.

Impact on water

156. According to the project, water intake from Boz Suv canal will increase from 72,000 m3/day to 105,000 m^3/day. Current water intake comprises 0.36% from the average flow of Boz Suv canal (which is on average 227,32 m^3/sec, as indicated in para 80 of the IEE). This will result in 0.17% increase of total water intake from Boz Suv Canal. This change in water intake is not going to affect other water users of the canal - farmers, using water for irrigation and smaller HPS, located at the downstream of the canal.

157. Improved and extended water supply service will lead to increasing waste water discharge by 40%. It may create problem of ground water pollution due to low level of connection to sewage network houses (19,3% in Kibray and 3,4% in Zangiota districts[15]), usage of non-concrete pit latrine in the project districts (53,7% in Zangiota and 31,1% in Kibray). Even there are no wells using as a drinking water source in the project area, risk of ground water pollution exists.

158. Operation of chemical laboratories for monitoring drinking water quality without proper treatment of chemical's reagents residual may pollute surface and ground water.

[15] Poverty and Social Assessment Report, TPWSDP PPTA, 2016

Mitigation measures

- Conduction of awareness program on proper and timely waste water disposal for population in the project area;
- Discharging chemical's reagents residual into water stream without treatment will be prohibited. Special procedure of utilization of such reagents, indicated in Standards for Drinking Water, 2011 has to be implemented.

Soil quality

159. As part of water treatment process, sludge generated after sedimentation and filtration stages will be collected into slurry tanks on the territory of WTP. It expected that maximum 420 m^3/day (30% of solid content) of sludge will be generated - this amount is expected during the season with high level of water turbidity in the river (3-4 months per year). Composition of solid load will be essentially siliceous (SiO2) material 0,002 to 0,02 mm in size. Such content makes it non-suitable for further use, and therefore it needs to be disposed in designated places as it accumulates.

160. Maximum annual amount of generated sludge will be 20683 m^3/year. However, only 4390 m^3/year of sludge will be disposed into the drying beds (slurry tanks). There are two drying beds on WTP (35m x 60 m x 3 m each). According to the project design, sludge will be collected in one bed during 3 years, after second sludge bed will be used for sludge collection. After evaporation of liquid part of sludge, solid residual from first bed will be disposed to the municipal landfill.

161. The rest of the sludge - 16293 m^3/year will be kept into sedimentation tanks using for water treatment only during the season with high level of water turbidity. This sludge will be dried during the rest of the period and will be disposed to the landfill as well.

162. Place of sludge disposal will be provided in environmental permission (limits on sludge disposal) which "Suvoqova" has to get prior commissioning of WTP.

Mitigation measures

- Permits for waste disposal should be received from Provincial Nature Protection committee.
- Sludge from WTP has to be timely disposed at the landfill and it could be used as capping soil. Untimely disposal of generated sludge and place of its disposal will be provided in environmental permission (limits on sludge disposal) which "Suvoqova" has to get prior commissioning of WTP.

Health Safety

163. In order to meet national standards for drinking water an electrolysis with sodium hypochlorite (SHC) will be used for disinfection. Four chlorination units will be built to produce SCH at the Kadirya WTP and WDC VK-20 (Kibray district), Keles and Otin Tepa WDCs (Zangiota districts). SHC from these WTP and WDCs will be delivered to remaining WDCs for further application.

164. Electricity equipment will be used at the WTP and WDCs which may cause of fire and electric shocks for workers.

165. Even SHC is less dangerous than gas chlorine, the special prevention measures need to be undertaken to minimize possibility of SHC leakage and consequently negative impact on facilities personnel, population from vicinity and environment.

Mitigation measures

- Emergency measures in the operation manual to be provided by the equipment suppliers;
- Providing required facilities: storage of SHC in well ventilated rooms;
- Applying special marking for containers with this agent;
- Using vehicles with increased safety measures for transportation;
- Special procedure need to be developed and applied for utilization leakages.

166. Thus during project operation stage some negative impacts and risks may take place. However, all of them could be mitigated by implementation proposed measures described in EMP and required by national legislation.

167. Along with this, positive impact of the project is obvious and it is well described in the part of the project goals and expected outcomes. Detail information about impacts, recommended mitigation measures, responsible people for EMP implementation and monitoring with cost estimates for this activities are presented in Chapter 9.

6. INFORMATION DISCLOSURE, CONSULTATION, AND PARTICIPATION

168. One of the main goals of the IEE is to facilitate the participation of all stakeholders and local communities at all stages of the project cycle: from the pre-construction phase and construction activities to its operation. In this regards, a number of consultations were held in the project districts to capture the stakeholders' opinions about the project, and agree on the project activities.

169. Prior to the public consultations several meetings were conducted with internal and external stakeholders, such as representatives of the Tashkent Province Nature Protection Committee, district Khokimiyats and makhallas, the Tashkent Irrigation and Melioration Institute, UCSA, Uzhydromet and others.

170. In compliance with ADB requirements with the aim of informing the communities in the project area about the upcoming consultations, the announcement has been published in the local daily newspaper "Narodnoe slovo" dated June 4, 2016 (#109) in Uzbek and Russian languages, as well as there were several notices posted in local Khokimiyats and makhallas in 2 project districts (Kibray, Zangiota).

171. All public consultations were held in administrative buildings of Zangiota and Kibray districts' Khokimiyats on June 9 and 8, 2016 respectively. The registration lists of public consultations held in project districts are presented in Appendix 6.

172. Two sets of public consultations were held in Zangiota district. First meeting was conducted on June 8 in Zangiota rayon center and second on June 9 in Economic college of Koksaroy settlement. The meetings were attended by more than 60 participants from 13 Rural Assemblies of Citizen (RAC): Keles, Khasanboy, Boz Suv, Koksaroy, Turkiston, Ortaovul, Kizgoldog, Nazabek, Zangoita, Kokterek, Chuvalavhi, Masalboy, Unusobod. All these RACs are located within the project area. Among participants were chairmen of RACs, secretaries and citizens from the relevant settlements. Besides them, specialists from district branches of Nature Protection Committee, Sanitarian Epidemiological Services, local administration (district hokimiyats), women committee, education entities (schools, colleges and lyceums) and Zangiota branch of TPS attended the consultations.

173. The dialog was made through informing communities about the proposed project and obtaining suggestions about the anticipated environmental impacts and developed mitigation measures. Project objectives and main findings of conducted environmental assessment, EMP and GRM was presented in Power Point presentation. Hard copies of EMP translated in Uzbek were distributed among participants. People were requested to give their opinions and suggestions. In addition, participants were provided with contact information of focal

points from TPS, Zangiota district branch of TPS and PPTA's Environmental Specialist for further suggestions and questions.

174. The stakeholders/consultation participants were informed that Contractors would develop an Informative Banner with information on project objectives, activities, implementers, schedule of construction works, deadlines, contact information and logbooks for complaints and suggestions on each construction site.

175. The main issues raised during the public consultation are presented in the Table 13:

Table 13: Issues raised during public consultation in Zangiota district

Issues raised	Response	Addressed in IEE
Scope and area of the project activities, including type of works to be implemented within the project	More detail information on requested settlements were provided	Details provided in Chapter 3
Roles and responsibilities of community and other stakeholders	1. Number of training will be provided for communities as part of awareness raising program; Information/education center will be organized for public education 2. Community will be part of GRM	Description of training program included awareness program for population and information on center are included in Chapter 9.4.2 2. Details is provided in Chapter 7
Selection of makhallas for the project area and their connection to WDCs	List of settlements included into the project was provided during PP presentation	Presentation is provided in Chapter 9
Monitoring of drinking water quality	Two laboratories will be constructed within the project – one in Kadirya WTP and second in Keles WDC	Details provided in Chapter 3.2
Life time of pipes	Fiberglass and polyethylene pipes characterized by extremely low roughness coefficient will be used for the construction of the water network, which ensure more than 40 years life time	Details provided in Chapter 3.2
Project implementation timing	Expected duration of the project is 5 years, starting date – beginning of 2017 and completion date – December 2021	Information is presented in Introduction

176. Baseline assessment showed that three houses are located close to Keles WDC in Zangiota district. Even head of settlement (Keles rayon center) where these houses located attended the consultation additional meeting with these affected people have to be conducted prior commence construction works.

Kibray District

177. Public Consultation for Kibray district was held on June 8 in administrative building of Kibray hokimiyat. Representatives of the following 6 RACs located within the project area attended the meeting: Yon Ariq, Chinobod, Unqurgon, Zafarobod, Oqqovoq and Botanika. Among 37 consultation participants 2 were females. Meeting participants represented chairman of RACs, secretary, specialists from district branches of Nature Protection Committee, Sanitarian Epidemiological Services, local administration (district hokimiyats) and TPS and Kibray branch of TPS.

178. Presentation flow was the same as described above. During consultation participants raised the following issues:

Table 14: Issues raised during public consultation in Zangiota district

Issues raised	Response	Addressed in IEE
Scope and area of the project activities, including type of works to be implemented within the project	More detail information on requested settlements were provided	Details provided in Chapter 3
Type of disinfection which will be used for water disinfection	An electrolysis with sodium hypochlorite (SHC) will be used for disinfection. Four chlorination units will be built to produce SCH at the Kadirya WTP and WDC VK-20 (Kibray district), Keles and Otin Tepa WDCs (Zangiota districts). SHC from these WTP and WDCs will be delivered to remaining WDCs for further application.	Included in Chapter 5.3
Development of sewage water system	Participant were informed about government plans to implement sanitation program in the project districts. As short term measure conduction of awareness program on proper and timely waste water disposal for population in the project area is included in EMP	Included in Chapter 5.3
Proper repairing of the roads in makhallas after completion of the civil works	After completion works all roads shall be rehabilitated at least up to condition of pre-construction stage	Included in Chapter 5.2.3

Issues raised	Response	Addressed in IEE
Project implementation timing	Expected duration of the project is 5 years, starting date – beginning of 2017 and completion date – December 2021	Information is presented in Introduction
Receiving permission from Goskompriroda for cutting trees and payment fees	Requirements on all necessary permissions to be obtained within the project with indication responsible part and timing are included IEE	Included in chapter 2

179. During all three public consultations the GRM was discussed. Stakeholders were explained that GRM to be a continuous process that envisages a collaboration of the Implementation Agency with population during the entire project cycle. The detailed information on this mechanism will be presented in the next chapter.

180. This IEE incorporates comments and suggestions from all concerned stakeholders. The final IEE report will be made available on local language on UCSA official website and in English on ADB's website.

181. As part of information disclosure, the final version of IEE will be translated into local language and will be delivered to local communities and relevant authorities (hokimiyats). The final IEE report will be sent to the Tashkent Province Nature Protection Committee, khokimiyats, UCSA and ADB for further use during the construction and operation phases.

182. For the interested parties the IEE (English and Russian versions) will be available at the offices of the PCU and UCSA and their websites.

183. In order to maintain the transparency of public disclosure process, the semiannual environmental monitoring reports (EMRs) will be published on the ADB and UCSA websites as well. The hard copies of EMRs will be also sent to the Tashkent Province Nature Protection Committee.

184. Future consultations for project stakeholders shall follow as mentioned below.

(i) During detailed design stage, in case of any major changes in the design/alignment/location, the IEE will be updated accordingly. The PCU will hold at least one public consultation meeting at early stages to solicit perceived impacts, issues, concerns and recommendations from affected communities.

(ii) Prior to construction, the PCU will conduct an intensive information, education and communication campaign (IEC) to ensure the sufficient level of awareness/information among the affected communities regarding the upcoming construction, its anticipated impacts, the grievance redress mechanism, contact details and location of the PCU, and status of compliance with the Government's environmental safeguard requirements. Among others, the information banners containing information about the subproject, implementation schedule and contact details of the executing agency and Contractors will be installed at the strategic locations within the subprojects' main areas of intervention. The grievance redress procedure and details will be posted at the offices of the district branches of PCU.

7. GRIEVANCE REDRESS MECHANISM

185. In accordance with ADB SPS (2009), Grievance Redress Mechanism (GRM) will be established after the project effectivity., The main goals of GRM are ensuring the free submission and timely redress of grievances and remarks submitted by aggrieved from the project person and resolve complaints at the project level and prevent escalation to the national courts or ADB Accountability Mechanism. Along with the ADB requirements on development and approval of grievance redress mechanism by implementation of investment projects, grievance redress procedure in Uzbekistan is also regulated by the national legislation of Republic of Uzbekistan, in particular by the law "On Citizens' Applications" and the law "On the order of submission of appeals of physical and legal entities" (2014). The submission procedure for grievances and citizens' applications has been discussed during the public consultations in the project districts.

