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Communal Infrastructure Program (CIP) II, Phase 3
Armenia, Water and Sanitation
CIP II-P3-L/NA
(BMZ 2013 66 343, BMZ 2009 66 515)

Lot 2: Rehabilitation of Water Supply Systems and Sewer Collector in Lori and Armavir Regions
(PINK BOOK CONTRACT)

TENDER DOCUMENTS

Book 4-b (Section 14)

Environmental and Social Impact Assessment Action & Management Plan

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OVERVIEW OF TENDER DOCUMENTS FOR PINK BOOK CONTRACT

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ABBREVIATIONS AND ACRONYMS

APCH	Agency of Protecting Cultural Heritage
AUA	American University of Armenia
AWSC	Armenian Water and Sewerage Closed Joint Stock Company
CC	Construction Contractor
CIP	Communal Infrastructure Programme
CJSC	Closed Joint Stock Company
CNR	Construction norm
DE	Diameter External
EIA	Environmental Impact Assessment
EIB	European Investment Bank
EM	Environmental Monitoring
ESIA	Environmental and Social Impact Assessment
ESMMP	Environmental and Social Management & Monitoring Plan
EU	European Union
EU-NIF	European Union Neighbourhood Investment Facility
HDPE	High Density Polyethylene Pipe
HSE	Health and Safety Expert
IA	Implementation Agency
IC	Implementation Consultant
IFI	International Financial Institutions
IUCN	International Union for Conservation of Nature
GRM	Grievance Redress Mechanism
HPP	Hydro Power Plant
KfW	KfW Development Bank
LSGA	Local Self Governance Agency
MA	Ministry of Agriculture
MC	Ministry of Culture of RA
MEINR	Ministry of Energy Infrastructures and Natural Resources of RA
MLSA	Ministry of Labor and Social Affairs of RA
MNP	Ministry of Nature Protection of RA

MTCIT	Ministry of Transport, Communication and Information Technologies of RA
NAS	National Academy of Science
NGO	Non-Governmental Organization
NPUA	National Polytechnic University of Armenia
OHS	Occupational Health and Safety
OP	Operation Policy
PAP	Project Affected Person
PCDP	Public Consultation and Disclosure Plan
PCR	Physical Cultural Resources
PEA	Project-Executing Agency
PN	Pressure Nominal
RPF	Resettlement Policy Framework
RA	Republic of Armenia
RAP	Resettlement Action Plan
ROW	Right of Way
SEA	Strategic Environmental Assessment
SEI	State Environmental Inspectorate
SME	Small and medium size production units
SNCO	State Non-Commercial Organization
TOR	Terms Of Reference
UN	United Nations
VCP	Village Council President
WB	World Bank
WSPIU	Water Sector Projects Implementation Unit
WTP	Water Treatment Plant
WUP	Water Use Permit
WWF	World Wide Fund for Nature
WWTP	Waste Water Treatment Plant

0 EXECUTIVE SUMMARY

0.1 Introduction

The Government of the Republic of Armenia and KfW, EIB and EU-NIF have signed an agreement for the financing of Communal Infrastructure Program (CIP) II, Phase 3 (the "Project), in the service areas of the four regional Water Utilities: Shirak Water and Sewerage Closed Joint Stock Company ("Shirak WS CJSC"), Lori Water and Sewerage Closed Joint Stock Company ("Lori WS CJSC"), Nor Akunq Closed Joint Stock Company ("Nor Akunq CJSC") and Armenian Water and Sewerage Closed Joint Stock Company ("AWSC") – the Project Executing Agencies ("PEAs").

The Project concerns the rehabilitation, renewal and extension of the water supply network as well as some urgent measures in the sewer system of the regional Water Utilities Shirak CJSC, Lori CJSC, Nor Akunq CJSC and AWSC as well as in the waste water treatment plant in Armavir. The Project covers the third Phase that aims at providing continuous, 24h/7days water and demand-oriented supply of the population with hygienically sound water and thus raising the living and health conditions. The purpose of the Project is the qualitative and quantitative improvement of the water supply for the population living in the project region. Furthermore, the Project includes investments for the surrounding villages. This is to contribute to the sustainable and ecological municipal development, the improvement of the environmental situation, to sustainable and ecologically sound management of the regional water resources as well as the reduction of negative impacts on the health situation of the population in the project region. Additionally, the project targets at establishing a hygienically sound sewage collection and environmentally compatible waste water treatment for Armavir and Sevan.

Since January 2017 several changes happened in the structure of the Employer and Operator: A new PIU was created and on 14th of June 2017 the official Amendment between the new WSPIU "Water Sector Projects Implementation Unit", State Agency of State Committee of Water Economy of the Republic of Armenia and SRP Schneider & Partner Ingenieur - Consult was signed. In January 2017 Veolia Jur took over operation of the Water Supply and Sewer Infrastructures in Armenia (Leasing contract for the next 15 years).

0.2 Objectives and Methodology

This is a non-technical summary prepared on behalf of SRP Schneider & Partner Ingenieur Consult GmbH. It forms part of a design for the water supply network and sewer systems of the Lori Water and Sewerage CJSC service area and Nor Akunq CJSC service area, which are combined in one Pink Book Tender Contract.

The proposed Project activities will have several impacts on various environmental and social components. The main objectives of the ESIA are to identify, assess the magnitude of the expected impacts, furthermore, to provide measures for their mitigation commensurate in accordance with the national and international standards. The ESIA report

provides useful data to the General Contractor on how the different components should be constructed in order to avoid or mitigate negative impacts and to use more efficiently the anticipated environmental and social benefits.

General overview on biophysical environment was carried out through a desktop study, and the environmental and social experts conducted a field survey. This implied walk-through along the proposed project areas and path of the access road possibilities, houses and villages affected by the Project. Additional information was gained through consultations with representatives of relevant governmental organizations and local communities.

0.3 Legal and Regulatory Framework

The implementation of any activity in Armenia, which may cause environmental impacts, needs a positive conclusion outcome from an Environmental Impact Assessment (EIA) expertise. Environmental impacts of a planned physical activity or a sectoral/regional development plan/program has to be assessed during the pre-implementation period. The Republic of Armenia (RA) Law on Environmental Assessment and Expertise of 2014 stipulates provisions with regard to environmental impact assessment, impacting the environment and conditions under which causing of such impact is allowed, thus, eventually it is the most important national law for EIA development.

According to this law, activities are classified into 3 categories: A, B, and C.

The only project activity in Lori district, which requires the Environmental State Expertise Conclusion is the ring feeder section from Novoseltsovo Pipeline to Taron 2 reservoir. The components in Armavir Distict, which are included in the Pink Book Tender Contract do not require any Environmental State Expertise Conclusion.

The positive conclusion for the Lori part was received from the Environmental Impact Expertise Center SNCO on 26 of March, 2018 (see Annex 5).

According to KfW Safeguard Guidelines, the Project falls into environmental **Category B-**, therefore it also requires ESIA and an Environmental Management Plan (EMP).

0.4 Baseline Conditions

Project Area in Lori District: Vanadzor is located about 120 km by road north of Yerevan in the fairly narrow Pambak and Tandzut valleys at an elevation between 1,300 to 1,500 m asl., right between the main ridges of the small Caucasus mountain range. The town stretches about 15 km along the two valleys with a lateral width of mostly not more than 2 km. The 16 villages connected to the water transmission system to Vanadzor are located up to 35 km by road from the town and situated mostly on the slopes of the valleys. The road accessibility to the town is excellent by two major highways from Yerevan, one highway from the distant Georgian Black Sea ports and one highway from the Georgian capital Tbilisi. Road access to the villages connected to the system is excellent by good highways, partly tedious by damaged tarmac or by gravel roads. Certain areas at the mountain slopes in Vanadzor and in the villages are badly accessible by narrow steep dirt or severely damaged tarmac roads, only.

Project Area in Armavir District: The project area is located in the city of Armavir and Metsamor at about 50 Km west of Yerevan, south of Ararat Mountain and northeast of the river Araks, representing the Tukish border. The area is located within the Hoktemberyan depression between the elevations from 830 m to 900 m from the sea level. There is a dry and continental climate. Winters start in mid-December; the average temperatures in January are minus 3°C to minus 5°C. Summers are long, since May to October, the monthly average air temperature reaches 24°C - 26°C, and the maximal point is 42°C. Often sandstorms happen, causing substantial damage to the agriculture. The quantity of annual athmospheric precipitations is 250-300 mm.

0.5 Project Background

Lori District: Before the project implementation, the water supply system of Vanadzor was divided into several supply and rotation zones, fed from seven separate sources. Water was received from both underground sources and surface intakes, and each source had its predominant supply area. Water losses were high, daily water production was sufficient for only a few hours, and local pumping was required to supply high-located town areas and a number of apartment blocks. Several epidemic disease cases were observed.

In order to solve this critical issue, a project was prepared, which aimed at provision of proper and reliable water supply and wastewater disposal in the service areas of Lori WS CJSC. The Governments of the Republic of Armenia and the Federal Republic of Germany have agreed to finance the 1st and 2nd phases of rehabilitation of water supply and wastewater systems in Vanadzor/Lori and a large number of major and small villages - Communal Infrastructure Programme (CIP) II.

In 2003, during the Feasibility Study and preparation of the General Plan for ensuring sustainable water supply and wastewater disposal in the project areas, as well as during the design activities under Phase 1 (2007-2008), the following main project issues were decided and planned:

- Rehabilitation of the water supply system components, provision of sufficient water quantities from the sources, rehabilitation of the transmission mains and reduction of the technical losses through reconstruction of the distribution networks.
- Creation of controllable system through establishment of dirigible pressure zones to be supplied with separate reservoirs, as well as installation of water meters and removal of direct connections to the transmission pipelines.
- Ensure sustainable operation and maintenance of the water infrastructure through enhancement of the managerial and operation skills of the water utilities, reduction of commercial losses and rehabilitation of the water supply systems.
- Construct wastewater distribution network, ensure proper discharge of sewers, elimination of hygienic problems in the basements and elsewhere caused by wastewater.
- Construction of new wastewater treatment plants in order to treat the wastewater discharged in the service areas.

The works for rehabilitation of Water Supply and Sanitation under the Project Phase 1 and 2 included the following main components:

- Reconstruction of spring captures,
- Rehabilitation, reconstruction and extension of transmission pipeline system,
- Construction of small pumping stations,
- Construction and rehabilitation of chlorinating stations,
- New construction and rehabilitation of balancing R/C water reservoirs,
- Provisional repair of a water purification plant for surface water,
- Separation of part of the existing water reticulation system of Vanadzor into pressure zones,
- New construction of up to 55% of the reticulation system and house connections of Vanadzor. However, 40% of this was optional, only, depending on the availability of funds,
- New construction of the water reticulation systems and house connections of the villages Schahumyan, Darpas and Lernapad,
- Connection of the reservoirs of the villages to the transmission pipeline system and to the reticulation systems,
- Repair of certain sections of the sewer system.

In Phase 1 of the project technical losses have been reduced to some extent. Further improvements were expected after completion of Phase 2. However, the replacement of reticulation networks during the second phase was restricted and such works have been mainly carried out in Vanadzor town.

The components to be implemented under Phase 3 Works Contract include the following:

- **Reticulation System of Pressure Zone 8 of Vanadzor:** Construction of on-site water distribution network (22.8 km) with two alternative feeder lines (1.75 km) from two different existing reservoirs (Dimats and WTP) including fire-hydrants, installation of valves, valve chambers and other ancillary pieces as well as house connections (additional 11.2 km of pipework) with water meter boxes and water meter sets.
- **Ring Feeder Pipeline Novoseltsovo – Taron-2 Reservoir incl. PS at Narekatsi Street:** Construction of the two missing sections of the ring feeder with a total length of 6.161m (DN300; PN16, Steel pipe). An existing building at Narekatsi Street will be adapted to install the required Booster pumping station (Qmax = 48 l/sec, required head = 30m).
- **Amrakits Reservoir Feeder Pipeline and Pumping Station:** Installation of a Booster Pumping Station inside the existing chlorination station at Amrakits Village (Qmax = 1.8 l/sec (required head = 32m) and construction of 653m of new feeder pipeline (HDPE, PN10, DE90) to connect to the existing feeder line.
- **Hobardzi/Vardablur Reservoir Feeder Pipeline:** Replacement of the existing feeder pipeline to the reservoir of a length of 1,580m (HDPE, PN16, DE160).
- **Gugark 2 Reservoir Feeder Line:** Construction of the new feeder pipeline to the existing reservoir. (Length: 800m, HDPE, PN10, DE110)

- **Separation of Zone 6.1 and 6.2 of Vanadzor:** Construction of the connection pipeline (HDPE DE225, PN10) from the existing outlet pipe of Novoseltsovo-2 reservoir to the existing valve chamber next to zone 6 (Length: 443m, HDPE, PN10, DE225)
- **Ring Feeder Pipeline WTP – Dimats Reservoir:** Construction of the missing ring feeder section (HDPE, DE280, PN10, Length: 2,283m)
- **Reticulation systems of following nine villages of Lori district:**

  The existing old networks will be completely replaced by new pipework including fire-hydrants, installation of valves, valve chamber and other ancillary pieces as well as house connections with water meter boxes and water meter sets. The length of the related networks are listed below with the length of the pipework for house connections in brackets.

  - Amrakits: 7.7 km (+ 2.2 km)
  - Antaramut: 4.7 km (+ 1.2 km)
  - Dzoragyugh: 5.2 km (+ 1.6 km)
  - Gugark: 27.0 km (+ 9.6 km)
  - Hobardzi and Vardablur: 18,1 km (+ 6.1 km)
  - Kurtan: 16.3 km (+ 5.2 km)
  - New Lernapat: 7.0 km (+ 1.5 km)
  - Vahagni: 11.1 km (+ 2.8 km)
- **River Intakes (3) for the Water Treatment Plant:** The selected type of river intake (Tyrolean weir with gravel and sand trap and equipment) made of reinforced concrete shall be a model for similar mountain river intakes in remote areas of Armenia. The locations are at the Spitak Jur river (1 unit) and Ghadri Dzor river (2 units), whereas the river intake at Spitak Jur river will be constructed at a new location and the two river intakes at Ghadri Dzor river will completely be rehabilitated at the same locations.

Armavir District: In 1998 The German Government decided to support the development of social infrastructures in Armenia. A credit of 5 million DM (Deutsche Mark) was assigned in the first phase (CIP I) of improvement measures for waste water system improvements in Armavir Region.
After the rehabilitation of about 70% of the network of Armavir completed in 2006 the performance of the block rings was as expected. The booster pumps were removed everywhere in the city and by end of 2006 a permanent water supply in Armavir for 24h has been enabled.

After a break of several years (Armavir Region was not part of Phase 1 and 2 of CIP II) the ongoing the urgent improvements of the water supply and waste water systems have been included in the coming Phase 3 of the Communal Infrastructure Project (CIP) II that is agreed among the RA Government, KfW, EIB and EU.
Main issue is that steel pipelines laid in the frame of previous contracts within Armavir are already oxidized in many cases due to high aggressiveness of the soil and high water losses are the consequence of this situation. During the last years a big amount of the annual budget of operator was spent for the rehabilitation of the damaged sections of the network

caused by the aggressive soil. Approximately 13 km of steel pipes of different diameters were already replaced by HDPE -pipes. Further replacements of steel pipes are very urgent to carry out, which is part of the scope of the recent project phase. During the consolidation process is was decided to replace the complete network of the newly defined DMA-1, which is the upper part of Armavir town, and to reduce the number of loops of the Water Supply System.

The components to be implemented under Phase 3 Works Contract include the following:

- **Reticulation System of DMA-1 of Armavir:**
  - Installation of approximately 60 km of new water distribution pipelines within Armavir town, ranging in size from DE300 to DE63 including house connections. The pipe material will be HDPE (PE 100, SDR 17, PN10).
  - Installation of valves, valve chambers, hydrants and other ancillary pieces;
  - Installation of approximately 2.600 house service connections together with new underground meter chamber boxes, internal pipework, all fittings and water meter. The house service connection will start at the reticulation main and finish at the connection to the existing house connection;
  - In addition, the contractor will be responsible for the connection pipe between the new meter chamber and the existing house service pipe, and closing off the existing house service connection.
- **Rehabilitation of existing main sewer collector between Armavir and Metsamor** (length of 5.300m, r/c pipe DN1000 and DN1200);

0.6 Environmental Impacts

Implementation of the Project activities will cause environmental impacts mainly during the construction period.

Following impacts are possible during Project implementation:

- Dust resulted from the earthworks,
- Noise resulted from the operation of construction equipment,
- Combustion products as a result of fuel usage for the operation of construction equipment and vehicles,
- Uncontrolled flow of waste water along main collector of Armavir - Metsamor
- Traffic intensification.

To reduce and compensate the influence of the enumerated processes the following main environmental measures are:

- To store the bulk construction materials e.g. cement, sand, etc in containers or under cover,
- Optimization of vehicle management in order to avoid excessive traffic of truck vehicles,
- During the construction works for dust suspension to wet the soil in the area,
- To cover the truck bed with film when transporting the materials,

- To adjust the vehicles and engines properly according to the technical passports of the equipment,
- Regular maintenance of all vehicles and equipment in the corresponding centres,
- Environmental friendly bypassing of the waste water during rehabilitation of the main collector by using mobile pumps and closed piping system.

In order to effectively use water resources and prevent water flows from excessive pollution it is anticipated to:

- To spray water in the working platforms in a way to avoid water flows,
- The cleaning and maintenance of construction and transportation equipment should be done out of the site, in the specialized washing points and technical service stations in Vanadzor,
- Household service of construction stuff should be carried out within the possibilities of the Lori branch of water and sewage utility.

To protect the ground cover it is anticipated:

- To install fuel and lubricant storages in the special areas on the concrete surface,
- To reduce the removal of the top layer of the soil rationally managing the works,
- To store the top layer of the removed ground in a special place preventing contact with water,
- After completion of the works to improve the areas with the removed soil,
- To install containers for waste collection in different parts of the construction area.

0.7 Conclusion

Rehabilitation of the water distribution network will result in satisfying population's water demand and in eliminating high water losses. Thus, the water resources will be used more efficiently and economically. The rehabilitation of the main collector between Armavir and Metsamor will avoid future blockages of this section and will eliminate the risk of flooding of this area with waste water. The negative impacts resulted from the construction works will be insignificant, short-term and local.

The anticipated environmental and social positive impacts resulted from the renovation of new daily regulating reservoir, construction of new water distribution pipelines and the rehabilitation of the main sewer collector will be long term improving the social and economic welfare of the population in the affected communities. The presented monitoring plan will provide an opportunity to control the implementation of the designed measures.

The Project is aimed to provide sustainable and continuous water supply which in its turn will positively impact the welfare of the population. Also the rehabilitation of the main sewer collector will positively impact the welfare of the population. So the social-economic positive impacts of the activities will significantly prevail the environmental risks relating to the construction works.

1 INTRODUCTION

The Government of the Republic of Armenia and KfW, EIB and EU-NIF have agreed for the financing of Communal Infrastructure Programme (CIP) II, Phase 3 (the "Project), in the service areas of the four regional Water Utilities: Shirak Closed Joint Stock Company ("Shirak CJSC"), Lori Closed Joint Stock Company ("Lori CJSC"), Nor Akunq Closed Joint Stock Company ("Nor Akunq CJSC") and Armenian Water and Sewerage Closed Joint Stock Company ("AWSC") – the Project Executing Agencies ("PEAs").

The Project concerns the rehabilitation, renewal and extension of the water supply network as well as some urgent measures in the sewer system of the regional Water Utilities Shirak CJSC, Lori CJSC, Nor Akunq CJSC and AWSC as well as in the waste water treatment plant in Armavir. The Project covers the third Phase that aims at providing continuous, 24h/7days water and demand-oriented supply of the population with hygienically sound water and thus raising the living and health conditions. The purpose of the Project is the qualitative and quantitative improvement of the water supply for the population living in the project region. Furthermore, the Project includes investments for the surrounding villages. This is to contribute to the sustainable and ecological municipal development, the improvement of the environmental situation, to sustainable and ecologically sound management of the regional water resources as well as the reduction of negative impacts on the health situation of the population in the project region. Additionally, the project targets at establishing a hygienically sound sewage collection and environmentally compatible waste water treatment for Armavir (Nor Akunq CJSC) and Sevan (AWSC).

The water supply systems in Armenia – though sufficient water of good raw water quality is mainly available in the northern regions Lori and Shirak- suffer from technical problems to distribute the water to consumers for more than a few hours per day because of corroded and damaged distribution systems and water wastage by consumers because of many illegal or not metered connections and misuse for extensive garden watering.

Since January 2017 several changes happened in the structure of the Employer and Operator: A new PIU was created and on 14th of June 2017 the official Amendment between the new WSPIU "Water Sector Projects Implementation Unit", State Agency of State Committee of Water Economy of the Republic of Armenia and SRP Schneider & Partner Ingenieur- Consult was signed. In January 2017 Veolia Djur took over operation of the Water Supply and Sewer Infrastructures in Armenia (Leasing contract for the next 15 years).

2 PROJECT DESCRIPTION

Phase 3 is divided in four lots, whereas lot 2 is divided once again in lot 2/1 (Lori CJSC) and lot 2/2 (Nor Akunq CJSC). SRP Schneider & Partners Ingenieur-Consult (SRP) was signing separate Consulting Contracts for lot 2/1 and 2/2 on 28/5/2016.

In addition to the main contract for Lori, the Addendum#1 was signed as well in December 2016, including several components located at the service area of Lori Water and Sewerage CJSC, which should be designed, tendered and implemented together with the two sections A and B of the main Lori-Contract.

This report is focused mainly on implementation of the following activities related to:

2.1 Section A for Lori

1. Rehabilitation works for pressure zone 8 of Vanadzor (Water Supply Network): During the previous phase of CIP II the major part of the water supply network of Vanadzor was rehabilitated and/or renewed. The remaining part is pressure zone 8.

   The entire pipework of this part of the town will be renewed and a total length of approx. 22.8 km HDPE-pipes of diameters 50mm up to 280mm diameter will be placed. The pressure zone will have two feeder line, one coming from the Reservoirs at the Water Treatment plant (1.490m, DE280 HDPE, PN10) for normal operation and the second one from Dimats Reservoir (264m DE280 HDPE, PN10) for emergency cases. The length of the pipes for house connections is additionally 11.2 km.
2. Ring Feeder Section from Novoseltsovo Pipeline to Taron 2 Reservoir: One of the main elements of the water supply concept for Vanadzor town developed during previous phases is the ring feeder surrounding the town and connecting different sources and reservoirs. The main advantages of this new ring feeder is that in emergency cases, when there are some problems with one of the sources, different zones can be supplied also from other reservoirs. Consequently, the supply security is much increased.

   Two parts of this ring feeder are not yet completed and during the resent phase 3 these missing links will be closed. One of them is this Section to connect the Novoseltsovo Pipeline with Taron 2 reservoir. The purpose of this pipeline is mainly to bring water from Novoseltsovo springs to Taron 2 reservoir in times of low yield form the sources of Lernapat when the water quantity is not sufficient to supply the north-western part of the town (pressure zones: 1, 2, 3 and 4). A pumping station at Narekatsi Street is required to lift the water to the higher level of the reservoir, which is not possible with the current pressure of the Novoseltsovo

pipeline. This pumping station – an existing building of a former pumping station - will not operate permanently but probably only for few months per year.

