REPUBLIC OF ARMENIA

Shirak Water and Sewerage CJSC, now "Water Sector Projects Implementation Unit", State Agency of State Committee of Water Economy of the Republic of Armenia

German Financial Cooperation with Armenia through KfW,
European Investment Bank (the "EIB"),
EU Neighbourhood Investment Facility (the "NIF"),
and the Republic of Armenia

COMMUNAL INFRASTRUCTURE PROGRAM (CIP) II,

PHASE 3 – ARMENIA, WATER AND SANITATION

CIP II-P3-SH

Lot-1: Design, Technical and Author Supervision of the water supply network and sewer systems of the Shirak Water and Sewerage CJSC service area

ENVIRONMENTAL SOCIAL IMPACT ASSESSMENT
LOT 1.1 AND 1.2 – GYUMRI CITY AREA

PRELIMINARY ASSESSMENT APPLICATION

Lead Partner:
GITEC-IGIP GmbH
(Germany)

in association with
HGSN LLC.
(Armenia)

Consulting & Engineering Services Worldwide GITEC CONSULT GMBH

HGSN

CONTENTS

ABBREVIATION LIST

BPT	Break Pressure Tank
CIP	Communal Infrastructure Programme
CJSC	Closed Joint Stock Company
EIB	European Investment Bank
EIA	Environmental Impact Assessment
EMMP	Environmental Management and Monitoring Plan
EMP	Environmental Management Plan
ESIA	Environment and Social Impact Assessment
ESMP	Environmental and Social Management Plan
EU-NIF	European Commission – Neighbourhood Investment Facility
EUR	EURO currency
GoA	Government of Armenia
ISO	International Standard Organisation
KfW	KfW Development Bank
l/c/d	litre per capita per day
MoM	Minutes of Meeting
NSS RA	National Statistical Service of the Republic of Armenia
PE	Population equivalent (pollution equivalent to the production of one inhabitant)
PEA	Project Executing Agency (Shirak Water and Sewerage CJSC)
PRV	Pressure Reducing Valve
RA	Republic of Armenia
RA MES	RA Ministry of Emergency Situation
RA MOH	RA Ministry of Health
RA MNP	RA Ministry of Nature Protection
SCWE	State Committee of Water Economy of the RA Ministry of Energy Infrastructures and Natural Resources
SEP	Stakeholder Engagement Plan
SNCO	State Non-Commercial Organization
SS	Total Suspended Solids
UNECE	United Nations Economic Commission for Europe
WSPIU	Water Sector Project Implementation Unit, SA
WWTP	Waste Water Treatment Plant

1. PROJECT BACKGROUND

This is '***Environmental and Social Impact Assessment'*** report for the rehabilitation works of water supply and sewer systems in the service area of the former Shirak Water and Sewerage (SWSC) Closed Joint Stock Company. The project is part of the framework of the Communal Infrastructures Programme (CIP) II, Phase 3, which is now under the remit of the Water Sector Projects Implementation Unit, which is a state agency of the 'State Committee of Water Economy'.

The programme is financed by KfW, EU-NIF and the government of the Republic of Armenia. The previous phases (Phase 1 and 2) have seen construction of new reservoirs and replacement of more than 50% of reticulation network in Gyumri town area and three adjacent villages. The programme covers Gyumri town area and is the third phase of the overall project, which targets improvement of the water supply sewerage, to provide uninterrupted, safe and hygienic water supply, thus raising population livelihood and health conditions.

The project covers rehabilitation, renovation and expansion of water supply network, as well as some urgent measures in regard to the sewer system in the service area of Shirak Water and Sewerage CJSC. The proposed works under Phase 3 foresee the replacement of water distribution network in the Gyumri town area, isolation and disconnection of the old water distribution system, new water distribution systems in several villages, and replacement of an approximately 6 km of existing sewer in Gyumri town area.

1.1. Policy, Legal and Institutional Basis

1.1.1. RA legislation on the environmental impact assessment and management

Legislation on environmental impact assessment and expertise constitutes from RA constitution, RA involved international contracts, RA laws on "Environmental impact assessment and expertise" and arising regulations, also from other legal acts.

In 1995 RA Constitution was adopted, the article 10 of which defines state responsibility for environmental protection and restoration, rational use of natural resources.

Environmental impact assessment system in RA is ruled by "Environmental impact assessment and expertise" RA law (2014). This law regulates the environmental impact assessment and public relations of environmental impact state expertise sector.

Current legislative framework regulating the environmental protection and use of natural resources covers also multiple legislative acts. RA Government decisions are the main legal instruments of environmental impact law enforcement. The sector is also regulated by the decisions and orders of RA president, vice-president and ministers.

Table 1 briefly introduces main provisions of the laws which relate to the implementation of different components of water supply system reliability and efficiency program, particularly to the environmental and social analysis issues of the water supply systems rehabilitation program.

The Republic of Armenian has signed and ratified also a number of international conventions and protocols

on environmental protection presented in Table 2. The outlined are the ones most relating to the initial environmental screening and impact assessment (EIA) of this project.

This report has been generated in accordance to the related RA legislation and normative acts (Table 1), and the RA commitments under international agreements (Table 2). The report also involves a number of laws and sub-legislative acts regulating construction sector defining construction norms and standards, and also the RA law (2006) on "Alienation of property for state and public needs".

The assessment works in this report have been carried out based on the relevant provisions of the RA law on "Environmental impact assessment and expertise" (June 21, 2014). The latter in accordance to the intended activities has been classified as Category 'C' type of activity, pursuant to the requirements of environmental impact preliminary assessment application expertise preliminary phase, according to which the expertise is performed with one/preliminary/ phase.

When making assessments in this report other legislative provisions have also been taken into account. They relate to environmentally specially protected areas, protection of atmospheric air, cultural and historical monuments, flora and fauna, water resources, waste management, provision of labor safety and sanitary conditions of workers.

Impacts possibly arising during the implementation of intended works will be prevented and/or mitigated due to timely and proper implementation of mitigation measures covered in detail by the EIA in Appendix 1.

Preliminary assessment report includes possible effects on the environment, as well as on various groups of the population in different stages of the project (construction and operation).

Table1.

RA legislation on environmental protection sector

No.	Title	Regulatory spectrum
1.	"Environmental impact assessment and expertise" RA law (2014)	RA law on "Environmental impact assessment and expertise" (2014) constitutes key steps of EIA for different kinds of projects and activities in RA. The law stipulates general legal, economic and organisational principles intended for the obligatory EIA implementation and expertise conclusion on different projects and branch development "concepts". Article 14 of the Law stipulates environmental impact and intended activity types subject to the environmental impact by the spheres, which are classified into three categories 'A', 'B', 'C' on the basis of decline of environmental impact degree. "Special status" of any area also creates a need for an environmental impact study. The law clarifies notification, documentation, public consultations and grievance procedures.
2.	"Specially Protected Natural Areas" RA (2006)	It stipulates specially protected natural areas and their management procedures; identification and management procedures of specially protected natural areas. It distinguished four types of preserved RA lands: state nature zone, state reserve lands, national parks and natural monuments.
3.	The RA law on "Preservation and use of the immovable historical and cultural monuments and historic environment" (1998)	It established legal and political basis for preservation and use of the immovable historical and cultural monuments and historic environment in RA and regulates legal relations for the protection and use. Article 15 of the law defines identification and state registration procedures of monuments, assessment of the surrounding protection zones and establishment procedures of historical-cultural reserves. Article 22 requires that prior to undertaking construction, agricultural and other type of activities in the areas having monuments, approval of the authorized body is obtained (Historical and cultural monuments protection agency).
4.	RA law on "Flora" (1999), RA law on "Fauna" (2000)	The main goal is preservation of flora/fauna and biodiversity; it establishes the policy of preservation, protection, use, reproduction and management of RA flora and fauna, also regulation of the impact of human activities on biodiversity; defines also monitoring and assessment procedures of species, particularly the endemic and endangered types.
5.	The RA Law on Preservation of Atmospheric Air (1994, revised 2007)	This law regulates emission permissions and defines the maximum permissible concentrations of atmospheric air pollution. The sanitary norms for the permissible noise in workplaces, residential and public places, household areas, as well as construction sites are defined by the sub-legislative act.
6.	The RA Land Code (2001)	defines the provisions for use of state lands, including use of lands for different purposes (for agricultural, construction, industrial and other purposes), as well as the fundamentals for use of lands allocated to energy, water economy (water supply, drainage, pumping stations, reservoirs, etc.) and other purposes. The Code defines specially protected land plots, as well as forested, waterlogged and reserve lands. It also defines land protection measures, as well as the rights of state bodies, local self-governing bodies and citizens. The separated territories with water objects are considered aquatic lands with rivers, natural and artificial reservoirs, lakes, as well as areas for hydro technical, water economic and other facilities required for the use and protection of water objects.
7.	The RA Law on Land Use and Conservation Supervision (2008)	Envisages the protection of the RA lands and the issues and forms of effective use, defines supervision over land legislation and structures, the rights and responsibilities of the bodies controlling the use and protection of lands. The law applies to all lands of the RA Land Fund irrespective of purpose, form of ownership and / or right of use.
8.	The RA Code on Entrails	among the other issues, the Code defines the main provisions for the use and protection of mineral resources and groundwater,