186. The GRM for the current project takes into account the national legislation, the specificity of the project sites and results of public consultations.

187. PCU will be responsible for establishment of GRM after the project effectivity and act as the GRM secretary to make sure that the GRM is operational to effectively handle environmental and social concerns of project affected persons. The proposing GRM was presented during the public consultations to affected people, discussed with heads of Kibray and Zangiota districts TPS subdivision, UCSA representatives and manager of existing PCU.

188. In addition, the GRM was discussed with PPTA Social Team and updated into the format applicable for both aspects – environmental and social in term of land acquisition and resettlement.

189. After discussion with all parties, the following GRM was proposed which consisted of several levels:

- **Level 1.** The aggrieved person applies to district subdivisions of TPS. After registration of received complaints, district TPS will review nature/specificity of the complaint and will forward it to relevant party for resolving. In parallel, district TPS will inform UCSA about received complaint and after its resolving about undertaken actions. Depending on nature of complaint it may go to Contractor, Land Cadaster, Makhalla or district branch of Nature Protection Committee. For example, complaints related to resettlement issues may be forwarded to Land Cadaster, hokimiyat and makhallas. In case of environmental issue, compliant will be forwarded to Contractor or District Nature Protection Committee. District TPS will be assisted by PMC and PCU's Environmental and Social Specialists in GRM implementation. At this level complaint should be resolved during 2 weeks.
- **Level 2.** In case the grievance was not redressed on the first stage or applicant is not satisfied with the decision made/solution, s/he can submit the grievance directly to Grievance Redress Committee (GRC) under UCSA in Tashkent. The GRC will consist of PCU's manager, designated officers from TPS and Provincial Hokimiyat and PMC's manager. GRC will review the compliant and made decision on its redress. In case the the grievance is not related directly to the project, the further instance will be recommended to the applicant where s/he should apply for the decision making.
- **Level 3.** If the issue was not solved or the applicant is dissatisfied with the decision/resolution, the aggrieved person may submit grievance to Economic Court where decision will be made in accordance with relevant national legislation.

190. Most of grievances on environmental issues are redressed at 1-2 levels. All grievances received from the population will be registered in a logbook which should be available at all levels: at the site office of Contractor, each subdivision of "Suvokova" and province "Suvokova". Even so, the information on received by Contractor grievances and applications from the aggregated persons, and undertook measures should be submitted to

the district subdivisions of “Suvokova” for the accounting all grievances. Consequently / Thereafter the information on all received grievances will be collected at the province subdivision of “Suvokova”.

191. The Contractor should include the information on grievances in monthly progress reports submitted to the province subdivision of “Suvokova”, who in their turn will include aggregated information to the semiannual reports on environmental monitoring submitted to ADB.

192. The aggrieved persons can also use the ADB Accountability Mechanism (AM) through the direct citizens’ application to the Head Quarter in Manila, particularly to Complaints Receiving Officer, Accountability Mechanism Asian Development Bank Headquarters 6 ADB Avenue, Mandaluyong City 1550, Philippines Email: amcro@adb.org, Fax +63-2-636-2086

193. AM is the last resort and ADB has its availability as a recourse in case other mechanisms for dealing with harmful project effects are not successful. GRM is required by SPS and the use of project level GRM should be encouraged first.

8. ENVIRONMENTAL MANAGEMENT PLAN

194. The EMP compiles the comprehensive information gathering a summary of impacts previously identified, the actions required to mitigate those impacts in accordance with the laws of Uzbekistan and the ADB safeguard policy; and the monitoring activities that are to be undertaken as part of the project in order to confirm that they have been effective in reaching their objectives.

195. The EMP also details the institutional arrangements and capacities that currently exist, or that will be put in place during project implementation, to ensure that the IEE (including the EMP) has (i) comprehensively considered both Uzbek and ADB requirements for environmental protection, (ii) identified all likely environmental impacts, (iii) proposed appropriate mitigation measures, and (iv) put in place the necessary systems to ensure that effective procedures for environmental monitoring and control of the project impacts, and mitigation measures are implemented throughout the life of the project.

9.1. Environmental Mitigation measures

196. Mitigation measures required to address the impacts identified by this IEE have been consolidated in the following EMP (Table 15). The table provides information on anticipated impacts during the pre-construction, construction and operation phases with proposing mitigation measures, defining responsible party for their implementation. It is considered that Environmental Specialist (ES) from PCU’s, Environmental Specialist of PMC and Environmental Specialist or designated staff from Contractors will be responsible people for EMP implementation.

Table 15: ENVIRONMENTAL MANAGEMENT PLAN

Impact	Mitigation measure	Responsibility	Cost
Pre-construction stage			
Absence of environmental experts in PMU	• Ensure that Environmental Experts with appropriate education is hired and he/she is involved in the work since the stage of bidding documents preparation.	UCSA, PCU, PMC's Environmental Specialist	ES is part of PCU with appropriate budget
Lack of proper environmental requirements	• Ensure that EMP is included in bidding documents. • Ensure that environmental covenants, tools for resolving issues with Contractors non-compliance with established requirements are included in the bidding documents (such as penalties for violence environmental requirements and etc.) and further in contracts. • Include list of required national approval and licenses (indicated in chapter 2, para 9) are included in the bidding documents and responsible for receiving such permission are identified.	PCU, PMC's Environmental Specialist PCU, PMC's Environmental Specialist PCU, Environmental Specialist	No cost required
Improper assessment of bidders' environmental capacity	• Include in working group of bidding committee environmental expert. • Ensure that awarded Contractors have proper environmental capacity, staffing and budget for EMP implementation.	UCSA, PCU	No cost required
Non-compliance with national environmental legislation in term of conduction environmental impact assessment and required permission	• Prepare ZVOS and submit it to Provincial Nature Protection Committee for revision and approval. • Include the requirements indicated in EA into the final EMP. • Receive official Permission on Special Water Use for Provincial Kadirya Water Intake and project's well fields.	TPS	Will be financed from the TPS budget

Impact	Mitigation measure	Responsibility	Cost
Generation of different potential environmental impacts due to changes in design, layout	• Update or new IEE to be prepared with full compliance of ADB SPS (2009)	Provincial TPP, PCU with PMC	Included in PMC contract
Improper SEMP and SSEMP development	• Within 30 days after contract award and prior to commencing any physical works, Site-specific Environmental Management plans (SSEMPs) will be developed by the Contractors under the guidance of the PMC, and be endorsed by PMC before submission to PCU for approval • Specific SEMPs need to be prepared by Contractors, endorsed by PMC and approved by PCU for the following activities: Traffic Management Plan for construction of distribution network within settlements, Waste management Plan for sites with demolishing works, Hazardous Wastes Management Plans as described in the next sub-section	Contractors develop SEMPs PMC review and endorses PCU approve	Included in the Contractors budget
Construction stage			
Air pollution	• apply watering of construction sites and roads inside settlements during dry season; • cover transported bulk materials; • control speed limitation for vehicles during movement inside of settlements; • all vehicles and techniques must comply with technical requirements and have to pass regular inspection as indicated into the national standards • prohibit open burning of solid wastes generated particularly from labor camps and construction activities; • Clean wheels and under carriage of haul trucks prior to leaving construction site; • Restrict demolition activities during period of the high winds or under more stabile conditions when winds could nevertheless direct	Contractors implement PCU and PMC monitor implementation	Included in the Contractors budget 10000 USD for installation of noise and dust protection screen

Impact	Mitigation measure	Responsibility	Cost
	dust towards adjacent communities; • Install dust and noise protection measure in Keles WDC		
Noise and vibration	• operation of heavy equipment shall be conducted between 7 am and 7 pm only, limitation on speed for vehicles; • In case of receiving any complaints from population, noise measurements need to be conducted and in case of exceeding established standards, additional mitigation actions for decreasing noise level need to be undertaken (establishing temporary sound absorbing barriers and others); • Schedule construction so as to minimize the multiple use of the most noisy equipment near sensitive receivers; • Use of Personal Protective Equipment (PPE) by workers involving in demolishing and construction works in conditions of increased noise level is mandatory; • Inform population about anticipated works.	Contractors implement PCU and PMC monitor implementation	Included in the Contractors budget
Pollution of surface and ground water	• Construction and labor camps, including storage places for lubricant, fuel and other oils will be located 100 m away from water bodies; • Conduction of refueling, oil replacement or repairing works will be banded at the area within 50 m from water streams; • Sanitary water and solid wastes will not be released directly into water streams; • Topsoil stripped material shall not be stored where natural drainage will be disrupted;	Contractors implement PCU and PMC monitor implementation	Included in the Contractors budget
Soil contamination	• The top soil of about 30 cm depth shall be removed and stored separately during excavation work, and after the construction of the main trunk the same soil shall be replaced on the top, in unpaved areas; • The excess top soil and earth reminded after construction new	Contractors implement PCU and PMC monitor	Included in the Contractors budget

Impact	Mitigation measure	Responsibility	Cost
	WDCs will be used at other project sites or disposed at the places prior approved by local government authorities and Nature protection committee; • To minimize soil compaction, movement of all type techniques will be allowed only through identified assess roads; • Contractors will be required to use only authorized carriers with getting all necessary permissions per respective national legislation.	implementation	
Hazardous materials	• all transformers produced before 1994 have to be carefully handled and disposed without pouring oil and avoiding oil leakage. All transformers have to be labeled with sign “Content PCB” and disposed in accordance with ""Guidebook on Environmental Sound PCB Management in Electrical Equipment” (prepared under Moldova POPs Stockpiles Sustainable Management and Destruction project)". Notification on presence of such equipment will be sent to State Nature Protection Committee and Sanitarian Epidemiological Station for their further actions; • A separate Waste Management Plan needs to be developed by Contractor, endorsed by PMC and approved by PCU for the construction sites with demolishing works. The Plan has to include information about type of generating wastes, procedure of their collection and disposal; • Used oil shall be collected into containers placed at the concreted sites and disposed to national oil company designated for accepting and treatment of used oils; • Refueling vehicles and replacement oils also have to be conducted in special designated and properly equipped places. Emergency facilities have to be at the place for elimination of accident of oil spills. • Prior to commencement of rehabilitation works at the WDCs, EO	Contractors implement PCU and PMC monitor implementation	Included in the Contractors budget

Impact	Mitigation measure	Responsibility	Cost
	with NES of PMC will conduct vision observation of old buildings and facilities on presence of asbestos materials. • In case of presence such materials, will developed by Contractor a detailed "Waste Asbestos-Containing Material Management Plan" is to be developed by Contractors (Appendix 11)		
Non-hazardous materials	• Segregation of wastes on recyclable and non-recyclable wastes; • Selling recyclable wastes to relevant organizations (paper, scraps, accumulators) and timely disposal of non-recyclable wastes to the landfill, determinate by local hokimyats. • Providing hydro isolated septic tank for collecting waste waters at the camp sites and bio toilets for workers at the construction sites and timely disposal of waste waters to the local waste water treatment plants. • Segregation of wastes on recyclable and non-recyclable wastes; • Selling recyclable wastes to relevant organizations and timely disposal of non-recyclable wastes to the landfill, determinate by local hokimyats; • Burning of waste on any construction site is forbidden with the exception of stub and small branches from felled trees and bushes, which is better to be burned in order to avoid pest dissemination; • Create a safe (sheltered with concrete foundation) storage facility	Contractors implement PCU and PMC monitor implementation	Included in the Contractors budget
Losses of trees and crops, losses of income due to impact on business	• Site cleaning for extension existing and construction new WDCs should be done exactly within marked area. • Conduction of a preliminary survey together with Contractor and respective representative of Provincial Nature Protection Committee (PNPC) to define trees for cutting and payments in accordance with CMR # 290 dated from 2014.	Contractors implement PCU and PMC monitor implementation	Included in the Contractors budget Cost for tree (non-fruits) for fees is approximately USD 9200

Impact	Mitigation measure	Responsibility	Cost
	• Construction during agricultural off- season may further minimize the impact (loss of agricultural income). Major crops in the project affected are wheat, sunflower, vegetables and cotton, which growing seasonally; • If cutting trees is unavoidable, to compensate losses as indicated in the LARP for this project. • Greening of WDCs as part of the project design and replanting trees along to pipe alignment; • Inform community in advance about planning works; • Schedule and conduct civil works in the way to minimize period with limited access to enterprises and closing roads; • Provide safe access to affected properties.		
Health and safety issues	• Contractor and PMC will inform population about anticipated works in the settlement in advance; • Contractors will require to develop a Traffic Management Plans with clear indication routes of vehicles' movements, placement special signs, and speeding allowance inside of the settlements and schedule transportation activities by avoiding peak traffic periods • The Traffic Management Plans will be approved by Traffic Police and disclosed to local communities prior commencement of construction works on respective sites; • Clear signs will be placed at construction sites in view of the public, warning people of potential dangers such as moving vehicles, hazardous materials, excavations etc. and raising awareness on safety issues. • Contractor will require to install temporary bridges and effectively organize works, which will allow avoid unreasonable delaying of	Contractors implement PCU and PMC monitor implementation	Included in the Contractors budget

