



ARMENIAN WATER SUPPLY & SEWERAGE COMPANY

OPERATIONAL MANUAL

FOR

MUNICIPAL WATER PROJECT



YEREVAN
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LIST OF ABBREVIATIONS

AMD	Armenian dram
AWSC	Armenian Water and Sewerage Company
CMU	Contract Monitoring Unit
CMMU	Contract Management and Monitoring Unit
DCA	Development Credit Agreement
DSC	Dispute Settlement Commission
EA	Environmental Assessment
EC	Evaluation Committee
EMPF	Environmental Management Plan Framework
EMMP	Environmental Management and Monitoring Plan
FAMU	Finance and Accounting Management Unit
GoA	Government of Armenia
IBRD	International Bank for Reconstruction and Development
IDA	International Development Association
IEE	Initial Environmental Examination
LOI	Letter of Invitation
MC	Management Contract/Contractor
MIS	Management Information System
M&E	Monitoring and Evaluation
MoF	RA Ministry of Finance
MoH	RA Ministry of Health
MoNP	RA Ministry of Nature Protection
MWWP	Municipal Water and Wastewater Project
NBW	National Board on Water
NGO	Non-Governmental Organization
NRW	Non-Revenue Water
PIE	Project Implementing Entity
PMB	Project management Board
PP	Procurement Plan
RFP	Request for Proposal
PSRC	Public Service Regulatory Commission
RC	Regulatory Commission
SCWS	State Committee of Water Systems of RA Ministry of Territorial Administration
SEI	State Environmental Inspectorate
SNCO	State Non-Commercial Organization
ToR	Terms of Reference
TSC	Technical Supervision Company
WB	World Bank
WRMA	Water Resources Management Agency



CHAPTER 1. INTRODUCTION

1.1 BACKGROUND

For many years after the collapse of the Soviet economy, most of the water supply and sanitation systems in Armenia were in serious state of disrepair. Despite an abundance of water in the country, for almost all Armenians, water was available for only a few hours a day. Over the past decade the Government of Armenia has strived to improve access, reliability and quality of the drinking water and its infrastructure with increased use of public-private partnerships, which have changed the way it manages the sector and brought about improvements in quality and service to customers.

Armenia enjoys relatively abundant water resources given the limited volumes required for drinking water supply. Total water resources average 10.2 billion m³ per year, of which only about 2.4 billion are used for drinking water. With dramatic reduction of industrial and agricultural activities after independence, water resources are not presently endangered. Out of 120 water supply systems, some 107 rely on ground or spring water with the remaining 13 drawing water from streams.

Over the last ten years, Armenia has recorded significant legislative and institutional achievements in terms of water resources management and protection, the main direction of which was introduction and application of the principles of integrated water resources management. This has been supported by a number of initiatives in cooperation with international institutions including the World Bank (WB).

The Municipal Water Supply and Wastewater Project (MWWP) financed with the World Bank loan started on October 19, 2004, following the enactment of a development credit agreement (DCA) signed between the Government of Armenia (GoA) and the WB.

The recipient of the Project was the Armenian Water and Sewerage Company (AWSC), which provides water supply and wastewater services to 37 cities and 271 villages. It is more than 277,000 domestic and business customers (a total population of more than 620 thousand). The beneficiaries of the Project were the communities and entities that receive water supply and wastewater services from the AWSC.

The main precondition and the cornerstone of the MWWP was the selection of an international water and wastewater operator for managing the AWSC and implementing the Project. Following an international tender an experienced water and wastewater operator – the French SAUR – was selected as a Management Contractor. The Management Contract (MC) for four year with SAUR was signed on August 19, 2004. The official Starting Date of the MC was October 19, 2004.

To monitor the day-to-day performance of the MC and to provide assistance and guidance to the MC in implementing the MWWP, a Contract Monitoring Unit (CMU) was established by the GoA with the financing of the WB. Originally the MWW Program was designed as a 6-year program. However, later it was decided to split the program in two phases: 4 years + 2 years; having the 2nd phase conditional on the successful implementation of the 1st phase.

The total amount of the World Bank loan for MWWP was 15.4 mln SDR (without co-financing). MWWP closed on February 28, 2009 while significant investment needs in the sector still remained.

MWWP was performing satisfactorily and met its development objectives. The investment program under the project has largely proceeded on track, and the repair and rehabilitation program for AWSC water supply systems has already resulted in improved water quality and increased availability of clean and safe water



supply in areas participating in the project. WB and the GoA agreed to start up Additional Financing of MWWP to enable AWSC to scale up the rehabilitation and investments and thus allow it to improve sustainability of the overall water supply system. The total amount of Additional Financing to MWWP made 12.8 mln SDR (without co-financing). Project Completion date is 31 December 2011.

The successful implementation of the MWWP Additional Financing gave the opportunity to start the negotiation for the next phase of the program, i.e the Municipal Water Project (MWP). The project objective will remain the same as for MWWP, i.e., improve the quality of services provided to customers in AWSC service area, and the sustainability of AWSC.

MWP will fund design, implementation and supervision of the rehabilitation and reconstruction of water supply systems in the towns of Masis, Echmiadzin, Ashtarak and the neighboring regional settlements. The initial feasibility studies as well as the impact of the investments in these areas in terms of energy savings, loss reduction, hours of service, and financial performance of the utility. While specific investments will be finalized during project preparation, in general the funds will be used for: (i) network replacements linked to operation efficiency and reduction of non-revenue water, and (ii) equipment linked to improving metering, and meter chambers. Furthermore, funds will be used for materials, spare parts, machinery, equipment, consumables (e.g. chlorine and chemicals for water treatment plants) and other O&M expenses to improve operational performance and service quality (particularly bacteriological safety).

1.2 PROJECT CYCLE

MWP includes the process from the sub-project selection up to the point of the sub-project closure. Briefly the sub-project cycle comprises of the following four main stages. Its components and subcomponents are outlined in the Table 1-1.

- (a) Project Preparation
- (b) Project Management
- (c) Project Execution
- (d) Project Completion

Table 1-1: Project cycle, components and sub components

Stage	Component	Subcomponents
Project Preparation	Project Selection	<ul style="list-style-type: none"> o Identification of urban needs – AWSC, SCWS o Stakeholder and Community Consultations o Project Scoping
	Project Appraisal	Appraisal and approval of Project Proposal by WB
	Project Report	<ul style="list-style-type: none"> o Feasibility study o Viability Analysis o Implementation Arrangements o Procurement Plan o Sourcing of Funds
	Project Approval	WB



Project Execution	AWSC by its Project Implementing Entity	<ul style="list-style-type: none">○ Technical and Economic Appraisal of Subprojects○ Subprojects Detailed Design Review and Approval○ Implementation of subprojects○ Preparation and submission of the Quarterly Progress Report○ Technical and Institutional Support (Project Management)○ Training on Project Implementation○ Procurement Management○ Contract Management○ Finance Management○ Information Management Monitoring and Evaluation of outcomes
Project Completion	AWSC by its Project Implementing Entity	<ul style="list-style-type: none">○ Closure of Project activities○ Preparation of Implementation Completion Report○ Taking over of completed works○ Completion of contracts

1.3 OPERATIONAL MANUAL FOR MWP PROJECT

Purpose of this manual is to set out the general procedures for planning and implementing MWP and is intended to serve as a reference guide primarily for the Project Implementing Entity (PIE) which would cover all aspects of project implementation.

To address the various operating procedures required for each component and subcomponent of the project cycle, this manual has been presented in the following chapters, which is as follows:

- Chapter 1 - Introduction
- Chapter 2 - Project Management
- Chapter 3 - Environmental and Social Management Framework
- Chapter 4 - Procurement Management
- Chapter 5 - Financial Management
- Chapter 6 - Monitoring, Evaluation, Reporting

This manual does not claim to cover every aspect in full. Wherever possible, references to applicable policies and directives, checklists, sample letters, and templates have been provided.

However, most of these can be accessed at the World Bank's website www.worldbank.org.



CHAPTER 2. PROJECT MANAGEMENT

This chapter briefly outlines the project management setup established to implement MWP and discusses the tasks and staffing requirements of these establishments.

2.1 PROJECT MANAGEMENT SETUP

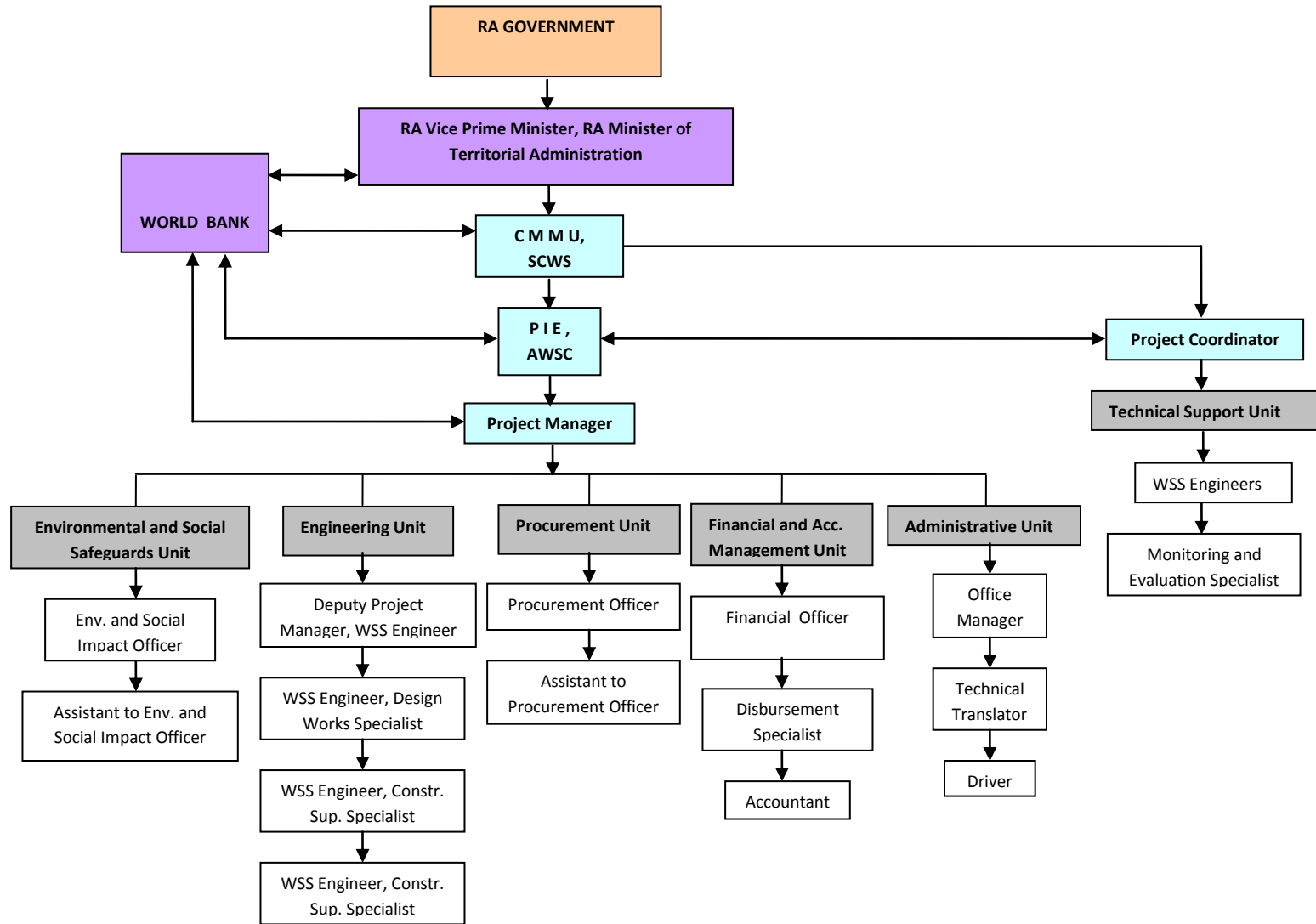
To enable effective communication and distribution of responsibilities between the WB, GoA with its Ministry of Finance (MoF), the following agencies should be established/maintained:

1. The State Committee of Water Systems of RA Ministry of Territorial Administration (SCWS) shall establish/maintain a Contract Management and Monitoring Unit (CMMU) to support SCWS in coordination of Project implementation, appraising Subprojects, and preparation of the Project completion report. The CMMU shall coordinate closely with the WB, AWSC and other government agencies concerned.
2. The AWSC shall establish/maintain a Project Implementing Entity (PIE) to manage the day-to-day coordination, implementation, and administration of the Project. The PIE shall recruit the Project consultants in coordination with the CMMU. The PIE, with the support of project consultants, shall be responsible for (a) approving of the Subproject feasibility studies in coordination with the CMMU; (b) ensure the proper preparation of detailed engineering designs and tender documents; and (c) undertaking construction supervision of all Subprojects.