Some parts of this pipeline were already constructed as planned during phases 1 and 2. A steel pipe DN325 with length of 350m was constructed and connected to the Novoseltsovo main water line DN1000. Another section of this ring feeder was also constructed during phase 2. It starts at Narekatsi Street (next to the pumping station) and is finishing at Sebastian Street with a total length of 1300m, (steel pipe DN325).

The route of the missing pipeline follows a gas pipeline on the southern site of the Pambak River up to the crossing of Narekatsi Street (M6) and Tevosyan Street, where the pipeline will cross the river and proceed up to the existing pumping station (Narekatsi PS) following the Tevosyan Street in parallel to the Pambak River. This first section up to Narekatsi PS has a length of 4251m.

The remaining part to reach the Taron 2 reservoir has the length of 1910m, which will be completed under this project. In total the length to be constructed is 6,161m. Both sections are foreseen as steel pipe DN300 as requested by the client.

Especially this component of Section-A because of the size bigger than DN300 and longer than 1,000m is the reason, that an Environmental Expertise Conclusion is required according Armenian Legislation (Category C-procedure).

2.2 Addendum#1 to Lori with the following components

1. Connection of the Amrakits Reservoir to Novoseltsovo main pipeline: A small poster pumping station inside of the existing chlorination station at Amrakits will lift the water coming from Novoseltsovo Pipeline to the Amrakits Reservoir, which was constructed during previous phases. With this measurement it will be possible to supply Amrakits Village from the reservoir by gravity for 24h/day and no other water sources are required any more. The length of the new section will be approx. 653m (HDPE pipe, DE90).
2. Rehabilitation of the connection of the Hobartzi/Vardablur Reservoir to Novoseltsovo main pipeline: Actually these two villages are supplied by direct connections to the Novoseltsovo Pipeline and the newly constructed reservoir cannot we used, because the feeder line has too high losses. After rehabilitation of the feeder line it will be possible to operate the new network of the two villages by gravity from the reservoir constructed during previous phases of the project. The length of the new section will be approx. 1580m (HDPE pipe, DE160, PN16)
3. New connection of the Gugark Reservoirs to the ring feeder WTP to Dimats Reservoir: The new Gugark-2 reservoir will receive a new feeder line from WTP-reservoir (approx. 800m, HDPE pipe, DE110, PN10) and the existing feeder line coming from Novoseltsovo pipeline will be used as part of the new distribution

network. The connection to the old Gugark-1 reservoir will be replaced as well (approx. 147m, HDPE pipe, DE 160, PN10).

4. Feeder line from Novoseltsovo-2 reservoir for separation of pressure zone 6 of Vanadzor: With this new connection it will be possible to operate zone 6.1 and 6.2 from two different reservoirs, which will improve the supply situation of this very big pressure zone 6. The length of the new section will be approx. 443m (HDPE pipe, DE225, PN10).
5. Rehabilitation of the ring feeder section WTP to Dimats Reservoir: This part of the not yet completed ring feeder will serve as permanent feeder line (by gravity) for the Dimats reservoir. Actually the Dimats reservoir is filled by pumping from the Novoseltsovo pipeline and is therefore not in operation during 24 hours per day. With closing this missing part of the ring feeder it will be possible to improve all zones of Vanadzor and Gugark, which are connected or will be connected to Water Treatment Plant Reservoirs and Dimats reservoir. The length of the new section will be approx. 2.283m (HDPE pipe, DE280, PN10).

2.3 Section B for Lori

Reticulation Systems for the following 9 Villages:

AMRAKITS: Amrakits village is located 4 km east of Stepanavan town, 30 km far from the regional center Vanadzor. The village is located on the right bank of Dzoraget river, on the southern slope of the Bazum ridge, on a hilly plain at 1380 m asl. Some parts of the village are directly connected to the Novoseltsovo Pipeline, other parts are receiving water from nearby strings.

It is planned to construct fully new reticulation systems because of the deteriorated state of the distribution pipelines (75.9% water losses). The total length of the new network including house connections will be approx. 9,900m (HDPE pipe, DE110 to DE25).

ANTARAMUT: This village is located 27km away from Vanadzor city. It was founded in 1870 and is located at an elevation of 1300m asl. The village has springs which are used for drinking water purposes.

Actually the village is supplied from the old existing Antaramut reservoir, which is fed from Novoseltsovo main with 100mm steel pipeline. The latter is in a poor state with numerous direct house connections.

Under previous phases a new r/c 100m^3 reservoir was constructed at the elevation of 1350m asl., which is not yet in operation. It is planned to construct fully new reticulation systems because of the deteriorated state of the distribution pipelines (89.5% water losses). The total length of the new network including house connections will be approx. 6,500m (HDPE pipe, DE110 to DE25)

DZORAGYUGH: Dzoragyugh village of Lori Region was founded in 1804. The village is 1200m asl. The number of households is 112. Frequent drought years hurt the villagers engaged in agriculture.

This village is actually supplied from the existing old reservoir (V=100m^3) connected to Novoseltsovo transmission pipeline. The old distribution network (steel) is completely worn out.

It is planned to construct fully new reticulation systems because of the deteriorated state of the distribution pipelines (84.2% water losses). The main water supply source is foreseen from the existing reservoir 100m^3, which was rehabilitated under Phase 1 of CIP II. The total length of the new network including house connections will be approx. 6,800m (HDPE pipe, DE110 to DE25).

GUGARK: The village is located to the north-east of Vanadzor. It borders Vanadzor, Pambak, Lermontovo and Shahumyan communities. The number of households is 1800. The Pambak River flows in the north-western part of the village parallel to the railway and the highway to Noyemberyan town. The village is surrounded by mountains and forests.

This village is supplied by three direct connections of DN50 from Novoseltsovo pipeline and one part of the village is supplied from the existing old Gugark 1 reservoir (V=600m^3) located in the south-west of the village at the elevation of 1436m asl. This reservoir is supplied from WTP reservoirs (Vanadzor). The existing network is in poor condition.

The consultant has developed a new concept on the supply of this village. It is considered to divide the service area in 3 sub-service areas where which of them has its own supply source (Dimats, Gugark-1 and Gugark-2 reservoirs). The total length of the new network including house connections will be approx. 36,600m (HDPE pipe, DE160 to DE25).

HOBARDZI: The village is 12km to the south-east of Stepanavan town and 30km away from the regional center Vanadzor. The number of households is 269.

The village is supplied with a direct DN65 connection from Novoseltsovo main. The network is deteriorated. In previous phases a reservoir for the two villages Hobardzi and Vardablur was constructed but could not get in operation. This will be corrected under this phase (see Amendment component no. 2).

It is planned to construct fully new reticulation systems because of the deteriorated state of the distribution pipelines (87% water losses). The total length of the new network including house connections will be approx. 10,700m (HDPE pipe, DE110 to DE25).

KURTAN: The village is 18km to the south-east of Stepanavan town and 36 km away from the regional center Vanadzor. It was founded in 1730-1740s. The number of households is 569. The village is located at an elevation of 980-1350m asl. There are frequent years of droughts, which hurt the villagers engaged in agriculture.

The village is actually supplied from 6 directions. There is one connection from Kurtan new reservoir; other five are direct connections from Novoseltsovo main pipeline. The old steel distribution network is in poor state.

It is planned to construct fully new reticulation systems because of the deteriorated state of the distribution pipelines (88.1% water losses). The main water supply source is foreseen from the existing new reservoir 250m^3 build under Phase 1. The total length of the new network including house connections will be approx. 21,500m (HDPE pipe, DE125 to DE25).

LERNAPAT: Lernapat is located at a distance of 14 km from the regional centre Vanadzor, 4 km to the left (south) at the 8th km of Vanadzor-Spitak highway.

The average elevation above sea level is 1520 meters. The Lernajur River flows through the village and joins the Pambak River. Lernapat village borders Arjut, Saral, Darpas, Halavar villages. The village is surrounded by hills of Pambak mountain range.

New Lernapat is actually supplied with two connections from the Lernajur-Lernapat-Azatadzor transmission pipeline. The water supply network is in poor condition.

It is planned to construct fully new reticulation systems of New Lernapat, because of the deteriorated state of the distribution pipelines (88.7% water losses). An existing old reservoir of 125 m^3 will be used as water storage. The other part of Lernapat received a new network during previous phases. The total length of the new network for New Lernapat including house connections and the feeder line to the reservoir will be approx. 8,500m (HDPE pipe, DE110 to DE25).

VARDABLUR: The village dates back to the 60s of the18th century. It is located next to Hobardzi in the former Stepanavan district in Lori Region at a distance of 31 km from the regional center Vanadzor. The number of households is 420. The elevation above sea level is 1320m.

The village is currently supplied with three connections to Novoseltsovo main. The distribution network is deteriorated. In previous phases a reservoir for the two villages Hobardzi and Vardablur was constructed but could not get in operation. This will be corrected under this phase (see Amendment component no. 2).

It is planned to construct fully new reticulation systems because of the deteriorated state of the distribution pipelines (87% water losses). The total length of the new network for Vardablur including house connections will be approx. 13,400m (HDPE pipe, DE110 to DE25).

VAHAGNI: The village was founded in 1805 and is situated 23 km away from Vanadzor the lower valley of the River Pambak, on the left side of the Vanadzor-Alaverdi road. The administrative area of the community borders the areas of Dzoraghugh, Antaramut, Yeghegnut, Vahagnadzor communities. The nearest railway stations are Vahagnadzor (5 km) and Tumanyan (7 km). It also borders the state land funds in southern part.

The geographic position is mountainous at an elevation of 1400-1600m asl.

The village is supplied from the existing old 100m^3 r/c reservoir, which is in a poor state. The reservoir is fed from Novoseltsovo main. Some years ago a part of the water supply network was reconstructed with HDPE, the other parts are deteriorated, and water losses make 65.4%.

Taking in consideration previous investments on the water supply distribution network of Vahagni, it is planned to construct only partly new reticulation systems where no investment was done and the deteriorated state of the those distribution pipelines is high

The new system will be supplied from the new constructed reservoir (Phase 1). The total length of the new network for Vahagni including house connections will be approx. 13,900m (HDPE pipe, DE110 to DE25).

Mountain River Intakes (3)

All three existing river intakes of the Water Treatment Plant are located in remote areas on the orthographic left river bank of the Tandzut River. The permission for water use Nr. 000174 given by the Water Resource Management Agency of the Ministry of Nature Protection of the RA to Lori WS CJSC dated 14/07/2017 is also covering the surface water sources of Spitak Jur River and Ghadri Dzor River.

- Spitak Jur River: 230 l/sec (= 20,000 m^3/day)
- Ghadri Dzor River: 120 l/sec for both branches of the river (= approx. 10,000 m^3/day)

SPITAK JUR RIVER INTAKE: This existing structure is located close to a shelter for animals on the right bank of the Spitak Jur River at an elevation of approx. 1780m (T38-460895E / 4510218N). Upstream of this location is another water intake, which is used by a hydropower plan. Cooperation with this Hydro Power Plant (HPP) might be possible – as it is happening already nowadays - because the elevation of the plant is sufficient (1715m) to bring the water by gravity to the Water Treatment Plant (WTP). But the owner of the HPP refused to enter in a closer cooperation.

Because of the hygiene risk this river intake is foreseen to relocate approx. 220m upstream to avoid negative influence from the shelter for animals. The connection pipeline from this river intake to the WTP has a total length of about 6.0 km. The first section (5.0 km) up to Tandzut river intersection is DN300 steel pipe and the last section until reaching the WTP at 1478m elevation is DN500 steel pipes. This pipe will not be replaced.

GHADRI DZOR RIVER INTAKE N1 and N2: These two other river intakes are located upstream of Antarashen Village at two branches of the Ghadri Dzor river 400m away from each other, the eastern is located at an elevation of 1920m (T38-467318E / 459584N) and the western intake at an elevation of 1990m (T38-467888E / 459584N). The two existing river intake will remain at the same locations, the gravel and sand sedimentation units including equipment will be renewed with the same dimensions, Through an existing steel pipe DN300 (length approx. 11.0km) the water reached the WTP of Vanadzor. This pipe will not be replaced.

The following figure is giving an overview of the water supply system of Vanadzor and all connected villages to this system including water sources and existing reservoirs. The yellow marked components are part of the actual contract and are related to this report.

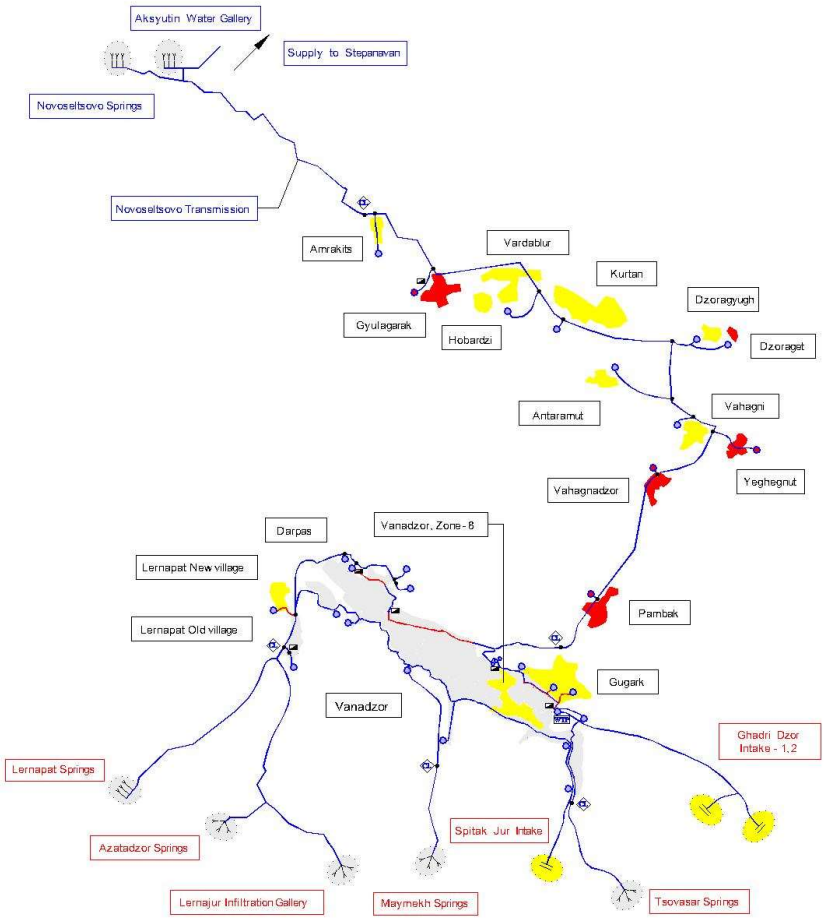


Figure 2-1: Water Supply System of Vanadzor and connected villages

2.4 Section A for Armavir (Nor Akunq)

1. Distribution network for Armavir DMA-1

   It is planned to construct fully new reticulation systems because of the deteriorated state of the distribution pipelines. It is considered that full replacement has considerable advantages compared with rehabilitation, as the latter would require a considerable amount of time and effort to locate and repair all the leaks. In addition, as the existing pipelines are mostly steel and suffer from severe corrosion, it is considered that any improvements following rehabilitation would be short lived. Previously it was considered that new water distribution systems should be constructed in whole districts or pressure zones in parallel to the existing system

and would replace the old reticulation system district wise as a whole once works are completed. However, this approach was found difficult to be implemented due to the size of the zone and related number of unknown (illegal) house connections that need to be dealt with at the time of switching over.

In Armavir the water supply network will be divided into 3 sectors/zones/DMAs. Water supply to the pressure zones is provided from the wells via existing reservoirs. In the heavy traffic roads and in the main regulating nodes of the distribution network the valves are planned to be installed in chambers.

In earth roads the valves shall be installed in chambers; while in asphalt-covered roads without heavy traffic they are planned to be buried.

The interface point of the new reticulation systems includes the water meter chamber at the border of the plot. The water meter box, the water meter set and the connection to the internal water supply system of the client shall be included in the construction.

Based on the requirements of the local applicable norms, the Consultant has developed a new scheme for the ring reticulation system of DMA-1 including required service lines and house connections

The reticulation water supply system of DMA-1 consists of a looping system. The zone is divided in 18 main lines, some of them are looped.

A feeder-line to DMA-2 is integrated in the calculation to fully divide supply zones.

The construction works consists of supply, installation and testing of pipelines including valve chambers, bends including thrust blocks, house connections.

The indications for pipe diameters and lengths are presented in the Table 2-1.

Table 2-1: DMA1 pipe diameters and lengths

No.	Pipe Description	Length (m)
1	Feeder Line to DMA2 - HDPE DE 280 PN10	4,500
2	Distribution Primary Network HDPE DE 280 PN10	1,000
3	Distribution Primary Network HDPE DE 225 PN10	1,100
4	Distribution Primary Network HDPE DE160 PN10	3,500
5	Distribution Primary Network HDPE DE110 PN10	8,500
6	Distribution Primary Network HDPE DE90 PN10	7,800
7	Distribution Secondary and tertiary Network HDPE DE 63 PN10	16,500
8	House connections HDPE DE 63 - 25 PN10	24,500

2. Waste Water Main Collector

The total length of the main collector was divided into three sections. The separation into sections was carried out mainly taking into consideration the work regime (by gravity or pumping), pipeline type, change in diameter depending on the length, number of lateral connections, estimation of required financial amount and technical

difficulties, etc. At the drawing of the layout plan these sections are indicated as follows:

Section 1: The manhole installed at the crossroad of Yerevanyan main road and Marshal Baghramyan intercity road is taken as the starting point of the 1st section of the collector. According to the drawings of the previous phase of the project the manhole has the number of 269, where DN800 mm R/C pipeline starts. It is crossing the railway and then crossing the village of Norapat to south-east. After 3520 m the collector joins the manhole installed next to the railway (south) with the coordinates of X=44.05580,Y=40.13768. This section consists of R/C pipes of 800mm and 1000mm and is crossing private farmlands and is located in several cases under buildings (constructions). It discharges wastewater from Armavir and Norapat.

Section 2: After this manhole the collector crosses Yerevan-North Caucasus railway to northeast and stretching along the highway M5 to southeast. It reaches the manhole at the entrance of the sewer system pumping station which is the final point of the 2nd section. This section of the collector mainly consists of R/C pipeline DN1000 and DN1200 and 44 manholes with some lateral connections. Two connections from Metsamor are also connected to the ending part of sector 2, which are discharging waste water from the town. (DN400 mm at the station 4962m and 5312m of the collector close to the pumping station). Actually, the collector discharges the wastewater into the Black River because the PS is decommissioned. The investigations showed that except the connection mentioned above the wastewater from the new car filling station and small quantity from other buildings constructed during the recent years are also connected to the collector.

Section 3: The part located between the PS and the WWTP is considered as the 3rd section. It will include the PS and sewer pressure pipeline coming out of the PS and reaching to the WWTP. This section is not a component of the Pink Book Contract but is included in the Yellow Book Contract together with the pumping station and the Waste Water Treatment Plant.

The table given below presents the length of all the three sections and the numbers of the included manholes.

Table 2-2. Brief description of the sections of existing main collector

N	Sections	Section length (m)	Manhole Quantity of this section (pcs)
1	Section-1	3.520	22 (not confirmed)
2	Section-2	5.420	44
3	Section-3	1.400	0
Total		**10.340**	**66**

An overview of the location of DMA-1 at Armavir and of the main collector is given in Figure 4-1 of chapter 4.

3 DESCRIPTION OF BASELINE ENVIRONMENTAL CONDITIONS / LORI

Vanadzor is located about 120 km road north of Yerevan in the fairly narrow Pambak and Tandzut valleys at an elevation between 1,300 to 1,500 m asl., right between the main ridges of the small Caucasus mountain range. The town stretches about 15 km along the two valleys with a lateral width of mostly not more than 2 km.

The 16 villages connected to the water transmission system to Vanadzor are located up to 35 km by road from the town and situated mostly on the slopes of the valleys.

The road accessibility to the town is excellent by two major highways from Yerevan, one highway from the distant Georgian Black Sea ports and one highway from the Georgian capital Tbilisi.

Road access to the villages connected to the system is excellent by good highways, partly tedious by damaged tarmac or by gravel roads. Certain areas at the mountain slopes in Vanadzor and in the villages are badly accessible by narrow steep dirt or severely damaged tarmac roads, only.

3.1 Water Resources in the project area

All rivers within the project area are flowing from west to east and are joining the Debed River, which leaves the country at the north-eastern corner at the border to Georgia. The main rivers are Pambak, Dsoraget and Debed, which are very clean at the mountainous areas where they are arising. But immediately after the first villages and towns along the rivers, they are getting more and more polluted because of the missing waste water treatment facilities and because most of the household waste is deposited along the river banks.

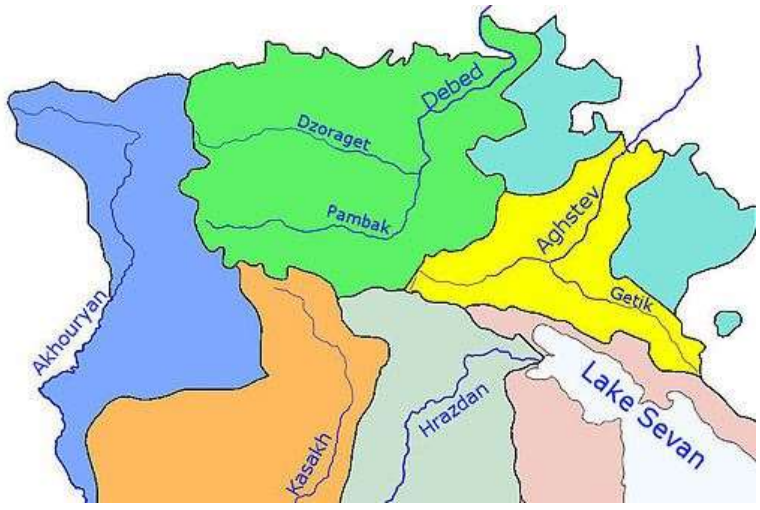


Figure 3-1: Rivers in the North of Armenia

3.1.1 Drinking Water Resources

The main water supply sources of Vanadzor town are Novoseltsovo springs located in Lori upland valley about 50 km North-West to Vanadzor and West to Stepanavan towns. The

water delivery is supplemented by water of five mountain springs from the southern part of Vanadzor (Southern springs) and three river water intakes also in the south of Vanadzor (Spitak Dschur river and Ghadri Dzor river) treated by the existing Water Treatment Plant (WTP). Currently the water supply concept of Vanadzor town plans to use the southern springs for the high-set areas that cannot be supplied with water from by WTP or Novoseltsovo springs.

The various water intake structures are located at the Dzoraget River at Novoseltsovo (about 10 km NW of Stepanavan) and about 10 km by road from Vanadzor in remote parts of the valleys to the south of the town, which are often difficult to access in winter.

The water supply concept of Vanadzor town is based on two main columns: the river water intakes and captured spring waters. The required future yield of various sources is about 540 l/s.