Impact	Mitigation measure	Responsibility	Cost
	construction works; • All construction sites will be properly lightened and fenced; • Development of Site Specific Plans for campsites; • After completion works all roads shall be rehabilitated at least up to condition of pre-construction stage. • Development Occupation Safety and Health Plan, which covers among others the following topics: usage of PPE, working procedure with hazardous materials (such as asbestos materials, PCBs etc.), training activities and others. The workers have to be provided with appropriate living conditions: safe water supply, washing conditions. • Carry out regular awareness campaigns among work staff, including specific hazards associated with the spread of HIV/AIDS		
Construction camps	• Development of Separate Site Specific EMP for labor/construction camps (or part of general SEMP). • SSEMP for labor/construction camps will describe waste collection and disposal procedure, set up of camp facilities (such as a storage place for construction materials and techniques if any, laundry and toilets, access roads). • If washing equipment and vehicle is planning to be conducted at the labor/construction camp's site, appropriate wastewater treatment facilities have to be organized on the camp and respective permissions on water intake and waste water disposal need to be received by Contractor from Nature Protection Committee • Provide safe and adequate living conditions for workers, such as	Contractors implement PCU and PMC monitor implementation	Included in the Contractors budget

Impact	Mitigation measure	Responsibility	Cost
	dining rooms, toilets, shower rooms etc. • Contractors shall instruct all the workers to act in a responsible manner. After completion works, construction camps		
Archeological heritages: Chance of finding heritage	• Excavation and other works need to be suspended immediately; • Area with possible heritage shall be fenced with fencing tape; • A designated focal point from a local administration (khokimiyat) needs to be informed and invited for assessment of potential heritage and undertaken necessary actions; • Civil works at the finding place could be recommenced after obtaining permission from the focal point.	Contractors implement PCU and PMC monitor implementation Representative from Khokimiyat assist in assessment and undertake necessary actions	Included in the Contractors budget
Construction sites and areas used for construction camps without proper cleaning and reinstatement works	• After completion of the main construction Contractor shall provide full reinstatement of the construction and camp sites by bringing them to its primary condition; • Remove all rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required; and • All disrupted utilities restored All affected structures rehabilitated /compensated; • The area that previously housed the construction camp is to be checked for spills of substances such as oil, paint, etc. and these shall be cleaned up; • All hardened surfaces within the construction camp area shall be ripped, all imported materials removed;	Contractors implement PCU and PMC monitor implementation State Nature Committee accept works	Included in the Contractors budget

Impact	Mitigation measure	Responsibility	Cost
	• PMC will conduct post-construction audit during defect liability period to make sure that construction sites and camps are properly cleaned and restored to pre-project conditions before acceptance of works before hand-over to TPS and local khokimiyats.		
Operation phase			
Impact on air	• Design of pump station and WDCs will be done to ensure compliance with national and IFC's standards on noise and vibration level for public and worker places; • Per national legislation assessment of working places conditions will be implemented once per three years; • During maintenance works periodically water down temporary roads on site; • Immediately replacing defective equipment and removing it from the work site; • No truck movements in inhabited areas between 22:00 and 6:00;	TPS	Included on TPS operational costs
Impact on water resources	• Conduction of awareness program on proper and timely waste water disposal for population in the project area; • Discharging chemical's reagents residual into water stream without treatment will be prohibited. Special procedure of utilization of such reagents, indicated in Standards for Drinking Water, 2011 has to be implemented.	TPS	Included on TPS operational costs
Soil pollution	• Permits for waste disposal should be received from Provincial Nature Protection committee.	TPS	Included on TPS operational costs

Impact	Mitigation measure	Responsibility	Cost
	• Sludge from WTP has to be timely disposed at the landfill and it could used as intermediate layer. Untimely disposal of generated sludge and place of its disposal will be provided in environmental permission (limits on sludge disposal) which “Suvoqova” has to get prior commissioning of WTP.		
Health safety	• Emergency measures in the operation manual to be provided by the equipment suppliers; • Providing required facilities: storage of SHC in well ventilated rooms; • Applying special marking for containers with this agent; • Using vehicles with increased safety measures for transportation; • Special procedure need to be developed and applied for utilization leakages	TPS	Included on TPS operational costs

9.2. Environmental Monitoring

197. To ensure that mitigation actions are implemented in accordance with the requirements of the EMP, monitoring shall be undertaken as follows:

- Instrumental Monitoring for environmental quality such as air, noise, vibration, water – This shall be performed monthly by a certified laboratory to be hired under the contractors' contract with guidance and approval from the PMC. Schedules, parameters, locations are indicated by the Project EMP and shall be endorsed by the PMC.
- Observational Monitoring – Throughout the Projects Construction phase PMC shall continually monitor the Contractors actions. This will be achieved through weekly inspections of the Contractors environmental performance by PMC's national environmental specialist throughout the construction period. PMC shall have the right to suspend works or payments if the Contractor is in violation of any of his obligations under the EMP and SSEMPs.

198. Developed within current IEE an Environmental Monitoring Plan provides details on required measurements, the locations of measurements points, frequency and responsibilities associated with each monitoring task (Table 16).

199. Besides instrumental environmental monitoring indicated into the Table 16, monitoring of EMP's implementation will be carried out. For efficient implementation of this activity it is proposed that several levels of supervision activities need to be undertaken: (i) daily inspection by Contractor's Environmental Specialist, (ii) monthly inspection by PMC's Environmental Specialist, and (iii) periodic audit (quarterly) by PCU's ESS.

200. Results of environmental performance including monitoring activity have to be properly documented and reported. As indicated in EMP and Chapter 7, each Contractor has to perform a book log book with information about conducted training on EH&S for workers and another book for registration accidents during the civil works. Original records on results of required instrumental environmental monitoring (air and water quality) also need to be kept in the separate file for records.

201. It is recommended that prior commencement of the civil works, PMC will develop for Contractors a format for site inspection to optimize a process of environmental supervision. The format may could be in form of checklist with list of mitigation measures to be implemented at the construction sites, their performance status and some explanations as required.

Table 16: ENVIRONMENTAL MONITORING PLAN

Mitigation measures	Parameter to be monitored	Location	Frequency	Responsibility	Standards	Cost
Construction Stage						
Air quality	NO_x, SO_2, CO Dust	Construction sites located within settlements	monthly, and if complaints received during construction works	Contract will hire certified laboratory to conduct analysis	Hygienic norms. List of Maximum Allowable Concentrations (MACs) of pollutants in ambient air of communities in the Republic of Uzbekistan including Annex 1. SanR&N RUz No.0179-04[16]	Included in Contractor's contracts. 2 sites during 5 years. 200 USD per I analysis. Total 24000 USD
Noise level	Noise level	1. Construction sites with demolishing works 2. Living houses located next to construction sites	monthly, and if complaints received during construction works	Contractor	1. "Sanitarian Norms of allowed level of noise at the construction sites" SanR&N №0120-01 2. SanR&N No.026709 Sanitarian Rules and Norms on providing allowed noise level into the living building, public building and territory of living areas[15]	Included in Contractor's contracts. 4 devises for four contractors 400 USD per Unit, Total 1600 USD
Water quality	1. Visual monitoring of surface water on existence oil film and	Water bodies located next to construction sites (points 1 and 3)	1. Visual during each visit of construction site (at least	1. Contractor 2-3. Contract will hire certified	1. Absence of oil films on the water bodies surface. 2-3. "Sanitarian requirements for development and approval	Included in Contractor's contracts. 2 months from 2 points, 200 USD per

[16] National standards is complies with international IFC standards

Mitigation measures	Parameter to be monitored	Location	Frequency	Responsibility	Standards	Cost
	turbidity 2. Oil products, dry residual, BOD, COD, pH, ammonia, SO_4		weekly). 2. Monthly and per complaints from people	laboratory to conduct analysis	of maximum allowed discharges (MAD) of pollutants discharged into the water bodies with waste waters". SanR&N No 0088-99	unit. Total 800 USS
Operation Stage						
Air quality	Noise level	Pump stations	1. Ones per three years as part certification of work places 2. Per complaints from people on noise disturbance due to work of pump station	TPS	1. "Sanitarian Norms of allowed level of noise at the construction sites" SanR&N №0120-01 2. SanR&N No.026709 Sanitarian Rules and Norms on providing allowed noise level into the living building, public building and territory of living areas	Cost is included into the annual budget of TPS
Water quality	Monitoring in accordance with 13.060.20. Drinking water. O'z DST 950:2011 (instead of O'z DST 950:2000) – Drinking water. Hygienic requirements and quality control.					Cost is included into the annual budget of TPS
Sludge disposal	Timely disposal from territory of WTP	Kadirya	Per filling sludge ponds	TPS		Cost is included into the annual budget of TPS

9.3. Reporting

202. Monthly Contractor's environmental reports shall consist of: filled formats from each construction site along with results of instrumental environmental monitoring, brief information on conducted training, received complains and their resolving, accidents during the civil works if any. Contractors will submit their report to PMC for endorsement before submission to TPS and PCU.

203. The PMC's environmental reports will aggregate all Contractors Environmental Report with adding results of own inspections of EMP implementation. The reports also have to include information on undertaking on-the job and planned training, capacity building activities, proposed actions on improvement of EMP implementation by Contractors. The report will be submitted to TPS and PCU on quarterly base.

204. The PCU's ES, assisted by PMC's environmental specialists, will develop semi-annual Environmental Monitoring Reports based on information reviewed within PMC's Environmental Reports (EMR) and own observation from site visits. The recommended format of EMR is presented in ADB SPS (2009) Toolkits distributed during the two sets of Environmental Training (2013 and 2016) where representatives of existing PCU under UCSA participated.

205. PMC will conduct post-construction audit during the liability period to check compliance with EMP requirements completed construction and camp sites. The audit has to be conducted before hand-over project's objects to TPS and hokimiyats. Based on post-construction audits results, PCU's ES with PPMC assistance will prepare final Environmental Monitoring Report to demonstrate that the project was properly completed. *Implementation arrangements*

9.4.1 Institutional arrangements

206. Being directly accountable to the Cabinet of Ministers, Uzbekistan Agency 'Uzkommunkhizmat' (UCSA) is a central government body with overall responsibility to improve water supply and wastewater services nationwide. It formulates policy, advises on reforms and decrees, and in particular is a focal execution agency for foreign investments in the sector. Its activities are financed by a combination of Government, utility and development bank project funding.

207. Currently five ADB funded projects are being implemented in UCSA under the Project Coordination Unit (PCU) management. PCU has generally good procurement capacity and well established procurement processes. PCU is well familiar with ADB procurement guidelines due to PCU is implementing ADB projects since 2009.

208. The PCU at UCSA will be responsible for implementation of EMP to comply with ADB's safeguards requirements and environmental national regulations. Present has Environmental and Social Specialist. Under the project, PCU will hire one more full-time safeguard position thus there will be a full-time environmental specialist (ES), who will be assisted by the environmental specialists of the project management consultant (PMC) in overseeing the implementation of EMP. The cost for implementing EMP will be financed by the project, specifically: the costs of mitigation measures and environmental monitoring will be included in the construction contracts, and the cost for environmental supervision will be included in the consulting service of the PMC. PCU is responsible for overall environmental compliance with SPS 2009.

209. Contractors will be responsible for implementing mitigation measures. Within 30 days after contract award and prior to commencing any physical works, Site-specific Environmental Management plans (SSEMPs) will be developed by the Contractors under the guidance of the PMC, and be endorsed by PMC before submission to PCU for approval. The

SSEMP is the document that the Contractors shall prepare outlining how he intends to implement the EMP and ensure that all of the mitigation and monitoring is completed according to the implementation arrangements specified in this EMP. SSEMPs will be needed for major environmental issues and most critical sites relating to sensitive receptors. During construction, the Contractors must retain the expertise of a full-time Environmental Officer (EO) to implement and continually update the SSEMPs, and to report on the implementation of mitigation measures throughout the contract period.