No.	Title	Regulatory spectrum
	(2011)	including sanitary protection zones of underground water resources.
9.	The RA Water Code (2002)	The main goal is to ensure the legal basis for the protection of water resources, satisfaction of citizens' and economic needs through the effective management of water resources and the protection of water resources for future generations. It reflects the following key issues: definition of obligations of the state, local self-government bodies and society, development of National Water Policy and National Water Development Plan, establishment of State Water Cadastre and Monitoring System, ensuring access to relevant information for the public, establishment of water resources and water system authorization systems, use of the transboundary water resources, definition of water quality standards, safety issues for hydraulic structures operation, water resources management and state control. The adoption of the Water Code in 2002 required the acceptance of a number of regulations and procedures, including: procedures for obtaining permits, sanitary drainage, use of drainage water, calculation of alternative water resources, access to information on transboundary water resources, water use for fish breeding purposes, protection of underground water resources, registration of documents in the State Water Cadastre, public awareness and the dissemination of documents developed by the Water Resource Management Agency, as well as other guidelines and normative documents related to the water sector and environmental issues.
10.	The RA Law on Wastes (2004)	establishes legal and economic grounds for waste collection, transportation, storage, processing, utilization, and the prevention of negative impacts of waste on the environment and human health. The law also defines the competences of the state authorized bodies of the sector.
11.	The RA Law on Fundamentals of the National Water Policy (2005)	Defines the long-term development concept for the protection, strategic management and use of water resources and water systems of the Republic of Armenia. It clarifies the key principles of comprehensive water management and planning of the country, meanwhile setting priority issues and approaches.
12.	The RA Law on Environmental Supervision (2005)	regulates issues related to the organization and implementation of control over the implementation of the environmental legislation in the Republic of Armenia and defines the legal and economic grounds for controlling the implementation of the environmental laws of the Republic of Armenia, the relevant procedures, conditions and relationships with them, as well as environmental control.
13.	The RA Forest Code (2005)	regulates the maintenance, protection and management of forests.
14.	RA Law on National Water Program(2006)	the main objective is todefine short-term (up to 2010), mid-term (2010-2015) and long-term (2015-2021) measures to achieve the main aim and objectives set out in the Water Code, National Water Policy and Program. The law anticipates the implementation of the following key activities: - Development of measures aimed at the establishment of national water reservoir, strategic water reservoir, usable water resource, as well as increasing and maintaining the national water reserve, classification of water systems, definition of the state water systems standards; - Assessment of water demand and supply; - Development of the strategy for accumulation / storage, distribution and use of water resources; - Determination of measures addressed to the elaboration of water norms, definition of maximum permissible water limits for ecological / minimum flow volume and consumption, definition of specially protected basin areas and emergency ecological

No.	Title	Regulatory spectrum
		situations and disaster zones, prevention of negative effects on water ecosystems; improved water resources monitoring and pollution prevention; - Definition of financial claims and sources of funding for the implementation of the National Water Program; - Ensuring public awareness and so on. The RA Law on the National Water Program is a "dynamic" document, which should be periodically updated.

Table 2.

Environmental conventions and protocols signed and / or certified by the Republic of Armenia

	Name and venue of convection and protocol	signed	ratified
1.	Convention on Wetlands of International Importance, Especially Waterfowl Habitat (Ramsar, 1971)	1993	Ratified by the USSR
2.	Convention on Biological Diversity (Rio de Janeiro, 1992)	1992	31/03/1993
3.	Cartagena Protocol on Biosafety(Cartagena, 2000)	2000	15/03/2004
4.	United Nations Framework Convention on Climate Change (New York, 1992)	1992	29/03/1993
5.	Kyoto Protocol (Kyoto, 1997)		27/12/2002
6.	Convention on Long-Range Transboundary Air Pollution (Geneva, 1979)		14/05/1996
7.	Convention on Environmental Impact Assessment in Transboundary Context (Espoo, 1991)		14/05/1996
	Protocol on Strategic Environmental Assessment (Kiev, 2003)	21/05/2003	
8.	Convention on the Transboundary Effects of Industrial Accidents (Helsinki 1992)		14/05/1996
	The Protocol on Civil Liability for Damage and Compensation for Damage Caused by Transboundary Effects of Industrial Accidents on Transboundary Waters(Kiev, 2003)	21/05/2003	
9.	United Nations Convention to Combat Desertification (Paris,1994)	1994	1997
10.	UN Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal(Bazel, 1989)		26/03/1999
11.	Convention for the Protection of the Ozone Layer(Vienna,1985)		28/04/1999
	The Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal, 1987)		28/04/1999
12.	UN EEC Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus, 1998)	1998	14/05/2001
13.	UN Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (Rotterdam, 1998)	1998	22/10/2003
14.	Convention for the Protection and Use of International Lakes and Transboundary Watercourses (Helsinki, 1992)	1999	
	Water and Health Protocol (1999)	17/06/1999	
15.	The Convention on Sustainable Organic Pollutants (Stockholm, 2001)	23/05/2001	22/10/2003
16.	Protocol on Persistent Organic Pollutants	14/12/1998	
17.	Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques(Geneva, 1976)		04/12/2001
18.	European Convention on Landscape (Florence, 2000)	14/05/2003	23/03/2004
19.	Convention Concerning the Protection of the World Cultural and Natural Heritage (Paris, 1972)		22/06/1993
20.	European Convention on the Conservation of Wildlife and Environment (Bern, 1979)	13/03/2006	
21.	European Convention on the Protection of Archaeological Heritage	18/06/2005	
22.	The Convention for the Safeguarding of the Intangible Cultural Heritage		20/03/2006
23.	Convention on International Trade in Endangered Species of Wild Fauna and Flora	1973	27/11/2010

	Name and venue of convection and protocol	signed	ratified
24.	Protocol on Heavy Metal	14/12/1998	
25.	Protocol on the Pollutant Release and Transfer Registers (Kiev 2003)	21/05/2003	

1.2. Institutional bases

The state departments and their scope of activities related to the Rehabilitation of water supply project of Shirak Region (the Republic of Armenia) are presented briefly below from the environmental point of view:

- *RA Ministry of Energy Infrastructure and Natural Resources*

The Ministry affiliated State Committee of Water Economy (SCWE) is authorized to improve management of the water sector companies. SCWE also improves water supply and water drainage services of the consumers, as well as implements further improvements in water infrastructure and water supply. SCWE functions are the following: to participate in the development and realization of the RA national water policy and national water program; to submit annual reports on water use and water use companies to the Government of Armenia;to implement accredited management of the government share in those organizations that are involved in commercial transactions (for instance, construction and technical operation of hydraulic structures, water supply and water drainage in irrigation, drinking and sewage service sectors, as well as in the state institutions that implement investment projects at the expenses of the foreign funds in the above-mentioned sectors for natural and artificial reservoirs).