The quality of the captured sources is quite good because of using mostly spring waters and non-polluted mountainous rivers. However, the supplied water can be polluted by leakages and operation of the system with low or without pressure.

In Vanadzor town the average water supply hours in the newly rehabilitated zones under Phase I and II is 21.42 h per day, whereas in the old zones it is 17.03 h per day. However some areas of Vanadzor town receive water only every second day for about 4 hours.

The volumes of non-revenue water still remain high. The analyses of the bulk water meters installed in the water sources and the water meters installed on feeder lines of 13 rural communities showed that the water losses in these communities are sufficiently high reaching about 88%. The situation is the same in non-rehabilitated zones of Vanadzor town. However, it is obvious that the produced water quantities are much higher compared with real needs.

3.1.2 Sewerage system conditions

Some sections of the sewerage system have been replaced under Phase 1 and 2. The existing WWTP downstream of Vanadzor is located next to the Pambak River. Nothing is foreseen for the existing sewerage system under Phase 3.

Only one village of Lori marz out of 16 will has an access to a sewerage system in the project implementation area. The remaining 15 villages do not have sewerage systems.

3.1.3 Ground water recourses

From hydrogeological point of view the Lori region is poor in ground water, which is deeper than 20 meters. At the area of Vanadzor the ground water is situated on different levels, beginning from 2 to 5 meters in river-valley areas; in escarpments and higher located regions 8 to10 meters and deeper.

3.2 Meteorology and Climate

In Vanadzor, the climate is cold to temperate and humid. The rainfall in Vanadzor is significant, with precipitation even during the driest month. The different classification of the climate of Armenia is shown in Figure 3-2.

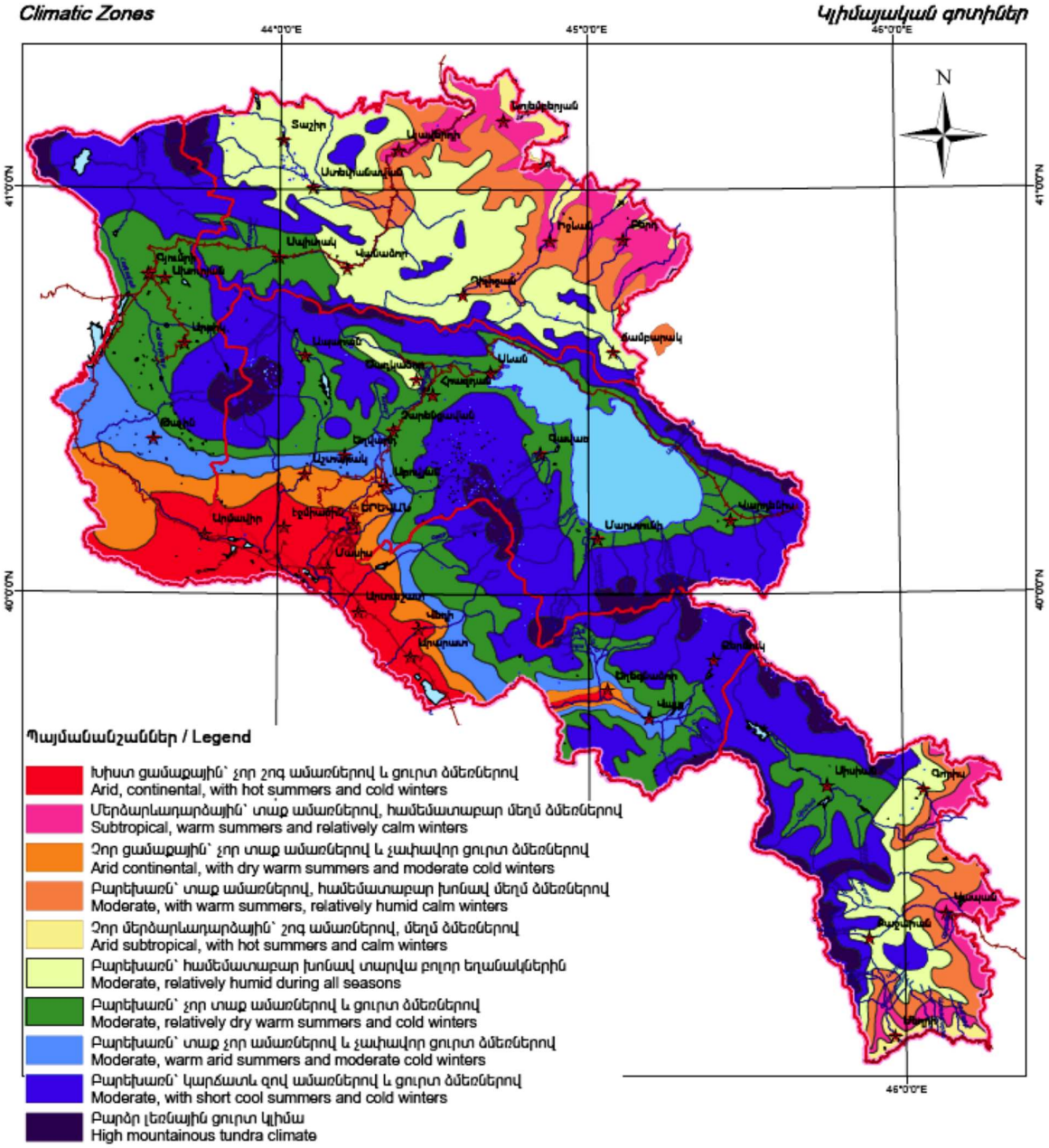


Figure 3-2: Climate Classification of Armenia

Annual precipitation is 500 - 800mm depending on the elevation. The average rainfall in Vanadzor is 586mm and the average temperature is 11.6 °C. Summers are long, temperate and sunny. With increasing altitude the winters become snowy, lasting from October until April at foothills and until May on the ridges. The maximum height of snow cover for ten-day period is about 30 cm; the average number of days with lying snow is 52. Prevailing wind is Southern, sometimes Northern and North-Western. The annual average occurrence of 0-1 m/s winds is 24 %.

Meteorological data for Lori Region (Shnogh, situated in the northeast of Lori Marz), can be found in the following **Error! Reference source not found.**.**Error! Reference source not found.**

Lori Region	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Decr	Annual
Temp. average (°C)	0.7	1.9	5.1		15.7	19.2	22.7	22.5	18.0	12.3	7.1	2.7	**11.6**
Temp. max (°C)	2	2	7	15	19	23	26	27	24	18	10	4	
Temp. min (°C)	-5	-5	0	6	9	1	15	15	12	8	3	-2	
Rel. air humidity (%)	69	69	70	69	72	68	62	63	69	73	73	70	**69**
Precipitation (mm)	20	25	40	54	79	87	49	39	37	42	31	16	**519**

Further climatic conditions of the Lori district are shown in the figure below:

Source: https://www.meteoblue.com/en/weather/forecast/modelclimate/vanadzor_armenia_616530

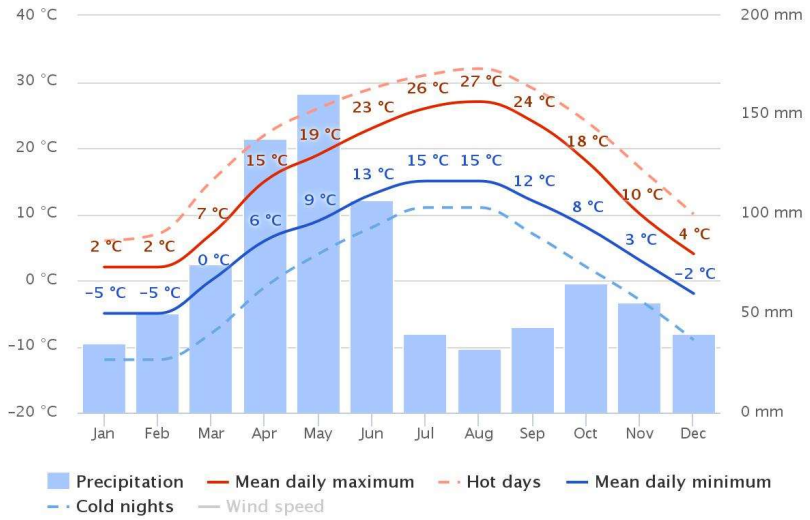


Figure 3-3: Average temperatures and precipition in Lori District

Global climate

The Republic of Armenia ratified the UN Framework Convention on Climate Change in 1993 and joined the Kyoto Protocol in 2003. Just recently in 2017 the Republic of Armenia agreed also to the Doha Amendment to this protocol.

In order to support the initiatives towards the mitigations of climate change effects, most energy efficient equipment will be chosen during design stage to reduce the overall electrical consumption.

3.3 Soils and Geology

The brown mountainous forest soils with a number of their subtypes are common in the investigation area. The warm, mild and variable humid climate, the long period of active soil formation, presence of sufficient drainage system and seasonal change in ground streams direction promote deep intensive weathering of primary minerals, formation of secondary mineral substances and rather thick clay soils. Bioclimatic features of brown mountainous forest soils formation promote good growth of forest plants communities and formation of phytomass. The common soils in the area are leached and carbonated types of brown mountainous forest soils. Distribution of soil types in Armenia is shown in Figure 3-4

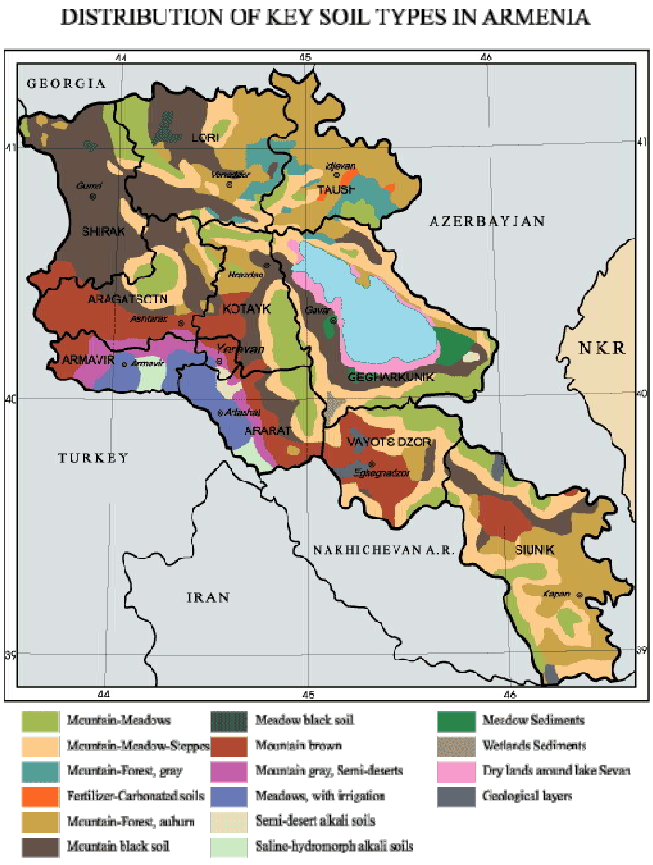


Figure 3-4: Distribution of soil types in Armenia

The geological structure of the project area is characterized by Palaeogene-age granodiorite intrusions, which are covered by Eocene age lime stones, conglomerates, as well as clayey layer group with its sand stone, limestone and conglomerate sublayers. Porphyrites and basalts of Neogene age are spread in the area. The above mentioned are covered by fourth age diluvial-eluvial-coluvial formations on the slopes, and alluvial-proluvial accumulations of irregular thickness in valley areas.

3.4 Flora

Lori is considered among the greenest places of the Republic of Armenia with large areas covered with forest; about 62% of total amount of forest in Armenia is located in the northeast part of the country mostly covered with oak, beech, and pine trees. Armenia has over 3,500 species of plants, while more than half of the 6,000 that can be found in the entire Transcaucasia region. The region of Lori has the variety of plant-life spread on the various zones and altitudes, including mountainous plateau, alpine zone, mountain steppe terrain, subalpine meadows, river valleys and semi-desert steppes. Dozens of fruits (wild relatives of cherry and blackthorn), nuts, melons (wild lentil) and berries (especially woodland strawberry and rheum and bilberry) are also native to this region. Native to Armenia are the apricot and peach. Other fruits that grow include apples, pears, cherries, plums, pomegranates and an amazing variety of grapes.

The vegetation includes the following species: medicinal plants are represented by oregano (Origanum vulgare), the European Cornel (Cornus mas), common yew (Taxus baccata), European crabapple (Malus sylvestris), pomegranate (Punica granatum), Persian walnut (Juglans regia), European Bird Cherry (Padus racemosa), wild raspberry (Rubus idacus), woodland strawberry (Fragaria veska), Sicilian sumac (Rhus cariaria), Jamestown weed (Datura stramonium), while endemic species are represented by malvaceae (Malvaecae), Genera Alcea (Alcea grossheimii). Species registered in the Red Book of Armenia include date plum tree (Diospyros lotus), trifolium (Trifolium sebastianii).

3.5 Fauna

Lori region holds a large diversity of animals; most notable species are sylvan wildcat, reed wildcat, lynx, fox, royal stag, deer, Caucasian squirrel, porcupine, bear, wild bore, and marten. Lori is also hosting a wide variety of bird species native for mountain plateaus and craggy mountains as well as for the woodlands and mountain forests. It also supports bird species residing in river gorges and semi-desert steppes. The mountain plateaus and sweeping alpine areas are habitats for the a number of varieties of eagles (Greater Spotted Eagle, Steppe Eagle, White Tailed Eagle, Golden Eagle, Imperial Eagle, Booted Eagle, etc.), hawks (Northern Harrier), sparrows (Buntings), bee-eaters, owls, cranes, storks, crakes, pheasants, bustards, larks, rollers, warblers, swallows, redstarts (Black Redstart, White-winged Redstart), lammergeyers, Eurasian Black vulture, Eurasian Griffon and other

species. Woodland birds include hawks, woodcocks, cuckoos, owls (Eurasian Scops Owl, Tawny-Owl, Long-eared Owl, Boreal Owl), woodpeckers (Eurasian Green Woodpecker, Black Woodpecker, Lesser Spotted Woodpecker, Middle Spotted Woodpecker, Great Spotted Woodpecker, White-baked Woodpecker), francolins, doves, larks, warblers, pipits, starlings, finches, jays, rooks, wrynecks, flycatchers, etc.

3.6 Forests

Forested areas occupy space in Debed River valley and they extend from 500 to 2200 m heights. The important tree species in the forest are: beech, oak, hornbeam, lime tree, ash tree, etc. Here the tree height can reach 20-30 m. The wild fruit trees - wild pear, walnut, apple, plum, and cornelian occupy a significant place in the lowland of the forest zone. Out of grassy-shrubby plants blackberries, rose hip, etc. dominate.

There are forested areas in Pambak River tributaries - Tandzut, Vahagni, Vahagnadzor, Alareks basins. The subalpine and less widespread, alpine meadows lie above the forested zone with their specific plants, particularly flowers. It should be noted that it is characteristic for both the vegetation of black soil areas and the felt-like layer of forest zone humus horizon to decrease the surface flow tension. The surface runoff is significantly higher than the subsurface runoff in these zones. There are only few sources, with small outlets. The river network formed in the area is fed due to rainfall and meltwater.

3.7 Special Nature Protection Zones

There is Gyulagrak Sanctuary (Pine of Gyulagrak Preserve), which is located in the north of Vanadzor close to Stepanavan at the mountain range between these two towns. The Project area is surrounding this Sanctuary but is not at all affecting this protected zone. The villages, which are part of the project (shown in yellow), are lined along the Novoseltsovo Pipeline. They will get water from sources which are far from the protected zone (almost 20 km).

The Rhododendron Caucasicum Sanctuary (Caucasian Rose-Bay) is located in the south of Vanadzor and it is also not negatively affected by project measures. The Margahovit Sanctuary in the south-east of Vanadzor might be affected in case, that the existing river intakes will be renewed. In this case special protection measures will be applied during construction phase.

The Dilijan National Park is far from the project area and is not at all affected by project measures.

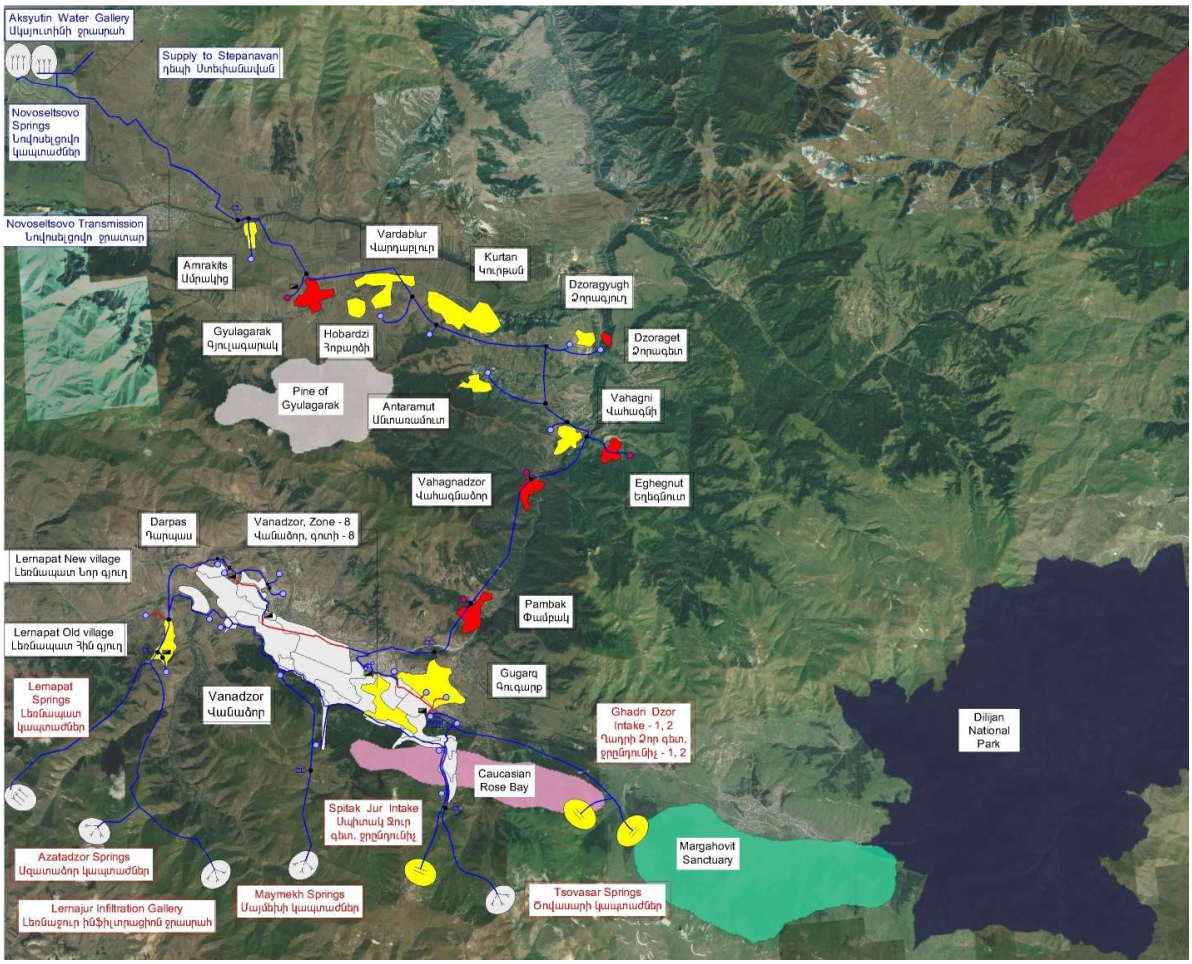


Figure 3-5: Natural Protected Zones near the Project Area

3.8 Social-Economic Conditions

During the Soviet era the Lori region had a powerful industrial base comprising all industry sectors. The industrial base employed more than 53,000 people, 30,000 were employed in Vanadzor. Industrial enterprises exported their products to more than 45 countries. Since the collapse of the Soviet Union, industry in the region has weakened considerably.

Although chemical and metallurgy industries remain leading branches in terms of the production, volume machinery and equipment construction spheres as well as light industry lost their leading position and the share of food production has increased. During recent years increase in electricity power has been noted.

New mining industry enterprises have been established recently and their production volumes have increased. In terms of production volumes the metallurgy subsector has the prevailing role in the industry structure (86%) followed by food industry, the volumes of which, however, are 14 times less than metallurgy. According to production volume the main industry is focused on Tumanyan province.

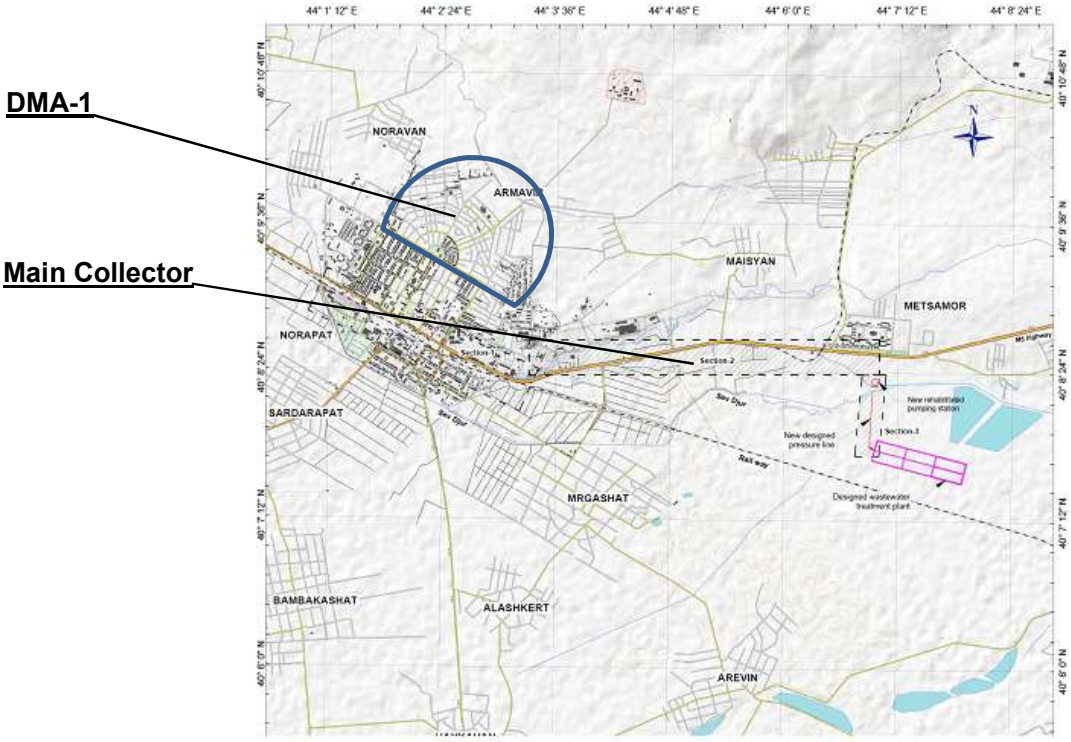
Vanadzor has about 50 enterprises with about 2500 employees. 6 enterprises operating in the region are large and 120 enterprises are small and medium size production units (SME), which involve only 30% of employees involved in the industry. 40% of (SME) production units are processors of agricultural products and food production enterprises. The majority of Lori population is involved in agriculture, namely livestock, husbandry, horticulture and beekeeping. The region also has stone and wood processing plants, electricity and other enterprises. Lori region has a number of banks and financial and credit organizations. The region has mass media (TV, newspapers) and NGOs. There are trade and service delivery centres, the majority of which are located in the regional centre and big towns. There are also hotels and guesthouses. However, it should also be noted, that the level of unemployment in the region is high. As a result of unemployment there has been migration from the region to work abroad (mostly males). Main institutions ensuring employment for men in communities are industrial enterprises (if there are any), farming, small and medium size enterprises, municipality and regional government (marzpetaran). Women are mostly employed in education, healthcare, service delivery facilities, farms, small and medium enterprises, municipality and regional government (marzpetaran). Business development in the region focuses on tourism, the mining, electricity production, metallurgy, information technologies and chemical industry, processing agricultural products, light industry, food industry, machinery and equipment production.