210. The PMC is tasked with specific responsibility to assist PCU in ensuring safeguard compliance of civil works – with particular emphasis on the monitoring of implementation of EMP through the Contractors SSEMP and related aspects of the project. PMC shall retain the use of Environmental Specialist, both national (NES) and international (IES), to ensure that the Contractor is compliant with his environmental obligations. It is required that the IES provides a short training program to the PCU safeguard person and Contractors EO prior to the start of construction to develop their knowledge and understanding of the environmental, social, health and safety aspects of the Project. The IES will also be responsible for developing a comprehensive proposal for establishment and operations of the Environmental awareness centers. Training EHS for contractors need to be conducted throughout project implementation, at every visit of the IES. TORs for IES and NES can be found in the PMC contract.

211. In addition to the Contractor's full-time EO and the PMC's part-time NES backed up with an IES, it is required that PCU designate a full-time safeguard position to manage and coordinate the contractors and PMC in reporting to EA and ADB on safeguard performance of the project. PCU is responsible for overall EMP implementation and will be assisted by the PMC. The PCU's responsibilities include the following, but not limited to:

- Ensure the bidding documents of PMC and Contractors include all tasks as described in the approved EMP
- Supervise the PMC and Contractors in EMP implementation for overall compliance with SPS 2009 requirements and project environment-related legal covenants
- Ensure all necessary government permits and license, including ecological expertise opinion, for all civil works will be obtained.
- Approve SSEMPs which will be prepared by the Contractors and endorsed by the PMC
- With assistance of the PMC, prepare, submit to the EA and ADB, and disclose semi-annual environmental monitoring reports on ADB website and in UZB
- Report in a timely manner to ADB of any non-compliance or breaches with ADB safeguard requirements and take corrective actions promptly.
- Update the IEE in case of technical design changes or unanticipated impacts
- Establish a Grievance Redress Mechanism (GRM) after the project effectivity and act as the GRM secretary to make sure that the GRM is operational to effectively handle environmental and social concerns of project affected persons
- Build up and sustain institutional capacity in environmental management

212. TPS will hire full-time Environmental Specialist who will in charge for implementation of EMP and ensure compliance with national environmental requirements. Along with implementation mitigation measures indicated in EMP, he/she will responsible for in-time development and submission environmental reports to Statistical Committee of Uzbekistan and State Nature Protection Committee; obtaining and timely updating permissions on discharge waste water, exhausted gases in air and disposal of solid wastes; special permission on water use.

213. State Nature Protection Committee through it is branches in Zangiota and Kibray districts will be also involved in the process of project implementation and further operation. Provincial Nature Protection Committee will review local Environmental Assessment (ZVOS) and approve it if the ZVOS complies with national requirements. Moreover, requirements

indicated in Environmental Appraisal will be mandatory for implementation and it will be monitored by inspectors from district branches of Nature Protection Committee. Representatives of the Committee will also participate into the hand-over process as member of State Acceptance Commission.

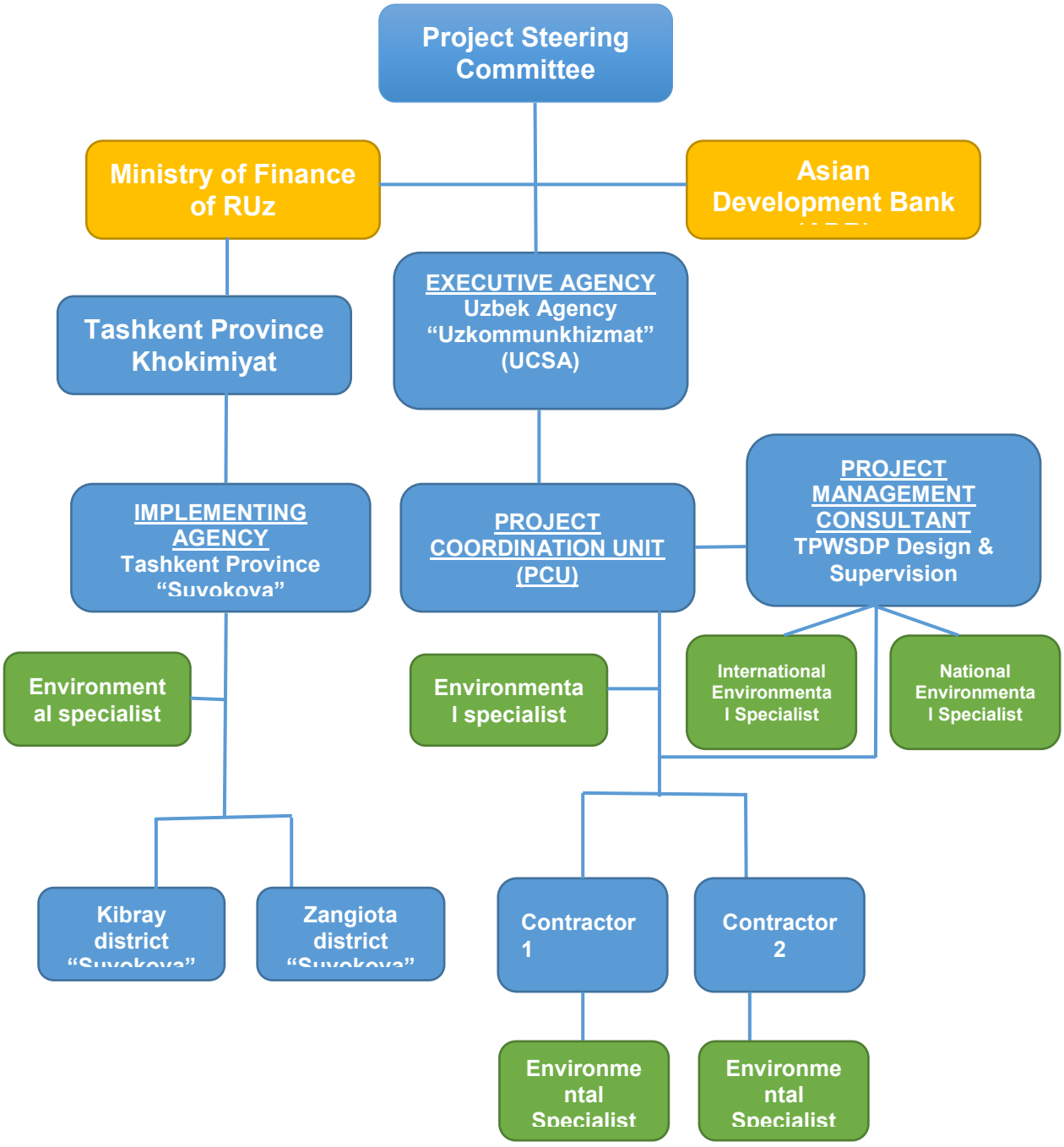


Figure 11: Project Institutional Structure

9.4.2 Capacity building activity

214. It is proposed the Project's capacity building on environmental aspects will cover three main directions:

(i) **PCU's capacity** on EMP implementation during construction stage - to enhance PCU's capacity on the EMP implementation PMC Environmental Specialist will provide respective training for PCU's ESS Specialist and further assistance in monitoring SEMP implementation and guidelines for Contractor's Environmental Specialists as required.

(ii) **TPS's capacity** on overall environmental performance during the project operation – PMC jointly with ESS Specialist will develop and conduct training program for proper disposal of sludge from Kadirya WTP, wastes from chemical laboratories, on general compliance with national environmental requirements such as timely receiving necessary permission, conduction monitoring of environmental performance and submission reports to respective national agencies and etc.

(iii) **awareness program for population** in the project area – for the project sustainability it is important along with physical interventions, institutional improvements and financial enhancing, to increase people awareness about water resources use. The program should be targeted on two groups of people – (i) households, daily consumers and (ii) young generation (pupils, colleges' students). The program should be developed by PMC and implemented along with the project construction activities.

215. In case of determining a presence of PCBs in oil from old transformers and asbestos materials in demolishing buildings, separate training for handling and disposal of hazardous materials to be conducted by for PCU and Contractors by PMC. The tentative plan of required training is presented in Table 17.

Table 17: Tentative program of training for PCU, TPS and Contractors staff

	Name of training	**Time**	**Recipients**	**Organizer**
1	Overall EMP implementation, Environmental Monitoring Reports preparation	Prior commencement of the civil works	PCU ESS Specialist	PMC
2	SEMP implementation	Prior commencement of the civil works	Contractors workers	Contractor's Environmental Specialist with support of PMC
3	Handling and disposal of hazardous materials	Before starting respective works	PCU ESS Specialist Contractors workers	PMC
4	On occupational health and safety	Regularly during construction and operation period	Contractors workers TPS staff	Contractor's Environmental Specialist with support of PMC, TPS safety Engineer
5	Handling and disposal chemicals from water quality laboratories of TPS	Regularly during operation phase	Staff of existing and new water quality laboratories	TPS

216. As for the program for young generation, it is proposed to create an education center under the Provincial "Suvoqova" administration where pupils and college and lyceum student will improve their knowledge about water management with emphasis on the drinking water

and supply and sanitation. The following topics could be presented through demonstrations of the following topics: water management history in Central Asia, water resources measurements, waster cycle, water treatment process and water saving devices etc. The center need to be equipped with demonstration posters, models and practical exercise rooms.

9.4.3 Cost estimation for EMP implementation

217. Costs required for implementing the EMP will cover the following activities:

(i) Conduction instrumental environmental monitoring of air and water by Contractors;
(ii) Conduction environmental monitoring measures and getting necessary permissions; and
(iii) Awareness program including organizing of education center.

218. Although some of the measures included in EMP are an integral part of the civil works (watering, storage of top soil and etc.), some measures (establishing sound-absorbing panels, temporary bridges, handling and disposal of hazardous materials) are required additional funds. Cost estimation for EMP by the main items are presented in Table 18:

Table 18: Cost estimates for EMP implementation

Item	Quantity	Unit cost, USD	Total Cost, USD	Remarks
Instrumental Monitoring				
Water quality	4	200	800	To be conducted by Contractor on the monthly base as indicated in EMP
Air quality SO_2, NO_2, CO	120	200	24000	Analysis will be conducted by external laboratory. Cost is included in Contractors budget
Noise measurement devices	4[17]	400	1600	Devices could be purchased for long-term use
Environmental Mitigation Measures/Permissions				
Cutting trees	40[18]	230	9200	Cost will be included into the Contractors budget
Asbestos Management	8	250[19]	2000	This mitigation measure will be implemented in case of identification asbestos materials during rehabilitation works at WDCs. Expenses will be included in Contractor

[17] four devices for four Contractors in both districts
[18] cost for trees was accepted as average with diameter 16-20 cm, per RCM of RUz#290 dated 20 October 2014 and converted into the USD based on rate of Central Bank of Uzbekistan
[19] Calculation based on Asbestos materials management plan developed for Kyrgyz Republic: Issyk-Kul Sustainable Development Project (2015)

				contracts
Dust and noise control barriers	1	10000	10000	To be installed by Contractor at Keles WDC
Environmental awareness program				
Training	5	3000	15000	Budget is included in PMC contracts
Information Centre	1	80000	80000	PMC will be in charge for procurement of the information Center
Subtotal			**142600**	
Miscellaneous			14260	10% of subtotal
Contingency			18823,2	12 % of subtotal + Miscellaneous
Total			**176043,2**	
Staffing				
PMC Environmental Specialist				
International, p/m	6	15000	105000	
National	18	1200	21600	Cost is included in PMC budget
PCU National Environmental Specialist,	60	1200	72000	Cost is included in PCU budget
TPS environmental staff				TPS budget
Total for staffing			**198600**	

219. Expenses related to staffing of PCU, PMC and Contractors with Environmental Specialists are included into their budget, therefore they are excluded from total budget for EMP.

9. CONCLUSION AND RECOMMENDATION

220. Conducted IEE showed importance of the proposed project which will improve lining conditions of population in 2 districts of Tashkent province. It will also improve environmental situation in the project area through wide integration of metering system, awareness program and capacity building for population and Tashkent Province “Suvoqova”. All together it will contribute a rational use of water in the region with increasing scarcity of this resource.

221. Along with this benefits IEE identified several aspects which need to be addressed during project preparation and implementation both in short and long terms perspectives.

222. Adequately institutional set up with proper allocating human resources and funds need to be undertaken from the project beginning stages and to be continued during the operation. Recommended capacity building program is aimed to improve UCSA and Tashkent Province “Suvoqova” environmental performance to meet national environmental requirements.

223. It is important to make sure receiving of all necessary permission from national relevant agencies prior commencement the civil works and the the project commissioning.

224. IEE showed that during project implementation the project will have temporary impacts on air, water quality and may cause some inconveniences for local population. However, all anticipated impacts could be properly mitigated by implementation of the EMP developed within current IEE.