- *The RA Ministry of Healthcare (RA MoH)*

The Hygiene and Anti-Epidemic State Inspectorate of the RA MoH is responsible for development of sanitary norms and potable water quality standards, elimination of all kinds of health-related issues, maintenance of sanitary and hygienic norms by organizations and citizens, and control over the implementation of anti-epidemic measures.

- *The RA Ministry of Labor and Social Affairs*

The RA Ministry of Labor and Social Affairs is responsible for development and implementation of the state policy, legislation and programs in the following aspects: social safety, labor force and employment, social assistance, social assistance to persons with disabilities and the elderly people, social protection of families, women and children.

- *The RA Nation Water Council*

The National Water Council, together with its Dispute Settlement Committee, is the highest advisory body for water sector management, which includes the representatives of a number of key stakeholder ministries under the presidency of the RA Prime Minister. The main functions of the National Water Council are: elaboration of proposals on national water policy and program, as well as on their implementation measures.

- *The RA Public Services Regulatory Commission*

The Commission is responsible for development of tariff policy in water relations and provision of water system use permits

2. ENVIRONMENTAL REFERENCE CONDITIONS

2.1. Geography and climate of the project area

Gyumri is located on the north-western part of Armenia, on the left bank of the Akhuryan River, in the central part of the Shirak Highland, at an altitude of 1475-1605.

Gyumri city is about 120 km away from the capital Yerevan. The city has a geographically convenient location, which stretches across Cherkese, Jajur and other canyons. The relief is plain, covered with lake-alluvial and volcanic-sedimentary formations with a depth of about 350 m. The total area of the city is 4429 hectares.

Gyumri annually gets 2500 hours of solar light and heat. There are a large number of full-flowing spring sources with the total combined capacity of approximately 1700 l/s.

Shirak Region is the coldest region of Armenia. One of the main factors of climate formation is the northern and north-western air currents that contribute to the formation of cold weather.

The area is in a climate zone where the average temperature in January varies from -5^0 C to -12^{0}C. The winter is cold, stable and with long-lasting snow cover. Sometimes in winter there are strong frosts when the air temperature reaches -41°C. The summer is short, cool and humid with a variable weather. The average summer temperature in July is 19^{0}C. The annual precipitation is 500-550 mm; the thickness of snow cover reaches 61cm, the soil freezing depth up to 110 cm. The average wind speed is 3.0-6.0m/s and the eastern winds dominate.

From geomorphological viewpoint the investigated area is located within the boundaries of the eroded-weathered slopes and the southern highlands (plateau). In the geological structure there are Quaternary Period ("fourth") volcanic tuffs, basalts, andesite basalts and dacite lava covered by young alluvial, eluvial-deluvial, deluvial- proluvial, and eluvial formations with sandy, clayey and macrofragmental soil (clastic rock) . The area is rich in construction materials, tuff, basalt, diatomite, clay, and black soil fertile fields.

From hydrogeological viewpoint, there are widespread underground waters in the area associated with Paleogene rocks and belong to various types of crack waters. The nourishment of groundwater is carried out due to absorption of melting and atmospheric precipitation waters. The region has 0.3-0.4g acceleration and is within the range of 8-9 magnitude earthquakes.

2.2. Biodiversity and Protected Areas

2.2.1. Flora:

The program area is located in the floristic territory of Shirak Region. The flora is very diverse in Shirak Region; the big difference of altitudes, different sides of the slopes and surface inclinations have greatly contributed to it.

In Shirak Region there are about 40 rare and endangered plant species registered in the Red Book of Armenia. The area vegetation belongs mainly to steppe type; Robinia, Acer, f.oxycarpa and other tree species grow in the river valleys. The mountain steppe black soil lands prevail with the spread of motley-grass and gramineous plants. The formation of various gramineous plants is met. The mountain steppes are presented in the formation of Stipa, Festuca and Bromus steppes.

At present, the forest vegetation in floristic zone of Shirak Region is absent. The non-forested lands were previously covered with forests, the evidence of which is the presence of shrub scrub.

The following types are met in the subproject territory: Populus, Robinia, Acer,Morus, Armeniaca, Crataegus,Pyrus salicifolia,Fraxsinus excelsior, F.oxycarpa, Spiraea crenata, Berberis orientalis, Cotoneaster integerrima, Lonicera iberica, Ephedra procera, Jasminum fruticans, Ulmus, Prunus, Elaeagnus, Salix, Rosa.

2.2.2. Fauna

Shirak Region also has some rare species of animals and birds. The establishment of "Lake Arpi" National Park was of great importance for the conservation of rare plant species, animal species and bird species. The latter, however, is not associated with the areas covered by the project.

In the described area, the Fauna is represented by steppe, high-mountainous widespread animal species. It is represented by the reproduction of domestic animal and birds. From amphibians and reptiles toads, frogs, lizards and many types of snakes are met here. Widespread animal species are found here, for example mammals: Lepus europaeus, Canis lupus and other rodents.

There are no ecologically vulnerable or specially protected areas in the project area.

The work activities planned in the frames of this project involve the restoration of already existing structures, so their impact on natural landscapes will be minimal, meanwhile having temporary character.

2.2.3. Historical and Cultural Monuments

Gyumri city is rich with historical-cultural and archaeological monuments. The churches revealing the architectural character of the city are Holy Savior's Church, Cathedral of the Holy Mother of God, St. Nshan, the Russian chapel, two Orthodox churches located in the military station. The central part of the city, with its historical-architectural and archaeological monuments, as well as the Akhuryan Canyon, as a place of preservation of the natural landscape, is involved in the boundaries of "Kumayri" State Historical-Architectural Reserve Museum.

Although there are historical and cultural monuments in the project areas, the program does not refer to them.

3. SCOPE OF THE PLANNED WORKS

3.1. Currant water supply and sanitation of Gyumri urban area

3.1.1. General description of the water supply system

A schematic plan of the Shirak and Gyumri water Supply system is provided in Appendix 2.

The Gyumri Urban Area and the majority of the villages in the surrounding area receive the water supply from three main spring captures and an artesian well field to the North of Gyumri (Ghazanchi 1 and 2, Kraser, and Zuygaghbyur).

The total combined capacity of the spring sources is approximately 1700 l/s; the contribution from each individual source is indicated below:

- Ghazanchi 1 460 l/s
- Ghazanchi 2 420 l/s
- Zuygaghbyur 530 l/3
- Kraser 285 l/s

The water from these spring sources flows in a southerly direction down the Akhurian valley to Gyumri through four transmission lines, three of which feed the Gyumri water supply system and some villages and the fourth feeds village water supplies, only. The water from the spring sources is of very good quality, nevertheless chlorination is provided to the water at the Kaps Chlorination station (Phase 1) to the north west of Gyumri.

After Chlorination the water continues to either one of the three main storage reservoirs supplying Gyumri, or through other transmission mains to supply the villages to the east, west and south of Gyumri.

There is a further spring capture on the west of Gyumri (Vard Barg) which is utilised to supply a small area in the south west of the Gyumri urban area, around the Russian Military Barracks. The potential production from this spring group is around 30 l/s (Preparation study, 2002).