4 DESCRIPTION OF BASELINE ENVIRONMENTAL CONDITIONS / ARMAVIR

The city of Armavir is about 50km away from Yerevan to the west. The area is located in the valley of Ararat on the altitude of 850m ASL. The area is totally flat.

The Network replacement of the Water Supply System is defined as DMA-1 of the Armavir network is located on the north-eastern part of the town upstream of the Abovyan Street. The main sewer collector, which will be rehabilitated, is connecting the town of Armavir with the sewer network of Metsamor and is following mainly the railway line Armavir – Metsamor.

Figure 4-1: General Location Plan Armavir / Metsamor



4.1 Investigation Area

4.1.1 Morphology

The Okemberyan depression with an area of 550 km^2 is situated in the north-west part of Ararat lowlands on the left bank of the Araks River and between the two large ancient volcanoes Ararat and Aragats. It has nearly an oval form. The length is 35km; width 10-12km. To the right bank it is limited by a fracture where its width decreases to about 6km. The Okemberyan depression is the biggest one within the Ararat lowlands. It is hardly inclined towards the Araks River with a slope of approximately 0.2%.

Miocene rocks outcrop in the western part of the depression. They form a range of flats tops, which is elongated in the width direction of the depression to an extent of 12 km with relative heights at about 50m above Araks River. The depressed areas of the depression are situated in its central part.

4.1.2 Characteristics of seismic conditions

The Republic of Armenia is located in an active seismic zone. The following seismic zones are separated from north to south: Kura, Somkheta-Karabakh, Sevan, Kapan-Gogoran, Tsaghkunyats-Zangezur, Yerevan-Ordubad, Urts-Vayq. Mainly the boundaries of these zones are crossed by deep faults of earth's crust the largest of which are Sevan-Akera, Shirak-Zangezur and Middle Araks (Yerevan) faults. These zones of the faults are penetrating into the 40-50 meters depths of the earth's crust and are expressed on the surface of the earth's crust by the zones of 5-10 km width, which are characterized by ophiolite rocks.

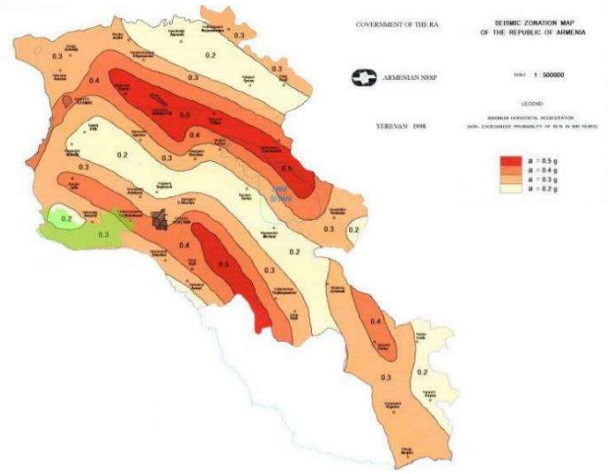
Figure 3 Seismic zoning schematic map (Source: National Statistical Service, a = 0.2g, up to 3 points, a = 0.3g, 3 to 9 points, a = 0.4g, 9 points or more, a = 0.5g, the devastating earthquake).

The RA seismic zoning schematic map is presented in which the territory of the country is subdivided into zones according to the degree of seismic hazard at the same size. According to this map, the ground's horizontal acceleration of the site for Armavir WWTP is v = 300 cm /sec^2 a = 0.4g which is equivalent to 3-9 magnitude earthquake.

The RA Minister of Urban Development Order RACN II-6.02-2006 establishes criteria to be met during design and construction of buildings and structures (Basic principles of seismic resistance). The seismic resistant construction is carried out in a differentiated manner as per increasing intensity sequence – in seismic zones 1, 2, 3, for which the peak horizontal acceleration intensity is 200, 300 and 400 cm/sec^2 accordingly.

The RA Minister of Emergency Situations Order No 100-N of 12.02.2013, defines the provisions of organization and implementation of seismic risk assessment works, according to which the seismic risk assessment maps are being prepared, serving as a basis for the marzes and communities development programs, as well as for preparing urban development documents, that are applied for the planning of seismic vulnerability reduction measures for buildings and constructions, for the management of emergency situations and reduction of their consequences.

Figure 4-2: Schematic Map of Seismic Regionalization



4.2 Geology and Soil

The rocks of the area requested for the project area / lake, river, storm, slopes sediments/ emerged during Upper Plagiocontinogenesis (3.3-0.01 million years ago). Ashes, slag and stoves emitted from many volcanic centers at the fourth quarter of the not-so-large extent have had a major impact on the formation of the region's lands. As to the geomorphological characteristics, the relief of the terrain is an alluvial, aluvial-slate plate, possibly found in the ancient valley of the Metsamor River. The main source of the rocks for the formation of this rock was the mudflows coming from the southern slopes of Aragats, from which the Mastara floodstone is formed. Landslides and erosion played no role in the relief formation of this region.

Groundwater has a major impact on land development. The requested area is characterized by a high level of groundwater, 2-3 meters below the ground surface. The site is within the limits of the spread of underground pressure water. Groundwater levels spread to the north. The slope of the ground surface is up to three degrees and is practically the beginning of the mountainous part of the Ararat valley. High absorption of solar radiation from the surface area of more than 60 kcal / cm2. Evaporation level is also high in the area, making approx. 1100 mm per year. As a result, major part of atmospheric precipitations / 300mm per yearual /, evaporates, especially in hot season of the year, which is one of the reasons of soil salinity.

Alkalic soils, containing saline salts, the amount of which is harmful for the growth and development of crops, are made of sodium, sulphate-soda and chloride-sulfate salt-alkaline soil. These lands are substantially carbonated, slightly humusized, have a high-grade alkalinity and a medium or heavy mechanical structure. In the soil profile the intestinal aorta horizon is clearly identified, where the mass of saline salts is 2% or more, with less content to the lower layer.

The prevalence of these lands is characterized by the high content of exchange sodium (in separate layers of 20-25 mg of ecos). In the Republic of Armenia these occur in semi-desert and desert zones where the evaporation exceeds the number of precipitation and the natural flow of groundwater is weak and the level is high. They are spread on the Ararat Valley. They develop in the area of irrigated meadow gray soils and have mostly hydromorphic origin. There are two groups of salt grass and salt-grass desert grass. The large area (75-80%) occupies meadow salt-alkaline land in the Armavir (Araks and Metsamor rivers) and Ararat (Arasanian steppes) provinces. Clay-glacial salt-alkaline lands have limited distribution, along the Metsamor River and the Hrazdan River Delta. The Scientific Center for Soil Science, Agrochemistry and Melioration of the Republic of Armenia has developed efficient methods for melioration/improvement of saline soils. Sodium salt-alkaline land improves only by chemical means, mostly by washing the soil with water solution of sulfuric acid wastes. As a result, water infiltration and salinization of ground water from the soil is increased. During desiccation, easy soluble salts and newly formed compounds are removed from the soil through the drainage network, and the resulting gypsum promotes soil fertility. As a result of neutralizing ground-based reactions, the solubility of calcium and magnesium carbonates increases, and the ions also contribute to soil improvement. For the

further improvement of the soil-alkaline lands, the right choice of crop rotation and the use of efficient agrochemical techniques are also important.

The lithologic composition of the soil-producing rocks is in the area where they are sought, with sand, clay sandstones, rocks, and dumps, with gravel traps.

The erosion degree in the proposed area is insignificant. The certain impact of the land breakdown is noticeable as a result of construction of the adjacent road.

According to the RA Government Decree # 2026 of 2006, "On Approval of the Technical Regulation on Requirements for the Removal and Protection and Usage of the Removed Fertile Layer".

For the fertile layer of the semi-desert zone, these indicators are:

- humus mass fraction fertile soil layer not less than 1%;
- in dry steppe and desert zones the mass fraction of humus in the potential fertile layer of soil - 0.5-1%
- pH of soil water extract - 5.5-8.2.
- exchange sodium - no more than 15%;
- mass fraction of toxic salts solutes in water - not more than 0.25%;
- the mass fraction of soil particles (less than 0.1 mm) of the fertile layer - within the range of 5-10%.

4.3 Characteristics of surface and ground water

Oktemberyan depression is a typical mountainous artesian basin and is a zone of accumulation and discharge of ground waters, which are formed in the mountain ranges. The groundwater flow direction follows the river network. The groundwater flow is formed generally due to atmosphere precipitations, and partly due to infiltration of surface waters.

Groundwater flows, which are coming into the depression from different massifs and ranges of the catchment area, are characterized by different flow volume and water chemistry. This results in different water mineralization and temperature in the different parts of the artesian basin. The groundwater varies significantly regarding depth and flow, groundwater pressure and coefficient of filtration.

4.4 Climate

The project area has dry continental climate.

Winters are cold while summers are very hot. The average temperature in January ranges between -7ºC in December and -11ºC in January. Days with snow cover are on average 60 days/year. The absolute minimum is measured at -33ºC. The snow cover reaches 1-2 cm in the lowlands and 10 cm in the foothills, the maximum depth is at 50 cm.

Spring is very short, turbulent, with frequent thunderstorms.

Summer is hot and dry with average temperature in July at 25ºC, but the maximum is 39ºC.

Autumn is warm and stable. The average rainfall Armavir town has a maximum in April with 48 mm. The number of rainy days per month varies from 1 to 2 days per month. Intense rain event occur regularly.

The frost penetration depth is 70-80 cm.

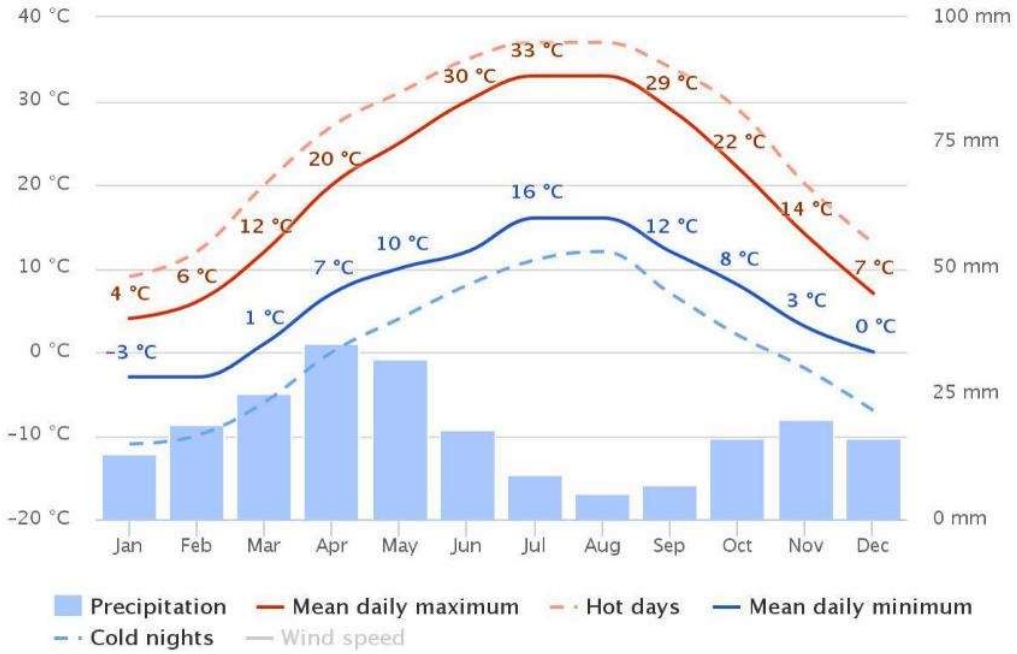
The wind rose for Armavir shows how many hours per year the wind blows from the indicated direction. And according to the diagram wind direction is generally from NNE (see **Error! Reference source not found.**).

Values of main climatic parameters are shown on the following charts and table.

Table 4-1: Climatic Parameters

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
Temperature (^{0}C)	-4.7	-2.1	4.6	12.3	17.5	21.6	25.6	25.1	20.1	12.7	5.7	-1.1	11.4
Humidity (%)	76	71	62	56	56	50	46	46	52	63	74	78	61
Precipitation (mm)	13.0	19.0	25.0	35.0	32.0	18.0	9.0	5.0	7.0	16.0	20.0	16.0	215

Figure 4-3: Average Temperatures and Precioition



Source: https://www.meteoblue.com/en/weather/forecast/modelclimate/metsamor_armenia_616417

4.5 Social environment of Project site

The information for the baseline data draws primarily on the following sources:

- National Statistical Service of the Republic of Armenia
- Official website of the Government of the Republic of Armenia
- The analysis of Socio-Economic condition of Armavir marz in 2015 (National Statistical Service of the Republic of Armenia)

4.5.1 Socio-demographic picture and livelihood

This Location situated in the Armavir marz is in the western part of Armenia. Armavir has an area of 1,242 km^2 (4.2% of total area of Armenia) making it the smallest marz of the country in terms of the total area. Occupying a major part of the fertile Ararat plain, Armavir has a major contribution in the agricultural sector of the Republic of Armenia. The economy of the marz is largely based on agriculture, including farming and cattle-breeding. Around 78% (970 km²) of the total area of the marz are arable lands, out of which 40% (388 km²) are ploughed. The main crops are grapes, apricot, peach, plum, grains, dry seeds and vegetables. Currently, Armavir has a contribution of 17.8% in the annual total agricultural product of Armenia.

The industry of Armavir is mainly based on food-processing. The "MAP" company, "Karas" company, the Armavir brandy factory, and the Etchmiadzin wine factory are the leading wine and brandy producers in the marz. Armavir has a contribution of 4% in the annual total industrial product of Armenia.

The Project Preparation Report 2014 (IMS Ingenieure, May 2014) has assumed that the population projections given in the design report 2004 (Fichtner, 2004) for the target year of that study, which was the year 2016, are still valid, which is not the case.

In total, the population has decreased in comparison with the figures given in the Project Preparation Report 2014. For the future, a stagnating population growth is expected.

Based on the available figures of population, the national tendency in the rural areas of Armenia and discussion with the SCWE/PEA dated 17 February, 2017 and the communication received on 24th of February 2017 the Consultant applied the growth rate of 0.5% up to the design horizon (2040).

Table 4-2: Actual and estimated Population of affected Cities/Villages

City/village	Armavir	Metsamor	Norapat	Total
Population 2011	29,319	9,191	1,738	**40,248**
Population 2040	33,882	10,621	2,008	**46,511**

4.5.2 Vulnerable groups

In the study area the following vulnerable groups have been identified:

- Poor households - based on the information disclosed in official website of the regional administration (marzpetaran) of Armavir for October, 86 households are registered in the evaluation system of vulnerability of families (ESVF) in Metsamor. They receive a family allowance in average 35,122.00 AMD (minimum is 23,500.00 AMD, maximum is 92,500.00 AMD) in Metsamor, in case when the minimum salary of RA is amounted to 55,000.00 AMD. Taking into account that 3,303 people is about 826 households (4 persons per AH), 1.04% of the total households is poor in Metsamor.

- Women and elderly headed households - Single and divorced women headed households and elderly headed households in the area are among the most vulnerable people. If resettlement issues arise, they will receive support as a vulnerable group.

Sometimes, the vulnerable people can have some limitation do not raise their grievances/ complaints in public and often do not seek legal support even if they perceive a situation to be unjust. It is suggested that during all of the stage of the Project a social specialists investigate potential grievances individually with the affected households. Otherwise, many justified complaints will never be made and therefore impossible to address, preventing full livelihood restoration and thereby violating safeguard principles.

In case, if vulnerable households lose their livelihood caused by the Project (loss of land or other losses), a special livelihood support program shall be implemented as specified by the project RPF and safeguard policies.

4.5.3 Affected Communities

In the immediate vicinity of the Project implementation areas are Armavir, Metsamor, Mrgashat and Norapat communities.

Metsamor

Surface: 9.12 km^2
Population: 9,191

Metsamor is located at the west of central Armenia in the Ararat Plain, at an average height of 855 meters above sea level. Surrounded with fertile farms of grapes, the town is at a road distance of 35 km west of the capital Yerevan and 6 km east of the provincial centre Armavir. The nuclear power plant is located around 4 km north of the residential area of the town. The village was a short passage road, a resort.

Currently, the town of Metsamor is home to a cultural house, a public library, as well as a school of music.

Armavir

Surface: 8.51 km^2
Population: 29,319

Armavir occupies an area of 8.51 km² within the fertile Ararat plain, at a road distance of 47 km west of the capital Yerevan.

The territory around Armavir is among the most important regions of Ancient Armenia. The town is built 6 km northeast of the ancient city of Argishtikhinili and 8 km north of historic Armavir. The region corresponds with the Aragatsotn canton of the ancient Armenian Kingdom.

Currently, Armavir is served by a cultural center commonly known as the Red Club. It is also home to a music school, a school of arts, five public libraries, and a theatrical group. There is a private zoological/botanical garden at the northeastern vicinity of the town.

The town is surrounded by many large villages including Sardarapat, Norapat, Mrgashat, Maysisyan and Noravan.

5 POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

This chapter provides an overview of the national policy within which the Project is being developed. This chapter discusses the overall policy and legal framework in the Republic of Armenia with specific sectorial laws on environment, land use and health and safety.

5.1 National Legislation

5.1.1 Constitution

In accordance with article 12 of the Constitution of the Republic of Armenia (adopted in 1995 and amended in 2005 and 2015) “The State stimulates protection, improvement and restoration of the environment and reasonable use of the natural resources based on the principle of steady development and taking into account the responsibility to the future generation. Everybody is obliged to take care of environmental protection”. Article 85 of the constitution provides that “Everyone has, in accordance with the law, the right of health protection”.

Since 1991 more than 25 codes and laws as well as numerous by-laws and regulations have been adopted to protect the environment.

5.1.2 Land Code (2001)

The preamble of the Land Code stipulates that the possession, disposition and use of lands shall not cause damage to the environment, defensibility and security of the country shall not violate the rights and lawful interests of citizens and other persons. The Land Code defines the main directions for use and disposition of the state lands, included those allocated for various purposes, such as agriculture, urban construction, industry and mining, energy production, transmission and communication lines, transport and other purposes.

The Code also defines the lands under the specially protected areas as well as forest, water and reserved lands. It also establishes the measures aimed to the lands protection, as well as the rights of state bodies, local authorities and citizens towards the land.

The Government of the Republic of Armenia directly or by means of the authorized bodies implements the State management of the land resources of the RA.

Following the requirements of this Code, the decree on the establishment of technical regulations for general requirements for protection of lands from pollution, list of substances polluting the lands, and assessment of level of land pollution (24.08.2006 N1277-N) was adopted by the Government of the Republic of Armenia.

Land allocation and acquisition will be carried out according to the provisions of this Code.

5.1.3 Water Code (2002)

The main purpose of the Water Code is to provide the legal basis for the protection of the country’s water resources, the satisfaction of water needs of citizens and economic sectors through effective management of water resources, and safeguarding the protection of water

resources for future generations. The Water Code addresses the following key issues: responsibilities of state/local authorities and public, development of the National Water Policy (2005) and National Water Program (2006), water cadastre and monitoring system, public access to the relevant information, water use and water system use permitting systems, trans-boundary water resources use, water quality standards, hydraulic structures operation safety issues, protection of water resources and state supervision.

5.1.4 Code on subsoil (2011)

The code defines principles and rules of mining in the RA, the relations related to preservation and use of the deposits, conditions and requirements of efficient use, complex use and preservation of deposits, security of mining and protecting the environment from its negative impacts, as well as protection of rights of the state, citizens and users of deposits. According to the Code, natural deposits are under the exclusive ownership of the state. They may be given out for use for a certain period of time, and cannot be privatized. The law also determines conditions, requirements and peculiarities of the natural resources and deposits. It also establishes payment principles, compensation, monitoring, and limitation for mining activities.

If due to the construction works it will be more appropriate to carry out the inert materials' (sand, gravel) supply from their own mine, all registrations will be done according to the requirements of this Code.

5.1.5 Labour Code

The Labour Code of the RA, adopted on 9 November, 2004, protects the rights and interests of employees and employers in collective and individual employment relationships, establishes state guarantees for labour rights and freedoms, and promotes the creation of favorable conditions of work.

The labour relations between the employee and employer are originated on the basis of labour contract concluded in a procedure established by the Labour Code and other normative legal acts containing norms on labour Code.

Activities and operations of the Project shall be implemented in accordance with the mentioned Code in order to assure the protection of the rights and interests of the employees.

5.1.6 Law on Environmental Impact Assessment and Expertise (2014)

The Law on environmental impact assessment and expertise was adopted on July 2014. The Law provides legal basis undertaking state environmental expertise of planned activities and concepts and presents standard steps of EIA process. The Law establishes general legal, economic, and organizational principles for conducting mandatory State EIA of various types of projects and concepts of sectorial development.

According to this law, activities are classified into 3 categories: A, B and C. The categories are defined on the basis of the volume of the activity, characteristics and the level of impact on environment.

The state expertise procedure consists of 2 stages. During the first stage lasting 1 month the Ministry of Nature Protection and the public are notified on the project (short summary), and the first round of public hearings is held. The Ministry of Nature Protection undertakes classification of a project and recommends TOR for the EIA, if the EIA is required according to the classification outcome. The activities classified as category C only initial (first) stage is exercised. Following the examination of the application at initial stage, the authorized body makes a decision on the issuance of an EIA conclusion for activities under categ. C.

At the second stage, an EIA report is submitted to the Ministry of Nature Protection and the Ministry undertakes its review during 60 days for a category “A” project or 40 days for a category “B” project. Two public consultation meetings are required at this stage. The Ministry may extend the review deadline for up to 30 days after which it issues a positive or a negative conclusion of the expert review.

The length and the complexity of the procedure depend on the categorization of the planned activity.

The only project activity, which requires the Environmental State Expertise Conclusion is the ring feeder section from Novoseltsovo Pipeline to Taron 2 reservoir (Section A of Lori).

5.1.7 Law on Ensuring Sanitary-epidemiological Security of the RA Population (1992)

The Law On Ensuring Sanitary-Epidemiological Security of the RA Population was adopted in 1992, which sets legal, economic and institutional bases for ensured sanitary and epidemiological safety of the population, as well as other guaranties provided for by the State to exclude influence of adverse and hazardous factors on human organism and ensure favorable conditions for vital capacity of the present and future generations.