225. Due to absence of facilities to conduct analysis on content of PCBs in demolishing transformers, they have to be properly marked and storage in accordance with indicated regulation

226. Due to implementation of significant part of the project works inside of settlements developed mitigation measures need to be strictly carried out to ensure safety for population and workers.

227. Conduction of environmental monitoring at all stages of the project is one of the crucial aspects. Monitoring of EMP implementation and adequate reporting at all levels of project cycle will provide effective mitigation of anticipated impacts. Environmental monitoring need to be carried out at the stage of operation phase as well.

228. Implementation Agency should ensure a proper functioning of a Grievance Redress Mechanism developed within current IEE and discussed with various stakeholders during Public Consultations.

229. During whole process of the project implementation it is important to be in touch with local communities, comply with all national environmental and EMP requirements, and conduct awareness program among population which ensure sustainable operation of the rehabilitated water supply system.

10. Appendixes

Appendix 1: Data on water related diseases in the project districts

ЎЗБЕКИСТОН РЕСПУБЛИКАСИ
СОҒЛИҚНИСАҚЛАШ ВАЗИРЛИГИ
ТОШКЕНТ ВИЛОЯТИ ДАВЛАТ
САНИТАРИЯ - ЭПИДЕМИОЛОГИЯ
НАЗОРАТИ МАРКАЗИ

O'ZBEKISTON RESPUBLIKASI
SOGLIQNISAQLASH VAZIRLIGI
TOSHKENT VILOYAT DAVLAT
SANITARIYA-EPIDEMIOLOGIYA
NAZORATI MARKAZI

100000, Toshkent sh., Q.Niyoziy 1-tor kuchasi,12, tel.: 286-14-48, 286-11-05,
л/с40012186026269795010005400б: ИНН 200540827, Тош vil Казначейства р/с 23430000504632029023
в. ХККМ МБ Тош вил ББ МФО 00025 ИНН: 300515520

№ 4[illegible]
«[illegible]» апрел 2016 йил.

Тошкент вилояти
"Сувоқава" ДУК директори
Н.Аминовга

Тошкент вилояти Давлат санитария эпидемиология назорати маркази Сизнинг 2016 йилдаги 18 апрелида тақдим этилган 04-02/921-сонли хатингиз белгиланган тартибда ўрганиб чиқилди ва натижалари юзасидан Қибрай, Зангиота, Янгийўл Чиноз туманлар бўйича жадвал кўринишида қуйидаги маълумотларни 2 варокда илова қилади.

Бош врач Г.Х.Таджибаев

Ижрочи: Г.Э.Мусабеков

Показатели заболеваемости Ташкентской области

Кибрайский район

Заболевание	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Брюшной тиф	-	-	-	-	-	-	-	-	-	-
Сальмонеллез	12	13	4	2	10	17	10	3	1	8
Дизентерия	31	59	40	40	77	95	85	44	56	83
ОКЗ	392	367	362	306	342	323	427	392	379	445
Вирусный гепатит А	116	262	164	186	131	266	112	121	149	56
Туберкулез	89	93	101	90	86	78	69	76	76	64
Энтеробиоз			2287	2004	2108	1556	1390	1314	1615	1225

Зангиотинский район

Заболевание	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Брюшной тиф	1	-	-	-	-	-	-	-	-	1
Сальмонеллез	58	75	77	47	78	109	31	18	15	10
Дизентерия	30	46	46	60	139	163	113	76	53	73
ОКЗ	499	591	416	340	739	652	662	679	780	777
Вирусный гепатит А	247	390	220	158	319	266	233	385	593	263
Туберкулез	89	95	89	88	158	125	141	139	121	136
Энтеробиоз			1341	1580	5096	4874	5054	4698	4331	4133

Appendix 2: Location of noise sample points

	
Point 1. Kibray dsitrcit, Kadirya WTP: 1- exisitng WTP, 2 – closest house – measurement point, 3 - fields	***Point 2. Zangiota district, existing Keles WDU***: 1- WDU, 2 – closest house 2 – measurement point, 3- other houses
	
Point 3. Zangiota district Oltin Tepa, new WDU: 1- Construction site, 2 – Closest house – measurement point, 3 – houses, 4 - workshop	***Point 4. Zangiota district BK-82***, ***new WDU***: 1 – construction site, closest house – measurement point, agrilculture land

Appendix 3: National water quality standards

Maximum permissible concentration of pollutants in the water of surface water bodies by usage categories mg/m^3						
	Uzbek standards for different type of using water body				**International Standards**	
Pollutants	**Fishery**	**Communal**	**Drinking water**	**Irrigation*)**	**WHO standards (drinking)**	**EPA standards (drinking)**
COD	15	40	30	40		
BOD20, mgO/L	3	3-6	3-7	10	3.6	
pH	6.5-8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.5-9.5	6.5-8.5
Suspended material	15	30	30	50	**	
Mineralizatio n	1000	1000	1000-1500	1000	1000	500
Including: sulfates	100	500	400-500		500	250
Chlorides	300	350	250-350		250	250
Ammonium nitrogen (ammonium salt) (NH4 +)	0,5	2	0,5	1,5	0.2	
Nitrite	0,08	3,3	3		3/0.2*	1
Nitrate	40	45	45		50	10
Phosphate (PO_4^{3-})	0,3	1	3,5	1		
Ether – soluble	0,05	0,8	0,8	0,8		
Oil products	0,05	0,3	0,1	0,3		
SAS	0,1	0,5	0,5	0,5		
Phenol	0,001	0,001	0,001-0,1	0,001		
Fluorine (F)	0,05	1,5	0,7	1		
Arsenic (As)	0,05	0,05	0,05	0,1	0.01	0.01
Iron (Fe)	0,05	0,5	0,3-3	5	0.3/2*	
Chromium (Cr6-)	0,001	0,1	0,05	0,1	0.05	0.1
Copper (Cu)	0,001	1	1	1	2	1,3
Zinc (Zn)	0,01	1	3	5	0.01/0.05*	5
Cyanides	0,05	0,1				
Lead (Pb)	0,03	0,1	0,03	0,2		
Nickel (Ni)	0,01	0,1	0,1		0,07	
Cadmium (Cd)	0,005	0,01			0.003	0.005
Cobalt (Co)	0,1	1				
Molybdenum	0,0012	0,5	0,25		0,07	

Maximum permissible concentration of pollutants in the water of surface water bodies by usage categories mg/m^3						
	Uzbek standards for different type of using water body				International Standards	
Pollutants (Mo)	**Fishery**	**Communal**	**Drinking water**	**Irrigation*)**	**WHO standards (drinking)**	**EPA standards (drinking)**
Strontium (Sr2+)		2	7			
Selenium (Se)	0,001		0,01		0.01	0.05
Mercury (Hg)		0,005	0,0005		0.006	0.002

* - upper figure is for surface water, lower figure is for ground water

**Reliable data on possible health effects associated with the ingestion of TDS in drinking-water are not available, and no health-based guideline value is proposed.

Appendix 4: Registration list of participants attended Public Consultation

Регистрационный лист

Общественные слушания по проекту: «Реконструкция водозаборных сооружений для водоснабжения сельского населения Кибрайского, Чиназского, Зангиатинского и части Янгиюльского районов Ташкентской области». Хокимият Кибрайского района, актовый зал, Июнь 8, 2016

Kibray district / Кибрайский район

No.	Full Name / Ф. И. О	Worked place / Наименование места работы	Adress / Адрес (КФЙ,МФЙ)	Signiture/ Подпись
1	Юлдашев Эркин	Истиқлол ИФЙ раиси	Чинобод ИФЙ	[signature]
2	[illegible]	Мустақиллик МФЙ	Чинобод КФЙ	[signature]
3	Тошев Шавкат	[illegible] МФЙ	Чинобод КФЙ	[signature]
4	Курбаев Шухрат	Председатель мах. комит. „Бо	Ботаника КФЙ	[signature]
5	[illegible]	Ёшлик маҳалла раиси	Ёшлик	[signature]
6	Каримов Зокиржон	Бўстон маҳа. фук. йиғ. раис	Бўстон	[signature]
7	Ахмаджонов Адхам	Ёнариқ. КФЙ, раис.		[signature]
8	Мухиддинов Эркин	Янги ҳаёт. МФЙ раис.		[signature]
9	Муратов Гулом	Ёнариқ. МФЙ раис.		[signature]
10	Каримов Шерзод	Курувчи МФЙ раис.		[signature]
11	Жамолбердиев Асад.	Маданият МФЙ, раис		[signature]
12	Абдуллаев Акрам	[illegible] МФЙ раис		[signature]
13	[illegible]	Меҳнат МФЙ раис		[signature]
14	Амангельдиев Ержан	Дархон МФЙ раис	Оқовоқ КФЙ	[signature]
15	Сапарлиев Зокир	Зафаробод КФЙ	Кўкқўрғон МФЙ	[signature]
16	Курбаев Сирожиддин	Зафаробод КФЙ	Янгиобод МФЙ	[signature]
17	Аминов Баходир Об.	Узумзор маҳалласи, раис	Оқовоқ КФЙ	[signature]
18	Низаметов У.	Обл. водоканал Кибр. район	Кибрай тумани	[signature]
19	Сарсенов Пулат Эр.	Раис, Оқовоқ, Оқолтин МФЙ	Оқовоқ КФЙ	[signature]
20	Шербоев Камолиддин	Раис, [illegible]	Зафаробод КФЙ	[signature]
21	Шоикромов Ш.	Раис, Чинобод МФЙ	Чинобод КФЙ	[signature]
22	[illegible] К.	Раис Чинобод	Чинобод КФЙ	[signature]
23	Махкамов Косимжон	СЭС, Кибрай район, зав. отдел	Кибрай тумани	[signature]
24	Одилов Зоҳид	Оққўрғон МФЙ, раис	Оққўрғон КФЙ	[signature]
25	Рустамов Улуғбек	Янги Оққўрғон, раис	Янги Оққўрғон КФЙ	[signature]

ADB

Регистрационный лист

Общественные слушания по проекту: «Реконструкция водозаборных сооружений для водоснабжения сельского населения Кибрайского, Чиназского, Зангиатинского и части Янгиюльского районов Ташкентской области». Хокимият Кибрайского района, актовый зал, Июнь 8, 2016

ADB

Kibray district / Кибрайский район

No.	Full Name / Ф. И. О	Worked place / Наименование места работы	Adress / Адресс (КФЙ,МФЙ)	Signiture/ Подпись
26	Салойдинов.Ш	Заравобод м.ф.й	Котиб	[signature]
27	Комилов. А.	Май м.ф.й	Раиси	[signature]
28	Шарбоев. Х	Пулат қадам м.ф.и	Раиси	
29	Кузиев С.	Янги обод м.ф.й	Раиси	
30	Тухтаев Рабжон	Район инспекция кат. отдела [illegible]	Кибр рн.	[signature]
31	Шамаханов Бакир	маҳалла МФИ, посбон.	[illegible]	[signature]
32	Очилов Х	[illegible] посбон	Янгиобод	[signature]
33	Тунисов Т.	[illegible] посбон	[illegible]	[signature]
34	Ганиев. Д.	Ен. посёлок посбон	[illegible]	[signature]
35	Абдуров А	Ёнариқ КФИ	Ёнариқ	[signature]
36	Махкамов И	Бурижар	Бурижар	[signature]
37	Мухамедов Г	[illegible]	[illegible]	[signature]
38				
39				
40				
41				
42				
43				
44				
45				
46				
47				
48				
49				
50				

ADB

Регистрационный лист

Общественные слушания по проекту: «Реконструкция водозаборных сооружений для водоснабжения сельского населения Кибрайского, Чиназского, Зангиатинского и части Янгиюльского районов Ташкентской области». Хокимият Зангиатинского района, актовый зал, Июнь 9, 2016