The water distribution system covering the urban area of Gyumri consists of steel pipes and is supplied from three main storage reservoirs: Marmaschen, Mayisyan, and Hovuni. The storage capacity, and elevation of each reservoir is indicated below:

Name	Capacity (m^3)	Elevation (m)
Marmaschen	4 x 2,500 = 10,000	1610
Mayisyan	2 x 10,000 = 20,000	1650
Hovuni	2 x 3,000 = 6,000	1664

To date no comprehensive investigation of these reservoir facilities has been undertaken, so it is not possible to report on the condition. Due to the current high leakage losses in the distribution system, the full amount of storage at the reservoirs is required in order to build up water storage over the night-time period. It is therefore recommended that a comprehensive investigation of the storage reservoirs be

undertaken after the water distribution system is completely replaced and the old distribution system is decommissioned, which will then substantially reduce the losses due to leakage.

The 2003 Master Plan and Feasibility Study instigated a fundamental change to the supply concept for the Gyumri Urban Area. The new concept, on which all phases of the project are building to, is to have a system of pressure zones, each fed by gravity from either the existing reservoirs, or from new small reservoirs acting as break pressure tanks (BPT).

Rehabilitation works to the main spring captures mentioned above were recommended under the Master Plan, and these works were undertaken directly by the water utility around the time of Phase 1. The main production sources are now considered to be satisfactory and no further works are required for the foreseeable future, other than maintenance. Each pressure zone would be supplied by independent feeder lines; one feeder line is supplied from the Marmaschen reservoirs, and the other from Mayisyan reservoirs.

The high water production capacity of over 1700 l/s which is more than sufficient to supply the water demand of the Gyumri urban area and the surrounding villages is not sufficient for 24 hour water supply because of the very high water leakage losses from the existing distribution network, in some Zones the pressure is not even enough, so pumping to many apartment blocks is necessary despite the building limitation to mostly 5 stories.

The numbers and diameters of the existing main transmission lines supplying Gyumri are in general oversized, for the most part the water flows by gravity and the mains are only part full. The main transmission lines have been rehabilitated to a certain extent under Phase 1. The following works have been implemented during Phase 1 and 2 (2009-2014):

Under Phase 1 the new reservoirs / BPT's were constructed which were required to establish the static head (pressure) for Pressure Zones 3 and 4. In addition the new feeder lines from the BPT to the relevant pressure zones were constructed for Zones 3.1 and Zone 4, and the existing feeder line from Mayisyan was utilised to feed Pressure Zone 3.2 in the south east. Phase 1 also included the replacement of the distribution system in the areas of Zones 3.1, 3.2, and 4. At present all properties in Zone 3.1 and Zone 4 now receive a 24 hour water supply.

The size of the inlet and outlet pipes installed at the new BPTs (3A, 3B, 4A and 4B) is only 200 mm, these small pipes have been found to be restricting the flow at periods of high demand. At present the water utility is therefore bypassing the reservoirs.

Under Phase 2, a new feeder arrangement for Pressure Zone 2 was established, with feeds from both Marmaschen and Mayisyan. As the Marmaschen storage reservoir group is at a lower elevation (1610m), the feed from Mayisyan (elevation 1653m) must have its pressure reduced; this is performed by a pressure reducing valve. Under phase 2 around half of the distribution system in the new pressure Zone 2 area was replaced.

3.1.2. General description of the wastewater system

Due to very poor condition of Gyumri wastewater system frequent blockages occur resulting in untreated wastewater discharging into the rivers running through the town.

Based on earlier surveys conducted at the time of the Master Plan / Feasibility Study, the sewerage system in Gyumri is intended to be a separate system for wastewater only. There is a separate drainage system for surface water, and also an old system of stone culverts called "Karise" which were constructed to collect groundwater as part of the old water supply for the city. No record drawings of the sewerage system exist. All of the collectors are gravity collectors, generally following the north to south fall across the city.

The general configuration of the sewer network is as follows:

- the river Gyumri chay, completely covered between Rustaveli and Teryan streets collects wastewater from the central part of the city between river and railway;
- the western Gyumri Chay collector, parallel to the river comes from Ani and collects wastewater from the areas west from the river
- the districts Sheram and Mush are collected by the western collector joining the west Gyumri Chay collector about 1 km upstream of the WWTP
- the eastern collector collecting the areas east of the railway was not completely constructed and the sewer discharges into the river Ghorghoba.

However, over the years, due to lack of maintenance, the sewerage pipes have become blocked or collapsed. Many repairs have been made with no regard for continuation of the same diameter pipes, which results in further blockage. There are also many interconnections between the surface water and wastewater systems, which were made in order to relieve flooding caused by blockages, and incorrect connections from the surface drainage system.

The sewerage sector in Gyumri is not well organized and the sewer system is not maintained except for urgent repairs when blockages occur. Knowledge about the network is very poor and that network is in very bad conditions.

It should be noted that wastewater discharges by gravity because of the area's relief.

After the earthquake (in 1988) the construction of a new residential district was commenced in the northern area of the city, in parallel the disposal of sewerage and wastewater to the WWTP was organized with the three main sewers (DN 1000mm, 1200mm and 600mm). There is an existing wastewater treatment plant (capacity is 60.000 m3/day), but this has not operated since 1997. Previously, the 50% of the wastewater had been treated here.

The funds allocated under this project for sewerage replacement works are understood to be only for resolving the worst problem areas as identified by the former SWSC utility operator. Without undertaking a comprehensive investigation of the sewerage network, involving a complete manhole survey, and investigation along mainlines, it is not possible to understand the full connectivity and condition of the existing sewerage system.

3.2. Description of the planned activities

The Project concerns the rehabilitation, renewal and extension of the water supply network as well as some urgent measures in the sewer system within the operational area of the former Shirak Water Utilities. The

assumed works will be implemented following further investigation and consideration of operational experience following the completion of previous Phases 1 and 2 between 2009 and 2014.

The project will mainly cover the Gyumri urban area, and aims at to provide continuous, hygienically safe water supply and thus raise the living and health conditions for the population of the area. The purpose of the Project is the qualitative and quantitative improvement of the water supply for the population living in the project region.

The ”missing areas” in the already completed Zones under Phase 1 and 2 should be prioritized under Phase 3. The rehabilitation works within the frame of this project will be implemented in the following areas of Gyumri town:

- Ani District;
- Zone 2 west;
- Zone 2 Canyon District (west side);
- Zone 3.1 Stadium District;
- Reservoir / BPT 3A/3B and 4A/4B inlet and outlet pipe size increase;
- Sewerage replacement in several locations around Gyumri
- All areas in south and east of Gyumri (Zone 3.2 Airport District, Kulakavan Area, Zone 5 area (former Zone 4.2), Zone 4 – west of cemetery;
- Zone 2 Canyon District (east side);

In general the following works should be implemented under Phase 3:

- Replacement of an estimated 118 km of water distribution networks in Gyumri town;
- Replacement of about 6 km of sewer lines with diameters between 250 and 500 mm in Gyumri town.

Following further investigation and consideration of operational experience following the completion of Phases 1 and 2, the scope of works under this project is indicated below.

3.2.1. Zone Boundary Realignment

Zone 2 – Zone 1 Boundary Changes

Pressure Zone 1 will also be extended down to the multi-storey apartment blocks near the Shirak Water Utility offices (northern part of Zone 2) which will provide sufficient pressure without the need for pumps to be operated.

Zone 3 – Zone 2 Boundary Changes

Taking into consideration high demand figures required by the PEA, the Consultant has revised the hydraulic models according to the higher demand. The effect of the increased demand is much higher friction losses in the pipes, which results in lower pressures in both Zones 2 and 3.1. Therefore it is foreseen to move some northern parts of Zone 3.1 into Zone 2. The work required to do this will be minimal as the works on the west side of Gyumri are under Phase III, and the new proposed boundary on the east side already has dual lines in many streets.

3.2.2. Decommissioning of the old network

The existing water distribution pipes will be cut-off. Any customers still connected to the old water distribution network will be transferred to the new network.

The identification of houses still requiring transfer to the new distribution systems will require a combination of investigation of records, field inspections, and notification to residents through the local media.