Sanitary-epidemiological conditions of the staff must comply with the terms of this law.

5.1.8 Law on Provision of Medical Care and Services to the Population (1996)

The Armenian Law on Medical Care and Services to the population establishes the legal, economic and financial guidelines for medical care and service delivery, which ensures the realization of people’s constitutional right to preserve their health.

Activities and operations of the project shall be implemented in accordance with the mentioned laws in order to insure health and safety of the employees as well as of the surrounding population.

5.1.9 Environment (1998)

The Law on the Protection and Use of Fixed Cultural and Historic Monuments and Historic Environment was adopted by the National Assembly on November 11, 1998. It provides the legal and policy basis for the protection and use of such monuments in Armenia and

regulates the relations between 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 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.

No historical values exist on the site, although the Law should be considered because non-recognized resources can be found during the Project implementation.

5.1.10 Law on Flora (1999)

The law defines RA state policy in the field of maintenance, protection, usage and regeneration of flora. The law defines objectives of flora examination, state monitoring, state inventory, requirements and approaches of red book preparation on flora, conditions, peculiarities, limitations of allocation of flora objects for purposeful usage, basis of termination of the right to use, provisions on flora maintenance, and economic encouragement of usage and implementation of supervision. The law also defines the rights and obligations of the state governance and local governmental bodies in the field of flora maintenance, protection, reproduction and usage, mechanisms of state inventory, principles of deciding their indicator.

The natural flora's protection norms are regulated by the law above.

5.1.11 Law on Fauna (2000)

The law defines RA state policy in the field of maintenance, protection, usage and regeneration of fauna. The law defines the objectives of survey of the fauna, state monitoring, state inventory, requirements and approaches of red book preparation on fauna, conditions, peculiarities, limitations of allocation of fauna objects for purposeful usage, basis of termination of the right to use, provisions on fauna maintenance, and economic encouragement of usage and implementation of supervision. The law also defines the rights and obligations of the state governance and local governmental bodies in the field of flora maintenance, protection, reproduction and usage.

The wildlife protection measures are regulated by this law.

5.1.12 Law on Wastes (2004)

The law regulates legal and economic relations connected to the collection, transfer, maintenance, development, reduction of volumes, prevention of negative impact on human health and environment. The law defines the main principles and directions of state policy, the principles of state standardization, inventory, and introduction of statistical data, the implementation of their requirements and mechanisms, the principles of wastes processing, the requirements for presenting wastes for the state monitoring, activities to decrease the amount of the wastes, including nature utilization payments, as well as the compensation for the damages caused to the human health and environment by the legal entities and

individuals, using the wastes, as well as requirements for state monitoring and legal violations. The law defines the rights and obligations of the state governmental and local governmental bodies, as legal entities and individuals.

Constructional and daily waste management occurred during Project implementation must comply with this law.

5.1.13 Law on Environmental Oversight (2005)

The Law regulates the issues of organization and enforcement of oversight over the implementation of environmental legislation of the Republic of Armenia, and defines the legal and economic bases underlying the specifics of oversight, the relevant procedures, conditions and relations, as well as environmental oversight in the Republic of Armenia. The existing legal framework governing the use of natural resources and environmental protection includes a large variety of legal documents.

Governmental resolutions are the main legal instruments for implementing the environmental laws. Environmental field is also regulated by presidential orders, Prime-Minister's resolutions and ministerial decrees.

The compliance of all the above requirements with this law is controlled by the State Environmental Inspection of RA Ministry of Nature Protection.

5.1.14 Law on Specially Protected Natural Areas (2006)

The law defines legal basis and relations of state policy for development, restoration, maintenance, reproduction and use of natural complex and separate objects, as well as ecosystems of specially protected natural areas of the Republic. According to the law, specially protected natural areas are divided into four categories, National parks, State Reserves, Natural museums and the forth category is divided into three separate types: areas of international, republican and local importance. Law defines concepts, regimes of maintenance, principles of preparation of specially protected natural areas management plans, monitoring, calculation and state registrar, as well as the requirements of usage, limitations and principles, rights and obligations of state governmental and local governmental bodies, maintenance bodies of the protected areas, the rights public to get an information on protected areas, financial sources of protected areas, requirement of supervision and responsibility for violating the Law on Specially Protected Natural Areas.

Project areas located outside of Specially Protected Natural Areas, closest one is Gyulagarak Pine Sanctuary.

5.1.15 Law on the Fundamental Provisions of National Water Policy (2005)

The task of this law is to ensure the implementation of water supply and demand formation process, to set up priorities for use of water resources and to draw up water basin management plans.

5.1.16 Law on the National Water Program (2006)

The overall goal of the law is development of measures (short-, medium- and long-term) aimed at satisfying the needs of the population and economy, ensuring of ecological sustainability, formation and use of the strategic water reserve, and protection of the national water reserve.

RA Health Minister's N 01-N order as of January 25, 2010, «On approving sanitary rules and norms of soil quality hygiene requirements N 2.1.7.003-10».

The sanitary rules and hygienic norms determine the hygienic requirements of soil quality, such as the hygienic evaluation of land sanitary condition, soil quality monitoring, assessment of main indicators of the sanitary condition of the soil, depending on their functional significance, as well the degree of soil pollution on land use proposals.

RA Health Minister's N 533-N order as of May 17, 2006, «On approving HN N 2.2.4-009-06 vibration hygiene norms at workplaces, residential and public buildings».

The hygienic norms determine the vibration classification, regulation standards, the maximum permissible level of vibration at workplaces, as well as the permissible levels of vibration at residential and public buildings.

5.2 International Agreements

In addition to the above presented list of laws, numerous strategies, concept frameworks, and national programs related to the nature protection have been developed, as well as a number of international agreements and conventions have been signed and ratified by the Republic of Armenia.

The table below shows the list of relevant International Conventions and Protocols as well as their status with respect to signing and ratification by the Republic of Armenia.

5.2.1 International Conventions and Protocols signed and ratified by the RA

NN	Convention or Protocol, Name and Place	In Force	Signed	Ratified	Comment
1	Convention on Biological Diversity, (Rio-De-Janeiro, 1992)	1993	1992	1993	Re-registered in UN 1993
2	UN Framework Convention on Climate Change, (New-York, 1992)	1994	1992	1993	Re-registered in UN in 1993
3	Kyoto Protocol, (Kyoto, 1997)	2005		2002	
4	Convention on Long-range Transboundary Air Pollution, (Geneva, 1979)	1983		1996	Re-registered in UN in 1997
	Protocol on Persistent Organic Pollutants, (Aarhus, 1998)		1998		

	Protocol to Abate Acidification, Eutrophication and Ground-level Ozone, (Gothenburg, 1999)		1999		
5	Convention on Environmental Impact Assessment in a Trans-boundary Context, (Espoo, 1991)	1997		1996	Re-registered in UN in 1997
	Protocol on Strategic Environmental Assessment, (Kiev, 2003)		2003		
6	UN Convention to Combat Desertification, (Paris, 1994)	1996	1994	1997	Re-registered in UN in 1997
7	Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, (Basel, 1989)	1992		1999	Re-registered in UN in 1999
8	Convention for the Protection of the Ozone Layer, (Vienna, 1985.)	1988		1999	Re-registered in UN in 1999
	Montreal Protocol on Substances that Deplete the Ozone Layer, (Montreal, 1987)	1989		1999	Re-registered in UN in 1999
9	Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters, (Aarhus, 1998)	2001	1998	2001	
10	Convention on Protection and Use of Trans-boundary Watercourses and International Lakes, (Helsinki, 1992)	1996	1999		
	Protocol on Water and Health, (London, 1999)		1999		

Table 5-1: International Conventions and Protocols signed and ratified by the RA

5.3 Institutional Framework

Stakeholders of the project within the Government of RA and the non-governmental sector of RA are:

Institutions of the Government of Armenia

- State Committee of Water Economy
- Ministry of Energy Infrastructures and Natural Resources
- Ministry of Nature Protection (MNP):
- Department of Protected Areas of MNP
- Environmental Expertise SNCO of MNP
- Ministry of Agriculture (MA):

- Hayantar SNCO (Forest) of MA
- Ministry of Culture (MC):
- Ministry of Health
- Ministry of Labour and Social Affairs
- Agency for Protection of Historical and Cultural Monuments of the MC
- State Committee of the Real Estate Cadaster

Local Branches of State Institutions:

- Local Cadaster Offices of Armavir and Lori Marzes
- Environmental Departments of Lori Marz and Armavir Marz
- Departments of the Protection of Monuments of Lori Marz and Armavir Marz

Universities / Research Institutions:

- American University of Armenia (AUA), Acopian Centre for the Environment of AUA
- National Academy of Science (NAS) of the Republic of Armenia, Institute of Archelogy and Ethnography of NAS.
- National Polytechnic University of Armenia (NPUA)

NGOs

- WWF Armenia
- Women's Resource Centre
- Association of Women with University Education
- Biosophia Health, Environment and Agricultural Development Center
- "BURG" Youth Environmental Center
- "EcoLur" Informational NGO

6 PRELIMINARY APPRAISAL

The Preliminary Appraisal (Screening) is performed on the basis of both the checklist below and consideration of existing and additional, easily accessible information. Considered requirements of KfW Sustainable Guidelines as well as EIB Environmental and Social Handbook. The screening checklists are provided in Annex 1.

Due to screening details, Project falls into **Category B** (B- by KFW Sustainability Guidelines) because it's mainly affect urban areas and will have short term negative impact during construction activities, which are not substantial and can be mitigated. The Environmental and Social Action and Management Plan (ESMP) have been prepared for the Client and KFW approval, as well as EIB no objection required. ESMP identify environmental and social requirements and standards that should be strictly implemented during overall Project implementation.

According national legislation the Project falls also into **Category C** which required the only the first stage of environmental assessment. The Application of the Preliminary Assessment (hereinafter APA) is required during the aforementioned stage.

7 THE COMPARATIVE ANALYZES OF THE RA AND INTERNATIONAL NORMS

The EIB, KfW, WB and RA comparative analysis of the environmental and social regulatory requirements is provided in the table below:

RA Legislation	EIB	KfW
The Law of the RA On Environmental Impact Assessment and Expertise (the "Law") limits the concept of "area of influence" to "affected community", which, according to the Law is the population of the community(ies) of the possible impact zone, including individuals and legal entities.	Impacts and risks will be analyzed in the context of the project's area of influence. This area of influence encompasses (i) the primary project site(s) and related facilities that the borrower/client (including its contractors) develops or controls, such as pipelines, canals, tunnels, access roads, borrow pits and disposal areas, and construction camps; (ii) associated facilities that are not funded as part of the project.	Similar to EIB
The Law provides for less vague rules for environmental categorization of the planned activity. The planned activities are classified into category A, B and C, based on descending impact scale. According to the Law, construction of the pipelines with 300mm diameter and more, as well as with length 1km and more are listed as category C.	A proposed project is classified as Category B if its potential adverse environmental and social impacts can be readily identified and mitigation and/or remedial measures can be put in place – Medium risk	Category B. A proposed project is classified as category B- because moderate potential adverse effects or risks, as a rule can be mitigated with countermeasures according to the prior art or with standard solutions
Environmental monitoring during project implementation provides information about key environmental aspects of the project, particularly the environmental impacts of the project and the effectiveness of mitigation measures. Such information enables the borrower and WB to evaluate the success of mitigation as part of project needed.	The EMP shall: (a) describe monitoring measures with technical details, including parameters to be measured, methods to be used, sampling locations, frequency of measurements, detection limits and definition of thresholds that will signal the need for corrective actions; and (b) describe monitoring and reporting procedures to ensure early detection of conditions that necessitate particular mitigation measures and document the progress and results of mitigation.	Similar to EIB

Table 7-1: EnviImpact Assessment

RA Legislation	WB SPS
Land compensation only for titled landowners.	Persons who have no recognizable legal right are provided compensation or resettlement assistance, as specified in the RPF.
All affected houses/buildings are compensated for buildings damages/demolition caused by a Project, with the exception of unregistered commercial structures.	WB Policy includes compensation for loss of structures for those without title to land or permits (Undepreciated value of building in cash +Right to salvage materials+ costs of shifting + job placement, skills training).
Crop losses compensation provided only to registered landowners.	Crop losses compensation provided to all PAPs.
Land valuation based on current market value plus 15% of the assessed value.	The methodology to be used in valuing losses is based on replacement cost.
Information on impacts quantification/costing, entitlements, and amounts of compensation and financial assistance are to be disclosed to the PAPs prior to appraisal.	The same
No provision for income/livelihood rehabilitation measure, allowances for severely affected PAPs and vulnerable groups, or resettlement expenses.	The WB policy requires to assist PAPs in their efforts to improve their livelihoods and standards of living or at least to restore them, in real terms, to pre-displacement levels.
RA law does not have a specific project level GRM, but RA legislation envisages mechanisms for the PAP's to submit applications, complaints, objections and suggestions to the acquirer and to the relevant authorities as well as filing a complaint to the court, during every stage of the acquisition process. Regardless the requirement of the “RA Law on Alienation of Property for Public and State Purposes”, every person has a right to an effective remedy before courts and before state authorities according to the RA Constitution. Public consultations with PAPs are not envisaged by RA legislation. However, the RA legislation defines the requirements and conditions for notification of PAPs on their actions and rights during different stages of alienation process, particularly:	An appropriate and accessible grievance mechanism should be established and specified. PAPs and community should be meaningfully consulted and provided opportunities to participate in planning and implementing resettlement programs. They have to be informed about their options and rights pertaining to resettlement. Full information regarding the GRM process is available in the RPF.
After the government decree on recognition of property as exclusive prevailing public interest comes into force, a copy of the description protocol of the property to be acquired, draft contract of the property to be acquired is sent to the property owner and persons possessing property rights. The property acquirer shall provide information on transferring the compensation into the court or notary deposit account. If the acquirer is conducting a preliminary survey on the property to be acquired, adequate information shall be provided to the property owner, the possessor and user on the nature and matter, legal consequences of those proceedings prior to its initiation.	

Table 7-2: Social Impact Assessment *)

*)Taking into consideration that RPF was done in accordance with WB SPS, analysis of social regulatory requirements presented accordingly.

8 POSITIVE ENVIRONMENTAL AND SOCIAL IMPACTS

The activities for improvement of water supply system of Vanadzor and near Villages will have essential positive environmental and social impacts.

Positive impacts are:

- Reduction of water losses
  Most of the old water distribution networks within Vanadzor (pressure zone 8) and of the 9 villages, which are part of the project, are of deteriorated state and water losses up to a percentage of 90% are reported.

  With the new project water losses of maximum 20% are expected and will considerably improve the status of the water supply system.

- Increase of the usage of water resources efficiently due to the implementation of water measure system

  It is foreseen to equip each connection with an independent water meter and that each customer will pay the water consumption according the meter readings. This will lead to much higher efficiency of water use.

- Protection of water resources from inefficient usage
  Because of paying the whole water consumption provided by the new water supply system, the water used for irrigation of gardens and other purposes from the drinking water network will reduce, which has high quality (chlorination and well organized quality control).

- Sustainable water supply

- Increase of water supply duration to 24 hours/day
  By using daily regulated water reservoirs for all villages and pressure zones, the water supply is guaranteed for 24 hours/day.

- Provision of appropriate quality of drinking water

- Reduction of drinking water contamination

- Prevention and elimination of penetration of infections in drinking water
  With renewal of the complete water supply networks it will be avoided that the drinking water will be polluted through defect parts of the pipework, as it happens at old and deteriorated networks.

- Improvement of health condition of residents

Rehabilitation of the water distribution network will result in satisfying population's water demand and in eliminating high water losses. Thus, the water resources will be used more efficiently and economically.

The rehabilitation of the main sewer collector between Armavir and Metsamor will result in no future flooding of this area with untreated waste water, because no blockages of the collector will occur any more.

The possible negative impacts are related to construction works; therefore they are limited and short. Under the project scope the Environmental and Social Management Plan has been developed (see Annex 2), where the activities for mitigation or preventing the negative impacts are projected.

9 ANTICIPATED ENVIRONMENTAL AND SOCIAL IMPACTS

9.1 Environmental impacts and their mitigation during pre-construction phase

Environmental and social impacts may occur during the construction phase.

- **Landscape**

The land envisaged for the Project implementation is the mainly urban area as well as some community agricultural lands, used as pasture.

Construction activities mainly will be performed in the existing buildings with their access roads. Pipelines tranches mainly will be excavated in the asphalt and community roads that are already exist. Taking into account the aforementioned, no landscape change is envisaged.

Impact of/ on	Sensitivity	Extent of Impact on/ by	Duration of Impact	Direct/ Indirect
Landscape	■	■	Long term impacts	Direct by the physical presence of the PV plant

- **Flora and Fauna**

Project implementation territories are mainly located in urban territories and will not occur disturbance of the flora and fauna.

No forested areas or protected areas will be affected by the Project implementation.

Impact of/ on	Sensitivity	Extent of Impact on/ by	Duration of Impact	Direct/ Indirect
Flora and Fauna	■	■	Long term	Direct

- **Soil Erosion**

Loss of vegetation and soil compaction increases the soils' vulnerability to erosion. It can be difficult for vegetation to recolonize bare and compacted areas of ground. Once vegetation is lost and not restored, the areas affected by erosion often tend to spread through the effects of wind and rain.

Erosion of exposed soil and the resulting sediment produced can occur from the project development, causing air (form dust). Earthmoving activities such as grading and grubbing for the site preparation and heavy equipment hauling over unpaved ground, may loosen soils and cause fugitive dust and particulate matter to become airborne. The potential risk for erosion is increased by placing project components in areas with steep slopes; on unstable soils such as alluvial soils; and on clays, which are fine-grained and susceptible to dust and erosion in dry conditions.

Damage to soils also has further effects on land-use. When soil is compacted, it cannot support native grasses or other vegetation. This in turn reduces the pasturage that can be used by the livestock of local herders or that is available for other creatures. The loss of grass affects biodiversity, since grass is a food source for small mammals, which in turn provide food for predators.

Removal of topsoil will be only in the territories outside of the Vanadzor and will be minimized. Topsoil will be brought back after construction and soil will be replanted. If some new access roads will be constructed and will not needed anymore after construction will be rehabilitated and replanted.

Contractor should prepare specific erosion control plans before the commencement of the construction works.

Impact of/ on	Sensitivity	Extent of Impact on/ by	Duration of Impact	Direct/ Indirect
Soil Erosion	■	■	Long term	Direct

- **Soil and Water Resources**

There is a risk of pollution of soil and groundwater by fuel and lubricants from the construction vehicles and machinery, which can be avoided by proper maintenance. Additionally, oil, fuel, paint, chemicals, soil run-off during construction could pollute surface waters. Measures to prevent pollution of soil and water resources by oil and chemical spills have to be implemented during construction phase.

The Project implementation itself will not present a hazard with respect to soil contamination unless paint or other coating is used. If soil will be contaminated by drips and spills it will be cleaned up and removed for safe disposal prior agreed with Engineer/IC.

In case of construction of new access roads, the appropriate transversal slope for drainage should be constructed to reduce pending and infiltration of water into the sub-grade

materials. The construction of perimeter swales, edge drains, curbs and gutters, or combination of these drainage devices is recommended to reduce

Operation of work camps - namely functioning of sanitation and catering facilities, storage and servicing of equipment, stockpiling of construction materials and waste - can lead to sewage and garbage pollution and spills from construction equipment operation and servicing. Construction camp must be equipped with toilets according to EIB/KfW Guidances - separately for men and women - and waste bins to accommodate the entire labor force during construction period. The measures preventing pollution of surface and ground water and soil with chemical products must be applied at the construction site. Dismantlement of construction camps and harmonization of the area with the landscape shall be implemented after completion of construction works.

Water treatment

Basically, wastewater generated during the construction phase is the wastewater from chemical toilets, staff and general facilities services and wastewater from the cleaning of equipment.

The wastewater from chemical toilets will be managed through authorized management agent, in order to avoid any risk of spillage. Agent should have the license in accordance to the RA legislation.

It is usual to install general facilities services for the workers, providing them a place to relax and personal care.

The activities for wetting the access roads will be twice per day during the dry period of the year.

The service will be provided troughs tanker trucks.

Impact of/ on	Sensitivity	Extent of Impact on /by	Duration of Impact	Direct/ Indirect
<u>Soil</u> <u>Water Resources</u> a) Groundwater b) Surface Water	■■ ■ ■	■■ ■ ■	Short term during construction	Direct

- **Solid and Liquid Wastes**

The sensitivity of the construction areas for solid and liquid wastes is assessed to be medium. The generation of wastes will be minimized by a proper waste management, implemented by the construction contractor. Small amounts of hazardous waste like residual oil, fuel, paint or spill contaminated soil will be stored at construction camp, which should contains adequate space and roofed, concreted and bounded facilities for storing of hazardous waste.

The hazardous waste will be provided to the relevant licensed organizations to transport it for the future processing or placement.

Fuel usage

Fuel will be requested as combustible, for machines and trucks base on the construction activities demand.

The consumption related to trucks and machine use can vary, depending on machine type, fluctuating between 40-80 l/h.

Specific area for the fuel storage will be determined. This area will have a concrete platform and a spillage manage system.

The Construction Contractor will agree with municipal authorities regarding to the using services of communal service providers for waste disposal purposes. Construction wastes include small amounts of packaging material, remaining metal parts etc. Contractor should provide waste management plan prior to commencement of the construction works that will include exact solutions on where the construction waste should be transferred as well as the logistics of the hazardous waste management. It will ensure that at least no free dumping and no open air burning of waste occurs.

Impact of/ on	Sensitivity	Extent of Impact on/ by	Duration of Impact	Direct/ Indirect
Solid Waste (generated by construction activities and by workers)	■■	■	Short term during construction	Indirect

- **Noise**

Workers will wear ear protection devices as part of their PPE if they are exposed to noise levels higher than 80 dB (A).

Wherever the line corridor is near to villages or houses, the construction contractor has to control noise emissions from all equipment. For residents the noise levels may not exceed 55 dB (A) daytime or result in a maximum increase in background levels of 3 dB (A) at the nearest receptor location off-site. In order to keep nuisance from construction noise low, construction works near villages or houses shall be done between 9 am and 5 pm. The calculation of noise level in the villages, urban area and in structures is should be done in accordance with СНиП 11-12-77.

Due to the limited time of the construction period, but because residential areas located very close nuisance caused by noise during construction activities will be generally medium.

Impact of/ on	Sensitivity	Extent of Impact on/ by	Duration of Impact	Direct/ Indirect
Noise	■■	■	Short term during construction	Direct

- **Air Quality**

Certain substance of emissions will occur during the construction phase. Particularly, there will be dust emissions during the soil digging, loading and transportation works. During operation of the construction machinery, in a result of fuel burning, the oxides of nitrogen, carbon and sulfur, as well as solid particles (soot), will be produced.

Due to the limited time of the construction period the impacts on ambient air quality by construction activities will be low. Machines and vehicles will be checked regularly to minimize exhausted pollutants. Dust generated by construction activities will be suppressed by spraying water, where necessary.