ADB

Zangiota district / Зангиатинский район

No.	Full Name / Ф. И. О	Worked place / Наименование места работы	Adress / Адресс (КФЙ,МФЙ)	Signiture/ Подпись
1	[illegible]	Сирдаш М.Ф.Й раис	Туркистон КФЙ	[signature]
2	Рахимов	"Туркистон" Тарнов		[signature]
3	Ильхамова М.	"Тарнов" МФЙ	Туркистон кфй	[signature]
4	Расулова Г	"Бахшуни" МФЙ	Туркистон КФЙ	[signature]
5	Туренова Д	"Интор" МФЙ котиба	Туркистон КФЙ	[signature]
6	Кисматов К.	раис. буйенчиф.	Кизгалдок КФЙ	[signature]
7	Зиеева Д	Туронобод МФЙ котиб	Туркистон КФЙ	[signature]
8	Бекметов	Кахрамон МФЙ. раиси	Эркин КФЙ	[signature]
9	Худайбергенова М	Кахрамон МФЙ котиба	Эркин КФЙ	[signature]
10	Абдурахмонова	Истиклол МФЙ котибаси	Чувамачи КФЙ	[signature]
11	Абдураимова М	Чукурсой МФЙ котибаси	Чувамачи КФЙ	[signature]
12	Абиев У	"Ибрат" МФЙ раиси	Туркистон КФЙ	[signature]
13	Юлдашева М	Навкирон МФЙ котиба	Катортол КФЙ	[signature]
14	Сойдуллова М	Катортол МФЙ котиба	Катортол КФЙ	[signature]
15	Назарова З	"Озодлик" МФЙ котиба	Келес КФЙ	[signature]
16	Юсупжонова М.	Амир Темур м.ф.й. котиби	Зангиота КФЙ	[signature]
17	Абдуллаева Д	Нурафшон МФЙ котиба	Эшонгузар КФЙ	[signature]
18	Аликулов Б	Нурафшон МФЙ раиси	Эшонгузар КФЙ	[signature]
19	Бекмуродов М	Эшонгузар МФЙ раиси	Эшонгузар КФЙ	[signature]
20	Номозкулов А	А.Темур М.Ф.Й раиси	Эшонгузар КФЙ	[signature]
21	Нарматова	Ойбек МФЙ раиси	[illegible]	[signature]
22	Оринбоева	Ойбек МФЙ котиба	[illegible]	[signature]
23	Рахимова Ш	Рамадан МФЙ	Туркистон КФЙ	[signature]
24	Ахмедов Э Г	Кохобод МФЙ котиб	Кохобод КФЙ	[signature]
25	Карилов К	Куштагирмон м. ф.		[signature]

Регистрационный лист

Общественные слушания по проекту: «Реконструкция водозаборных сооружений для водоснабжения сельского населения Кибрайского, Чиназского, Зангиатинского и части Янгиюльского районов Ташкентской области». Хокимият Зангиатинского района, актовый зал, Июнь 9, 2016

Zangiota district / Зангиатинский район

No.	Full Name / Ф. И. О	Worked place / Наименование места работы	Adress / Адрес (КФЙ,МФЙ)	Signiture/ Подпись
26	Мамирдшанов Х	Уч Сади. раиси	МФЙ	[signature]
27	Кифбеков С	[illegible]	мфй	[signature]
28	Додабоев Х	Улгол мфй раис		[signature]
29	Мирзаев Ак	Намуна ... раис	Кабарсой КФЙ	[signature]
30	Мустаева Х	Бозсувчи МФЙ котиба	Туркистон КФЙ	[signature]
31	Пирматов Н	Кишлоклик мфй раис	Гулистон КФЙ	[signature]
32	С.С. Хужаев	Навбахор мфй раис	Каторгол КФЙ	[signature]
33	З.М. Мусаев	Янгиюзилик ... Навруз мфй	Янгиюзилик КФЙ	[signature]
34	Номанжон Саломова	Нурли ... М.Ф.Й	Хонобод	[signature]
35	Ахмедова Ш.	Номданик М.Ф.Й.	Хонобод	[signature]
36	Тешаева У	Истиклол мфй	Хонобод	[signature]
37	Кучкарова М	Сохибкор мфй	Хонобод	[signature]
38	Орипов М	Туркистон КФЙ	Туркистонобод мфй	[signature]
39	Сойдиев М	Туркистон КФЙ	Богишамол	[signature]
40	[illegible]		Бозбон	[signature]
41	Хониназаров В		Бозбон	
42	Каримов С		Хонобод	[signature]
43	Гафурова	Корасув мфй	котиб	[signature]
44	Жураев О	Тараққиёт	раис	[signature]
45	Бойназаров А	Бузсув К.Ф.	махалла раиси	[signature]
46	Самиев Ф	Зарафшон	махалла раиси	[signature]
47	Мухитдинова		Хонобод	[signature]
48	Абдураев		Номданак	[signature]
49	Курбонов		Сохибкор	[signature]
50	Новиков	Янгитурмуш МФЙ	Бозбон	[signature]

ADB

Регистрационный лист

Общественные слушания по проекту: «Реконструкция водозаборных сооружений для водоснабжения сельского населения Кибрайского, Чиназского, Зангиатинского и части Янгиюльского районов Ташкентской области». Хокимият Зангиатинского района, актовый зал, Июнь 9, 2016

ADB

Zangiota district / Зангиатинский район

No.	Full Name / Ф. И. О	Worked place / Наименование места работы	Adress / Адресс (КФЙ,МФЙ)	Signiture/ Подпись
51	Абдужалилов	Чукурсой МФЙ		[signature]
52	Мамуржонов	Чуколоч МФЙ.	[illegible]	[signature]
53	Нурлибоев	Беруний М.Ф.Й.	Раис	[signature]
54	Алиев Ч.	Улугбек М.Ф.Й	раис	[signature]
55	Б. Асатов	Гулистон М.Ф.Й.	котиб	[signature]
56	Самиев А	Зангиота сувоқова	начальник	[signature]
57	Музаффаров Т	[illegible]	[illegible]	[signature]
58	Хамидова	[illegible] КФЙ	маслахатчи	[signature]
59	Юсуфхонов Р	Урта махалла	[illegible]	[signature]
60	Ахмедова Н	Зангиота КФЙ	раис	[signature]
61	Худойберганова М	Хосттепа КФ	Котиб	[signature]
62	Пулатов Э.Х.	Гулистон КФЙ	раис	[signature]
63	Тургунова С.А	Чоштепа КФЙ	раис	[signature]
64				
65				
66				
67				
68				
69				
70				
71				
72				
73				
74				
75				

Appendix 5: Announcement in newspaper about planning Public Consultation

Народное слово

ЖИЗНЬ МОЯ, СУДЬБА МОЯ - РОДНОЙ МОЙ, НЕПОВТОРИМЫЙ УЗБЕКИСТАН!

Созидатели. Энтузиасты. Патриоты

РЕКЛАМА И ОБЪЯВЛЕНИЯ 3

ГУП «ТАШВИЛСУВОКОВА»

ГУП «ТАШВИЛСУВОКОВА»

Сообщает, что в соответствии с постановлением Президента Республики Узбекистан от 6 марта 2015 года № ПП-2313 «О программе развития и модернизации инженерно-коммуникационной и дорожно-транспортной инфраструктуры на 2015—2019 годы» агентство «Узкоммунхизмат» реализует инвестиционный проект «Реконструкция водозаборных сооружений для водоснабжения сельского населения Кибрайского, Чиназского, Зангиатинского и части Янгиюльского районов Ташкентской области» с привлечением инвестиционных средств Азиатского банка развития.

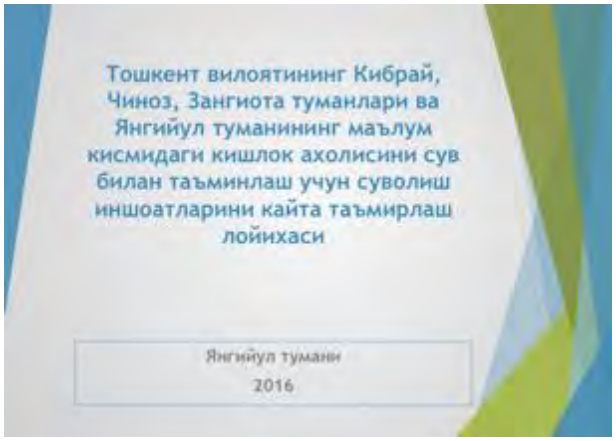
Для реализации проекта в рамках указанного постановления планируется проведение общественных слушаний для обсуждения экологических и социальных аспектов с привлечением всех заинтересованных сторон. На слушаниях будут представлены основные результаты проведенной экологической оценки воздействия проекта «Реконструкция водозаборных сооружений для водоснабжения сельского населения Кибрайского, Чиназского, Зангиатинского и части Янгиюльского районов Ташкентской области» на окружающую среду и вопросы отвода земель и переселения.

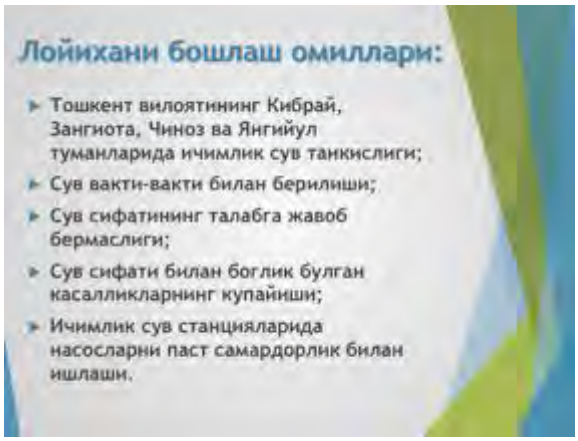
Общественные слушания ГУП «Ташвилсувокова» будут проведены в следующих районах:

- для жителей Кибрайского района — в 10.00 8 июня в здании хокимията Кибрайского района;
- для жителей Зангиатинского района — в 10.00 9 июня в здании хокимията Зангиатинского района;
- для жителей Янгиюльского района — в 10.00 11 июня в здании хокимията Янгиюльского района;
- для жителей Чиназского района — в 10.00 10 июня в здании хокимията Чиназского района.

Контактные лица: Тохир Мухамадиев, телефон (+99894) 408-27-35, Сергей Ким, телефон (+99890) 352-22-29.

Appendix 6: Example of presentation provided during Public Consultation





Лойихадан кутиладиган натижалар:

- 1-натижа: Тошкент вилоятининг Кибрай, Зангиота, Янгиюл, Чиноз туманларида сув таъминоти яхшиланади:
  - 90000 m³ ичимлик сув ишлаб чикариш кувватига эга булган янги сув олиш иншоати курилиши,
  - 50,000 m³/кун ер ости сув иншоотларини кайта таъмирланиши
  - 133 км узунлигида сув кувури,
  - 14 янги ва 20 мавжуд Сувни тарқатиш нукталарини кайта таъмирлаш, 49-km таксимлаш кувурлар ва 1400-km кичик таксимлаш кувурларни ва 100,000 атрофида сув улчагичлар урнатилиши.
- 2-натижа: Тошкент вилояти «Сувокова» корхонасини ва тизимини бошкарувини яхшилаш:

Лойихадан кутиладиган натижалар (давоми):

- Энергия истъемоли 25-30%га камаяди, ва ичимлик сувининг ишлаб чикариш нархи 10-15% камаяди;
- Водопровод сув таъминоти 50-55% дан 90%-95%гача купаяди;
- Истъемолчиларда сув улчагич ускуналари урнатилиши хисобига тизимнинг самарадорлиги ва накорати яхшиланади;
- Самарали технологик жараён ва ускуналар кулланилиши хисобига тизимда сув йукотишлар 30-35% дан 5-10% гача камаяди;
- Замонавий электрон назорат тизимлари, насослар, насос станцияларида ва бошка таалукли сув олиш ва таксимлаш иншоатларида улчов ускуналари урнатилиши хисобига сув таъминоти яхшиланади;
- Сув сифати талабга тулик жавоб беради ва х.к.;

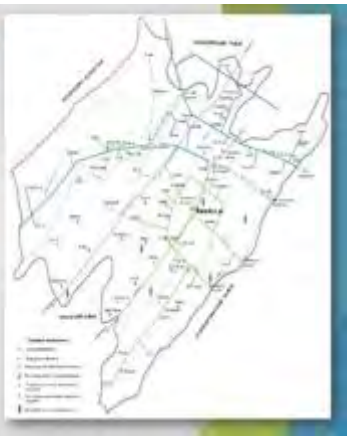
Янгийул тумани

Янги курилиш:

- 3 УРВ

Кайта таъмирлаш ишлари:

- 6 УРВ кайта таъминланади



Лойихага киритилган ахоли пунктлар

пгт Умид	ш.п.Хескан
ш.п.Дустлик	ш.п.Дангир
ш.п.Гапаба	ш.п.Туркис
ш.п.Янги махалля	ш.п.Хакша
ш.п.Марказ	ш.п.Янгиобод
ш.п.Шуралисой	ш.п.Куштепа
ш.п.им. Охунбобоева	ш.п.Чангтепа
ш.п.Хамкат	ш.п.Хонкурган
ш.п.им. Бобура	ш.п.Кенгкечик
ш.п.Маърифат	ш.п.Мустакиллик
ш.п.Канализуйи	ш.п.Тунбугиз
ш.п.Ватан	ш.п.им. Иногомова
ш.п.Миришкор	ш.п.Узбекистон
ш.п.Халкобод	ш.п.Гапаба
ш.п. Икрамов	ш.п.Сайд ота
ш.п.им. Навои	ш.п.им. Мирзабобоева
ш.п.Нуробод	

Экологик конунчилик

- УзРнинг «Экологик Экспертиза тугрисида» конуни (2000) ва Вазирлар Махкамасининг 491 -сон Карори (2001) асосида (Экологик Экспертиза тугрисида Низом) асосида:
  - Экологик экспертизадан ижобий хулоса олингандан сунг курилиш бошланади;
  - Курилишда карьерлардан фойдаланиш учун рухсатнома олинади;
  - Лойиха ишга тушишдан олдин Экологик окибатлар тугрисида ариза тасдикланади;
  - Сувдан фойдаланиш учун махсус рухсатнома олинади.