3.2.3. Water Distribution Network Replacement

The plan of the project areas is indicated in Appendix 3. The details of the scope of works according to 5 water supply Zones are indicated below.

- ***Zone 1***

The zone covers Ani, Mush, and the area north of Savoyan Street. The network in this zone shall be completely renewed. This zone is fed from Hovuni and Mayisyan reservoirs. The Sheram area will not be included as the area is supplied directly from the Ghazanchi transmission main and there are no recorded problems in this separate network.

- ***Zone 2***

The zone covers the modern town north of Sargyan Street, Manukyan Street and Tigran Mets Avenue as well as the area east of the railway station (former 3.2 North) and Bulvarni. The network in the city centre was mainly replaced during the previous phases. For the phase 3, a new network is planned in the area west of the river as well as some remaining parts around the railway.

- **Zone 3**

The zone covers the old town north of Gayi Street, Aragats Street, and Terian Street as well as the sub-zone 3.2 south, between the railway and the airport. This zone is fed from the BPT 3A and 3B. To reinforce the transfer capacity to the airport area, particularly for firefighting, and avoid stressing the existing network in the sub-zone 3.2, a new DN225 pipe is planned to connect the pipe DN500 along the railway and the airport area.

- **Zone 4**

The zone covers the south of the town. This zone is fed from the BPT 4A and 4B. The network was mainly replaced during the previous phases. For this phase, an extension is planned in the south along the road H-17.

- **Zone 5**

The zone covers a small area on the Kars Highway. This zone is will be supplied from Zone 4 and the network in this zone shall be completely renewed.

3.2.4. Works at Reservoirs

Alterations to the existing pipe arrangements at Hovuni, Marmaschen, and Mayisyan reservoirs (daily regulating reservoirs) will also be made under Phase 3. These alterations will allow more flexible working of the reservoirs and also rehabilitate several valve chambers which are in a poor state of repair.

3.2.5. Sewerage network

The locations requiring urgent replacement of the sewerage pipelines are indicated on the plan in Appendix 4. These locations have been prioritized for replacement due to operational problems caused by either collapse or major blockage. The list of streets for sewerage replacement is provided below:

Table 3. Locations of Sewerage Replacement

No.	Street Name
1	Shirakatsi street
2	Tekstilagortsner street
3	Pionerakan street (Boryan, Nar-Dos streets)
4	Shirakatsi,Rustaveli streets
5	Komintern street
6	Musayelyan street
7	Teryan street
8	Tigranyan street
9	Meat factory
10	Ani district, 7-rd street
11	Atoyan-Ghukasyan street
12	Komitas 3rd Block

3.3. Water Demand and Population assumptions for the planned works

Demand assumptions have been revised in order to comply with the requirements of SNiP 2.04.02-84 and RABC 31-01-2014 for satisfying potential demand developments until year 2040. The respective SNiP regulations define the mean specific demand as 160 – 230 l/c/d (domestic, institutional, commercial, losses) plus 10-20% addition for consumption of industrial facilities.

Gyumri:

Domestic, institutional and commercial demand = 150 l/c/d

Allowance for industrial demand (10%) = 15 l/c/d

Unaccounted-for water: min. 20 % of production (f_L = 1.25) = 45 l/c/d

Mean water demand = 210 l/c/d

Max day demand = 273 l/c/d

According to the NSS RA Statistic Yearbooks, natural growth in urban areas of Armenia over the past five years had been about + 0.5 %. The population of Gyumri urban area is 117.7 thousand as of 01.01.2016.

The growth rate of about + 0.5% until the planning horizon Year 2040 had been assumed according to which there will be the following design population figures for the Gyumri municipal area:

Table 4. Gyumri population growth by years

Current population of Gyumri and a forecast according to years	
2016	117,700
2030	126,000
2040	**133,000**

Assuming the adoption of the mean water demand of 210 l/c/d for the Gyumri Urban Area, then the total mean daily water demand is provided below.

Table 5. Mean water demand of the municipal areas

N	Urban area	Design population	Water demand norm l/c/d	Mean water demand (2040)	
				m³/day	l/sec.
1	Gyumri	133 000	210	27.930	323

4. ELIMINATION AND REDUCTION MEASURES ADDRESSED TO THE HAZARDOUS IMPACT ON SURROUNDING ENVIRONMENT

4.1. ENVIRONMENTAL AND SOCIAL IMPACTS

The rehabilitation of the water supply system and sewerage pipes of Gyumri city contain low risks, negative impacts on the natural landscapes, surface and ground water resources, plant and animal species are not anticipated as a result of implementation of foreseen activities.

No permanent works under the project will be constructed in 'green-field' areas, and there will not be any need for resettlement. From the environmental protection perspective, vulnerable or specially protected nature areas, as well as cultural and historical heritages are absent from the project implementation area /impact zone. The project implementation will not have any irreversible impact on the surrounding environment. Localized negative impacts are anticipated during the construction phase, but these will have limited affect and will be short lived; the negative impacts will also be reduced by mitigation measures.

The anticipated negative environmental impacts expected during the implementation period are as follows:

- Noise, dust, emissions from the construction machinery,
- Additional vehicular traffic on roads due to construction related vehicles,
- localized soil erosion in unpaved construction areas,
- environmental and water resources pollution with construction and household waste.

The finished works under the project will have substantial positive impacts on the social conditions of the population. As a result, the quality of life for the Gyumri city population will be significantly improved, and benefits to the social-economic conditions in Gyumri city should also arise.

All the potential negative impacts will be mitigated as a result of the implementation of mitigation measures and monitoring included in the Environmental Management Plan (EMP), which is indicated in Appendix 1. It is possible to prevent and reduce (mitigate) these negative impacts as a result of good construction practice.

The following positive impacts are expected in a result of the implementation of rehabilitation activities:

- More effective use of the water resources;
- Improvement of the population's quality of life by providing 24 hour water supply conditions,
- Provision of high quality drinking water, reduction of water losses, increase of duration of water supply, storage and management of water resources,
- Reduction of water pollution risks and prevention/exclusion of infectious diseases,
- Improvement of health conditions,
- Integration of water metering system and increase of consumption efficiency.

The contractor, constructor, controlling and supervisory bodies should strictly follow the proper implementation of environmental mitigation measures planned in the EMP.

4.2. WASTE MANAGEMENT

The aim of the waste management plan is to define the principles of waste removal, and waste reuse resulting from the construction activities. During the implementation of the planned rehabilitation activities it is possible that various types of waste may emerge in project impact zone which may negatively impact on surrounding environment (for instance, pollution of water and soil resources, air pollution, etc.).
Safe waste is the construction waste which is considered to be non-hazardous. Safe waste expected under the project will mainly be surplus excavated material. The transportation or removal of this safe waste to a recognized suitable disposal site may also have negative environmental impacts, but these will be short lived.

Hazardous waste is the waste that can be flammable, putrid, radiating or toxic and has dangerous impacts. Batteries, paints and solvents, used oils and other chemical wastes are among the hazardous waste generated during the construction works.

Waste waters will occur in the form of construction waste waters (they may appear in construction sites) and household sewage waters (as a result of household activities of employees) and contain various pollutants and pathogen elements.

In order to avoid the hazardous impacts of the above mentioned wastes the following management principles are preferable:

- Avoidance or reduction of waste generation,
- Possible waste utilization or recycling,
- Waste removal according the defined norms of the RA regulations agreed with the community leader or authorized bodies,
- Usage of the existing mines and waste disposal sites (according to the terms fixed in the agreements that are obtained at the design stage),
- Purchase of the construction materials (inert substances, concrete) from the licensed suppliers or usage of the existing mines,
- Explicit definition of the waste temporary storage sites (more acceptable sites from the environmental point of view that will be confirmed by the appropriate authorized bodies).