Impact of/ on	Sensitivity	Extent of Impact on/ by	Duration of Impact	Direct/ Indirect
Air Quality	■	■	Short term during construction	Direct

- **Historical and Cultural Sites**

Historical and cultural sites located far from the Project affected territories.

Chance Finding Procedure

In case of unexpected encounter of Cultural and Historical Sites a Chance Finding Procedure has to be implemented. In case of any chance findings, the construction has to be stopped immediately and the Agency for Protection of Historical and Cultural Monuments, Ministry of Culture has to be informed to agree on further steps (according to the Armenian Law). The Chance Finding Procedure will include:

- Stop the construction activities immediately in the area of the finding.
- Notify the responsible local authorities and the Ministry of Culture.
- Evaluation of the findings to be performed by the archaeologists of the Agency for Protection of Historical and Cultural Monuments and the Ministry of Culture.
- Decision on how to handle the find to be taken by the responsible authorities and implementation of the decision concerning the management of the finding.

- Construction works can be resumed only after written permission is given from the responsible local authorities and the Ministry of Culture concerning safeguard of the heritage.

For implementing the Chance Finding Procedure no costs will arise for the Construction Contractor and the related excavation and conservation costs will be paid from the Government budget. The Construction Contractor will not be entitled for compensation for idle time while Chance Finds are dealt with it, because due to linear nature of the Project components, Contractor will be able to continue works on other sections of the OTLs.

Impact of/ on	Sensitivity	Extent of Impact on/ by	Duration of Impact	Direct/ Indirect
Historical and Cultural Sites	■	■	Short term during construction	Direct

- **Health and Safety**

Direct impacts on Health and Safety during implementation of the Project may result from various factors as fire and mechanical incidents, sanitary situation during construction, e.g. contamination of water, sexually transmitted diseases (STD) due to contact of workers and population, etc.

Workers' camps have to meet the requirements of EIB/KfW guidances on worker accommodations, including e.g. provision of an adequate number of sanitation facilities, medical facilities, dormitory facilities, etc.

More details provided in OHS report.

Impact of/ on	Sensitivity	Extent of Impact on/ by	Duration of Impact	Direct/ Indirect
Health and Safety	■■	■	Short term during construction	Direct

- **Gender Aspects**

The Project implementation may increase existing gender disparities, as benefits from construction work will be earned mostly by men, therefore, access and control over compensation payments are likely to be at the disposal of men and not of women, which increases the probability that the family will benefit less. There are a considerable percentage of single women headed households in the area, who are among the most vulnerable people.

Special vulnerability allowance will be provided to affected women-headed households and holding targeted consultations with women who will be affected by construction works.

Impact of/ on	Sensitivity	Extent of Impact on/ by	Duration of Impact	Direct/ Indirect
Gender Aspects	■■	■ if any	Short term	Indirect

9.2 Environmental Impacts and their Mitigation during Operation

- **Sterilizing Water Supply Pipelines**

The water supply pipelines shall be sterilized, after final pressure testing operations have been complete, by filling them with chlorinated water containing at least 50 ppm of free chlorine. Filling of the mains shall be through a metered connection from a browser or an existing main, and chlorinating shall take place at this point. Chlorine shall not be injected directly into the main from a cylinder, but the flow shall be accurately controlled through an approved chlorinator. Powdered or Granulated Chlorine 70 % chlorine may be used for sterilizing in lieu of chlorine gas subject to the approval of the Engineer/IC.

Chlorination of pipes shall be effected by introducing a chlorine solution in a concentration of about 25mg/l. The chlorinated water shall remain in the pipeline for a period as directed up to 24 hours. All valves in the system shall be operated at least once during this period.

Chlorine residual tests shall then be taken at various points along the pipeline. The chlorine residual shall not be less than 10mg/l. Should the residual at any sampling point fall below this figure, the sterilization process shall be repeated, until no residual falls below 10mg/l.

The Contractor shall dispose off the waste chlorine solution in such a manner so as to avoid the pollution of natural waters, streams, reservoirs or natural watercourses. Then the flushing of the sterilized pipelines follows. The Contractor shall submit his proposed method of disposal of the solution to the Engineer/IC for his prior approval, which should comply with RA legislation requirements.

Impact of/ on	Sensitivity	Extent of Impact on /by	Duration of Impact	Direct/ Indirect
<u>Soil</u>	■■	■■	Long term	Indirect
<u>Water Resources</u>				
a) Groundwater	■■	■■		
b) Surface Water	■■	■■		

*<u>*Detailed information about the social impacts included in the RPF report.</u>*

- **Construction Camp**

During the Project implementation, operation of the construction camp may arise several negative impacts. Operation of construction camp - namely functioning of sanitation and catering facilities, storage and servicing of equipment, stockpiling of construction materials and waste - can lead to sewage and garbage pollution and spills from construction equipment operation and servicing. Construction camp must be equipped with toilets - separately for men and women - and waste bins to accommodate the entire labor force during construction period. The measures preventing pollution of surface and ground water and soil with chemical products must be applied at the construction site. Dismantlement of construction camps and harmonization of the area with the landscape shall be implemented after completion of construction works.

Impact of/ on	Sensitivity	Extent of Impact on/ by	Duration of Impact	Direct/ Indirect
Construction camp	■■	■ if any	Short term	Direct

Proposed area of the Construction camp in Vanadzor is shown in Figure 9-1 below, it was already the construction camp during previous phases. For Armavir no proposal can be given for the moment. No investigations were carried out yet and it has to be coordinated between the two contractors of the two different contracts.

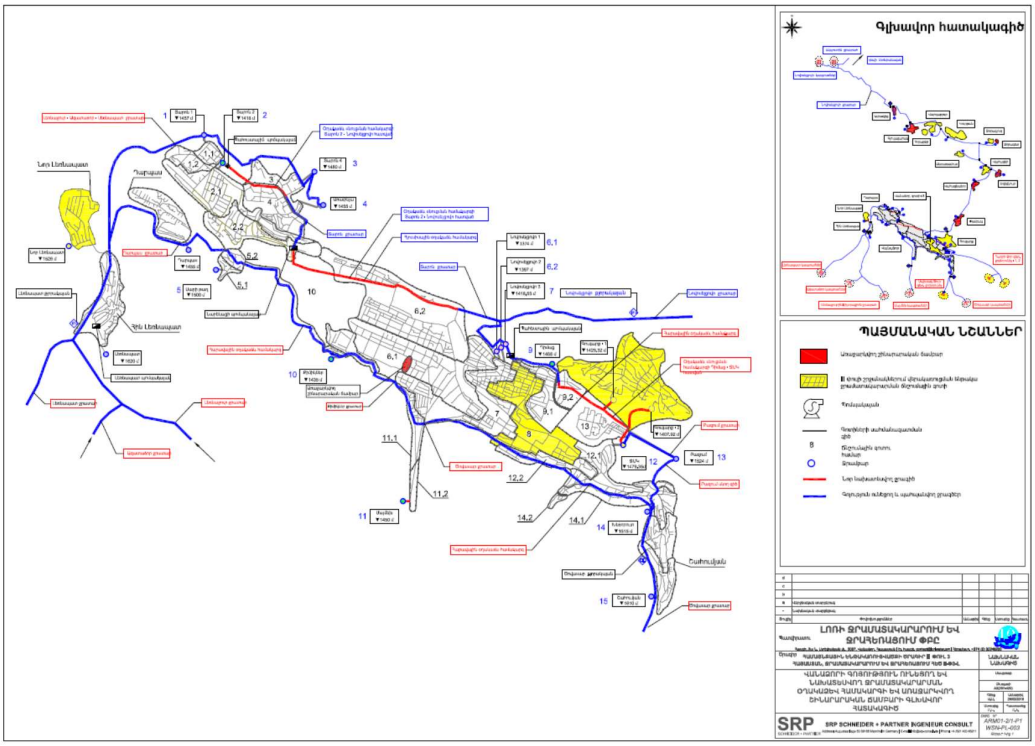


Figure 9-1: Proposed location of the Construction Camp at Vanadzor

10 GRIEVANCE REDRESS MECHANISM

In the course of the construction process, people affected by the project may feel treated unjustly. This might happen for various reasons: the Contractor does not adhere to sound construction principles, the damages to crops are not paid for, resettlement measures have not been implemented, people have been forgotten during land survey or simply misunderstandings have arisen and so forth. This may also be disagreement with procedures of consultation, notification or valuation.

When this happens people are encouraged to lodge their complaints. The grievance redress mechanism is implemented, so that people can get their problems solved and grievances redressed in a timely and effective manner without directly addressing the court.

During consultation, survey and compensation the affected population shall be notified orally or in a written form about their rights and the procedure of complaints introduction. Local NGOs e.g. via the local Aarhus Centre can inform communities about the possibility to raise complaints and how and where to address them. The grievance redress mechanism has to be locally implemented at the level of village institutions and local self-government as well as bundled on national level at the WSPIU.

Grievances can be addressed at the local community level ("Head of the LSGB"), where the grievance is recorded and forwarded to the IA's grievance coordinator responsible for registration of grievances and decision on grievance redress.

Grievances that are addressed to the Contractor during the execution of civil works shall also be forwarded to the IA grievance coordinator. Even if the constructor decides to settle the grievance on the spot, the documentation of the grievance settlement procedure needs to be documented at the IA's grievance coordinator/focal point.

The following are the procedural steps to file a complaint, pose an inquiry on matters relating to project implementation, environmental concerns and other issues regarding the Project.

Step 1. The person affected by the Project could raise their suggestions/concerns /complaints first of all to the Contractor's dedicated grievance staff that is an attempt will be made to resolve complaints at the local level. In order to maintain transparency and accountability to affected communities and to make information, assistance and grievance resolution services accessible to the Affected Persons.

(i) AP's could approach Contractor's representative (construction foreman, engineer, social or environmental specialist) on-site and/ or register their suggestion /complain into the grievance register book kept by Contractor at the site and construction camp.

(ii) Contractor ensures the provision of contact information (field office location, operating hours, names of responsible contact persons, phone numbers, regular mail and email addresses, etc.) via posters and Project informational boards.

Step 2. Should the AP be not satisfied with the Contractors' solution of his/her complain,

the further opportunities are available. AP could next apply to the Engineer/IC via lodging the complaint within one month after receiving/not receiving the response from the Contractor.

The environmental specialists of the Engineer/IC in collaboration with the Contractor(s) shall establish an office at the Project site where environmental complaints of Projects' AP regarding ESMP and project operations' impacts can be lodged. This Project site office will be used for: supervision of construction, including monitoring of the Contractor's compliance to the ESMP to ensure the mitigation measures are timely and properly implemented; disclosing all safeguard documents; and receiving and responding to the comments/feedbacks from the community. The Engineer/IC shall respond to the complaint within 15 days.

Step 3. Should the Engineer/IC fail to satisfy the complaint, AP can address complaint directly to the IA grievance coordinator via phone, e-mail or grievance form. A project grievance hotline shall be made available by the WSPIU for direct complaints (at national level) and all received grievances shall be recorded by the WSPIU grievance coordinator in a grievance log-book. All the contact information shall be provided by Contractor on posters and on the Project informational board. Contractor shall provide the necessary explanations and assistance in application to the mentioned entities, if needed through the personal contact with AP.

Finally, the AP can always seek attention and interference of NGOs and the court. However, all the efforts will be made to settle the issues at the Contractor's, the Engineer/IC and IA's level. If not possible, attempts will be made to resolve the issues at the EA level to avoid/minimize litigation as much as possible.

All complaints regardless of the outcome and solutions will be properly documented and made available for review, monitoring and evaluation purposes.

The IA's grievance coordinator then decides whether to settle directly, call for grievance committee meeting or go to the court. The decision has to be taken within 2 (two) days after receipt and registration of the grievance.

In case of major grievances, that cannot be directly settled, permanent and not-permanent members of the grievance committee will be called for a meeting. The meeting will take place during 15 (fifteen) business days after receipt and registration of the grievance. Decisions in the grievance committee are taken by majority vote of the members who registered in the protocol of the meeting (Permanent and Non-permanent). PAP will be informed about time and place of the meeting 10 (ten) days before (as Non-permanent member).

In case of failure of the grievance redress system, the PAPs can submit their case to the appropriate court.

The Committee will be composed of permanent and non-permanent members.

Permanent members: WSPIU, the Contractor and a lawyer.

Non-permanent members: PAP, Appropriate marz representative, community representative and NGO representative. Non-permanent members will be notified of the date and venue of the meeting 10 (ten) days before the meeting. Absence of non-permanent members cannot be the reason for the cancellation of the meeting. A lawyer can represent one of the permanent members.

The Contractor is obliged to carry out the work in accordance with the contractual requirements that include:

- A person of staff responsible for grievance procedure who will provide technical assistance to the WSPIU in handling any grievances that may arise during RAP preparation and implementation (The person shall have 3 or more years of similar experience, bachelor/master degree in Law or Sociology is preferable);
- Preparation of regular monitoring reports on the status of RAP preparation and implementation, including details of any complaints that arose and how they were handled (if the RAP preparation obligation is delegated to the CC);
- If vulnerable affected people are identified following census completion, then the CC will appoint professional advocates (social workers / legal experts) to assist those people during the entire process, and to act as independent advocates for them should any grievances arise (if the RAP preparation obligation is delegated to the CC);
- Handling of grievances with the IA and PAP and participation in the grievance committee.

The WSPIU will carry out works that include:

- A person of staff responsible for the grievance procedure coordination, hereby referred to as grievance coordinator (including first contact, periodical site visiting of mitigation measure to be implemented by the Contractor);
- A telephone line, e-mail address and contact name on project boards;
- Handling of grievances with the Contractor and PAP and participation in the grievance committee.
- Liaison with court.

However PAPs have the option to choose a different representative or directly liaison with the IA staff, responsible for grievance redress. Vulnerable households will have the support of their individual social worker and legal support.

Additionally, legal experts will support PAPs who are not registered land owners with legalization of land titles.

NGOs, e.g. Aarhus Centre or local member organizations will monitor grievance redress negotiations, assist with grievance arbitration, raise public awareness (local legislation doesn't define any formal arrangement for monitoring; this issue is regulated by the company's internal documentation, which may differ depending on the company charter). PAPs need to be informed that in case of conflict with the community leader they can

address NGO staff to follow up their complaint. NGOs will monitor relationship between PAPs and community leader.

The KfW is not directly a part of the Grievance procedure but should receive reports which complaints were received and how they have been followed up / mitigated.

Special consideration has to be taken for PAPs living in remote areas and vulnerable people as complaint mechanisms may be unusual and contact with legal procedures let alone courts of law may appear not very promising from their experience. This would prevent the most disadvantaged persons from addressing their grievance.

A close monitoring on village level by an independent social expert during the implementation of the project and a personal contact with PAPs is therefore recommended.

Vulnerable PAPs (all women headed households and all households below the poverty line) will be entitled to a legal aid / social worker to support them with complaints procedures.

Grievance Redress Framework

Contractor should prepare a framework for redress of grievances / complaints during all phases of the project. This framework should be reviewed and modified continuously for improvements during the life of the project.

11 ANALYSIS OF ALTERNATIVES

As this project is phase 3 of an ongoing program (Communal Infrastructure Program – CIP II), the main concept was established at much earlier stages and it was not foreseen according to the ToR to search for main alternatives to this concept or to some parts of it.

The selected project components were clearly defined and it was not expected to prepare alternatives for these components. As the selected drinking water networks are always related to reservoirs, which were constructed during previous phases of this program, it is not possible in the actual stage to think about alternative locations for reservoirs.

In this regard no alternatives were analysed for the actual scope of this project.

Regarding the construction methodology, the contractor has to present method statements, which have to be approved by the Engineer. For this purpose, the Engineer will take care, that the concept of ranking mitigation measures will be applied, prioritizing methods which avoid any mitigation measures, followed by such methods, where these measures are minimized. And in the worst case methods which require rehabilitation/restoration or even compensation shall be applied.

Regarding the selection of the location for the construction camp, the consultant proposed the area, which was used in previous phases (see chapter 9.2) but at the end it is the contractor´s decision where he will place his construction camp.

For the main collector between Armavir and Metsamor, the Consultant proposed the construction of a new collector at a new location following the railway line towards Yerevan, but this alternative was rejected by the Client during the inception phase.

12 ENVIRONMENT AND SOCIAL IMPACT MITIGATION MEASURES

The Contractor shall prepare an Environmental Impact Mitigation Report within 30 days before the Commencement Date which shall include following topic specific environmental management plans.

- Top soil (humus layer) shall be removed and temporarily stockpiled for incorporation into the landscaping works.
- A hard and soft landscaping scheme shall be designed using suitable plant species.
- Dust control of the sites
- Effective erosion control measures
- Organization of a monitoring system for automatic control of emissions, as well as of the technological processes
- Collection and disposal of solid and liquid wastes in an orderly manner
- Emergency response plan
- Traffic management plan

Contractor should conduct public awareness meetings in the Project affected communities at least 15 days before the construction activities and also to ensure proper implementation of Grievance Redress Mechanism.

Prior to commencement of water supply system's rehabilitation works relevant permits and agreements shall be obtained from local authorities, in particular for disposal of excessive soil and construction wastes in special locations. If wastes contain high rate of harmful components, the appropriate passport of the Ministry of Nature Protection of the RA shall be obtained for their removal and location.

The following preventive and mitigation measures have to be implemented in order to mitigate negative environmental and social impacts:

1. The location of access roads, construction sites, vehicles and heavy equipment parking stations, warehouses for construction materials and equipment, warehouses or accumulation sites for storage of dismantled pipes, units, liquid wastes and others shall be determined in advance and be organized in a manner not harming the environment. In particular, where possible the construction site shall be fenced by relevant methods. The parking sites for vehicles and heavy equipment, the warehouses and the sites of preliminary accumulation (if relevant) of construction materials and dismantled equipment, liquid wastes and others shall be clearly delimited from the surroundings. The leakage of fuel/lubricants, spreading of wastes or their storage in arbitrary places shall be excluded. After completion of rehabilitation activities those warehouses and accumulation sites shall be completely eliminated and the original appearance of the area be restored.

2. The demolished asphalt has to be adequately collected placed in the special places allocated for the construction waste.

3. Special tanks shall be prepared for collection and storage of liquid wastes. Leakage of liquid wastes into the environment shall not be allowed. The liquid wastes shall be reused or removed according to procedures specified by the Armenian legislation.

4. At the beginning of construction works the fertile soil layer shall be removed, stored, and used after construction works for restoring the original appearance of the area (re-cultivation). While restoring the original appearance of the site, plants typical for the landscape shall be used.

5. Only trucks and construction machines in good technical state shall be used as their emission is within the permissive standards.

6. Use closed/covered trucks for transportation of dusting construction materials and wastes. Regularly water construction sites to reduce dust. Construction sites shall be washed periodically in order to prevent the spread of dust

7. As the construction works will be implemented within inhabited areas, maximally new and good machinery shall be used to reduce noise and vibration as much as possible. The working hours shall be agreed with local authoritative body to disturb them as little as possible.

8. The garbage shall not be stored or removed to places not allocated for that purpose in order not to damage flora and fauna. It is prohibited to use and store very explosive and poisonous substances. It is prohibited to park, wash, repair vehicles and heavy construction equipment in places not allocated for that purpose. It is prohibited to collect or destroy plants including cutting shrub and trees.

9. The labor shall be ensured with adequate working clothes and personal protecting equipment, in particular with helmets, gloves, safety shoes and others.

10. The bypassing of the waste water during investigations and rehabilitation works of the main collector between Armavir and Metsamor, has to be done environmental friendly without pollution of the land and the ground water.

11. If historical and cultural monuments and artifacts are found during construction works, the works shall be ceased immediately and the appropriate agency of Ministry of Culture of the RA shall be informed.

13 ENVIRONMENTAL AND SOCIAL MANAGEMENT & MONITORING PLAN

The organizational obligations for the implementation of proposed mitigating measures are distributed among the following agencies:

13.1 Agencies responsible for controlling implementation of the ESMMP measures

13.1.1 Project Executing Agency (PEA) –since 6/2017 Water Sector Projects Implementation Unit (WSPIU)

WSPIU has the ultimate responsibility that an ESMMP is implemented and, where relevant, ensuring that the conditions and requirements for the Project are satisfied. WSPIU has the authority to stop any construction activity in contravention of the ESMMP, must approve all decisions regarding environmental procedures and protocol.

The main tasks of WSPIU are:

- Ensuring that the requirements of the ESMMPs are communicated, understood and enforced for all activities on site;
- Review and approval of this ESMMP, before submittal to the KFW for final approval, and EIB for no objection;
- Monitoring the performance of the Contractor (and Sub-contractors) and ensuring compliance with the ESMMP;
- Identification of non – compliance with the ESMMP and OHS Plans and issuing of corrective actions;
- Assisting in the resolution of conflicts;
- Carrying out ESMMP actions for the operational phase of the project.

WSPIU will delegate responsibilities taking place during construction and post construction to the Implementation Consultant (IC) and the Construction Contractor (CC) as described below.

The Environmental and Social Specialists will be responsible for overall implementation of the project form environmental aspect and monitoring activities. They will be responsible to perform formal monthly field monitoring checks of all project sites and produce monthly monitoring reports, including photo documentation. Results of environmental monitoring and other findings shall be properly recorded and quarterly submitted to KFW.

Environmental and Social Specialists will carry out the overall supervision of the implementation of the Environmental and Social Management Plan, reveal and report on incompliance with ESMMP or issues that may arise in the course of construction works that had not been covered in the ESMMP.

13.1.2 Implementation Consultant/Engineer

The Consultant (SRP Schneider & Partner Ingenieur Consult GmbH) will provide technical supervision of the construction works, including environmental and safety supervision. Supervisors will implement control of in time, due and reliable implementation of mitigating measures during the construction, prepare regular reports (quarterly) and submit to the WSPIU.

The Consultant's environmental and social specialist, as well as Safety Specialist will cooperate closely with engineering and technical staff of the Consultant, the WSPIU and the CC to ensure that environmental due diligence is mainstreamed into the project in a comprehensive, practical and effective manner. The following specific activities are expected:

During construction

- Monitor Health and Safety procedures at construction sites. Suggest and supervise the measures to be taken in order to avoid or mitigate it during construction.
- Ensure that ESMMP provisions are consistently and fully followed in all project-related works (including auxiliary and sec. works such as roads, and spoil deposits).
- Identify non-compliance with and violation of provisions of ESMMP.
- Monitor implementation of contractual clauses on environmental / social compliance.
- Ensure contractual enforcement by detecting and documenting non-compliance issues and preparing/initiating contractual remedies.
- Advise WSPIU on the appropriate contractual responses, such as demanding remedy, withholding payments, triggering penalties for initiating remedial works by third parties.

This will be done by:

- Monitoring the performance of the Contractor (and Sub-contractors) and ensuring compliance with the ESMMP;
- Validating the regular site inspection reports, which are to be prepared by the Contractor;
- Checking the Contractor's record of environmental incidents (spills, impacts, legal transgressions etc.) as well as corrective and preventive actions taken;
- Checking the Contractor's public complaints register, in which all complaints are recorded, as well as action taken;
- Issuing of site instructions to the Contractor for corrective actions required if necessary;
- Conducting regular audits to ensure that the system for implementing the ESMMP is operating effectively.