Экологик конунчилик

- Осиё Тараккиёт Банки «Мухофаза килиш чора-тадбирлар тугрисида ариза» (Safeguards Policy Statement, 2009) хужжати асосида:
  - Экологик бахолаш утказилади ва хисобот миллий мухофаза килиш органларга топширилади (Табиатни мухофаза килиш кумитаси (ТМКК));
  - Хисобот ОТБ веб-сайтида жойлаштирилади;
  - Лойиха доирасида экологик талаблар бажарилиши буйича ярим йиллик хисоботлар ОТБ ва ТМККга топширилади.

Лойиханинг атроф мухитга таъсири:

- Лойиха боскичлари:
  - Курилишдан олдин
  - Курилиш давомида
  - Лойиха ишлар давомида
- Таъсири ураниладиган объектлар:
  - Атмосфера
  - Сув ресурслари
  - Усимлик ва хайвонот олами
  - Тупрок
  - Ижтимоий-иктисодий таъсир
  - Маданий меърос

Атмосфера хавосига таъсири

Таъсирлар:

- Чанг
- Шовкин-сурон

(Кечаси 45 дБ

Кундуз куни - 55 дБ)

- Ифлослантирувчи моддалар ташланиши

Атмосфера хавосига таъсири

Шовкун сурон улчов натижалари

Нукта	Меъёр		Улчаш натижалари		Ошиб кетган курсаткичлар	
	Кундуз куни (7am- 3pm)	Кечаси (23pm - 7am)	Кундуз куни (7am- 23pm)	Кечаси (23pm-7am)	Кундуз куни (7am- 3pm)	Кечаси (23pm- 7am)
P 1	55	45	54	39	-	-
P 2	55	45	45	37	-	-
P 3	55	45	42	41	-	-
P 4	55	45	58	48	3	3
P 5	55	45	53	37	-	-
P 6	55	45	59	45	4	-
P 7	55	45	52	35	-	-
P 8	55	45	49	40	-	-
P 9	55	45	44	38	-	-
P 10	55	45	40	28	-	-
P 11	55	45	46	40	-	-
P 12	55	45	40	35	-	-

АТРОФ МУХИТНИ БОШҚАРИШ РЕЖАСИ

Атмосфера хавосига таъсири

Чора-тадбирлар:

- Сув сепиб чикиш;
- Машина ва техниканн харакатланиш тезлигинн меъёрлаш;
- Кум ва шагалнн ташиб юришда машиналарни брезент билан ёпиш;
- Техникани ишлаш вактн эрталаб соат 7.00 данкечги соат 7.00 га кадар;
- Шовкин сурон меърлардан ошган холатда кушимча чора-тадбир куриш

Сувга таъсири

- Ёг махсулотлари, ёкилги моддалар ва курилиш чикиндилар билан ифлосланиши
- Лойиха амалга ошириш пайтида ичимлик суви билан таъминганлик даражаси
- Ер ости сувларига таъсири

Лойиханинг сувга таъсири (чора-тадбирлар)

- Ёг махсулотларини, ёкилги моддаларни махсус белгиланган жойларда сакланишнн,
- Мой алмаштиришни, техникага ёкилгини куйиш махсус жихозланган участкаларда амалга оширнш
- Окова сувларни йигилишини ва уз вактида олиб чикиб кетилиши талабга жавоб бераднган равишда ташкил юлинишн

Лойиханинг флора ва фаунага таъсири

- Дарахтларнинг кесилиб кетилиши;
- Каналдаги сувни ифлосланиши натижасида аквафауна яшаш мухитининг узгариши

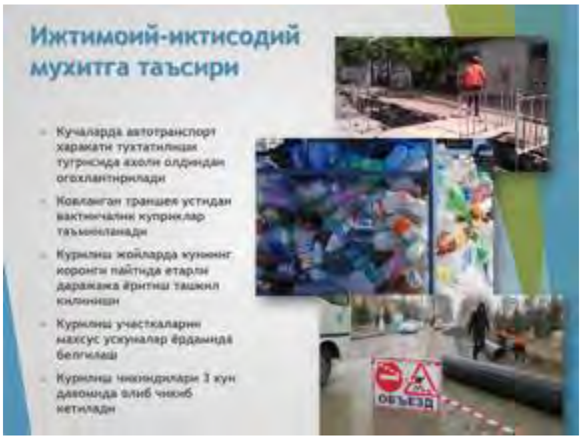
Лойиханинг флора ва фаунага таъсири

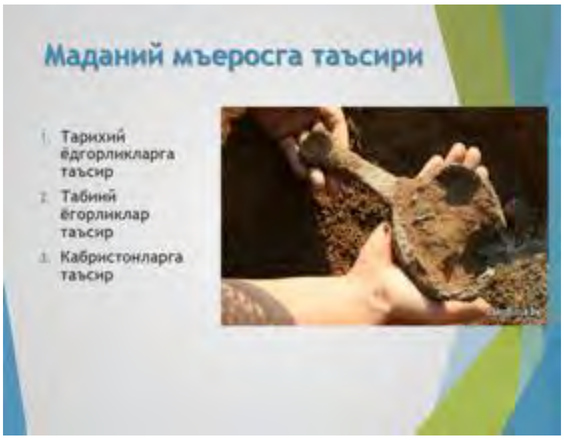
- Курилиш ишларини олиб бориш жараёнида дарахтларни кесмасликка харакат килиш
- Чикиндиларни саклаш ва уз вактида бартараф килиш урнатилган тартибда амалга оширилади


Лойихани тупрокка таъсири
Чикиндиларнинг тартибсиз йигилиб колиши ва худуддан уз вактида олиб чикилмаслиги натижасида тупрокнинг курилиш ва маиший чикиндилар билан ифлосланиши
Огир техниканинг харакатланиши натижасида мавжуд йулларнинг сифати бузилиши
Тартибсиз равишда карьерларни очиш
Ер ажратиш масалалари


Ижтимоий-иктисодий мухитга таъсири
Ахоли яшаш пунктларида автотранспорт окимининг купайиши, хавфли вазият пайдо булиш эхтимоли купайиши
Курилиш ишлари сабабли айрим кучаларда транспорт харакатини вактинчалик кийинлашиши/ тухтатилиши
Уйларга утиш вактинчалик кийинлашади
Очилган траншеялар пиёда йуловчиларга хавф келтириши мумкин
Курилиш чикиндилари кучаларнинг умумий куринишини бузади


Ижтимоий-иктисодий мухитга таъсири
Ахоли яшаш пунктларида техника харакати режасини тузиш.
Курилиш ишларини бошлашдан олдин, ахоли яшаш пунктини, махалла кумитасини огохлантириш.
Мактаблар, болалар богчалар ёнидан утадиган йулларда тезликни пасайтириб юриш


Ижтимоий-иктисодий мухитга таъсири
Кучаларда автотранспорт харакати тухтатилиши тугрисида ахоли олдиндан огохлантирилади
Ковланган траншея устидан вактинчалик куприклар таъминланади
Курилиш жойларда куннинг коронги пайтида етарли даражада ёритиш ташкил килиниши
Курилиш участкаларини махсус ускуналар ёрдамида белгилаш
Курилиш чикиндилари 3 кун давомида олиб чикиб кетилади
ОБЪЕЗД


Маданий мъеросга таъсири
1. Тарихий ёдгорликларга таъсир
2. Табиий ёгорликлар таъсир
3. Кабристонларга таъсир


Шикоятлар билан ишлаш механизми


Мурожат учун адреслар
Тошкент вилояти «Сувокова»
Тел: 150 56 00
Тошкент вилояти «Сувокова» Янгийул туманида вакили
Тел: 0370 603 33 59
Лойиханинг экологик масалалри буйича маслахатчи: Халмирзаева Мадина
Тел: + 99871 253 36 33

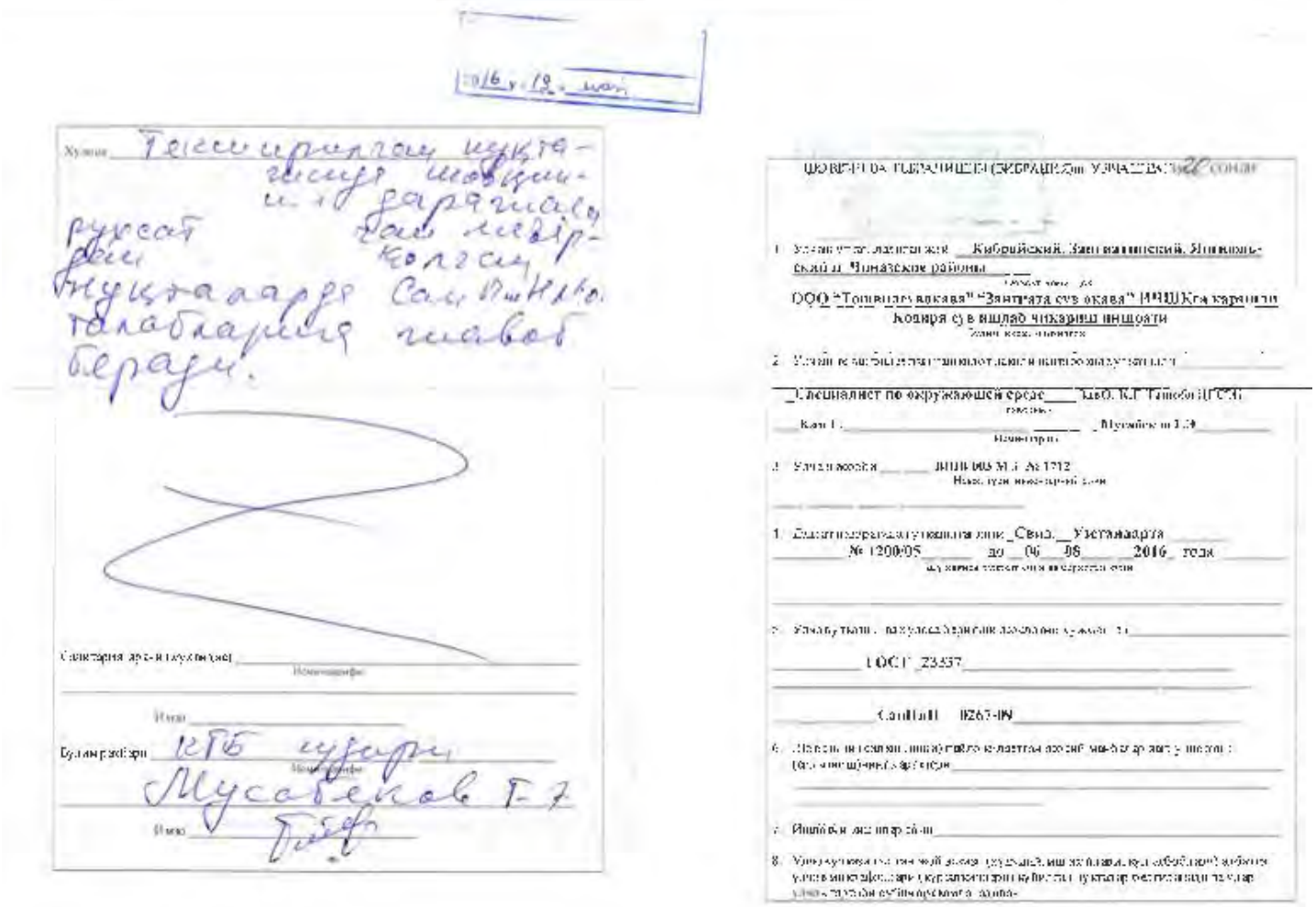

Эътиборингиз учун рахмат!