The Project management structure is envisaged as shown in **Figure 1**.



Figure 1. Organizational Chart of Project Management





2.1.1. Management Board of MWP

A Project Management Board (PMB) under the chairmanship of the Chairman of SCWS, representatives of RA Ministry of Finance (MoF), RA Ministry of Nature Protection (MoNP), Non Governmental Organizations (NGO), senior officers of AWSC and other ministries as may be required would guide and oversee the work to be taken up under the project. Representatives from the World Bank may be invited to meetings as and when required.

2.1.2. Contract Management and Monitoring Unit (CMMU) of SCWS

To monitor the day-to-day performance of the MC and to provide assistance to the Management Contractor in implementing the MWP a CMMU will be established by the SCWS.

2.1.3. Project Implementing Entity (PIE) of AWSC

AWSC shall constitute a PIE to manage and monitor the day to day work programs and schedules in the various components and subcomponents of project.

2.2 STAFFING OF PIE AND CMMU

For the effective functioning of the PIE and CMMU, appropriate technical staff needs to be appointed by the SCWS and the AWSC. With regard to the various aspects which need to be considered during project implementation, the required staffing pattern of the PIE and CMMU shall be as mentioned in the following sections.

2.2.1. Staffing of CMMU

The CMMU shall consist of a team of professionals with specialization in the following areas:

- Project Coordinator, CMMU
- Water Supply and Sanitation (WSS) Engineer
- Monitoring and Evaluation Specialist

2.2.2. Staffing of PIE

The PIE shall consist of a team of professionals with specialization in the following areas:

- Project Manager
- Deputy Project Manager, WSS Engineer
- WSS Engineer, Design Works Specialist
- WSS Engineer, Construction Supervision Specialist
- WSS Engineer, Construction Supervision Specialist
- Procurement Officer
- Assistance to Procurement Officer
- Financial/Disbursement Officer
- Financial/Disbursement Specialist
- Accountant
- Environmental and Social Impact Officer
- Assistant to Environmental and Social Impact Officer



- Office Manager
- Technical translator
- Driver

Hiring of key staff members, listed in the paras 2.2.1 and 2.2.2 above, that will be wholly or partially paid out of the resources provided by the WB, will be subject to the prior review by the WB of the TOR and the short list of the candidates”.

2.3 KEY PERSONNEL FUNCTIONS

2.3.1 CMMU PERSONNEL

1. Project Coordinator, CMMU

Responds to: Chairman of SCWS

Functions: Project Coordinator will coordinate and supervise the appropriate day-to-day work of the professional staff of CMMU, namely:

- Overall project coordination and monitoring; ensure the accuracy, quality, completeness and timeliness of the outputs from each member of team,
- Prepare agenda, reports and information for PMB consideration,
- Record distribute minutes of PSC to all members and ADB,
- Provide input to the subprojects appraisal and ensure that other technical staff is also involved in the project feasibility reports/field visits with the PIE staff,
- Ensure the timely preparation of quarterly progress reports,
- Prepare the Project completion report with assistance of PIE,
- Regularly liaison with the SCWS officials, prepare all kind of necessary references and provide them updated progress and make respective presentations when needed;
- Facilitate IFIs review mission and meetings with the Government officials and all other concerned government and donor agencies.

2. Monitoring and Evaluation Specialist

Responds to: Project Coordinator, Chairman of SCWS

Functions: Monitoring and Evaluation Specialist will be responsible for the following:

- Monitoring and Evaluation of Performance Indicators of Contract Manager
- Monitoring of the Project physical, economic, social and environmental impact
- Preparation and Monitoring of the Project Performance Indicators and Project Performance Management System (PPMS)
- Evaluation of progress and results against a work plan and results framework



3. Water Supply and Sanitation Engineer

Responds to: Project Coordinator, Chairman of SCWS

Functions: Water Supply and Sanitation Engineer will be responsible for the following:

- Participate in the field visits and feasibility work with the PIE consultants
- Determine the viability of the subprojects and their compliance with the agreed subproject selection criteria
- Assist the project coordinator in documenting all other reports and making presentations to the PMB and government agencies when needed

2.3.2 PIE PERSONNEL

1. Project Manager

Responds to: Director of Investment Projects Coordination Department (IPCD), General Director of AWSC

Functions: Project Manager will coordinate and supervise the appropriate work of the professional staff of PIE and Project “Consultant”/“Design and Supervision Company” supervise and be accountable for the day-to-day project operations, namely:

- Project planning, preparation of works packages, budgeting and results-based management;
- Development of project implementation strategies, schedules and work plans;
- Participation in establishment of Project Performance Indicators and monitoring;
- Supervise, coordinate and monitor the activities of the Project’s “Consultant”/“Design and supervision Company” to ensure efficient and timely delivery of the services of individual specialists, including the guidance for preparation of Feasibility Studies, Preliminary Design, Detailed Design, and Construction Supervision;
- Participate in the Appraising of Subprojects under the coordination of AWSC top management;
- Participate in the preparation of Subproject’s Feasibility Studies;
- Coordinate the preparation of Detailed Engineering Design and tender documents;
- Ensure the compliance of procurement procedures with IFIs’ Guidelines;
- Ensure the reporting arrangements as per IFIs and RA requirement (provision of the respective reports on progress, expenditures and other variations to IFI, Management Board and other involved Governmental bodies);
- Coordinate and facilitate regular project progress meetings with PIE/CMMU staff, contractors, and consultants;
- Undertaking of the construction supervision visits during the Implementation of Subprojects;
- Participate in the mid-term review of the Project and provide assistance during IFIs review missions;
- Coordinate and actively manage and participate in training activities of the Project for counterparts assigned to the project within AWSC.



2. Procurement Officer

Responds to: Project Manager, Director of Investment Projects Coordination Department

Functions: The procurement officer shall be responsible for preparation and implementation of the all procurement processes for the IFIs financed Project and for preparation of detailed procurement plan for each of the Subprojects. The procurement officer shall:

- prepare Procurement Plans,
- prepare texts of advertisements and follow-up all the work relating to publishing,
- prepare bidding documents with the required drawings and specifications provided by the relevant departments of AWSC
- organize and participate in bid conferences for clarifying bid issues with contractors,
- participate and conduct the bid openings,
- participate in the evaluation of the bids/proposals and preparation of evaluation reports,
- organize and conduct the negotiations,
- prepare the procurement related minutes, draft contracts,
- maintain a filing system on all procurement documentation relating to each sub-project;
- review and propose options for AWSC in resolving all procurement related matters during the execution of contracts

2.1 Assistant to the Procurement Officer

Responds to: Procurement Officer, Project Manager, Director of Investment Projects Coordination Department,

Functions: Assistant to the procurement officer shall be responsible for assistance in preparation and implementation of the procurement related issues for the IFIs financed Project .The procurement assistant shall:

- assist in preparation of Procurement Plans,
 - assist in preparation of the texts of advertisements
 - assist in organization in bid conferences for clarifying bid issues with contractors
 - assist in preparation of the Evaluation reports and relevant evaluation minutes
 - prepare all required documentation for Management Board approval
 - assist in preparation the procurement related minutes
 - maintain a filing system on all procurement documentation relating to each sub-project;
- Other duties as assigned by the Procurement Officer

3. Water Supply and Sanitation Deputy Project Manager

Responds to: Project Manager, Director of Investment Projects Coordination Department

Functions: Water Supply and Sanitation Deputy Project Manager will be responsible for the following:

- Implement the preliminary examination of the Water Supply and Sanitation facilities of settlements including in the service perimeter of the Company



- Review the technological solutions suggested by the preliminary design, hydraulic calculations, feasibility study conclusions and consistency of the provided working designs in the frame of the subprojects selected based on the selection criteria of IFIs,
- Organize meeting with all the interested parties to discuss and clarify the solutions proposed by the preliminary and working designs, set up and present to the management well-justified Minutes of Meetings,
- Accept the working designs and check the Bill of Quantities, Cost-Estimates, agreed consistency of the tender documents for further procurements
- Participate in the technical supervision of the construction activities, periodically visit the construction sites, organize meeting with the Contractors, Consultants and Technical Supervisors to discuss and find the solutions for remedying the revealed defects, and check the Change/Variation orders and new quotations.
- Upon request provide the comprehensive information and explanations of the occurred design changes, urgent issues to the representatives of IFIs.
- Perform other tasks as assigned by the management

4. Water Supply and Sanitation Engineer (3 staff units)

Responds to: Water Supply and Sanitation Deputy Project Manager, Project Manager, Director of Investment Projects Coordination Department

Functions: Water Supply and Sanitation Deputy Project Manager will be responsible for the following:

- Check the hydraulic calculations of water supply distribution network provided with the working designs by means of EPANET software,
- Participate during the preliminary examination of the Water Supply and Sanitation facilities of settlements including in the service perimeter of the Company
- Check the consistency of the provided working designs in the frame of the selected subprojects, feasibility study conclusions, Bill of Quantities, Cost-Estimates and other justifications as requested by the Terms of Reference
- Participate in the meetings organized for the discussion and clarification of the solutions proposed by the preliminary and working designs, set up the first draft of the Minutes of Meeting,
- Participate in the technical supervision of the construction activities, periodically visit the construction sites to record the defects and deviations from the design
- Perform other tasks as assigned by the management

5. Financial /Disbursement Officer

Responds to: Project Manager, Director of Investment Projects Coordination Department

Functions: Financial /Disbursement Officer will be responsible for the following:

- Maintain project records and accounts according to the generally accepted Accounting principles and practices and local legislation; Establish and operate the financial management system for the Project;



- Ensure that all project accounts are maintained in accordance with the IFIs relevant guidelines and regulations;
- Participate in preparation of the project's annual budget. Implement financial planning in co-operation with the procurement specialist; control the implementation of annual budget as per the project components, expenditures categories and finance sources
- Provide budget implementation and other financial reports to the State Authorities and the IFIs as requested
- Prepare and submit withdrawal applications according to the IFIs and MOF (Treasury) respective procedures
- Establish and manage the project's Designated Account. Prepare requests for Special Commitments, open Letters of Credit, prepare payment orders and make payments from the Designated Accounts;
- Prepare all necessary documentation (WAs, SOEs, Summary Sheets, etc.) for submission to the IFIs to request for replenishment/recovery of the Designated Account on timely basis;
- Maintain procedures for collecting, checking and preparing documentation required for verifying Supplier's invoices. Record payment documentation and payments to Suppliers. Prepare invoices for payments by verifying the invoice against contract terms and conditions; ensure that all payments are made on a timely basis and according to contract terms and conditions as well as the IFIs relevant guidelines, regulations, legal agreements and other applicable documents;
- Coordinate all the work related to audits of the financial unit of the PIE
- Prepare the project annual financial statements to be audited and coordinate the audit arrangements of the project and cooperate with the auditors; ensure that all project accounts are maintained in accordance with the IFIs regulations;
- Ensure that audited project and entity financial statements are submitted to the IFIs on timely basis;
- Ensure that the project accounting system is reliable for preparation of quarterly Interim Un-audited Financial Reports (IFRs).
- Maintain fixed assets' register for the equipment bought from the project funds.
- Liaise with the taxation, customs and social security agencies and other budgetary agencies in Armenia in issues relating to Project implementation; estimate and make timely tax payments to the state budget;
- Perform project administrative duties as required to ensure that all contract files and procurement activities are complete and accurately reflect the financial status of each contract; perform filing and archiving of the accounting and financial documentation.
- Perform other tasks assigned by the management