The application of the above mentioned principles during the construction works will allow minimizing environmental risks associated with waste management.

During the planned construction activities under the project it is intended to transfer the construction waste and excessive soil to the landfill allocated by Gyumri Municipality, but in some areas they will be flattened in place.

It is intended to realize the supply of construction materials to the construction sites by the vehicular transport, which will be reached to the construction sites through the urban and field grunt roads without violating the requirements of the RA Ministry of Transportation, Communication and Information Technologies.

5. ENVIRONMENTAL CONSULTATIONS

5.1. Public Consultation Requirements

In the framework of this project implementation the beneficiary and affected communities of Gyumri city will be informed about the environmental and social impacts of the planned activities. A Stakeholder Engagement Plan (SEP) was developed to ensure smooth project implementation, community interest regulation and coordination of the project implementation with engagement of various concerned parties.

The purpose of beneficiaries' involvement is informing the community and concerned stakeholders about the project content, its potential environmental and social impacts, as well as about the proposed mitigation measures. It will allow improving and simplifying the decision making processes in the project frames and create an atmosphere of mutual understanding between all the beneficiary parties.

Initial appointments were made with the representatives of Gyumri Municipality and SWSC, Shirak NGOs and other concerned organizations.

Public discussion was held in Gyumri Municipal Hall. It was attended by employees of Gyumri Municipality, local NGOs and inhabitants.

The public discussions in Gyumri city were organized according to the applicable norms of public discussion and notice procedure. A Minimum of seven (7) days notice was required according to the RA Norms. A notice of the meeting was published in the No. 197 "The Republic of Armenia" official daily newspaper.

Announcement

This year on November 14 a public consultation will be held on the environmental impact assessment of "Design of of water supply and sanitation systems in Shirak-Water Supply and Sewerage CJSC service area" document presented by HGSN LLC in RA Shirak Region, Gyumri Municiplaity building (Address: Gyumri, Vardanants Square, 1, 3 meeting hall).

You may get acquainted with the documents at

- **HGSN LLC, address: Yerevan, Kievyan 16, Tel: 26-28-31, 27-43-06**
- **Gyumri Municiplaity.**

Copies of this report were also circulated via post to the official postal addresses of the municipalities of the affected communities, Veolia and affected regional NGO's.

5.2. Public Consultation Results

A public consultation meeting for the proposed works under Phase 3 within the Gyumri City area was held on November 14, 2017 in Gyumri Municipality that was attended by employees of different departments of the municipality, representatives of regional NGOs, Gyumri residents (a total of 25 people).
The minutes of the meeting is provided in Appendix 5, and the list of participants is provided in Appendix 6.
Representatives of the most vulnerable groups - women and elderly people, for whom improvement of the water supply systems has a vital role, also took an active part in the meeting.

Participants were provided with details of the intended activities, after which the environmental specialist presented the possible negative impacts on the environment, which were summarized in the EMP.

The EMP describes possible adverse impacts on the environment, human health and constructors, which are possible in the design, construction and operation phases of the subproject and the list of mitigating measures.

Community residents have expressed their concerns mainly about the following possible issues during construction work:

- Disturbance to the traffic of vehicles and residents in the settlement as a result of keeping the trenches open for a long time, as well as improper rehabilitation of roads after completion of construction.
- Construction waste not removed during and after the construction,
- Safety of new pipes used for drinking-water supply. After presenting the EMP, the environmental specialist asked all the participants to get acquainted with the EMP and encouraged them to follow the proper implementation of the activities envisaged in the Plan during the construction work.

The EMP has been multiplied and distributed to the meeting participants, as well as left in the Municipality.

Videotapes recorded during the public discussions are submitted attached to this application for the preliminary assessment.

Photos from public consultation meeting

Gyumri, 14.11.2017

6. GRIEVANCE MECHANISM FOR AFFECTED PUBLIC

A grievance mechanism for external stakeholders and affected public is a process focused mainly on receiving, evaluating, and addressing project-related grievances from affected communities at the level of the Water supply and sanitation sector project (WSSSP). The grievance mechanism differ from other forms of dispute resolution (e.g. courts, administrative systems, etc.) in that is offers the advantage of a locally based, simplified, and mutually beneficial way to settle issues.

Properly designed and implemented grievance management processes can benefit both the executers and communities by increasing the likelihood of resolving minor disputes quickly, inexpensively, and fairly with solutions that reasonably satisfy both sides without taking the grievances to other (formal) dispute resolution body. Grievance mechanisms can help to identify and resolve issues before they are elevated to formal dispute resolution methods, including the courts. For a grievance mechanism to function effectively, it is important to define the grievance processing structure and to assign responsibilities for the mechanism's implementation and make them clear for the stakeholders.

A grievance mechanism will be available to allow an AP appealing any disagreeable decision, practice or activity arising from disturbance during the construction works. APs during public consultation will be fully informed of their rights and of the procedures for addressing complaints whether verbally or in writing during consultation, survey, and time of compensation. This can be obtained through by ensuring full participation and consultation with the APs, and by establishing extensive communication and coordination among the affected communities, the PMU/consultant and town or community heads. The below grievance mechanism does not limit the citizen's right to submit the case to the court of law just in the first stage of grievance process.

In the frames of this project PEA/Consultant should accept all the comments and complaints related to the projection.

Any individual or organization can send their proposals, comments and complaints to the following addresses: (State Committee of Water System / copy to Consultant's office):

Employer / Client	**Consultant**
Water Sector Project Implementation Unit SA, 8 Vardanants Blind Alley (5-th floor), Yerevan 0010, Armenia Contact Person: Mr. Felix Melikyan Tel / Fax: (+374-10) 56 03 62 E-mail: fmelikyan@wsdp.am	GITEC Consult GmbH/HGSN Ltd. 16 Kievian st, Yerevan, Armenia. Contact person: Mr. Mark Whippey Tel / Fax: (+374) 41 27 17 10 E-mail: shirak@armenia.gitec-consult.com

All complaints should be registered and be responded within 14 days. The complaints form is provided in Appendix 7, which should be available for the local communities. Any other format intermediations are also acceptable.

The received complaints should be responded in verbal or in written format according to the complainant's preferable method indicated in the comments and complaints form. Depending on the complaints nature relevant actions should be undertaken within 3-5 days after receipt of the complaint. In case of complicated problems and solutions this period can be extended, and the information on solutions for the received complaints should be recorded.

The individuals who submit their comments and complaints can request that their names are kept confidential.

The complaints will be summarized in the Complaints Log (see Appendix 8), which includes the dates, complaints character, information on necessary actions and problem-solving status.

The complaints related to the construction works will be managed by contractors. Before the commencement of the construction works notice boards should be installed in easy accessible areas for the population of the project affected communities, which will ensure complete function of the complaints mechanism meanwhile including information on the contact details of the responsible organizations.