Appendix 7: Picture from Public Consultation


Giving the presentation on project overview and conduction of the IEE results
(Left to right: Zangiota district; Kibray district)


Discussing the description of proposed project activities and answering questions
(Zangiota district)

Appendix 8: Examples of noise water quality analysis



9. Шовқин (тебраниш)ни ўлчаш натижалари

1	2	3	14	2	4	8	16	31,5	63	125	250	500	1000	2000	4000	8000	28	29
		Измерение шума	**ПДУ**														**45**	**дБА**
		Время с 23-00 до 7-00 часов																
	8	**Янгиюльский район Безсу КФЙ, Умид МФЙ**																
		Около жилых домов															40	
		Превышение ПДУ															-	
	9	**Чиназский район Эшонобод КФЙ**																
		Около жилых домов															38	
		Превышение ПДУ															-	
	10	**Гайрат МФЙ около жилого дома**															28	
		Превышение ПДУ															-	
	11	**Сутбулок МФЙ около жилого дома**															40	
		Превышение ПДУ															-	
	12	**Яллама КФЙ, ул. Ачамайли**																
		Около жилого дома № 62															35	
		Превышение ПДУ															-	

Ўлчашни ўтказди ___ техник **ОФФ** Зукуров А.И ___
(лавозими, исми шарифи)

Имзо: ___

TOSHKENT ... DAVLAT SANITARIYA-EPIDEMIOLOGIYA NAZORATI MARKAZI

Appendix 9: Water quality analysis

«УТВЕРЖДАЮ»
И.о. зам.начальника ГосСИАК
Госкомприроды РУз
Рахмонов Б.А.
«» мая 2016 г.

ПРОТОКОЛ ИЗМЕРЕНИЙ № 130
на 2 страницах

Химический анализ вод питьевого водоиспользования водозабора Кадыря КФИ Бурота
(название проводимого эксперемента)

Наименование лаборатории Аналитик назоратга ихтисослашган давлат инспекцияси (АНИДИ)№UZ.AMT.07.MAI. 429, 100100 г. Ташкент, ул. Ш.Руставели 13 А, тел.:255-08-67, факс: 255-23-89, e-mail: anidi@uznature.uz.
(адрес, телефон, факс, номер аттестата аккредитации)

Наименование заказчика г.Ташкент, 100100, Яккасарайский район, Массив Ракат 14-7 ООО «Nazar Business and Technology»
(адрес, телефон, факс)

Обозначение и данные маркировки объекта измерения Водозабор Кадырья. Дата отбора и доставки 27.05.2016 г.
(номер партии, номер образца, дата изготовления и получения, дата отбора)

Цель, задачи измерений Соответствие результатов анализа требованиям O'z DSt 950:2011, «Вода питьевая»

НД на объекты измерений O'z O'U 0290:2006, O'z O'U 0111:2009, O'z O'U 0414:2009, O'z O'U 0422:2009, O'z O'U 0502:2010, O'z O'U 0521:2011, O'z O'U 0522:2011, O'z O'U 0706:2016

НД и план на методы измерений ПДК

Условия проведения измерений t–24°C, влажность 46% .
(температура, влажность, другие окружающие условия)

Измерения, проведенные субподрядчиком -

Результаты проведения измерений (вода питьевого использования)

Наименование параметров (требований)	Значение параметров (требований)		Соответствие параметров (требований)
	По НД	Фактически	
1	2	3	4
Свинец, мг/л не более	0,03	0,000547	Соответствует
Кадмий, мг/л не более	0,001	0,0000871	Соответствует
Марганец, мг/л не более	0,1	0,0171	Соответствует
Медь, мг/ не более	1	0,00146	Соответствует
Мышьяк, мг/л не более	0,05	0,00110	Соответствует
Цинк, мг/л не более	3	0,00653	Соответствует
Хром общ., мг/л не более	0,05	0,0219	Соответствует
Железо, мг/л не более	0,3	0,290	Соответствует
Ртуть, мг/л не более	0,0005	Не обн.	Соответствует
Никель, мг/л не более	0,1	0,00884	Соответствует
Кобальт, мг/л не более	-	0,000138	-

Дата проведения измерений 27 и 30.05.2016 г.

Ответственное лицо за измерение (нач.отдела) Полякова Н.С.
(Ф.И.О., подпись)

Измерения проводил Полякова Н.С.
(Ф.И.О., подпись)

Дата выпуска протокола 31.05.2016 г.

Appendix 10: Asbestos-Containing Materials Management Plan

Asbestos-Containing Materials Management Plan

The Asbestos-Containing Materials Management Plan (ACMMP) describes and evaluates the risk of contractors (and others) encountering asbestos-containing material (ACM) at the Project construction sites during the implementation stage of the project; and it provides a procedure for dealing quickly and safely with any ACM that may be found.

The ADB *Safeguard Policy Statement* (SPS) requires that ADB-funded projects apply pollution prevention and control technologies and health and safety measures that are consistent with international good practice, as reflected in international standards such as the IFC/World Bank *Environmental, Health and Safety General Guidelines* (2007). If national legislation differs from these standards, the borrower is required to achieve whichever is more stringent. There is no current legislation in the Uzbekistan governing the handling and disposal of ACM[20], so the ACMMP follows the World Bank Guidelines.

The main principles of the ACMMP are as follows:

- Prompt recognition of ACM;
- Prompt and effective action to contain and deal appropriately with the ACM (including safe management and disposal); and
- Maintaining the safety of site personnel and the general public at all times.

The ACMMP is designed for use by the Project's Project Coordination Unit (PCU) to manage the ACM risk over the project as a whole, and by contractors to deal efficiently with any ACM they or their workers encounter. The procedural element of the ACMMP is therefore designed to provide straightforward instructions that can be easily and quickly understood without the need for specialist knowledge and without referring to other sources.

PROTOCOL FOR HANDLING AND DISPOSAL OF ACM AT ISDP SITES

Source

This protocol was developed from guidance given by the UK Health and Safety Executive (HSE), which complies with European Union (EU) legislation and the UK *Control of Asbestos Regulations* (2012). For further information see the HSE website: http://www.hse.gov.uk/asbestos/essentials/

Applicability

The Project ACMMP applies to all project construction sites and any related areas (eg workshops, parking lots, storage or disposal areas, etc used by Project contractors). Contractors employed by Project are legally responsible for their construction sites and related areas and must follow the provisions of the Project ACMMP within those locations. Specifically this protocol must be used to ensure the safe handling, removal and disposal of any and all ACM from those areas.

Immediate Action

On discovering ACM on an Project site the contractor must:

(a) Stop all work within a 5 m radius of the ACM and evacuate all personnel from this area;

[20] Uzbek Sanitary Norms SanPin 0233-07 "National standards "Sanitarian Norms and Rules on Work Hygiene and Environment Protection during production and usage of ACM was one of a number of pieces of legislation deregulated in the 1980's. Notwithstanding their lack of legal status, as the most recently-available local standard, the regulations were referred to in preparing the ACMMP and the protocol for handling and disposal of ACM (see Section 3) incorporates soil covering requirements from the SanPin.

(b) Delimit the 5 m radius with secure fencing posts, warning tape and easily visible signs warning of the presence of asbestos;
(c) If the site is in an inhabited area, place a security guard at the edge of the site with instructions to keep the general public away;
(d) Notify the PMC and Environmental Supervisors and arrange an immediate site inspection; also notify the PCU.

The PCU must:

(e) Notify the Territorial Department of the State Sanitary Epidemiological Service.

Equipment

To remove asbestos from a construction site, contractors must provide the following equipment:

- Warning tape, sturdy fence posts and warning notices;
- Shovels;
- Water supply and hose, fitted with a garden-type spray attachment;
- Bucket of water and rags;
- Sacks of clear, strong polythene that can be tied to close;
- Asbestos waste containers (empty, clean, sealable metal drums, clearly labelled as containing asbestos).

Personal Protective Equipment (PPE)

All personnel involved in handling ACM must wear the following equipment, provided by the contractor:

- Disposable overalls fitted with a hood;
- Boots without laces;
- New, strong rubber gloves;
- A respirator is not normally required if there are only a few pieces of ACM in a small area, and if the ACM is damp;
- In large or heavily contaminated areas, a disposable respirator is needed (not a dust mask) with an Assigned Protection Factor of 20 or more (eg a respirator with a P3 filter);
- There must be no smoking, eating or drinking on a site containing ACM.

Decontamination Procedure 1: Removing small pieces of ACM

(a) Identify the location of all visible ACM and spray each lightly but thoroughly with water;
(b) Once the ACM is damp, pick up all visible ACM with shovels and place in a clear plastic bag;
(c) If ACM debris is partially buried in soil, remove it from the soil using a shovel and place it in the plastic bag;
(d) Insert a large label inside each plastic bag stating clearly that the contents contain asbestos and are dangerous to human health and must not be handled;
(e) Tie the plastic bags securely and place them into labelled asbestos waste containers (clean metal drums) and seal each drum;
(f) Soil that contained ACM debris must not be used for backfill and must instead be shovelled by hand into asbestos waste containers;

(g) At the end of the operation, clean all shovels and any other equipment with wet rags and place the rags into plastic disposal bags inside asbestos waste containers.

A. Decontamination Procedure 2: Removing ACM-contaminated backfill

(a) If soil containing ACM debris has inadvertently been used for backfill this must be sprayed lightly with water and shovelled out by hand to a depth of 300 mm and placed directly into asbestos waste containers (ie not stored temporarily beside the trench);
(b) Any ACM uncovered during the hand shovelling must be placed in a clear plastic bag;
(c) Once the trench has been re-excavated to 300 mm, if there is no visible ACM remaining, the trench may be refilled by excavator using imported clean topsoil.

B. Decontamination Procedure 3: Removing AC pipes or large pieces of ACM

1. If AC pipes or other large pieces of ACM are uncovered during excavation in an undamaged condition and they can be re-covered by soil and left in place in the ground undisturbed, this should be done. If AC pipes or other large pieces of ACM need to be removed from site:

(a) Inform the city Mahsustrans Enterprise of the nature and size of the large ACM and arrange for them to dig a suitable cavity at the disposal site to receive and bury the material;
(b) Sprinkle the ACM thoroughly with water, ensuring that any broken or damaged areas in particular are thoroughly wetted;
(c) Inform excavator and truck drivers of the dangers associated with ACM and instruct them to remain inside their cabs with the windows closed throughout the operation.
(d) Lift the material by excavator into a dump truck, without causing additional breakage and with as little disturbance as possible;
(e) Cover the bed of the truck with a secure tarpaulin and transport the ACM to the disposal site with as little disturbance of the carried material as possible;
(f) Manual assistance should be limited to securing the tarpaulin if possible, and personnel providing such assistance should wear PPE as indicated in Section E;
(g) At the disposal site, tip the ACM directly into the prepared cavity and arrange for it to be covered with soil immediately.

C. Disposal

2. ACM should be disposed of safely at a local hazardous-waste disposal site if available, or at the city municipal dumpsite after making prior arrangement for safe storage with the site operator.

(a) The Contractor must arrange for the disposal site operator to collect the sealed asbestos waste containers as soon as possible and store them undisturbed at the disposal site.
(b) At the end of construction Contractors must arrange for the disposal site operator to bury all ACM containers in a separate, suitably-sized pit, covered with a layer of clay that is at least 250 mm deep.

D. Personal Decontamination

3. At the end of each day, all personnel involved in handling ACM must comply with the following decontamination procedure:

(a) At the end of the decontamination operation, clean the boots thoroughly with damp rags;
(b) Peel off the disposable overalls and plastic gloves so that they are inside-out and place them in a plastic sack with the rags used to clean the boots;
(c) If a disposable respirator has been used, place that in the plastic sack, seal the sack and place it in an asbestos waste container;
(d) All personnel should wash thoroughly before leaving the site, and the washing area must be cleaned with damp rags afterwards, which are placed in plastic sacks as above.

E. Clearance and Checking-Off

(a) The decontamination exercise must be supervised by DSC site supervisors (engineering or environmental).
(b) After successful completion of the decontamination and disposal, the PMC should visually inspect the area and sign-off the operation if the site has been cleaned satisfactorily.
(c) The contractor should send a copy of the completion notice to the PCU, with photographs of the operation in progress and the site on completion.

TRAINING

4. PMC's Environmental Specialist will conduct training on ACCMP implementation for Contractors staff and PCU. The training will include a session focusing on ACM, which covered:

- Risks of contact with ACM (in general and the ISDP risk assessment);
- Responsibilities for dealing with ACM on ISDP construction sites;
- The ISDP ACMMP and the Protocol for site clean-up;
- Awareness-raising for the contractors' workforce.

1. COST ESTIMATE

Costs incurred by contractors in implementing the ACMMP are included in their budget in EMP budget.