Post Construction / Operation

- Ensure that the Contractor has duly carried out all remediation and re-cultivation measures specified in the ESMMP and / or design documents.
- Identify remaining gaps and non-compliance issues and initiate their remedy, if necessary recommend third party contracting.
- Confirm that environmental compliance being fully achieved (for specific project sections) before operational acceptance certificates are issued and final payments to CC released.
- Assist the WSPIU in mainstreaming environmental and social monitoring and management into long-term care and maintenance plans.

13.1.3 Construction Contractor (CC)

(Responsible for construction works implementation, to be selected through tendering)

The CC will be responsible for physical implementation of mitigating measures planned under the ESMMP and for obtaining any additional permissions/consents if a need for such documents emerges during construction. CC being the direct implementing organization for management of all aspects of preparation and construction under the project is responsible for environmental management, but it is not limited, to the following certain obligations:

- Implementation of applicable laws, regulations and standards;
- Receiving of necessary permissions and/or agreement;
- Ensure that mitigation measures to reduce impacts during the construction phase are implemented;
- Ensure that monitoring to be undertaken during construction is implemented;
- Ensure compliance with the environmental and social management plan;
- Ensure that health and safety requirements are respected;
- Organize environmental and safety training and orientation for workers.

Contractors supervising team, HSE and environmental specialist will be responsible for implementing the environmental mitigation measures and their related monitoring activities on a regular basis. Roles of the specialists will be responsible for:

- Compliance with ESMMP requirements;
- Submission of environmental report to the Consultant on a monthly basis;
- In case of inadequate monitoring results, identification of the necessary corrective actions and follow their implementation, as well as reporting to the Consultant for approval;

- Allow access to the site for any environmental monitoring and inspection at any time requested;
- In cases of accidents (fire, explosion, oil spill, bitumen overflow, etc.), the Contractor must notify the Consultant immediately. Initial notification might be verbal, but must be followed by a written report within 24 hours after the incident or accident happened;
- Execute upon work completion, all the work necessary to reinstate all the used areas of the site close to its original condition to the reasonably acceptable level. The Consultant should approve this.

Training

The Environmental and Social Specialists of CC under the direct supervision of the same staff at Consultant will provide required trainings to relevant staff of CC and operation team in order to ensure that all measures of ESMMP for both the construction and operation phases are executed in an appropriate manner.

Training of CC staff is required. Training will focus on the application of KFW Sustainability Guidelines and Directive 92/57/EEC shall contain the implementation of the mitigation and monitoring measures.

All staff employed for construction and operation phases will be trained in the following:

- Specific job roles and procedures;
- Occupational health and safety and
- Contingency plans and emergency procedures.

Training will include:

- Induction training on appointment;
- Specialist training (as required for their prescribed job role) and
- Refresher training as required.

13.2 State monitoring agencies responsible for controlling ESMMP implementation efficiency

- State Environmental Inspectorate of RA Ministry of Nature Protection
- State Hygiene and Anti-Epidemiological Inspectorate
- The State Agency for Protection of Historical and Cultural Monuments, if needed
- The RA local governance bodies
- The RA Ministry of Transport and Communication, if needed

14 SUBMISSION OF REPORTS

The environmental safeguards compliance of the Project shall be regularly reported on all project implementation levels.

The CC shall submit to the Consultant the Monthly Environmental and Safety Reports: The report shall describe the results and findings from the environmental monitoring activities. Monthly reports shall provide explanations for anomalies, non-compliance and problems encountered.

The Reports shall comprehensively include all relevant aspects in implementing the mitigation measures of the ESMMP compliance to any environmental regulations and requirements such as training/orientation, permits, license, etc. undertaken during the period covered by the report.

The reports shall be submitted in Armenian and English and will include description part (monthly progress on environmental and social), photos and environmental mitigation measures monitoring table.

15 ENVIRONMENT MANAGEMENT PLAN

The purpose of a Construction Environmental and Social Management & Monitoring Plan (ESMMP) is to provide a consolidated summary of all the Environmental and Social (E&S) commitments relevant for the construction phase of the Project. The measures focus on environmental (such as air emissions, biodiversity and environmental contamination) and social aspects (such as the protection of human rights, communication with local stakeholders, safety of workers and communities). The ESMMP also gives an overview about the E&S Management System that is being implemented to ensure systematic and effective execution of these commitments, including roles and responsibilities between the WSPIU and the Contractor.

The tender documents will set out all E&S commitments that are to be fulfilled by the Contractor - supported by the WSPIU - during the construction activities. **Annex 2** provides details of the typical information that is required to be included in the Contractor's ESMMP.

The Contractor will be required to fulfil the commitments as set out in the ToR regarding all E&S commitments and also to ensure that its sub-contractors fulfil them. This includes the following:

- Prepare a construction environment and social management plan
- Conduct monitoring and on-site audits to verify implementation of the ESMMP (and report on findings to the employer.
- Communicate any environmental issues and incidents to the employer immediately.

- Support the employer with and perform the training of the construction workers to raise awareness in the fields of E&S topics and in general implementation of this ESMMP.

16 OCCUPATIONAL HEALTH AND SAFETY GUIDELINES

As this topic is quite complex and has to be paid serious attention, this subject is dealt with in a separate section (Section 17 of the Tender Documents).

17 ANNEXES

Annex 1: Screening Checklists

Annex 2: ESMMP Matrix

Annex 3: Reporting Formats

Annex 4: Public Consultations

Annex 5: State Environmental Expertise Conclusion

Annex 6: Communication with the Client

ANNEX 1: Screening Checklists

Categorization questionnaire

Topics	Ranking questions	Select one item (most appropriate/highest impact)	Comment / explanation for selection (required):
	Environment		
Environment	**Type of project location**	Development of a new site	**The goal of the Project is rehabilitation of the existing water supply networks. Some new locations will be required due to component 3 and 4 of Addendum 1, but that is only several components and minor territories.**
		Extension of facilities (Spatial)	
		No change /no additional area requirements (=Low to no extension of the location)	
		Modernization at the existing location	
		Not location-based (e.g. pure consultation)	
		Unknown: various small- part locations (e.g. programs)	
		Unknown: several larger sites (e.g program projects)	
		Unbekannt bei Einzelvorhaben (z.B. unbekanntem Trassenverlauf)	
	Current land use of the project site	Location in natural environment (without human use)	**Urban territories as well as other types of the land will be used for the Project.**
		Agricultural area	
		Ländlicher Raum (mit ländlichen Strukturen)	
		Residential areas	
		Multiple sites / Major areas of activity	
		Industrial Estate	
		Location in industrial area	
		Unknown	
	Expected surface requirements	Very large (>15ha)	**Very small areas will be required.**
		Large (5-15ha)	
		Medium (ca.1-5 ha)	
		Small (< 1ha) No new or very small area requirement	
		Unknown	
	Biodiversity of the site and protection status	Location in a protected area or protected habitat	**Project areas located far from the natural habitats as well as specially protected areas.**
		Project adjacent to protected habitats	
		pot. Impact on Protective Habitats	
		No effect on protected habitats	
		Unknown	

	Expected risks for residents	No risk for residents to be expected	**Minor risks expected for the residents, because construction activities will take short period and will not be so intense. Nevertheless, some negative impacts on the residents considered.**
		Various minor hazards for residents	
		Various medium-term hazards for residents	
		Various higher hazards for residents (noise, air, water)	
		High risks eg due to explosion / fire hazard	
		Favoring epidemic diseases	
		Integrated dam (energy / water supply)	
		Transport of dangerous goods	
		Significant increase in heavy-load traffic	
		High labor migration (influx)	
		Overland power lines (> 200 kV)	
		Armed security personnel (possibly also "A")	
	Social		
Social	**Loss of livelihood (econ.) / Resettlement (phys.)**	Phys. or econ. resettlement of people with informal rights	**Not applicable**
		Phys. Resettlement> 200 people	
		Phys. Resettlement> 50 pers.	
		Econ. Resettlement> 100 pers.	
		Use Community land	
		Small amount of phys. or econom. Resettlem. (phy. <50, econ. <100)	
		No	
		unknown	
	Impact on Indigenous	Resettlement of indigenous people (phy. / econ.)	**Not applicable**
		Impact on indigenous people.	
		Pot. impact on indigenous (e.g. project nearby)	
		No impact on indigenous	
		unknown	
	Impact on cultural heritage	Impact on cultural heritage	**Project territories located far from the areas of the cultural heritage.**
		Pot. impact On cultural heritage	
		cultural heritage nearby	
		No impact on cultural heritage	
		unknown	
	Risk of discrimination of vulnerable groups	Elderly	**Not applicable**
		Children and teenager	
		Women, esp. Single Mothers	
		Handicapped and chronically ill	
		No conceivable risk	

	OHS		
OHS	Size of construction site	>500 workers with or without "Camp"	Less than 100 construction workers are expected per site.
		>100 workers with "Camp"	
		>1000 workers	
		100 - 500 workers without "Camp"	
		<100 Construction workers	
		No large building site	
		No construction work is required	
		unknown	
	Risk group employed	Danger of child labor (Country/Sector)	No risk group.
		Danger of forced labor (Country/Sector)	
		:> 20% time / seasonal workers / migrant workers	
		Employment of young people	
		Employees:> 50% women	
		>20% foreign seasonal workers / migrant workers	
		>20% national seasonal workers / migrant workers	
		Employees:> 20% indigenous population	
		No risk group	
		unknown	
	Workplace hazards (construction and/or operation)	Work with hazardous substances)	Various types of workplaces are required, which needs special attention. See OHS-Guidelines
		Work with heavy equipment (accident danger, noise, vibration, etc.)	
		Welding	
		Electric work/electric machines	
		Danger of falling from heights	
		Blasting operations	
		Work in confined spaces (sewer, trenches)	
		No danger	
	Number of employees (relevant for implementation)	above 4000	Up to 200 (expected)
		4000-2000	
		2000-1000	
		1000-200	
		Up to 200	
		There will be few to no direct employees	

	Impacts		
Impacts	**Negative effects and risks**	Impacts are long-term and irreversible	
		Impacts are partly temporary and reversible	
		Impacts are temporary and reversible	
		none	**X**
		unknown	
	Cross-border effects	yes	
		no	**X**
		unknown	
	Cumulative effects through associated and other planned projects	yes	
		no	**X**
		unknown	
	Is an environmental test required under the national law of the partner country? (If YES at least category B)		**Categorized as a category C by the local environmental expertise, which means local legislation consider the impacts of the Project minor and non-significant that could be minimized by conducting the appropriate mitigation measures.**
		Fill out and use appropriate answers from following table	**Short justification of categorization with main arguments:**
	ESIA Category **It cannot be ruled out that the project category has to be revised again in the course of the examination because new risks arise or do not materialize.**	**Category B -**	**Project falls into Category B - because it's mainly affect urban areas and will have short term negative impact during the construction activities, which are not substantial and can be mitigated.**

Environmental and Social Issues	Yes ✔	No or Not Sure ✕	Initial level of Risk (High, Medium or Low)
E&S Policy, Legislation and Standards			
EU policy: • Is the project/operation consistent with EU environmental and social policy?	✔		**Low**
Legal context and compliance: • Is the project/operation likely to be consistent with EU/national/international environmental and social legal frameworks (i.e. international conventions ratified by the host country)?	✔		**Low**
Consultation and disclosure under the EIA process? • Has the screening decision been disclosed to the public? • Has the NTS been disclosed to the public and consultation under the EIA process been carried out?		✕ ✕	**Low**
EIB E&S principles and standards: • Is the project/operation likely to be consistent with EIB E&S principles and standards?	✔		**Low**
IFI E&S standards, safeguards and operational policies: • Is the project/operation likely to be consistent with IFI E&S standards or safeguards and operational policies?	✔		**Low**
Environment, Biodiversity, Climate Change			
Environmental impacts: • Will the project have an impact on air, soil, water through emissions or similar?	✔		**Low**
Transboundary impacts: • Will the project impact a cross-border region (river, canal, lake, seas, forest, mountain range, etc.) which forms a boundary between or runs through 2 or more sovereign states in any way?		✕	**Low**
Protected areas: • Does the project include activities within or adjacent to protected and environmentally sensitive areas?		✕	**Low**
Critical Habitats: • Does the project involve significant conversion or degradation of critical habitats? • Does the project impact on an area of critical habitat?		✕ ✕	**Low**
Biodiversity: • Will the project impact an area high in biodiversity or impact on a vulnerable, endangered or critically endangered species?		✕	**Low**
Forestry: Does the project involve: • the financing of commercial forestry? • logging operations in tropical moist forest • the purchase of logging equipment for use in tropical moist forest?		✕ ✕ ✕	**Low**
Cultural heritage: • Will the project adversely impact non-replicable cultural property (e.g. archaeological, historical or religious sites), sites with unique natural values or intangible cultural heritage (e.g. social practices, rituals and festive events)?		✕	**Low**

Vulnerability to climate change: • Will the outcome of the project and/or impact of the project on environment, communities or ecosystems be significantly affected by climate change projections? • Do the projects for climate change in the lifetime of the project significantly increase the risks above (e.g. to the environment, biodiversity, forestry)?		☒ ☒	**Low**
Climate change mitigation: • Will the project have significant absolute or relative GHG emissions?		☒	**Low**
Social			
Social assessment: • Will the project/operation have significant adverse social impacts and risks?		☒	**Low**
Involuntary resettlement: • Will the project have any involuntary resettlement, either or both physical or economic? • Will the project result in livelihood changes that can increase the pressure on available natural resources?		☒ ☒	**Low**
Vulnerable groups and Indigenous Peoples (IPs): • Does the project impact on indigenous peoples and, if so, have the particular rights of indigenous groups been considered (e.g. rights to lands, territories and resources, rights to FPIC, etc…) • Will the project have adverse impacts on vulnerable groups? • Have vulnerable groups amongst impacted stake-holders been identified and included in project planning, consultation and engagement activities?		☒ ☒ ☒	**Low**
Labour Standards: • Are there risks of forced or child labour? • Is there any indication of child or forced labour in the supply chain?		☒ ☒	**Low**
Occupational and public health, safety and security: • Will the project have an impact (direct /indirect) on occupational and public health and safety?	✔		**Medium**
Stakeholder engagement: • Has the project engaged adequately with project-affected stakeholders? • Has a project grievance mechanism been established? • Is an adequate accountability reporting in place?	✔ ✔ ☐	☐ ☐ ☐ ☒	**Low**
Other E&S Issues			
Project boundaries: • Are the project's ancillary/associated facilities/infrastructure and area of influence likely to pose any significant E&S impacts and risks?		☒	**Low**
Supply chain: • Are there any risks of adverse environmental and social impacts of the project's supply chain?		☒	**Low**
Reputational Risk			
Stakeholder interests: • Are there are any major stakeholder interests in the project/operation?		☒	**Low**
Risks:• Is the project/operation likely to pose significant risks from an environmental, climate or social point of view? • Is the EIB likely to be exposed to any reputational risk?		☒ ☐ ☒	**Low**

ANNEX 2: ESMMP Matrix

Topic/ Potential Impact	Mitigation, Management and Enhancement Measures	Means of Verification	Responsibility	Monitoring Procedure
Occupational Health and Safety				
Occupational Health and Safety	Provide H&S Training to the construction workforce (including sub-contractors, temporary workers and drivers)	Training performed and recorded	Contractor/ PIA	Check Training records
	Ensure site premises are provided with appropriate fencing (where applicable) and lighting. Use hazard notices/signs/barriers to prevent access to dangerous areas.	H&S planning of construction site done, items installed	Contractor	Random site inspection
	Ensure speed limits on site and on transporting routes.	Speed signs installed	Contractor	Random site inspection
	Ensure the use of Personal Protective Equipment (PPE) for workers.	PPE used on-site by workers	Contractor	Random site inspection
	Maintain high standard in housekeeping on site.	Good housekeeping on-site	Contractor	Random site inspection
	Ensure provision of Health and Safety (H&S) facilities at the Project site, including shaded welfare areas, bathrooms, and potable water.	H&S Facilities provided at site	Contractor	Random site inspection
	Ensure that the workers camp and construction areas are open only to formal employees.	Access controlled	Contractor	Random site inspection
Fire Prevention	Provide necessary fire prevention equipment on site in line with applicable regulations.	Fire prevention equipment in place	Contractor	Regular site inspection
Labour Rights	Ensure that workers have access to and are aware about the Grievance Mechanism	Grievance Mechanism in place and grievances recorded	PIA/ Contractor	Review of grievance register
	Ensure minimum legal labour standards as per ILO regulations (child/forced labour, no discrimination, working hours, minimum wages) are met	Grievance Mechanism Records, Training recorded	Contractor	Inspection reports (also from labour authorities), Review of grievance register and training record
	Provide hygienic, adequate facilities for workers, ensuring toilets and changing rooms are separated to male and female employees.	Appropriate facilities in place	Contractor	Random site inspection

Topic/ Potential Impact	Mitigation, Management and Enhancement Measures	Means of Verification	Responsibility	Monitoring Procedure
	Ensure the workforce has access to primary healthcare on site, providing prescriptions.	Healthcare available on site	Contractor	Random site inspection
	Provide housing conditions in accordance with all applicable health and safety regulations and norms by ensuring the provision of adequate space, supply of water, adequate sewage and garbage disposal system, appropriate protection against heat, cold, damp, noise, fire and disease-carrying animals, adequate sanitary and washing facilities, ventilation, cooking and storage facilities and natural and artificial lighting, and in some cases basic medical services.	Appropriate housing conditions for workers	Contractor	Random site inspection Worker interviews
Ambient Air				
Dust emissions (especially in dry conditions)	Ensure watering of transportation roads during dry and windy conditions. Generally keep roads in good condition.	Watering conducted, roads in good conditions	Contractor	Random site inspection, inspection of roads
	Cover truck loads with canvas to avoid dust blow.	Trucks covered	Contractor	Random site inspection
	Ensure optimal traffic routes. Enforce vehicle speed limits on unpaved roads.	Speed limit signs Driver Training Records	Contractor	Random site inspection
	Ensure appropriate stockpile management (friable materials) to minimise dust blow. Minimise drop heights for material transfer activities such as unloading of friable materials.	No extensive dust blow	Contractor	Random site inspection
Emissions from equipment and vehicles	Use equipment and vehicles in appropriate technical conditions. Provide emissions control equipment where applicable (e.g. filters).	Technical Specification Sheet	Contractor	Each time new equipment/vehicle is used at the site Random site inspection
	Use low sulphur content fuels, in line with legal provisions in force as well as local availability.	Technical Specification Sheet	Contractor	Random site inspection
	Ensure optimal traffic routes to minimise lengths of travel while avoiding settlements if possible..	Optimal routes chosen	Contractor	Random site inspection
	Ensure vehicles and equipment are switched off when not in use.	Engines switched off	Contractor	Random site inspection

Topic/ Potential Impact	Mitigation, Management and Enhancement Measures	Means of Verification	Responsibility	Monitoring Procedure
Noise and Vibrations				
Noise and vibration impacts at the construction sites and from construction traffic	Limit the hours of operation for specific pieces of equipment or operations, especially mobile sources operating through community areas or close to residential houses (typically between 10 pm and 7 am). Avoid vehicle movements at night.	No work conducted between 10pm and 7 am/ Grievance Mechanism	Contractor	Random site inspection, Review of filed grievances, review of timesheets of workers
	Use of state-of-the-art technology and limit the number of machines operated simultaneously.	Grievance Mechanism	Contractor	Spot checks, Review of filed grievances
	Ensure the use of modern and well-maintained equipment (e. g. use of silencers).	Technical Specification Sheet	Contractor	Random site inspection
	Set traffic speed limits. Verify drivers' behaviour with respect to driving speed and safety.	Speed limit signs Driver Training Records as part of Induction training	Contractor	Random site inspection, Review of training records
	Plan vehicle routes to avoid settlements where possible.	Safest routes selected, Grievance Mechanism	Contractor	Review of traffic routes, Review of filed grievances
	Use protective hearing equipment for workers conducting noisy activities.	Protective hearing equipment used.	Contractor	Random site inspection
Traffic and Transport				
Disruption, noise and increased air pollution	Schedule traffic activities to avoid peak hours on local roads if feasible.	Peak hours on local roads avoided, Grievance Mechanism	Contractor	Review of filed grievances
	Ensure safe driving by Project personnel (e.g. through training/induction).	Driver Training Records as part of Induction training	Contractor	Review of training records
	Organise carpools/buses for worker transportation where possible to avoid additional traffic pressure.	Carpools/ buses used	Contractor	None
	Prevent storage of construction materials, equipment and machineries on traffic lanes.	Dedicated storage areas in place	Contractor	Random site inspection

Topic/ Potential Impact	Mitigation, Management and Enhancement Measures	Means of Verification	Responsibility	Monitoring Procedure
Soil and Groundwater				
Environmental contamination/ spills	Collect and segregate wastes and ensure safe storage and in line with legal requirements.	Waste collection areas existent, waste inventories	Contractor	Random site inspection, Review of waste inventories
	Ensure disposal through waste contractors licensed for treatment/removal/recycling of each of the waste types.	Disposal through licensed contractors	Contractor	Random site inspection, Inspect offsite waste disposal facilities if feasible
	Ensure appropriate containment and disposal of construction wastewater, including sanitary water.	Water disposal compliant with legal requirements	Contractor	Random site inspection
	Ensure appropriate and safe storage of contaminants such as fuels, construction materials and wastes. Provide absorbent and intervention materials in sufficient quantities and at relevant locations for intervention in case of leakages/spills.	Safe storage of hazardous materials, Spill remediation equipment in place.	Contractor	Random site inspection
	Implement appropriate secondary containment and spill controls for maintenance or refuelling works.	Containment and spill controls in place	Contractor	Random site inspection
	Ensure immediate cleaning of any spills and remediation of contaminated areas after construction.	Workers trained.	Contractor/ PIA	Random site inspection One-time inspection after construction
Best practice soil handling	Ensure appropriate storing of topsoil removed. After construction topsoil will be used as backfill for restoration of the area.	Topsoil stored and re-used	Contractor	Random site inspection
	Limit stockpile height to 2 m maximum to avoid soil compensation.	Stockpile height limited	Contractor	Random site inspection
	Reinstatement of construction working area to the best possible after construction activities are completed.	Reinstatement completed	Contractor/ PIA	One-time inspection after construction