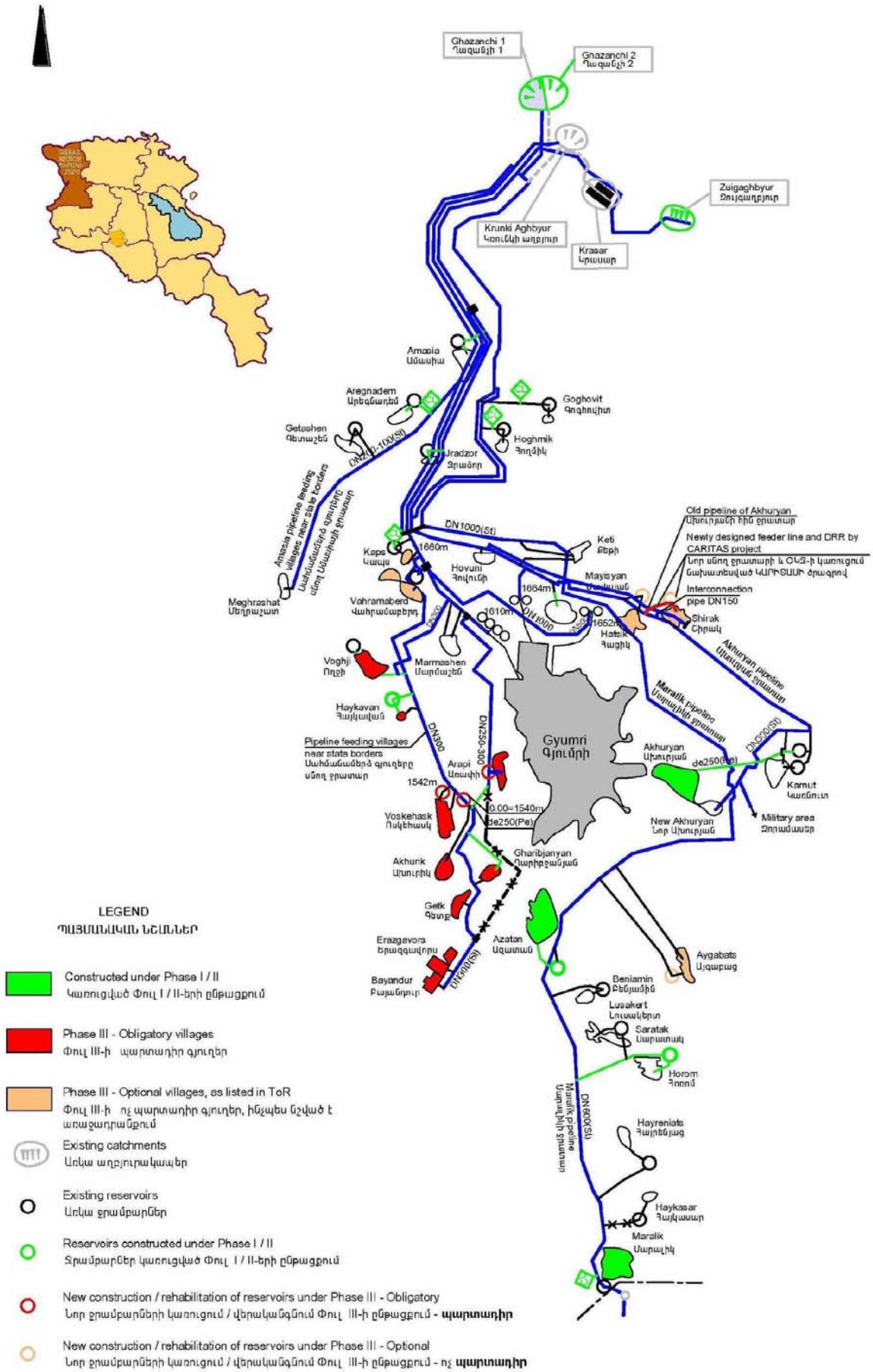
The consultants should provide information regarding received complaints and proposed solutions in his monthly and quarterly reports.

Appendix 1 - Environmental Management Plan

Works and possible impacts	Proposed mitigating measures	Monitoring	Responsible entities(bodies)
Air pollution, noise, Dust and noise during the construction works	- regularly water the construction site and roads, - limit night work in residential areas, Avoid usage of machines/equipment with extra noise; installation of silencers if needed, Provide safe area for trucks, - Do not accumulate and burn waste on the construction site, Carry out construction in stages, give adequate notice of construction activities to the population,	Daily site inspection	
Environmental pollution – - Soil erosion and soil sliding processes - Environment pollution with construction waste - Land and water resources pollution with fuels and lubricants - Land and water resources pollution with chlorine	- In inclined sites of the water line route implement measures for retaining the inclinations - Minimize the time during which trench and pit excavations for regulation and metering nodes are open Reinstate the damaged surfaces after the construction as soon as possible according to project requirements. - Store oil, fuels and lubricants on a sealed surface, away from water resources Remove construction waste to corresponding landfill of the community, having in advance a contract agreement with the community heads or landfill operators. - Organize works disinfection of the water supply distribution network with chlorine, according to technical calculations. Provide appropriate technical means. - - Implementation of chlorine discharge to surface water facility or land area after washing the pipes, according to the regime planned under the design, MPE	Daily inspection of construction and maintenance	contractor, consultant, PEA
3. Transportation traffic - Population's disturbance	- Install appropriate road signs and barriers, organization of bypasses. - If necessary, provide appropriate lighting in the construction sites. - Provide proper lighting installation in places here is likely the	Daily Site inspections	constructor, consultant, PEA

Works and possible impacts	Proposed mitigating measures	Monitoring	Responsible entities(bodies)
because of overloaded roads	population's transportation. - Provide population's engagement in the implementation of project, which will minimize the interception of the community social activities.		
4. Health and safety - Risks for employees and population	- 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 - Provide first aid and safety training to construction staff	Daily inspection during construction stage. Monthly inspection of accident reports and complaints register	contractor, consultant, PEA, population

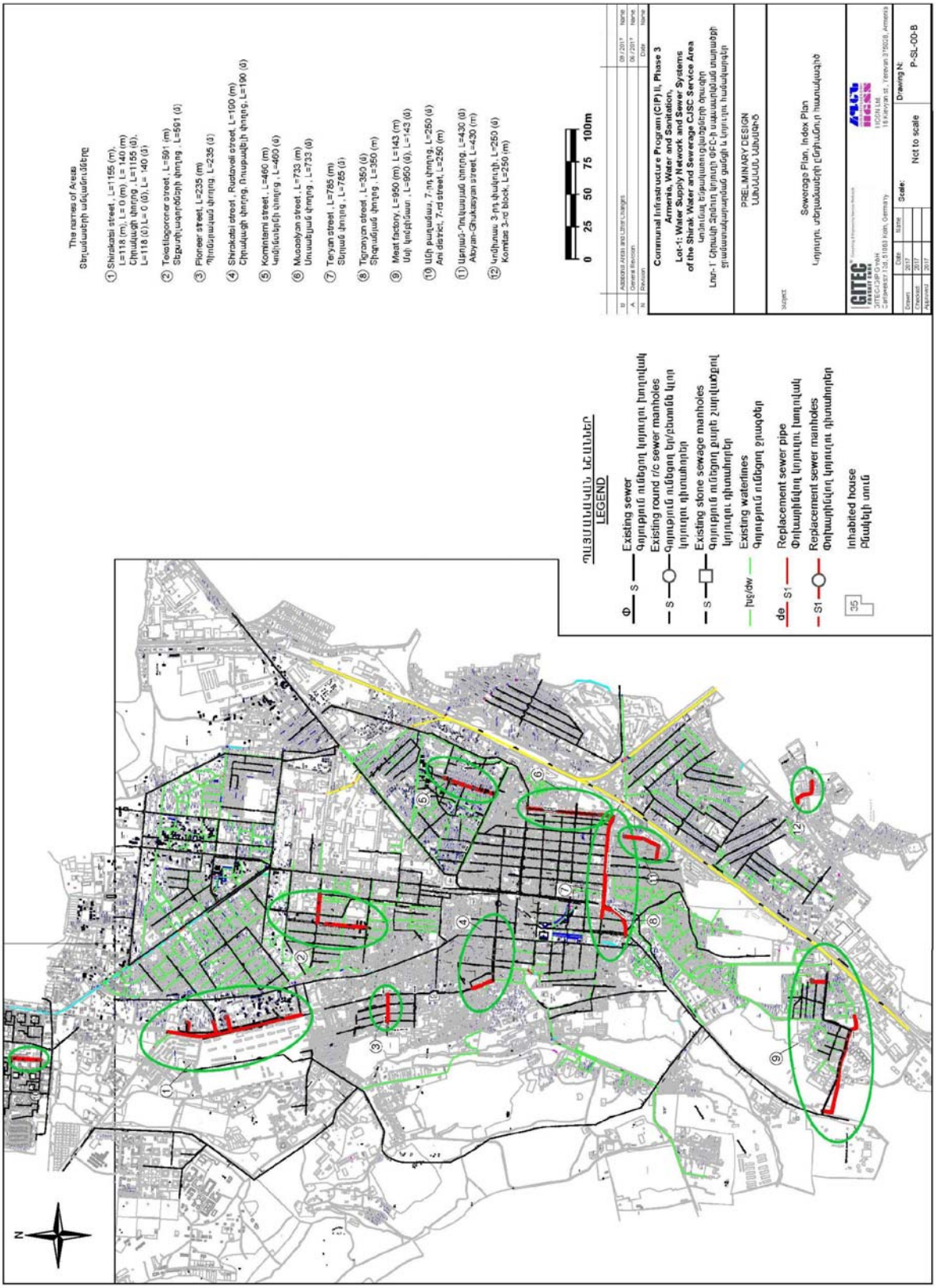
Appendix 2. General Schematic Plan of the Shirak Water Supply System