6. Environmental and Social Impact Officer

Responds to: Project Manager, Director of Investment Projects Coordination Department

Functions: Environmental and Social Impact Officer will be responsible for the following:



- Revise and submit proposals and comments regarding all environmental documentations developed by the Consultant, particularly initial environmental examination/IEE, environmental management and monitoring plan/EMMP for each subproject and Environmental Impact Assessment /EIA packages if applicable.
- Approve EMMPs, prepared by Consultant and ensure availability of all environmental documentations in Bidding Documents.
- Organize environmental impact mitigation measures explanation workshops for Contractors and TSCs.
- Actively participate in Public Consultation meetings in rural area, organized by Consultants.
- Obtain all environmental permits and documents from the RA Ministry of Nature Protection in due time
- Oversee the fulfillment of environmental impact mitigation measures included in EMMP jointly with the Consultant, according to RA legislation and IFIs environmental and safeguards policy papers requirements.
- Responsible for development of Environmental Policy of AWSC based on policy papers of IFIs as well as participation during safety policy development with safety and quality team of AWSC.
- Responsible for quarterly and annual reporting on the outcomes of environmental monitoring according to the requirements of AWSC and relevant IFIs.
- Coordinate all work related to environmental audits of AWSC and of the PIE.
- Perform other tasks assigned by the management

6.1 Assistant to Environmental and Social Impact Officer

Responds to: Environmental and Social Impact Officer, Project Manager, Director of Investment Projects Coordination Department

Functions: Assistant to Environmental and Social Impact Officer will be responsible for the following:

- Participation in development of all required environment and nature protection documentations in the frame of the projects implemented by the “Armenian Water and Sewage” CJSC
- Participation in revision process of all the environmental management plans and another environmental documentations submitted to the Investment Project Coordination Department (IPCD),
- Regular site visits during construction works implemented under different projects and control over the environmental mitigation measures
- Perform other tasks assigned by the management

2.3 TRAINING OF PIE STAFF

To facilitate the training of PIE staff that may need training to familiarize themselves with the procedures and methods required as part of this project, the PIE shall arrange need based training programs as and when required for each area of specialization.



CHAPTER 3. ENVIRONMENTAL MANAGEMENT PLAN FRAMEWORK

3.1 INTRODUCTION

The *Environmental Management Plan Framework* (EMPF) was prepared to ensure that the Municipal Water Project (MWP) is implemented in accordance with the environmental legislation of Armenia and safeguard policies of the WB. The main purpose of this EMPF is to serve as a guiding tool for identifying key environmental and social impacts of the proposed investments, defining mitigation measures to address the expected negative impacts, design plans for monitoring application of the mitigation measures, and define institutional responsibilities for implementation and oversight.

The budget for implementing the EMPF has been included in the project cost.

3.2 BACKGROUND AND PROJECT SELECTION CRITERIA

There are 37 towns and around 300 rural populated areas within the service area of the Armenia Water and Sewerage Company (AWSC). Service perimeter of AWSC does not include Yerevan - the capital city, towns of Gyumry, Vanadzor, Armavir, and around 600 villages.

MWP will invest in three target towns of Masis, Ashtarak, Ecmiadzin and the surrounding villages in Armavir, Ararat, Aragatsotn and Kotayk marzes (provinces) of Armenia. Description of the existing water supply and wastewater services for these towns and the satellite rural settlements are described in the section 3.3.

The target towns and villages were selected according to following priority criteria:

- Short daily service hours for all or considerable amount of customers within a settlement and feasibility of extending water supply up to 18 - 20 hours day through the project intervention.
- Water supply system being at risk of further critical deterioration leading to distortion of water supply to the customers and deterioration of supplied water quality (age of the selected water supply schemes between 40-50 years);
- High portion of Non-Revenue Water (NRW), likely to be decreased through the project intervention from 85-87% to 70-72%;
- An existing need and feasibility of reducing of energy consumption through the project intervention.

According to AWSC main strategy in order to improve the four priority criteria will be replacement of bad portions of main pipes, pipes in the network and installation of water meters and chambers for them in the point of property limit in the private houses districts. AWSC came with the following towns/villages ranked according to priorities:



- 1 MASIS – town;
Ayntap, Arbat, Hayanist, Azatashen, Marmarashen, Darbnik, Dashtavan – surrounding villages; hereinafter Masis sub-project.
- 2 ASHTARAK – town.
Karby, Mughny, Ohanavan, Sasunik, Karin, Agarak – surrounding villages; hereinafter Ashtarak sub-project.
- 3 Echmiadzin – town;
Aygeshat, Dasht, Shahumyan, Norakert-- surrounding villages; hereinafter Echmiadzin sub-project.

Table 3-1. Overview of the Project Area

Settlement	Population	Customers	Daily service hours (average)	Percentage of customers with water meters (%)
MASIS	16 400	5 462	17	83
Ayntap	5 600	1 882	9	77
Arbat	1 300	434	16	82
Hayanist	1 000	331	16	97
Azatashen	600	173	16	75
Marmarashen	2 000	650	15	78
Darbnik	550	209	16	92
Dashtavan	1200	404	16	77
ASHTARAK	20 500	6 806	8	86
Karby	1 500	502	10	22
Mughny	1 100	341	12	81
Ohanavan	1 500	498	12	83
Sasunik	1 800	582	6	84
Karin	500	142	4	80
Agarak	250	81	18	81
ECHMIADZIN	44 000	14 692	12	92
Aygeshat	1 000	328	24	63
Dasht	1 000	311	24	60
Shahumyan	1 300	434	24	70
Norakert	2 400	776	13	58



Masis town and villages around are the settlements with the 100% of mechanical type of service - annual consumption of energy 3,7 million KWt/H, cost - 88,0 million AMD and level of losses (Non-Revenue Water) - 84% . Despite in Masis average of daily service is 21,7 hours AWSC still have one district of town - roughly 20 % of population (Rail way station district) were duration of service is only 6 hours.

In Ayntap village, due to the difficult landscape, AWSC is not able provide own produced water for 20 % of customers. Company purchase water from Yerevan Water Company- annual cost is 8,5 million AMD. In other villages included in the project level of losses is not acceptable as well – 85-87%.

Daily service in Ashtarak town will be not possible to increase due to the lack of water, because villages located upstream of the main pipe consume incredible quantity of drinking water. Level of losses there is again close to 85%. For that reason was identified in the project proposal one of the main direction of water production for Ashtarak, Implementation of MWP will allow water savings in villages located upstream of Ashtarak town and usage of this surplus for increased daily duration and quality of water supply in Ashtarak town. Parallel with that we will reduce % of NRW.

Echmiadzin town has similar problem with the upstream villages. These villages all most have 24 hours service of water supply, but at same time, Company has high level of non-revenue water. In Echmiadzin is necessary found solution for the 75 buster pumps located in the basement of the apartment buildings. Energy consumption for those pumps cost 18,0 million AMD per year. Due to the improvement of the shape of the distribution network and good zoning Company will be able operate without buster pumps, and provide more sustainable service to the customers in higher floors.

3.3 DESCRIPTION OF BASELINE CONDITIONS OF W&W SYSTEMS

A. MASIS SUBPROJECT

Description of current system

The operation and servicing of water and wastewater systems of Masis town, Ayntap, Arbat, Hayanist and Azatashen villages are made by Masis sector of the “Center-West” regional branch of the AWSC CJSC.

Number of customers: Masis town - 5441, villages Ayntap -1841, Arbat - 433, Hayanist- 325, Azatashen - 167:

Number of customers with water meters: Masis town - 4204, villages Ayntap - 1413, Arbat - 357, Hayanist - 315, Azatashen - 315:

Water is supplied to Masis town and Ayntap village from “Araratyan” pumping station by 2 N=315 kVt capacity centrifugal pumps out of which one is operated for 24 hours and the other is a standby pump. The pumps have been installed in 2004-2008 under World Bank loan project replacing former N=630



kVt pumps. Water is delivered to 2x2000 m³ capacity Kharberd DRR N1 by Φ 500 mm, 8,8 km length steel pipe from where it is supplied to Masis town by Φ 500 mm, about 4,7 km length steel water main and to Ayntap community by Φ 200 mm, about 2,5 km cast iron pipes. Water is supplied Nor Kjurin, Marmarashen, Arevabujr and Jrahovit villages from the same reservoir. The higher located district of Ayntap village is fed also from Φ 500 mm water main which is connected to the distribution network by Φ 160 mm PE newly built water main. "Kayaranain" district of Masis town is also directly connected to Φ 500 mm steel water main.

The AWSC CJSC operates 54 km length distribution network in Masis town and 20 km length in Ayntap village.

Water is supplied to Arbat, Hayanist and Azatashen communities from the same "Araratyan" pumping station by two pumping units /one standby/ to supply water to some rural communities of Masis region. Through this system water reaches Norabats DRRs and pumping station put into operation in 2010 and delivered to the rural communities including Arbat, Hayanist and Azatashen villages distribution networks.

Water is supplied to Arbat community by 0,9 km length, 300 mm PE water main. The length of internal network of the community is 7,75 km. Hayanist community is supplied with water by 200mm, 1,8 km length PE water main. The length of internal network of the community is 6 km

Water is supplied to Azatashen village by 0,4 km length, 100mm steel water main. The length of internal network of the community is 4.5 km

Implemented works

The following works have been implemented by the resources of the loan projects, grants, as well as own funds.

- Reconstruction of 11 km distribution network and water main in Masis town,
- Reconstruction of 12.7km distribution network
- Reconstruction of water main feeding Arbat community and 5 km broken section of internal network
- Reconstruction of 2,4 km distribution network and water main in Hayanist village
- In Azatashen community no water network rehabilitation works have been done so far.

Along with rehabilitation of distribution networks, in-house connections also have been made by installing water meter chambers and reconstructing trunk mains of the communities. In general for improving Masis town and adjacent villages water supply systems about 9,6 km length water main was repaired and 2000 m³ capacity DRR was built. It should be emphasized that as a result of implemented works water quality has been improved and water supply duration increased up to 17-18 hours in average. However, the works implemented in the distribution networks are not sufficient.

High level of ground waters in Masis town and other communities of the region, aggressiveness of soil, absence of electrical and chemical protection of metallic pipelines and deposition on the walls of the pipes cause early corrosion of the water mains and reduction of transmission capacity. All above mentioned facts cause high losses in the distribution network.



Masis town is being developed with new districts where there is no distribution network at all and a part of the existing network is made by poor quality PE pipes causing frequent breakdowns.

Environmental baseline conditions

Masis town, Ayntap, Arbat, Hayanist, Azatashen, Marmarashen, Darbnik and Dashtavan, villages

- Population - 21400 people, Ayntap village - 7712 people, Arbat village - 1801 people, Hayanist village -2046 people, Azatashen village – 786 people, Marmarashen- 2000, Darbnik- 550 , Dashtavan 1200
- Average altitude above the sea level: Masis town - 828-854 m, Ayntap village - 845-880 m, Arbat village -838-865m, Hayanist village -836-862m, Azatashen village – 847-865 m, Distance from Yerevan: Masis town -14 km to the south, Marmarashen-20 Darbnik- 25 k, Dashtavan- 18 km
- Distance of villages from Masis town: Ayntap - 9 km, Arbat - 20 km, Hayanist - 8 km, Azatashen – 14 km, Marmarashen -10 km, Darbnik20 km , Dashtavan- 20 km
- Average annual precipitation - 252mm
- Humidity 59 %

There are the following special protected areas in Ararat marz: Khosrov forest State natural reserve, Goravan sands and Khor Virap State preserves and 11 natural monuments. The location of Masis sub-project is not located next to these special protected areas.

In Ararat marz subterranean water resources are prevailing and surface waters /4 rivers, 2 reservoirs /with 77 mln m³/ year are mainly used for irrigation purposes. Two rivers Vedi and Azat originated from the territory of the marz. Araks River runs across the marz. Hrazdan and Sev Jur rivers run into Araks River.

In the area of Ararat marz there are 136 plants registered in the Red Book /2010/ out of which 79 are under danger, 22 are vulnerable and 34 are in critical situation.

Water supply facilities

“Ranchpar” boreholes, with about 42000 m³ daily capacity. Water of the spring can be used for drinking and household purposes and requires only chlorination.

Water from the boreholes is supplied to “Araratyan” pumping station water intake facility from where it is pumped to “Kharberd” DRR with about 12000 m³ daily capacity.

The length of the Ø500 mm trunk main is 13.5km and Ø200 mm is 2.5 km.

Water is pumped to two DRRs with total 4000 m³ capacity. The DRR is located on the altitude of 921m. From the above mentioned reservoirs water is supplied to Masis town distribution network with mainly 50-200 mm steel and PE pipes of 45 km length and to Ayntap community distribution network with 50-160 mm cast iron and PE pipes of 20 km length covering 50-60% of the community and water supply to the remaining part of the community is made from the pressure line without reservoir.

Water is supplied to Arbat, Hayanist and Azatashen villages from Norabats 2000 m³ DRR by booster pumps. Water disinfection is made in the water intakes of “Araratyan” pumping station by liquid chlorine.



The operation of water supply facilities is interrelated with water supply systems of the region fed from “Araratyan” pumping station.

Wastewater collection/disposal facilities

No investments have been made in the wastewater collection/disposal systems
42.5 % of population is connected to the sewerage system.

Masis town wastewater treatment plant does not operate for more than 20 years.

The wastewaters are removed into 35.5 km length sewer and discharged by gravity without treatment to Hrazdan river.

In the districts without sewerage system wastewaters are discharged into local pits without maintaining sanitation norms.

Ayntap, Arbat, Hayanist and Azatashewn villages have no sewerage system, the households use pit latrines, except 2 streets in Ayntap village connected to the sewers lines built before for industrial enterprises.

Improvement activities in the frame of MWP

In order to improve water supply systems of Masis town and Ayntap, Arbat, Hayanist, Azatashen, Dashtavan, Darbnik and Marmarashen communities it is necessary to carry out the following works based on pre-assessment results:

- Repair of “Ranchmar” 3 boreholes, improvement and fencing of sanitary zones;
- Reconstruction of 4km, 160-300mm diameter water mains;
- Major repair of 2*2000 cubic meter DRRs, improvement of sanitary zones, reconstruction of regulation valve unit;
- Rehabilitation of “Araratyan 1-2” pumping station;
- Reconstruction of distribution network and zoning:
 - 16 km length, 40-250 mm diameter in the town
 - 31 km length, 40-160 mm diameter in the villages
- In-house connections:
 - 1000 with about 9 km length in the town
 - 3200 with about 23 km length in the villages

B. ETCHMIADZIN SUBPROJECT

Description of current system

The operation and servicing of water and wastewater systems of Echmiatsin town, Aygeshat, Dasht, Shahumyan and Norakert villages are made by Echmiatsin sector of the “Center-West” regional branch of the AWSC CJSC.

Number of customers: Echmiatsin town - 14692, villages Aygeshat 328, Dasht - 311, Shahumyan - 434, Norakert 776.



Number of customers with water meters: Echmiatsin town - 13530, villages Aygeshat - 208, Dasht - 186, Shahumyan - 305, Norakert – 448.

Water is supplied to Echmiatsin town from “Bazmaghbjur” and “Ghazaravan” subterranean springs by three main systems out of which two are fed from subterranean springs and one from bore holes. Total capacity of water intake is 750l/sec out of which 500 l/sec is delivered to the distribution network of Echmiatsin town and 26 rural communities and about 250l/sec is consumed by 13 rural communities of Aragatsotn marz. Water is delivered from the main facilities through 300-600mm. 3 trunk mains with 136 km total length.

Before reaching the DRRs feeding Echmiatsin town, the trunk mains pass through the territory of rural communities sometimes through privatized lands with many illegal connections made by households having an adverse impact on water supply to Echmiatsin town adjacent rural communities and water losses indicator.

The total length of town distribution network is 105 km. Some sections of distribution network is being operated for 40 years. The network is made from cast iron and steel pipes. The in-yard networks of residential multistoried and private houses are also in poor condition.

The required pressure is not kept in the network because of water losses and corrosion of the network and in order to provide water to the customers 96 in-yard and personal pumping units are used.

Implemented works

The following works have been implemented in Echmiatsin town by the resources of the loan projects, grants, as well as own funds.

- Rehabilitation of about 12 km distribution network, including replaement of sections laid with asbestos pipes
- Construction of about 11. 52 km waterlines to make 980 in-house connections

As a result water supply quality was improved and duration reached from 4 hours to 19.6.

Water is supplied to Aygeshat, Dasht, Shahumyan and Norakert villages from “Bazmaghbjur-“Ghazaravan” system. Distribution networks of the villages were maily built in 1970s and are in poor condition. Given the fact that water is supplied to the villages by direct connections from Φ 50-100 mm trunk main, as well as poor condition of distribution networks water losses reach big volumes especially in rural communities. No investments have been made in the water supply systems of above mentioned villages.

Environmental baseline conditions

Echmiatsin town is located in the western part of RA Armavir marz

- Population – 56 388 people
- Average altitude above the sea level -870 m
- Distance from Yerevan – 25 km
- Distance from Armavir regional center - 20 km
- Average annual precipitation - 274 mm,
- Humidity- 62%
- Well developed road infrastrucltur



Armavir marz is located in the South-West of Armenia and occupying west part of Ararat valley. The major water basin of marz is Araks river with several left sided tributaries Akhuryan, Selav-Mastara, Sevjur.

As to special protected areas in Armavir marz there is a State preserve "Ararat Vordan Karmir", but Echmiatsin sub-project is far from this special protected area.

Aygeshat, Dasht, Shahumyan and Norakert villages are located in the North-East part of the RA Armavir marz.

- Population: villages Aygeshat -1480, Dasht- 752, Shahumyan -1120, Norakert -2564 people
- Average altitude above the sea level - villages Aygeshat -870m, Dasht -945m, Shahumyan - 940m, Norakert - 940 m
- Distance from regional center villages Aygeshat -34 km, Dasht -27, Shahumyan -28 km Norakert -38 km
- Average annual precipitation - 250-300 mm,
- Average temperature + 11.7 ° C,
- Humidity- 62 %:
- Mother see of Holy Echmitasin, Headquarters of Armenian church, as well as "Rastr" plant, "Armenia
- International Airports" CJSC are located in Echmiatsin town.

Water supply facilities

"Bazmaghbjur" and "Ghazaravan" catchments (11), "Bazmaghbjur" and "Ghazaravan" boreholes (3). Water of the spring can be used for drinking and household purposes and requires only chlorination. Chlorination is made by 2 chlorination stations furnished with ALLDOS dosing equipment.

"Shahumyan" DRRs with 1x6000 m³ and 2x2000 m³ capacity from where water is supplied to Echmitasin town. The DRRs are located on the altitude of 921m.

The length of Φ 300-600 mm trunk main is 136 km.

Water is delivered from the above mentioned DRRs to Echmiatrin town 105 km length distribution network made of Φ 50-200 mm cast iron and PE pipes. Water delivery to the rural communities having 20 km length, Φ 50-150 mm steel and cast iron distribution network is made without DRRs.

Wastewater collection/disposal facilities

No investments have been made in the wastewater collection/disposal systems.

88% of population is connected to the sewerage system.

The town has centralized system for wastewater collection, main collector, as well as non functioning wastewater treatment plant. The wastewaters are discharged into Kasakh river without treatment. The pipelines of water discharge system and manholes are in poor technical condition.

Aygeshat, Dasht, Shahumyan and Norakert villages have no sewerage system and households use pit latrines.

Improvement activities in the frame of MWP



In order to improve water supply systems of Echmiatsin town and Aygeshat, Dasht, Shahumyan and Norakert villages it is necessary to carry out the following works based on pre-assessment results:

- Repair and re-commissioning of “Bazmaghbjur” 2 boreholes;
- Major repair of the catchments;
- Reconstruction of 4km, 300-500 mm diameter water mains;
- Major repair of DRRs, reconstruction of regulation valve unit;
- Reconstruction of distribution network and zoning:
 - about 35 km length, 40-250 mm diameter in the town
 - about 25 km length, 40-100 mm diameter in the villages
- In-house connections:
 - 3300 with about 30 km length in the town
 - 1800 with about 17 km length in the villages

C. ASHTARAK SUBPROJECT

Description of current system

The operation and servicing of water and wastewater systems of Ashtarak town, Ohanavan, Karbi, Karin, Sasunik, Agarak and Mughni villages are made by “Ashtarak” sector of the “Center-West” regional branch of the AWSC CJSC.

Resident population of Ashtarak town together with Mughni village is - 21475, villages Ohanavan – 2254, Karbi - 3624, Karin - 310, Sasunik- 2280, Agarak-1655.

Number of customers Ashtarak town - 6806, villages Ohanavan-498, Karbi- 502, Karin - 142, Sasunik- 582, Agarak-81, Mughni-341, 8952 customers in total.

Number of customers with water meters: Ashtarak town - 5840, villages Ohanavan -412, Karbi - 111, Karin - 113, Sasunik - 490, Agarak -66, Mughni – 277, 7309 customers in total.

Water is supplied to Ashtarak town from “Saghmosavan” and “Artashavan” springs, Karbi boreholes and through pumping station fed from “Artak” springs.

Water supply to Ohanavan, Karbi, Karin, Sasunik, Agarak and Mughni villages are also made by the system fed from “Saghmosavan” and “Artashavan” springs. The trunk mains pass through the developed and privatized areas of the villages where many connections are made. The villages have no DRRs. Big quantities of water delivered through the system are lost in the villages. before reaching Ashtarak town DRRs. The rate of the losses constitute up to 90-95%:

Average daily water supply duration is 18 hours in Ashtarak town and villages except Sasunik and Karin is 18 hours and in Sasunik and Karin is 4-5 hours. In summer water supply to the 3rd floors of residential buildings is a real technical problem.

Water is supplied to Agarak village from local water system owned by the community. One district of the village is provided with water from “Agarak-Kosh” water main connected to the trunk main fed from “Bazmaghbjur” and “Ghazaravan” springs and supplying water to Echmiatsin town and adjacent villages.



Water is supplied to Ashtarak town by 35 km length trunk main and 82 km length distribution network, to Ohanavan - 20 km, to Karbi- 8km, to Mughni-15 km, to Sasunik -15 km, to Karin - 4 km length distribution network. Two 800m³ capacity DRRs are built for Sasunik and Karin villages out of which one is broken and does not function.

Water supply systems of the communities are in poor technical condition, most of the installed valves do not function, there is no water distribution zoning, the breakdowns are very frequent, the rate of water losses in the networks is high.

Implemented works

The following works have been implemented in Ashtarak town by the resources of the loan projects:

- In the area of Saghmosavank catchments, two new catchments have been built with 15l/sec capacity.
- One operating catchment facilities were capitally repaired.
- Main facilities of Karbi boreholes have been reconstructed.
- A contact reservoir has been built in the area of Karbi boreholes.
- The DRRs of the town have been repaired.
- 4700m pipeline of the town distribution network has been reconstructed.
- About 305 in-house connections have been built.