Appendix 3A. Plan of the Project areas - North

Appendix 3B. Plan of the Project areas - South

Appendix 4 - Locations of Sewerage Replacement Areas



Appendix 5 - Minutes of the Environmental Consultations

(Note the original signed copy of the meeting minutes is contained in the Armenian version of this report)

Minutes of Meeting

Public consultation was held in Gyumri Municipality meeting hall on November 14, 2017 at 12:00. It was attended by employees of Gyumri Municipality, council members, leading specialists of utility and municiplaity, Gyumri residents, various water users, representatives of HGSN LLC consultant group, a total of 25 people, including 15 female attendees.

Subject-Public discussion on the environmental and social impacts of "Design, technical and author's supervision of water supply and sanitation systems in "Shirak-water and sewerage" CJSC service area" project.

Speeches:

HGSN LLC environmental specialist Kristine Sahakayan introduced the subject of public discussions. She stated that environmental and social impact assessment, results of environmental and social studies will be presented during the public discussion. The environmental specialist introduced also the intent of public discussion, highlighting that according to "RA legislation, the project is classified as Category "C" and is subject to public notice and discussion. The purpose of public discussion is that Gyumri residents are informed on the details of designed works, as well as possible environmental impacts during the construction works. During discussion presentation was made on the environmental report, both positive and negative environmental and social impacts of the project. Environmental measures aimed at mitigation of possible adverse impacts were discussed, noting the some of these impacts are expected mainly during the construction stage and will be temporary. At construction stage the following is expected: temporary air pollution, dust, pollution with construction and household wastes, pollution with fuel and lubricants, noise influence.

Gayane Sargsyan, a representative of HGSN LLC consultant group presented the results of technical-economical studies of the preliminary design of water supply reticulation network construction, works for the improvement of the systems, drawings and schemes. These drawings include existing and replaced pipeline routes and details of expected works which was shown the participants.

The attendees raised questions on the location of water metering chamber installation, as well service pipe works.

G. Sargsyan who is an engineer at HGSN replied that they are mainly to be placed outside of the yards of private houses, and the connections to the house are to be carried out by the residents.

Attendees raised questions on the properness and safety of pipes used for water supply.

The environmental K. Sahakyan mentioned that the Contractor is obliged to acquire pipes of corresponding quality and class, which are used only for drinking-water supply and have corresponding certification.

An employee of the utility department of the Municipality highlighted the supervision issue during construction with regard to the opening of trenches, timely backfilling and compaction works.

HGSN LLC designer Gayane Sargsyan replied, that all those works are foreseen in the design, and during the construction works technical supervision will be carried out as well, which will give adequate solutions

to all the discovered defects. It was stated that trenches will open with a maximum length of 100-150m on a condition that backfilling is done during 1-2 days maximum. Attention will be paid also to the proper implementation of trench works in regard to measurement and replacement work. Participants of the discussion expressed their satisfaction with the presented design details promising to support effective implementation of the project as much as possible.

HGSN environmental specialist K. Sahakyan thanked the participants for the productive discussion hoping that such a productive meeting will have its input in further implementation of the project.

The list of participants is attached.

HGSN LLC environmental specialist	Kristine Sahakyan
HGSN LLC designer	Gayane Sargsyan

Appendix 6 - List of participants of environmental consultation

(Note the original signed copy of the meeting attendance is contained in the Armenian version of this report)

Public Discussion
Communal Infrastructure Project, Phase 3
Lot-1 and 2, "Shirak-Water and Sewerage, Phase 3
Water supply and sanitation system in the service area of
"Shirak-Water and Sewerage" CJSC

Name of the Community Gyumri

Spokesperson Kristine Sahakyan

List of participants

	Name, Surname	Position	Telephone	Signature
1	Anahit Avetisyan	leading specialist	095 77 05 25	signed
2	Taguhi Movsisyan	leading specialist	055 555 895	signed
3	Astghik Sargsyan	translator	077 02 87 03	signed
4	Aida Martirosyan	leading specialist	077 19 91 75	signed
5	Kristine Sahakayan	HGSN environm. specialist	091 52 93 27	signed
6	Artur Avetisyan	leading specialist	098 25 23 26	signed
7	Aram Chernamorev	utility	098 90 29 19	signed
8	Andranik Muradyan	dep. of income leading specialist	094 94 66 47	signed
9	Gagik Hovhannisyan	dep. of Income leading specialist	091 38 83 12	signed
10	Arpine Hovhannisyan	dep. of education leading specialist	077 39 45 -79	signed
11	Aida Karapetyan	dep. of education leading specialist	098 24 09 75	signed
12	Sos Ispiryan	housing dep. leading specialist	098 14 40 99	signed
13	Karapet Sargsyan	housing dep. leading specialist	098 08 18 68	signed
14	Greta Janyan	External dep. deputy of project manager	094 82 38 59	signed
15	Liana Sargsyan	staff super. dep. lead specialist	093 49 44 99	signed

16	Kristina Panosyan	staff super. dep. lead specialist	093 19 22 08	signed
17	Laura Israelyan	staff super. dep. lead specialist	099 79 78 43	signed
18	Ashkhen Badalyan	staff super. dep. lead specialist	098 10 -23 -31	signed
19	Narine Hakobyan	project dep. lead specialist	077 25 29 80	signed
20	Haykuhi Hovhannisyan	physical and sports lead specialist	077 50 67 60	signed
21	Norik Sargsyan	physical and sports lead specialist	091 77 62 43	signed
22	Artur Khachatryan	HGSN LLC	091 01 61 66	signed
23	Edward Grigoryan	HGSN LLC	099 65 45 88	signed
24	Gayane Sargsyan	HGSN LLC	055 12 15 60	signed
25	Arsen Harutyunyan	HGSN LLC	055 35 48 54	signed
26				

Appendix 7 - Complaints Form

Comments and Complaints Format	
Notes, complaints and reports form for individuals, Reference No.	
Full name	
Contact details and preferable communication ways Please indicate the preferable communication way (e-mail, telephone, post).	☐ **Post: please provide postal address** _____ _____ _____ _____ ☐ **Telephone:**_____ ☐ **E-mail address:** _____
Incident or complaint description What has happened? Where has it happened? Whom has it happened? What is the problem result?	
Incident or complaint date	
☐ One time incident/complaint (date _____) ☐ It has happened more than once (how many times _____) ☐ On-going (problem, which is in process currently)	
What would you like to see as a problem solution?	

Appendix 8 - Complaints Log

Province, community, project _____

Complaint N	Complaint receiving date	Complaint form (in person, telephone, e-mail, internet, other)	Complaint nature (problem description)	How the complaint was solved/mitigating activity	Complaint solving status*	Does the complainant appeal consistency pertaining to the problem solvation process? Yes / No	Notes
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							

**Open or Closed (If closed include date)