The above mentioned works have been carried out basically in the main facilities and the distribution network built about 35-40 years ago was only partially repaired. For improving water supply systems it is required to fully reconstruct the distribution network including as many settlements as possible in the zone of gravity supply.

Environmental baseline conditions

- Distance from Yerevan – Ashtarak town: 20 km to the North-West
- Average annual precipitation - 300-400 mm
- Average temperature in summer +25-26° C, in winter - 40-42° C
- In Aragahtsotn marz there are the following special protected zones: “ Aragts alpine” state reserve, as well as 24 nature monuments. However, the location of Ashtarak subproject is not near to these special protected areas.
- Five rivers run across the territory of the marz: Kasakh, Halavar, Gegharot, Shahverd, a and Amberd out of which Amderd is the biggest river with 1480 km² surface and 89 km length.

Wastewater collection/disposal facilities

No investments have been made in the wastewater collection/disposal systems. Wastewater treatment plant of Ashtarak town does not operate for about 20 years. In the districts without sewerage system wastewaters are discharged into local pits without maintaining sanitation norms.



Ohanavan, Karbi, Karin, Agarak and Mughni villages have no sewerage system and households use pit latrines. From all the rural communities only Sasunik village is provided with sewerage system which is not connected with main collector and wastewaters are discharged into river without treatment.

Improvement activities in the frame of MWP

In order to improve water supply systems of Ashtarak town and Agarak, Sasunik, Karin, Mughni, Karbi and Ohanavan villages it is necessary to carry out the following works based on pre-assessment results:

- Repair and re-commissioning of “Karbi” 2 boreholes;
- Major repair of the catchments;
- Reconstruction of 4km, 300-500 mm diameter water mains;
- Major repair of DRRs, reconstruction of regulation valve unit;
- Reconstruction of distribution network and zoning:
 - about 40 km length, 40-300 mm diameter in the town
 - about 25 km length, 40-100 mm diameter in the villages
- In-house connections:
 - 2100 with about 20 km length in the town
 - 1700 with about 15 km length in the villages.

3.4 LEGAL AND INSTITUTIONAL SETTINGS

3.4.1 Legal Setting

RA laws affecting water and wastewater infrastructure and enforced by the aforementioned environmental ministries include:

- RA Law on the Principles of Nature Protection (1991);
- RA Water Code (2002);
- RA Land Code (2001)
- RA Law on Environmental Impact Assessment (1995);
- RA Law on Ensuring Sanitary-epidemiological Safety of the RA Population (1992)
- RA Law on the Protection and Use of Fixed Cultural and Historic Monuments and Historic Environment (1998)

(i) RA Law on the Principles of Environmental Protection (1991),

The Law on the Principles of Environmental Protection (1991) outlines the environmental protection policy of Armenia. Its purpose is to ensure state regulation of environmental protection and use within the territory of Armenia. It provides a legal basis for the development of environmental legislation regulating the protection and use of entrails, forest, water, flora and fauna, and the atmosphere.

(ii) RA Water Code (2002),

- Establishment of appropriate water resources management mechanisms;
- Conservation and protection of water resources, including mitigation of pollution, maintenance and supervision of water standards and water level of the national water reserve;



- Prevention of waters harmful impact;
- Ensuring water resources assessment;
- Ensuring water supply to population and economy in necessary quantity and quality by regulated tariffs;
- Safe and smooth work of water supply and wastewater systems provision of normal conditions for their use and maintenance and supervision;
- Organization of management, protection, and development of water systems.

(iii) The RA Land Code,

Regulate the requirements for the establishment and the regime of sanitary protection zones.

(iv) The RA Law on Environmental Impact Assessment (1995),

Mandate an Environmental Assessment for water and wastewater infrastructure projects. The law tries to minimize the actions affecting human health, environment, economic and social development including those related to construction and operation of reservoirs, embankments, dams, canals, pump stations and other hydro-structures as well as actions related to extraction of underground waters, works of reconstruction and construction of wastewater treatment plants.

(v) The RA Law on Provision of the Sanitary-Hygienic Safety for the RA Population, Articles 16 and 23:

The main requirements regarding water supply and water use field are set forth in Article 16 of the Law. Article 23 of this law serves a basis for mandatory implementation of sanitary-hygienic expertise particularly chemical and biological discharges and effluents into the environment.

(vi) Water Quality Standards (2002)

State Standards for Drinking Water in terms of water supply and water use include:

- a) N2-III-22-2 which establishes sanitary protection zones for water pipelines and water supply sources of drinking economic importance.
- b) N2-III-22-1 on quality control which establishes hygienic requirements for drinking water quality as well as rules for control over the quality of drinking water produced and supplied to residential areas through water supply systems.

(vii) RA Public Service Regulatory Commission Degree - of Minimum Drinking Water Supply Rates for Population

To times per year (April, October) PSRC (Public Service Regulatory Commission) of RA sign the Degree for the percentage of customers with the minimum of water supply service per day. That minimum is 4 hours per day. Based on the last Degree of PSRC AWSC is obliged to have 96% of customers with the daily service 4 and more hours, that means the final target is to have all customers with the service not less than 4 hours per day, of course we have obligation for the number of customers with the daily service of 6 hours, 8 hours, 10 etc.



(viii) *The Law on the Protection and Use of Fixed Cultural and Historic Monuments and Historic Environment (1998)*

Provides the legal and policy basis for the protection and use of such monuments in Armenia and regulates the relations among protection and use activities. Article 15 of the Law describes procedures for, among other things, the discovery and state registration of monuments, the assessment of protection zones around them, and the creation of historic-cultural reserves. Article 22 requires the approval of the authorized body (Department of Historic and Cultural Monuments Preservation) before land can be allocated for construction, agricultural and other types of activities in areas containing monuments.

(ix) *International Conventions*

In addition, Armenia has signed or ratified several other international environmental conventions, including:

- Convention on Environmental Impact Assessment in the Trans-Boundary Context (Espo, 1991);
- Dublin Convention on Water and Sustainable Development (1992);
- Convention on the Protection of World Cultural and Natural Heritage (1993);
- Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus, Denmark. 1998);

3.4.2 *Institutional Setting*

In Armenia, SCWS is the primary agency in charge of water management, whereas the MoNP has overall responsibility for water resources and environmental protection and management, including hazardous waste management. Water Resources Management Agency (WRMA) under the MoNP is responsible for the allocation and use permitting of water resources in Armenia. In addition, the Ministry of Health (MoH) plays the lead role in controlling the spread of malaria and other water-borne diseases. Local and regional authorities assume responsibility for natural resource use and protection within their jurisdiction.

(a) *State Committee of Water Management*

In order to rehabilitate financially companies engaged in water economy, to improve their services to consumers, to improve the tariff policy and to implement economic reforms in this sphere, the Government decided to establish a State Committee of Water Management under the Government (RA Government Decision #95, dated 9 February, 2001), according to RA Government Decision #633, dated 15 May 2005 SCWS was included in the structure of the RA Ministry of Territorial Administration.

Within the structure of SCWS, AWSC is responsible for operation and maintenance of the water supply and sewerage system under its service area.

The State Committee of Water Management performs the following functions:

- participates in the policy development related to Water National Plan and water resources protection and use;



- submits to the Government annual reports on water utilization by a breakdown of sources and user companies;
- executes authorized management of state stocks in companies engaged in commercial activities like building of hydro-technical constructions, technical operation, water supply and sewerage services in the area of irrigation, drinking water, sewerage as well as in state entities which implement investment projects in natural and artificial water basins in the mentioned areas at the expense of foreign funding.

(i) Ministry of Nature Protection (MoNP)

The MoNP is responsible for the protection, sustainable use, and regeneration of natural resources as well as the improvement of the environment in the Republic of Armenia. In those areas, the MoNP's authority includes overseeing national policy development, developing environmental standards and guidelines, and enforcement. The MoNP discharges those functions through the following departments:

- Environmental strategic program and monitoring
- Underground resources and land protection policy
- Hazardous Substances and Waste Policy
- Water Policy
- Biodiversity policy
- Atmospheric Air Policy
- Legal
- Public Relations, others

The MNP also undertakes several functions through its structural subdivisions:

- WRMA
- Bio resources management Agency
- The Agency of Waste and Atmosphere Emissions Management
- State Environmental Inspectorate

WRMA under MoNP is the key institution responsible for the water resources management: development of National Water Policy and National Water Plan; classification of water resources by their purpose usage; participation in water standards development and supervise their application, issue water use permits, etc.

State Environmental Inspectorate (SEI) responsible for overseeing compliance with environmental laws and regulations;

There are following SNCOs in the structure of MoNP

- Info & Analytical Center
- National Park SNCOs
- State Reserve SNCOs



- Environmental Expertise
- Environmental Impacts Monitoring Centre (collects water quality data from 131 sampling points);
- Waste Research Centre
- Hydro-geological Monitoring Center

(ii) Ministry of Health (MoH)

State Hygienic and Anti-epidemic Survey of the MoH of RA responsible for the following:

- participating in sanitary norms and drinking water quality standards development;
- coordination of all issues related to health;
- supervise implementation of sanitary norms, hygienic and epidemiological measures implementation by organizations and citizens.

(iii) National Board on Water

National Board on Water (NBW) is the top consulting agency, the staff of which comprises representatives of several ministries. Main actions of the Board lead to the development of recommendations on the National Water Policy and Program.

(iv) Dispute Settlement Commission

Dispute Settlement Commission (DSC) is established under this NBW, which is authorized to settle disputes related to water use permits within the scope of water relations.

(v) Regulatory Commission

Regulatory Commission (RC) is responsible for establishment of tariff policy in water relations and issuing of permits for the use of water systems.

3.5 ADDRESSING ENVIRONMENTAL ISSUES

MWP is expected to finance rehabilitation of the existing water supply systems and expenditures to improve management and operations of AWSC, which should contribute to improve the quality of life and the environment. Specific physical investments will be defined only during the course of the project by the private operator and approved by the WB. Although no additional structures of significant size are envisaged under the project, some reconstructions can entail the installation of new facilities.

It is not expected that the project will require land acquisition since most of the work will be done in properties owned by AWSC, municipal land or rights-of-way assigned to municipal infrastructure.

The EMPF developed by AWSC with an overall framework to guide the preparation and implementation of AWSC annual work program, as well as reflects the environmental guidelines and standards existing in RA.



3.6 EVALUATION OF POSSIBLE ENVIRONMENTAL IMPACTS AND MITIGATING MEASURES

During implementation of Masis, Echmiadzin and Ashtarak sub-projects there will be possible adverse and positive impacts on environment and human health.

The following positive impacts on community social condition and health are anticipated:

Potential Positive Impacts:

- **Improvement of the public health:** The project will increase water availability and improve the physiological and microbiological quality of water supplied to consumers, which should lead to a reduction of the water-borne diseases and a general improvement in public health.
- **Improvement of the public socio-economic situation:** The project will improve socio-economic situation of population covered by the Project.
- **Repair and improved operation of water supply system will ensure water savings, higher quality of drinking water thus reducing pollution threat:** A possible reduction in the amount of raw water used could potentially improve the sustainability of water resource use, as well as leak correction and control will prevent water contamination and activation of land sliding and erosion processes.
- **Rehabilitation of pumping stations and conversion to gravity water supply** will allow reducing amount of consumed energy.

Initial environmental examination (IEE) has identified that in the area of water supply system improvement in Masis, Echmiadzin and Ashtarak subprojects areas no significant, long term, and/or irreversible adverse impacts are anticipated in the landscapes, flora and fauna.

Possible adverse impacts are mainly related to the construction phase, are limited and short-term. To prevent them mitigation measures will be developed and included in environmental management monitoring plans (EMMP), supervising authorities shall follow the plan.

Potential Negative Impacts and mitigation measures

To prevent soil erosion and sediment transport, the following is to be implemented: in inclined sites of the water line route implement measures for retaining the inclinations to prevent soil erosion and sediment transport; minimize the time during which trench and pit excavations for regulation and metering nodes are open

Rehabilitate disturbed surfaces as soon as possible after completion of construction activity, according to the design:

- recover the asphalt-concrete cover in the streets in a good condition;
- recover earth/ gravel covers in streets with deteriorated asphalt-concrete streets and earth/gravel streets.



To exclude **land and water resources pollution with fuels and lubricants**, the latter must be stored and the vehicles serviced on a sealed surface, away from water resources, plan use of special tanks for their collection, which will then be removed to special sites envisaged for re-treatment.

To exclude **land and water resources pollution with chlorine**, organize works for washing the water supply distribution network with chlorine according to the established technical guidelines. Provide appropriate technical means; implement chlorine discharge to surface water body or land area after washing the pipes, according to the regime planned under the design and according to the established regulations. Provide control over the supplied water quality, including tracking of the residual chlorine level.

To prevent **environment pollution with construction and household waste**, equip in construction sites special place for collection of construction waste, during construction works, as well as installation of close bins in the construction site for household waste. Finally remove construction waste to designated landfill of the community, having in advance a written consent with the community heads or landfill operators.

To avoid **threats related with handling and disposal of asbestos containing waste**, the sections of water supply schemes laid with asbestos pipes will be replaced with new piping without unearthing of the decommissioned asbestos pipes. New trenches will be excavated in parallel with the existing pipes to place new pipes. Location of the existing pipes will be accurately marked prior to commencement of excavation, so that they are not encountered accidentally. In case earth works still get in contact with the asbestos pipes, the dug-outs will be immediately closed and the placement of new pipes re-aligned.

To reduce **dust during the construction works**, the construction site and roads are to be regularly watered, and to prevent **noise**, night work in residential areas is to be limited, and usage of machines/equipment with extra noise is to be avoided; installation of silencers if needed.

To reduce **disturbance to population because of overloaded roads** safe area for trucks is to be provided; waste on the construction site must not be accumulated and burnt, construction in stages, give adequate notice of construction activities must be given to the population, effective road signs, diversions or barricades are to be provided.

Provide community participation in subproject design, which will minimize disruption to community social activities.

To prevent **hazards for workers and the population during the construction, the following measures must be implemented**: install fencing around construction site; control access of unauthorized persons to site; place warning signs in dangerous places; carry out regular examination of equipment by highly qualified staff, as well as make regular safety audits; Safety Instructions will be included in the EMMPs as an Annex.



3.7 ENVIRONMENTALLY SOUND CLAUSES FOR CIVIL WORKS CONTRACTS

Most construction phase impacts will be possible to mitigate by including appropriate clauses into the civil works contracts. Clauses should cover, but not limited to, the following issues:

- compliance with general national environmental guidelines;
- compliance with environmental management and monitoring plan (EMMP) attached to the contract;
- protection of Historic-cultural monuments;
- formally permitted disposal of construction and excavation wastes;
- permitted placement of construction camps.

3.8 PUBLIC CONSULTATION AND COORDINATION

The Armenian Environmental Laws regulating public consultation and coordination, as well as information availability to public are listed below:

- The “Fundamentals of the RA legislation on Nature Protection” ensure citizen's right to request complete information concerning the environmental situation and obtain it in time.
- The Law “On Environmental Impact Assessment” sets forth the process of assessment of environmental impacts.

The new Water Code also addresses public participation principles.

The MoNP according to existing legislation is responsible for ensuring public awareness about sub-projects of all EA Categories through mass media (TV, radio, newspapers), as well as notify local authorities and concerned NGOs about environmental aspects of a project with further consideration of their views during project preparation and implementation phases.

Taking into consideration requirements of the above mentioned legislation, as well as WB guidelines for all Category B subprojects, AWSC will be responsible for organizing disclosure of the sub-project specific EMMPs to the local communities and other stakeholders, soliciting public opinion/comments, and incorporating them into the sub-project designs and EMMPs as feasible. AWSC will provide relevant material in a timely manner prior to consultation with project-affected groups and local NGOs and in form and language that are understandable and accessible to the group being consulted. Public Consultation meeting minutes should be attached to EMMPs.

3.9 ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN

The EMMP will be based on the results of environmental screening under the investment program and will include appropriate mitigation measures.



EMMP consists of two components:

1. Mitigation measures and institutional responsibilities for implementation;
2. Environmental monitoring.

The Contractor should strictly follow the environmental mitigation measures prescribed in the EMMP. The costs foreseen for the implementation of all the measures prescribed in the EMMP are included the total value of the Contract.

Failure to implement each of the measure recorded by the Technical Supervision Company (TSC) or the Client would be send to the Contractor in written as a Notification.

- After the Notice to Correct, the next recorded violation would be bind to the liquidated damages amounting at 0,1 % of the total value of the Contract. The liquidated damages do not relieve the Contractor from remedying the violation. The recorded violation should be remedied in two working days period. Liquidated damages would be retained from the next Performance Certificate and after the completion of the construction activities the liquidated damages for the recorded violation will be retained from the Retention Money.
- In case of three liquidated damages the Contract could be terminated unilaterally.

Mitigation measures and institutional responsibilities for implementation

Table 1-3 presents the potential negative environmental impacts during rehabilitation and operation of water supply systems. For each potential impact Table 1-3 identifies:

- the proposed *mitigation measure(s)*; and
- the parties or agencies charged with implementing those measures, separated into:
 - ✓ ***Executive agencies, which are responsible for implementation of the measure.***
 - ✓ ***Supervising agencies, which are responsible for controlling the executive agencies to provide implementation of the EMMP measures by the latter***
 - ✓ ***Monitoring agencies, which are responsible for observing the extent and efficiency of EMMP implementation and making corrections, if needed.***
 - ✓ ***State monitoring agencies, state insinuations, which are responsible for observing the extent and efficiency of projects***

2. Environmental Monitoring

AWSC, through its **PIE**, carries overall responsibility for environmental compliance of works performed under the MWP and to meet this responsibility provides day-to-day environmental supervision of the project implementation. According to the requirements of the national legislation, AWSC/PIE hires a **licensed TSC** to provide technical supervision of works, including environmental monitoring. AWSC's



own environmental staff oversees performance of the TSC for the purpose of quality assurance, which implies review of TSC's monthly reports and validation of the provided information through periodic field visits of AWSC's environmental staff.

SCWS, through its **CMMU**, while providing general oversight and support of the MWP implementation, tracks performance of works contractors, including application of the environmental mitigation measures included in EMMPs, which are integral part of civil works contracts.

Various line agencies authorized to carry out control of respective thematic aspects pertaining MWP at its construction and operation phases include:

- **State Environmental Inspectorate** of the RA Ministry of Nature Protection,
- **State Hygiene and Anti-Epidemic Inspectorate** of the RA Ministry of Health,
- **State Agency for Protection of Historical and Cultural Monuments**, if necessary,
- **RA Ministry of Transport and Communications;**
- **Local self-governance bodies.**



**ENVIRONMENTAL IMPACT MITIGATING MEASURES
AND MEASURES FOR PREVENTING LIFE, HEALTH AND SAFETY RISKS**

Table 1-3

<i>Possible adverse impact</i>	<i>Impact mitigation and monitoring activities</i>	<i>Executing agency</i>	<i>Supervising agency</i>	<i>Implementation period</i>	<i>State monitoring agency</i>
REHABILITATION, CONSTRUCTION AND IMPROVEMENT OF W&W SYSTEMS					
Construction and household wastes (garbage) origination and transportation	Obtaining of relevant permission for transportation of household wastes from local self-governing bodies and relevant department of the RA Ministry of Health.	Contractor	TSC, AWSC CJSC	Before commencement of construction works	RA Ministry of Nature Protection (MoNP) RA Ministry of Health (MoH) Local self-governing bodies (LSGB)
	Organization of wastes removal in the areas designated for their collection upon completion of construction works pursuant to established manner	Contractor	TSC, AWSC CJSC	During construction works and after its final completion	LSGB RA MoH
Temporary air pollution/ dust origination	Use of closed/covered vehicles for transportation of powdery construction materials	Contractor	TSC, AWSC CJSC	During construction works	RA MoNP RA MoH
	Regular watering of construction sites in populated areas	Contractor	TSC, AWSC CJSC	During construction works	LSGB RA MoH



<i>Possible adverse impact</i>	<i>Impact mitigation and monitoring activities</i>	<i>Executing agency</i>	<i>Supervising agency</i>	<i>Implementation period</i>	<i>State monitoring agency</i>
	Provision of protective means (masks) to the workers in dusty environment	Contractor	TSC, AWSC CJSC	During construction works	RA MoH
Contamination of soil and water resources with fuel and lubricants	Storage of required fuel and lubricants in isolated areas far from water resources and without direct contact with soil	Contractor	TSC, AWSC CJSC	During construction works	RA MoNP RA MoH
	Special containers for collecting used lubricants and their further removal to special or processing areas	Contractor	TSC, AWSC CJSC	During construction works	RA MoNP RA MoH
Adverse impact of noise and vibration	Implementation of construction works during working hours and use of silencers in established manner	Contractor	TSC, AWSC CJSC	During construction works	RA MoH LSGB
	Regular checkup of the construction technique	Contractor	TSC, AWSC CJSC	During construction works	RA MoH LSGB
	Provision of noise silencing means (headphones) to the workers working in noisy environment	Contractor	TSC, AWSC CJSC	During construction works	RA MoH
Inconveniences caused to the households	Installation of appropriate road signs and by-pass arrangements in case of necessity	Contractor	TSC, AWSC CJSC	During construction works	LSGB



<i>Possible adverse impact</i>	<i>Impact mitigation and monitoring activities</i>	<i>Executing agency</i>	<i>Supervising agency</i>	<i>Implementation period</i>	<i>State monitoring agency</i>
	Provision of relevant information on construction works Installation of small bridges	Contractor	TSC, AWSC CJSC	Before commencement of construction works During construction works	LSGB
Impact on cultural and historical monuments	Immediate termination of excavation works in case of finding items of cultural value and sending relevant information to the Agency of protecting cultural heritage	Contractor	TSC, AWSC CJSC	During construction works	RA Ministry of Culture
Landscape degradation and soil erosion	Removal of top soil into separated areas and its restoration upon completion of construction works	Contractor	TSC, AWSC CJSC	During construction works and after its completion	RA MoNP
	Minimizing the time for keeping open the trenches for water lines, as well as for regulation and water metering chambers	Contractor	TSC, AWSC CJSC	During construction works and after its completion	RA MoNP



<i>Possible adverse impact</i>	<i>Impact mitigation and monitoring activities</i>	<i>Executing agency</i>	<i>Supervising agency</i>	<i>Implementation period</i>	<i>State monitoring agency</i>
	Installation of gabions for laying waterlines in the terrain with slope	Contractor	TSC, AWSC CJSC	During construction works and after its completion	RA MoNP
	Restoration of damaged surfaces within the shortest possible time according to design	Contractor	TSC, AWSC CJSC	After completion of construction works	RA MoNP RA Ministry of Urban Development /MUD
SAFETY MEASURES					
Construction site mobilization	Separate area for construction technique/equipment, fencing of construction site in case of necessity, illumination at nights *	Contractor	TSC, AWSC CJSC	During construction works	RA MoH LSGB RA MoUD
	Storage of lubricants in the construction site isolated areas *	Contractor	TSC, AWSC CJSC	During construction works	RA MoNP LSGB RA MoUD
	Fencing of construction site, construction of roads for reaching the site *				



<i>Possible adverse impact</i>	<i>Impact mitigation and monitoring activities</i>	<i>Executing agency</i>	<i>Supervising agency</i>	<i>Implementation period</i>	<i>State monitoring agency</i>
	Installation of safety posters, signals, informing, prohibiting warning signs and notices in dangerous zones of the site *				
Operation of construction technique	Positive expertise report for operating cranes, machines, machinery, equipment in the construction site*	Contractor	TSC, AWSC CJSC	During construction works	RA Ministry of Emergency Situation
Conduct of earth works in sites with asbestos pipes currently in operation	Accurately demarcate location of asbestos pipes and excavate cautiously long the marked area to avoid contact with existing pipes. In case of unintended unearthing of asbestos pipes, immediately backfill the dug-out area, compact soil, and place warning signs.	Contractor	TSC, AWSC CJSC	During excavation works	RA MoNP
Safety, sanitary conditions of workers	Installation of temporary shelters for workers equipped with first aid kits and anti fire facilities *	Contractor	TSC, AWSC CJSC	During construction works	RA MoH RA MoUD
	Appropriate sanitary conditions for the workers *				



Possible adverse impact	Impact mitigation and monitoring activities	Executing agency	Supervising agency	Implementation period	State monitoring agency
	Provision of special overalls and uniforms *				
	Installation of protective walls in trenches *				
OPERATION AND MAINTENANCE OF W&W SYSTEMS					
Safety hazards from chlorination processes	Continuous control of chlorination stations Training of operators Installation on chlorine leak detectors Require protection and emergency response equipment for operators	AWSC	SCWM	During operation	MoNP MoH
Soil and water contamination by water treatment sludge (river, well, spring catchments)	Using of approved disposal sites according RA legislation	AWSC	SCWM	During operation	MoNP MoH
Pollution of water sources due to domestic animal, cattle, sheep breeding	Proper operation and maintenance of sanitary protection zones	AWSC	SCWM	During operation	MoNP MoH

* See detailed explanation in AWSC's "Guidelines of activities to ensure health and safety during mobilization and construction works" which will be included in EMP for each subprojects



3.10 ENVIRONMENTAL REPORTS AND DELIVERABLES

- Licensed TSC will be responsible for carrying out permanent environmental monitoring of works under the MWP and preparation of the environmental supervision reports on monthly basis, according to the EMMPs. The format of report will be provided once sub-project specific EMMPs are available.
- AWSC staff will prepare quarterly reports on the supervision process of environmental and safety measures implementation during construction works. Reports will be submitted to AWSC Management/Board, SCWS, WB and other interested parties within 3 weeks form the end of a quarter.



CHAPTER 4. PROCUREMENT MANAGEMENT

4.1 INTRODUCTION

Procurement is a critical element in project implementation and unless carried out efficiently and promptly, the full benefits of the project cannot be realized. Poor procurement leads to project delays, cost overruns, complaints by bidders, and affects creditability of the associated institutions. To enable uniform and effective procurement, this chapter provides general guidelines to all concerned. The responsibility for the execution of the project and for the awards and administration of the Contracts under the project rests with the PIE.

Particularly, the PIE will be responsible for carrying out all procurement activities under the Project in compliance with the World Bank procurement guidelines. More specifically, the procurement under the Project will be carried out in accordance with the World Bank's procedures as specified in the World Bank's Guidelines:

- "Guidelines: Procurement of Goods, Works and Non-Consulting Services Under IBRD loans and IDA Credits by World Bank Borrowers" (January 2011),
- "Guidelines: Selection and Employment of Consultants Under IBRD loans and IDA Credits by World Bank Borrowers by World Bank Borrowers" (January 2011).

It is the WB's policy to require that Borrowers (including beneficiaries of Bank loans), as well as bidders suppliers and contractors observe the highest standards of ethics during the procurement and execution of contracts. In pursuance of this policy the World Bank Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credit and Grants dated October 15, 2006 and revised on January 2011, would also apply.

4.2 PROCUREMENT PLAN

The Procurement Plan (PP) is a key program planning and budget implementation document. A PP will include estimated cost of each package, the method of procurement/selection, the prior or post review requirements and other bidding details, shall be prepared by PIE and the same shall be finalized in consultation with the Bank.



The PIE, with assistance from the World Bank, has developed an initial procurement plan for project implementation which provides the basis for the procurement methods and timing. The PP will be updated in agreement with the General Director of AWSC and agreed with the World Bank at least annually or more frequently as required to reflect the actual project implementation and will be posted at the Bank's web site and at the web with open public access without cost estimation.

4.3 PROCUREMENT'S ADMINISTRATION

All the goods, works and consulting services required for the MWP and to be financed out of the proceeds of the Loan shall be procured in accordance with the requirements set forth or referred to in the applicable Procurement Guidelines, and with the provisions of this Section.

PIE shall prepare all the bidding documents for procurement of goods and works and request for proposals for selection of consultants under the MWP using Technical Specifications and TORs prepared by the other departments of AWSC, and obtain Bank's "no-objections", as needed. Depending on the type and nature of the specific bid (national or international), the bidding documents will be prepared in English or Armenian.

PIE will publish all the necessary advertisements/publication for procurement of goods, works and services in local newspaper (as a rule, these advertisements will be published in "Hayastani Hanrapetutyun" Daily) and in the web site with open public access, i.e. www.procurement.am. Whenever international advertising is required under the provisions of the respective WB guidelines, the advertisements will be published on-line in UNDB.

4.4 EVALUATION COMMITTEE OF PIE

Evaluation of bids/proposals will be carried out by the PIE's Evaluation Committee(s) (EC), appointed by General Director of AWSC. The EC to conduct bids'/proposals' evaluation will be established by a special Order of the General Director of AWSC before the commencement procurement activities. Special Orders may be issued for single procurement item or several items that are similar in their nature and essence.

The EC will open and evaluate bids/proposals.

The EC has a Chairman and a Secretary appointed by the Order establishing the Committee. The secretary is not a Committee Member.

The Secretary will

- 1) organize the activities of the Committee



- 2) receive and records bids
- 3) prepare and submits documents to the Management Board for approval
- 4) prepare relevant documents by putting down and checking information on the Committee activities;
- 5) ensure safe maintenance of these documents during the period of Committee's functioning.

Depending on the complexity of procurement item, the number of EC members may vary from 3 to 7. The General Director may request to replace the proposed EC member if: (i) before or during EC working sessions it becomes apparent that the person nominated is incompetent in the field of procurement subject or (ii) conflict of interest provision is applicable to the nominated person; or (iii) the person nominated ignores the invitation to be present on working sessions or unable to be present for any other reason for two consecutive times, however, provided that such person has been duly notified by PIE at least one day prior to the EC working session; or (iv) the person refuses to sign a Declaration of Impartiality (**see Attachment No 1**). Each member of EC should make its evaluation and judgment independently.

In case of tenders with cost of 350 mln AMD and more, PIE shall submit evaluation results to the GOA for approval prior to contract signing.

4.5 CONTRACTS ADMINISTRATION

The payment condition indicated in the BDS and RFP should be agreed with FM prior of issuing these documents. PIE will be responsible for contracts administration (day-to-day oversight of work progress, approval of completed works/deliverables, drafting requests for contract extension and/or change orders). PIE will be responsible for timely payments as well as for timely submission of the requests for approval of contract extension and/or change orders in accordance with WB guidelines.

The importance of Contracts administration to the success of the contract, and to the relationship between customer and provider, should not be underestimated.

The contract documentation itself must continue to accurately reflect the arrangement, and changes to it (required by changes to services and WB procedures) carefully controlled. Responsibility for authorizing different types of change will often rest with different people, and documented internal procedures will need to reflect this.

The following team is responsible for contract administration:

1. General Director
2. Director of IPCD



3. Financial Officer(s)
4. Accountant(s)
5. Component Coordinator(s)
6. Procurement Officer(s)
7. Environmental and Social Impact Officer(s)
8. Lawyer

Procurement officer is responsible for follow-up the contract duration as per signed contracts and availability and content of required securities as per BDs. Particularly, the Bid and Performance securities will be reviewed by the Procurement as to Advance payment security , it will be reviewed by Procurement and Finance officers.

Custom clearance will be handled by the Custom Agent of AWSC's based on the documents checked by relevant AWSC's departments.

Amendments/modifications of the Contracts for Goods and Consulting Services shall be prepared by Component/Contract Coordinators in collaboration with Procurement Officer. In line of amendments/modifications for works contracts the engineering unit will bear responsibility.

Acceptance procedure for works, goods and services will be executed by the Acceptance Committee formulated by the General Director's order.

The PIE shall be responsible for arranging all the communication and reporting to the WB for any matter related with the procurement under the MWP.



CHAPTER 5. FINANCIAL MANAGEMENT*

5.1 INTRODUCTION

In order to enable consistency and quality in managing the financial aspects of the project, this chapter outlines the operating procedures relating to financial management of PIE. It includes institutional arrangements, fund flow mechanism, budgeting, accounting, auditing and reporting. The coverage is by no means exhaustive. Issues which have not been addressed here would have to be considered on a case-by-case basis by the PIE as and when they arise during the execution of the project.

5.2 FINANCIAL ARRANGEMENTS

The Finance and Accounting Management Unit (FAMU) of the PIE should establish an efficient and effective funds disbursement, financial accounting, cost control, reporting mechanism that will enable the PIE to comply with its mandate to establish sound financial management of the MWWP AF2.

The FAMU is responsible for revision and processing of documents that will ensure the proper acquisition of assets, services, and equipment for the normal operation of the PIE and in compliance with the AWSC internal rules and regulations.

5.3 FUNDS FLOW

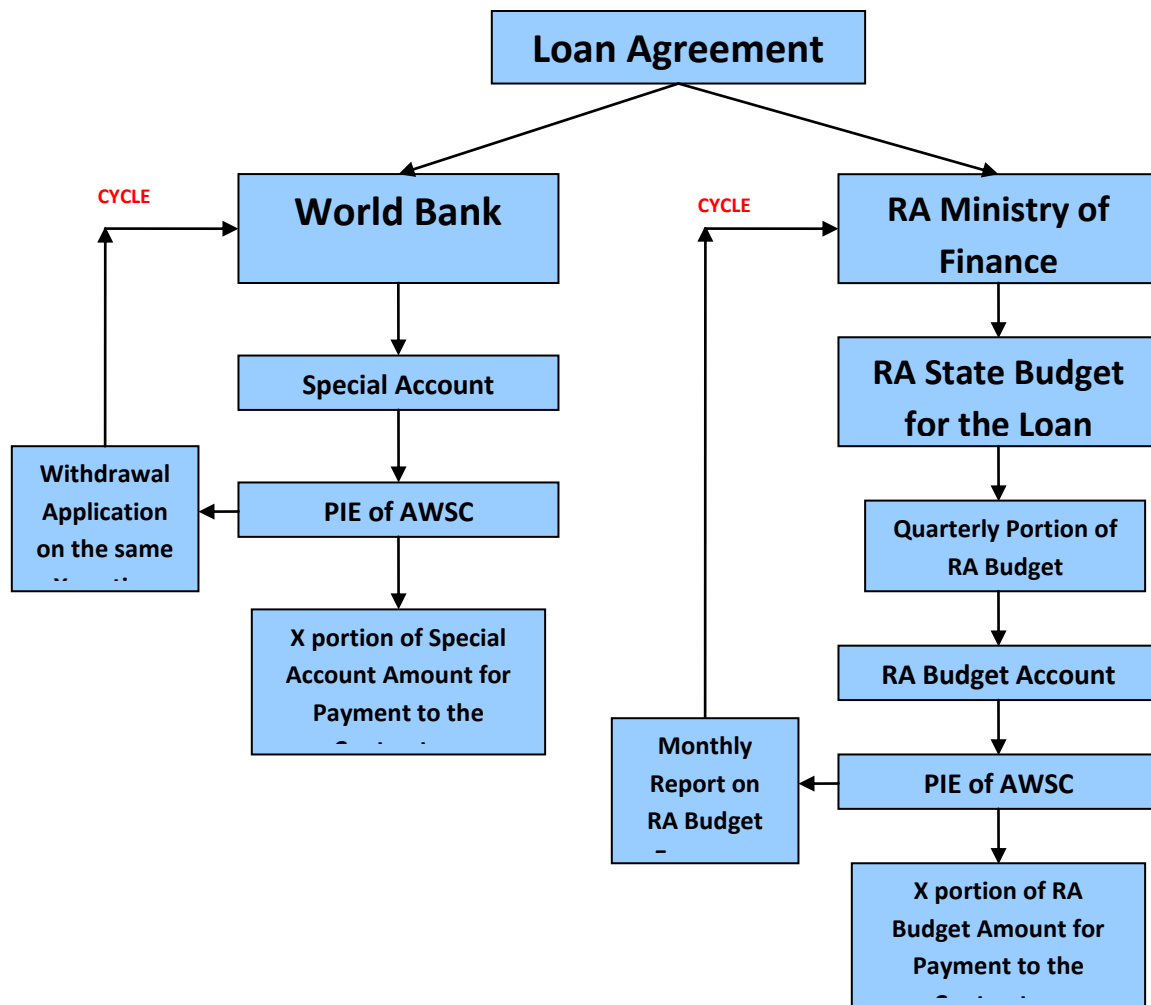
The project funds will be maintained in the State Treasury. For that purpose AWSC will open the project's Designated Account at State Treasury and will administer the project funds via Treasury-Client system.

For the government co-financing funds another account will be opened and maintained at the State Treasury.

The proceeds of the project are disbursed in accordance with the Bank procedures, Legal Agreements, Disbursement Guidelines and Disbursement letter. The details of the funds flow are given in the **Figure 2**.



Figure 2. FUNDS FLOW



5.4 BUDGETING, FINANCIAL REPORTING AND AUDIT

5.4.1 Budgeting

The MWWP AF2 Project plans and budgets must be developed by the AWSC managed by the MC (SAUR S.A.S., France) in collaboration with the SCWS and valuable input of the WB consultants. The final plans and budgets are submitted to the PMB approval.



PIE of AWSC is responsible for preparation of Project annual budget. The annual budget is based on procurement plan, which is regularly updated by procurement specialist. The MWWP AF2 Operating budget (including the list of members of the PIE staff) prepared by the Financial/Disbursement Officer is reviewed by the Project Manager and agreed with Directors of the AWSC, MOF and approved by the PMB.

All necessary changes are reviewed by the Director of the Investment Projects Coordination Department of AWSC and approved by the AWSC General Director and the WB.

The budget is represented by the categories, components and financial sources according to the requirements of the WB projects

All variation from the budgets of the Project the AWSC agrees with the WB in advance and with the MOF and SCWS, if necessary, and then makes changes in the annual budget.

5.4.2 Financial reporting

PIE shall produce a full set of IFRs every semester throughout the life of the Project. The format of IFRs includes: (i) Project Sources and Uses of Funds, (ii) Uses of Funds by Project Activity, (iii) Designated Account Statements, (iv) Balance Sheet, and (v) SOE Withdrawal Schedule. These financial reports will be submitted to the WB within 45 days of the end of each calendar semester covering the semester in forms and substance satisfactory to the Bank. The first quarterly IFRs will be submitted after the end of the first full semester following the initial disbursement.

PIE also will submit monthly and quarterly reports for GoA by sources of funds showing project financing and expenditures by categories with variance of actual expenditures with budgeted and programmed allocations.

5.4.3 Accounting and Finance Internal Control

Accounting cycle process has a number of controls to ensure the transparency and efficiency of the operation. These procedures and controls are the basically general mechanism to be applied in a Project operation. If during implementation there is any reason to develop more controls or steps in the accounting operational flow they should be implemented.

- (i) Financial Specialist will review the origin document to verify the compliance with the conditions to accept the document and then send for the registration in the accounting system
- (ii) The Accountant will receive and review the documentation from the financial specialist. He/she will decide if the documentation needs previous approval or not and then the Accountant will proceed to introduce the information in the accounting system, and an expenditure document will be produced.
- (iii) The Accountant, before printing the payment advice, compares the number of the payment advice in the accounting document with the payment advice to be printed. The Accountant will print the payment advice with the expenditure document. In addition he/she will register the number of the payment advice in a separate ledger as an addition control.



- (iv) Complete documentation of the process will be sent to the financial specialist. This includes the origin document, expenditure notes, and payment advice for his/her revision. The Financial specialist will review the documentation.
- (v) Project Manager will review all the documentation and validate the process by signing the expenditure document, and sending the payment advice to general Director for signing them
- (vi) When signed by the General Director the Project manager sends the documentation to the financial specialist. The Financial specialist will review the documentation making sure that the signatures and documentation are in place.
- (vii) If an error is detected the Financial Specialist will send the documentation for immediate correction. The Accountant will review the documentation and if it is complete he will be responsible to file the documentation in order.

5.5 AUDIT

The audit of the project will be conducted (i) by independent private auditors acceptable to the Bank, on terms of reference (TOR) acceptable to the Bank and procured by AWSC, and (ii) according to the International Standards on Auditing (ISA) issued by the International Auditing and Assurance Standards Board of the International Federation of Accountants (IFAC).

The annual audited project and entity financial statements will be provided to the Bank within six months of the end of each fiscal year, and for the project also at the closing of the project. The Borrower has agreed that it will publish (posting on www.armwater.am Website/or publishing in a national newspaper) the audit reports for the project and entity within two weeks of receipt of the reports from the auditors.

5.6 DISBURSEMENT

5.6.1 Withdrawal Application

The withdrawal applications to the WB will be valid if in the name of the RA Government it is signed by the Chief Treasurer and the Chairman of the SCWS and in the name of AWSC it is signed either by:

1. the AWSC General Director sole signature,
or simultaneously by:
2. First Signature – the AWSC Director of Investment Projects Department
Second signature – the AWSC Administrative Director

5.6.2 Request for Payment

The request for payments will have basic information regarding the sub-project, like name of the sub-project, source of funding assigned, disbursement category, amount to be disbursed, number of disbursement, and advance of the sub-project at the moment of the request.

The payment memorandum will have at least the following information: sub-project name, amount, disbursement category, payment number, and the instruction requesting the disbursement. The memorandum will be also signed by the responsible of the sub-project and the unit manager.



In case there is a return of a payment by any contractor of a previously authorized payment, the unit will produce a memorandum attaching the payment document and complete information of the sub-project. In case of a change of order, the memorandum will be accompanied of an itemized description of the change order approved by the executive committee. The itemized change of order takes the form of a payment request bill.

All of this documentation properly signed and complete will constitute in the only valid documents to process payments for sub-projects financing. Financial/disbursement specialist is process of registration. If the request for payment is made for a new sub-project, then the Accountant will create the corresponding account in order to produce the expenditure document. If the request for payment is made for an existing sub-project, then the Accountant will make the corresponding entries.

- ***Detailed information is provided in the “Financial Manual”.***



CHAPTER 6. MONITORING, EVALUATION, FORECAST, REPORTING

6.1 MONITORING AND EVALUATION

Monitoring and Evaluation (M&E) of Project is done for two purposes. The first is for the M&E of Project implementation while the second is for the M&E of Project outcomes. In either case, M&E has to be done using a set of Project Performance Indicators. M&E will review physical, economic, social and environmental impact of the Project.

6.2 PERFORMANCE INDICATORS AND FORECAST

Performance Indicators are measures of inputs, processes, outputs, outcomes, and impacts for Projects and Programs. When supported with sound data collection—perhaps involving formal surveys—analysis and reporting to demonstrate results, and take corrective action to improve service delivery. Involvement of key stakeholders in defining indicators is important because they are then more likely to understand and use indicators for management decision-making.

The Table 1-4 presenting the annually baseline and target values for the Masis, Echmiadzin and Ashtarak towns, which are proposed for the MWP project. The indicators are to be closely monitored during the project implementation.

Table 1-4

		Investments M\$					Daily service (Hours/day)			
		DONORS	2012	2013	2014	Total	Base Year 2010	Target 2012	Target 2013	Target 2014
1	Ejmiatsin city	WB		1.00	1.80	2.80	11.90	12.30	12.80	16.00
2	Masis city	WB	0.80	2.00		2.80	16.94	17.34	17.84	21.04
3	Ashtarak City	WB		1.00	1.80	2.80	8.18	9.78	10.78	12.78

		Investments M\$					Losses (%)			
		DONORS	2012	2013	2014	Total	Base Year 2010	Target 2012	Target 2013	Target 2014
1	Ejmiatsin city	WB		1.00	1.80	2.80	82.6%	82.6%	75.0%	70.0%
2	Masis city	WB	0.80	2.00		2.80	83.6%	83.0%	75.0%	70.0%
3	Ashtarak City	WB		1.00	1.80	2.80	84.3%	83.0%	75.0%	70.0%

		Investments M\$					Bill payment (000'AMD)			
		DONORS	2012	2013	2014	Total	Base Year 2010	Target 2012	Target 2013	Target 2014
1	Ejmiatsin city	WB		1.00	1.80	2.80	222,106	244,317	252,868	261,719
2	Masis city	WB	0.80	2.00		2.80	107,361	118,098	122,231	126,509
3	Ashtarak City	WB		1.00	1.80	2.80	94,868	104,355	108,007	111,788



6.3 M&E OF PROJECT IMPLEMENTATION AND REPORTING

During implementation the CMMU shall monitor and evaluate progress and results against a work plan and results framework. The PIE shall send a quarterly progress report on project implementation to the CMMU for the further distribution to the SCWS, WB, and other interested parties no later than 45 days from the end of the quarter.

The PIE will prepare composite quarterly project reports to describe the physical progress in all project cities, as well as outputs and outcomes delivered by the program highlighting successes; constraints; and whether planned targets were achieved or otherwise. These project reports will be sent to the World Bank not later than 45 days after the end of the quarter covered by such report.

The specific aims of the report would be to monitor timelines and expenditures in the completion and delivery of scheduled activities and outputs respectively, and highlight exceptions, including:

- Proportion of scheduled activities that were commenced and completed on time.
- Proportion of scheduled expenditure incurred for the activities undertaken
- Details of activities that were started or finished late
- Special issues that were experienced or are anticipated and proposed remedial actions
- Major activities planned for the next quarter.

. Such reports should be available for public access on a website of AWSC and feedback received should also be published.

*Details according Environmental reporting are mentioned in CHAPTER 3.



ATTACHMENTS



ATTACHEMENT No 1
DECLARATION OF IMPARTIALITY AND CONFIDENTIALITY¹

Project:.....

Credit No.....

Assignment:

I, the undersigned.....

Having been nominated by "Armenian Water and Sewerage" CJSC

To participate as Member of the Evaluation Committee constituted to evaluate the
submitted for Project –

I, the undersigned, hereby declare that I agree to participate in the evaluation of the above-mentioned By making this declaration, I confirm that I have familiarized myself with the information available to date concerning this request for proposals/or bidding. I further declare that I shall execute my responsibilities honestly and fairly. I am independent² of all parties which stand to gain from the outcome of the evaluation process³. To the best of my knowledge and belief, there are no facts or circumstances, past or present, or that could arise in the foreseeable future, which might call into question my independence in the eyes of any party; and, should it become apparent during the course of the evaluation process that such a relationship exists or has been established, I will immediately cease to participate in the evaluation process.

I agree to hold in trust and confidence any information or documents ("confidential information") disclosed to me or discovered by me or prepared by me in the course of or as a result of the evaluation and agree that it shall be used only for the purposes of this evaluation and shall not be disclosed to any third party. I also agree not to retain copies of any written information or prototypes supplied. Confidential information shall not be disclosed to any person not included in the Evaluation Committee.

NAME	
SIGNED	
DATE	

¹ To be completed by all persons involved in an evaluation process (including members of the Evaluation Committee, whether voting or not-voting and any observers)

² Taking into consideration whether there exists any past or present relationship, direct or indirect, whether financial, professional or of another kind

³ ie, all firms who are participating in the request for proposals/ or bidding, whether individuals or members of a consortium or firms, or any of the partners or subcontractors proposed by them.