Topic/ Potential Impact	Mitigation, Management and Enhancement Measures	Means of Verification	Responsibility	Monitoring Procedure
	If construction takes place on inclined surfaces/slopes, ensure preventive erosion control measures are applied (e.g. plan to retain trees and other vegetation, use of natural contours for roads and drainage networks, excavated drainage channels).	Preventive erosion control measures in place	Contractor	Random site inspection
Water and Hydrology				
Surface Water Quality	Prioritise the use of rainwater/storm water over surface water/groundwater abstraction by using harvesting equipment and systems on site.	Water harvesting conducted	Contractor	Random site inspection
	Restrict excavation activities during periods of intense rainfall. Use temporary bundling to reduce the risk of sediment, oil or chemical spills to the receiving waters.	No excavation during intense rainfall	Contractor	Random site inspection
	Carry out excavation works in cut off ditches to prevent water from entering excavations.	No water entering excavations	Contractor	Random site inspection
	Reuse wastewater wherever feasible.	Wastewater reused	Contractor	Random site inspection
Flora and Fauna				
Areas of high ecological value	Assess the occurrence of protected areas and/or natural/critical habitats at and around the construction site. Avoid these areas where possible through traffic management and site setup.	areas of ecological value avoided	Contractor/ PIA	Random site inspection
Site Clearance-Vegetation removal and habitat disturbance	Limit vegetation clearing to areas within the site boundary where it is absolutely necessary.	Vegetation clearing minimal	Contractor	Random site inspection
	Avoid clearing mature trees.	No mature trees cleared	Contractor	Random site inspection
	Avoid off-road vehicle traffic. Use existing roads.	No off-road traffic	Contractor	Random site inspection
	Ensure revegetation of cleared areas where possible after construction using native species.	Revegetation completed	Contractor/ PIA	One-time inspection after construction
Light	Shield lighting downwards towards the site to avoid side-spill. Avoid tall masts where possible.	Light nuisance minimised	Contractor	Random site inspection

Topic/ Potential Impact	Mitigation, Management and Enhancement Measures	Means of Verification	Responsibility	Monitoring Procedure
Pesticide Use and Management	If pesticides are to be used for agriculture program, only those that are low in human toxicity, that are known to be effective against the target species, and that have minimal effects on non-target species and the environment shall be used.	Pesticide Specification sheet	Contractor	Random site inspection
Socio-Economic				
Stakeholder Engagement and Grievance Mechanism	Engage/ communicate with communities and plan sufficient time for participation. Ensure regular consultations with the local authorities and communities regarding the management of construction. See also Planning stage (Chapter 6.1).	Minutes of Meetings Grievance Mechanism	PIA/ Contractor	Review of grievance register
	Initiate an efficient Grievance Mechanism to allow potentially affected individuals to voice their concerns on the Project. See also Planning stage (Chapter 6.1).	Grievance Mechanism in place, grievances recorded	PIA/ Contractor	Review of grievance register
Local Employment & Procurement	Ensure local communities are preferred for the supply of goods and services to the Project and Project personnel, where appropriate.	Local Procurement and Employment Records	Contractor	Revie procurement and employment rules and records
Land Acquisition and Compensation, Physical Displacement/ Economic Displacement	Avoid land take and hereby avoid physical relocation of both, formal and informal land owners/land users Engage with the local community and potential affected households to understand the land ownership and land use. Should land acquisition and displacement be inevitable, prepare a Management Plan for Land Acquisition and Compensation including provisions for resettlement.	Grievance Mechanism records Management Plan for Land Acquisition and Compensation if needed		

Topic/ Potential Impact	Mitigation, Management and Enhancement Measures	Means of Verification	Responsibility	Monitoring Procedure
Impacts on livelihoods/ Economic Displacement	Engage with the local community and potential affected households to understand their needs and identify the risk of damage to their livelihood basis through the Project (e.g. take of pasture land, lack of access to water). Should land acquisition and displacement be inevitable, prepare a Management Plan for Land Acquisition and Compensation including provisions for livelihood support for the affected parties.	Minutes of Meetings Grievance Mechanism records Management Plan for Land Acquisition and Compensation if needed	Contractor/ PIA	Review of grievance register and meeting minutes
Community Health and Safety	Ensure all contractors implement codes of conduct concerning employment and workforce behaviour (including but not limited to safety rules, zero tolerance for substance abuse, environmental sensitivity of the area, dangers of sexually transmissible diseases and HIV/AIDS, gender equality and sexual harassment, respect for the beliefs and customs of the populations and community relations in general).	Workers Code of Conduct Grievance Mechanism records	Contractor/ PIA	Worker interviews, Review of grievance register
	Target signage and outreach activities to improve public awareness of traffic changes and potential hazards for high-risk sections of public roads, including near the site and laydown areas.	Warning signs Minutes of Meetings	Contractor	Inspection if traffic routes, Review of grievance register
	In case of security personnel at the site, ensure proper training and in the use of force and appropriate conduct toward workers and affected communities	Training Records	Contractor	Review of training records and grievance register
Communicable Diseases	Report any occurrence of any communicable diseases amongst the workforce (STD, HIV/AIDS, TB, malaria and Hepatitis B and C) and set up disease prevention programme if needed.	Communicable Diseases Register	Contractor	Review of diseases register and disease prevention programme if available.

Topic/ Potential Impact	Mitigation, Management and Enhancement Measures	Means of Verification	Responsibility	Monitoring Procedure
Cultural Heritage				
Damage of Cultural Heritage	Ensure all chance finds of cultural heritage (e.g. graves, old ceramic, old building fragments) are reported immediately to the relevant authority. If possible, avoid excavation in the ultimate neighbourhood of a chance find, fence the chance find and await instructions from the competent authority.	Training records, records about chance fiends	Contractor/ PIA	Random site inspection

Expected Impact	***Mitigation measures***	***Monitoring indicator***	***Monitoring method***	***Monitoring duration***	***Executing agency***	***Supervising agency***	***Costs***
Disruption of the natural and urban landscapes and loss of biodiversity	Selection of routes of water mains and internal network taking into account engineering-geological conditions of the area, minimizing the adverse impact on natural and urban	Presence of instructions in design documents	Review of design documents	Upon delivery of draft design documents	Consultant	WSPIU, KFW	Included in construction costs
	Instructions provided for washing and disinfecting the water main and the network with chlorine, with reference to formal guidelines.						
Activation of land erosion and landslide process	Selection of routes of water mains taking into account engineering-geological conditions of the area	Sensitivity of design to geological conditions of the project site	Review of design documents	Upon delivery of draft design documents	Consultant	WSPIU, KFW	Included in construction costs
Construction and household wastes (garbage) accumulation and transportation	On-site collection of waste in the designated locations and timely out-transportation to the destinations of final disposal.	Construction sites free of litter and scattered construction waste.	Site inspection	During construction works	Contractor	IC	Included in construction costs
	Obtaining written consent for disposal of construction waste from local self-governing bodies	Presence of waste disposal permission	Inspection of documents at Contractor's office	Before commencement of construction works	Contractor	IC	Included in construction costs

	Waste disposal to the formally designated locations	Absence of large volumes of the household and construction waste at the construction site. Absence of waste on site upon completion of construction.	Field visit	During construction. prior to hand over of the completed works	Contractor	IC, WSPIU	Included in construction costs
Generation of dust	Dust emission from transportation of construction materials	Use of closed/covered vehicles for transportation of powdery construction materials	Field visit	During construction	Contractor	IC, WSPIU	Included in construction costs
	Regular watering of construction sites in populated areas	No excessively dusty conditions on-site	Field visit	During construction	Contractor	IC, WSPIU	Included in construction costs

Expected Impact	*Mitigation measures*	*Monitoring indicator*	*Monitoring method*	*Monitoring duration*	*Executing agency*	*Supervising agency*	*Costs*
Contamination of soil and water with fuel and lubricants	Storage and application of fuel/ lubricants in the conditions excluding spillage and leakage	Area allocated for storage and application of fuel/ lubricants insulated and confined No fuel and/or lubricant spills observed on-site	Field visit	During construction	Contractor	IC, WSPIU	N/A
	On-site storage and storage and safe disposal of used lubricants and their removal to designated disposal sites or recycling facilities	Presence of containers for storing used lubricants Presence of formal arrangements for disposal or hand over of used lubricants	Field visit, Inspection of documents	During construction	Contractor	IC, WSPIU	Included in construction costs
Noise and vibration	Limiting of construction works to working hours Reduce vehicle speeds (stick to recommended speeds) in populated areas Allow truck movements only during daylight	No excessive noise out of working hours No complaints from affected communities	Field visit, Consultation with affected communities	During construction	Contractor	IC, WSPIU	Included in construction costs

Expected Impact	*Mitigation measures*	*Monitoring indicator*	*Monitoring method*	*Monitoring duration*	*Executing agency*	*Supervising agency*	*Costs*
	Technical condition of construction vehicles and machinery. Optimization of transportation management to avoid needless truck drives Regular maintenance and service of building machinery and other vehicles	Absence of excessive noise from engines and check the conditions. No complaints from affected communities	Field visit	During construction	Contractor	IC, WSPIU	Included in construction costs
	For workers noise levels shall be kept below 80 dB (A), wherever possible. In case of exceeding this value, hearing protections must be provided to workers and warning signs must be installed For residents the noise levels may not exceed 55 dB (A) or result in a maximum increase in background levels of 3 dB (A) at the nearest receptor location off-site	No complaints from affected communities. Presence of warning signs.	Field visit	During construction	Contractor	IC, WSPIU	N/A Warning signs: 800 USD (Included in construction costs)
Safety of pedestrians and traffic in and around construction sites	Installation of appropriate road signs and provision of temporary by-pass arrangements as required	No disruption of traffic and no constraint for pedestrian access	Field visit, Consultation with affected households	During construction	Contractor	IC, WSPIU	Included in construction costs

Expected Impact	*Mitigation measures*	*Monitoring indicator*	*Monitoring method*	*Monitoring duration*	*Executing agency*	*Supervising agency*	*Costs*
Impact on archaeological monuments	Immediate termination of earth works in case of chance finds and prompt communication to the Agency of Protecting Cultural Heritage(APCH)	No damaged archaeological items	Field visit	During construction	Contractor	IC, WSPIU, APCH	Included in construction costs
Landscape degradation and soil erosion	Separate storage of topsoil and its restoration upon completion of construction works	Top soil stored in separate piles Top soil re-deposited over the construction site	Field visit	During construction	Contractor	IC, WSPIU	Included in construction costs
	Timely backfilling of excavated trenches	No trenches left open for excessive periods of time	Field visit	During construction	Contractor	IC, WSPIU	Included in construction costs
	Installation of gabions for laying pipelines in the sloped terrain	Presence of gabions	Field visit	During construction	Contractor	IC, WSPIU	Included in construction costs
	Harmonization of construction sites with landscape promptly upon completion of works	Construction site restored in original condition to the permissive extent	Field visit	Prior to hand over of constructed infrastructure	Contractor	IC, WSPIU	Included in construction costs

Expected Impact	*Mitigation measures*	*Monitoring indicator*	*Monitoring method*	*Monitoring duration*	*Executing agency*	*Supervising agency*	*Costs*
Environment pollution with chlorine use for disinfection of newly constructed pipelines	Prevention of release active and highly concentrated disinfectants to nature	Deactivation and delusion of chlorine prior to release of disinfectant to nature	Field visit	During disinfection of pipelines	Contractor	IC, WSPIU	Included in construction costs
Workers' exposure to dust and noise	Provision of protective gear (masks, ear phones) to workers for the use industry and noisy environment	Workers equipped with and wearing protective gear	Field visit	During construction	Contractor	IC, WSPIU	2000 USD (Included in construction costs)
Maintenance of work site and work camp (if existing)	Provision of water, sanitation, and household waste containers on work site	Satisfactory sanitary conditions	Field visit	During construction	Contractor	IC, WSPIU	Included in construction costs
Safety of construction machinery	Standard technical condition of construction machinery formally certified	Presence of positive expertise reports for operating cranes and other machinery deployed at the constr. site	Inspection of documents at Contractor's office	During construction	Contractor	IC, WSPIU	Included in construction costs
Conduct of excavation works	Demarcation of open trenches and other dig-outs	Open trenches and other dig-outs demarcated	Field visit	During construction	Contractor	IC, WSPIU	Included in construction costs

Expected Impact	*Mitigation measures*	*Monitoring indicator*	*Monitoring method*	*Monitoring duration*	*Executing agency*	*Supervising agency*	*Costs*
Conduct of earth works in sites with asbestos pipes currently in operation	Accurately demarcate location of asbestos pipes and excavate cautiously along the marked area to avoid contact with existing pipes. In case of unintended unearthing of asbestos pipes, immediately backfill the dugout area, compact soil, and place warning signs.	Respectively marked asbestos pipe location	Field visit	During construction	Contractor	IC, WSPIU	Included in construction costs
Preparedness for accidents at work site	Provision of the first aid medical kits and fire-fighting equipment	The first aid kits and fire-fighting equipment present on site	Field visit	During construction	Contractor	IC, WSPIU	800USD (Included in construction costs)

[2] RA Government Decree N-529Ա dated April 21, 2011 on “Approval of safety rules during production, use, storage and transportation of chlorine”.

ANNEX 3: Reporting Formats

Format EM1: Staff Training Report

Month: ……

1.1: Staff Trained according to position:

(i)Technical, (ii) Field Staff or (iii) Sub-contractor staff (use one form for each type of staff)

Date of training	Attending (no)	Purpose of Training	Comments
TOTAL		xxxxx	xxxx

1.2: Yearly Training Statistics

Month: …….. Year……

1.2.1: Number of people trained (no)

Position	Total to last month for year	Total for this month	Total for Year
Technical			
Field Supervisors			
Sub-contractors			

1.2.2 Number of Training Sessions held (no)

Position	Total to last month for year	Total for this month	Total for Year
Technical			
Field Supervisors			
Sub-contractors			

Name & Signature

Site Engineer / Supervisor ……..

Time work commenced: …….. Time work completed: ……

Format EM2: Selection of disposal site locations

Criteria on which information for each site is to be collected	Site 1	Site 2	Site 3	Site 4
Area covered (m^2)				
Total Material that can be dumped within the site (m^3)				
Depth to which disposal is feasible (m)				
Distance of nearest watercourse (m)				
Nearest Settlement (m)				
Date/s of Community Consultation/s				
Whether the community is agreeable to siting of dumping site (Y/N)				
Date of Permission from Village Council President(VCP)				
Proposed future use of the Site				

Name & Signature

Site Engineer / Supervisor ……..

Time work commenced ……

Time work completed ……

Enclosures:

(Tick as appropriate)

1 Maps of each location

2 Photographs

a Each disposal location

b Approval/certificate from each community

3 Photocopies of permissions from VCPs

Format EM3: Construction Camp and Storage Area

Construction Stage: Report - Date____ Month_____ Year_____
Format to be submitted before target date of establishing camps
Location of Camp (km_____)

Sl.	Item	Unit	Details	Remarks
1	**Detail of item camp**			
a	Size of Camp	mxm		
b	Area of Camp	sq.m		
c	Distance from Nearest Settlement			
d	Distance from Nearest Water Source	Type/Size/Capacity/Present Use/Ownership		
e	Date of camp being operational dd/mm/yy			
f	Present land use			
g	No other trees with girth > 0.3m.			
h	Details of Storage area(Availability of impervious surface)	mxm		
i	Availability of separate waste disposal from storage area	Cum		
2	**Details of top soil stacking**			
a	Quantity of top soil removed	Cum		
b	Detail of storage of topsoil	Describe stacking arrangement		
3	**Details of workforce**			
a	Total No of Labourers	nos		
b	Total no of Male Workers	nos		
c	No of Male Workers below 18 years of age	nos		
d	Total No of Female Workers	nos		
e	No of Female workers below 18 years of age	nos		
f	No of children	nos		
4	**Details of dwelling units**			
a	No of dwellings/huts	nos		
b	Minimum Size of Dwelling	mxm		
c	No of openings per dwelling	nos		
d	Minimum size of opening	mxm		
e	Walls	specifications		
f	Roofing	specifications		
g	Flooring	specifications		
h	Drinking Water Tank	specifications		
i	Capacity of Drinking water Tank	cum		
j	Size of Drinking Water Tank	mxmxm		
k	Total no of WC	nos		
l	No of Wcs for female workers	nos		
m	Minimum Size of WC	mxm		
n	Total No of Bathrooms for female workers	nos		
o	Size of septic tank for WC/Baths	mxmxm		
p	Capacity of Water Tank for WCs/ Bathrooms and general			
q	Fencing around camp	Y/N		
5	**Details of facilities**			
a	Availability of security guard 24 hrs a day	Yes/No		
b	Details of First Aid Facility	Yes/No		
c	Availability of Day Care Centre	Yes/No		
d	Availability of dust bins (capacity 60 ltr)	nos		

Name & Signature

Site Engineer / Supervisor ……..…

Time work commenced: …… Time work completed: ……..……

Format EM4: Tree Felling

S.No	Links	Physical Target				Completion Target		
		Total	Target	Target Achieved	% of task completed	Target Date	Date of Completion if task completed	Reason for Delay if any
		Unit						
1		nos						
2		nos						
3		nos						
4		nos						

Name & Signatures

Site Engineer / Supervisor ……..……..…

HES and environmental specialist ……..……

Time work commenced: …….. Time work completed: ……..……

EM 5 Topsoil Conservation Monitoring

Contract _____
Report No. _____
Date_____

Location (Chainage)	Original Use of Topsoil removed	Measures for preventing spillage of topsoil on Haul Roads(Earthen/ Metalled)	Present Method of Storage	Anticipated period of Storage (Months)	Distance of nearest Water course (m)	Present Slope of Pile (V: H)	Whether silt fencing provided?	Is any other covering / measure provided? If yes, what is it?	Improvements required	Extent of Compliance as on date of report

Name & Signature

Site Engineer / Supervisor ……..

HES and environmental specialist ……

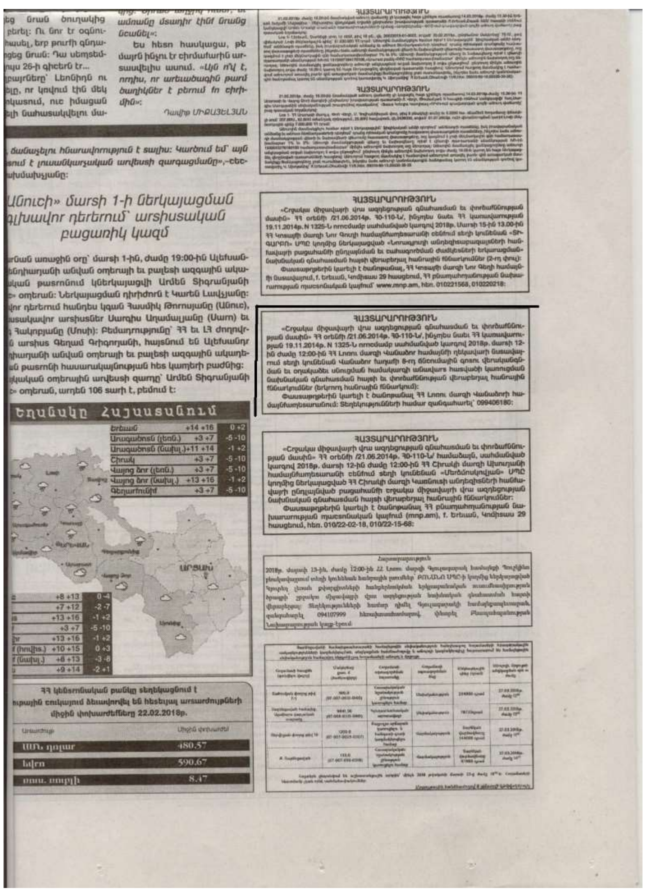
Time work commenced: ……..… Time work completed: ……

ANNEX 4: Public Consultations

First meeting with the affected communities conducted on 25th of July, 2017. Ovelall information on the Project presented with some details of design data as well as environmental, social and H&S planned measures.

Besides, under the environmental expertise public hearings/consultations was held, for which, in accordance with Article 26 of the RA Law “On Environmental Impact Assessment and Expertise” as well as RA Government Decree No.1325-N dated 19.11.2014, the community in which territory the activities will be carried out, is responsible. The 1st consultation are to be organized jointly by the initiator and the affected community and the second organized by the Environmental Expertise Center SNCO under the Ministry of Nature Protection of RA and the affected community, at the place provided by the affected community, which was the Vanadzor municipality hall for both consultations. 1st public consultation took place on 7th of February 2018 and the 2nd one is on 12 of March, 2018.

Announcement example published in daily newspaper that should be done at least 7 working days before the consultations by the Law.



Preliminary agreement on the overall Project implementation provided from the affected community after 1st public consultations.

ՀԱՅԱՍՏԱՆԻ ՀԱՆՐԱՊԵՏՈՒԹՅՈՒՆ
ԼՈՌՈՒ ՄԱՐԶ
ՎԱՆԱՁՈՐ ՀԱՄԱՅՆ ՔԻՂԵԿԱՎԱՐ

Հայաստանի Հանրապետության Լոռումարզի Վանաձորի համայնք
✉ 2001, ք.Վանաձոր, Տիգրան Մեծի 22, Ֆաքս 0322 22250, Հեռ. 060 650044, 060 650040, 0322 22648,
vanadzor.lori@mta.gov.am, info@vanadzor.am

N 079/1052 13 փետրվար 2018թ.

ՀՀ ԷԵՔՊՆ ՋՐԱՅԻՆ ՏՆՏԵՍՈՒԹՅԱՆ ՊԵՏԱԿԱՆ
ԿՈՄԻՏԵ ՀԱՄԸՆԴՀԱՆՈՒՐ ԾՐԱԳՐԻ ՂԵԿԱՎԱՐ
ԲԵՐՆՀԱՐԴ ՖԻՇԵՐԻՆ

Հարգելի պարոն Ֆիշեր

Ուսումնասիրելով Համայնքային Ենթակառուցվածքի Ծրագիր /ՀԵԾ/ II, փուլ 3-ի շրջանակներում իրականացվող Վանաձոր քաղաքի 8 ճնշումային գոտու վերականգնման և օղակաձև սնուցման համակարգի անավարտ հատվածի կառուցման շրջակա միջավայրի վրա ազդեցության նախնական գնահատման հայտը Լոռու մարզի Վանաձորի համայնքապետարանը հայտնում է, որ տալիս է իր նախնական համաձայնությունը նշված գործունեությանը:

Հարգանքով՝

ՀԱՄԱՅՆՔԻ ՂԵԿԱՎԱՐ ՄԱՄԻԿՈՆ ԱՍԼԱՆՅԱՆ

Կապ. Ճ ԵՎ Ք բաժնի պետի պաշտոնակատար, գլխավոր ճարտարապետ՝ Սուրեն Աբովյան
(374 60) 65 03 63

Minutes of meetings of those public consultations.

1

ԱՐՁԱՆԱԳՐՈՒԹՅՈՒՆ

7 փետրվարի 2018 թ. *ՀՀ, Լոռու մարզ, ք. Վանաձոր*

Ս/թ. փետրվարի 7-ին, ժամը 12.00–ին ՀՀ Լոռու մարզի Վանաձորի համայնքապետարանում/համայնքի ղեկավարի նստավայրում տեղի ունեցան Համայնքային Ենթակառուցվածքի Ծրագրի Փուլ 3-ի շրջանակներում նախատեսվող Վանաձոր քաղաքի թիվ 8 ճնշումային գոտու վերականգնման և օղակաձեւ սնուցման համակարգի վերականգնման շրջակա միջավայրի վրա ազդեցության նախնական գնահատման հայտի վերաբերյալ հանրային քննարկումներ (I փուլ):

Ներկա էին Վանաձորի համայնքի ղեկավարի տեղակալը, ՀՀ ԷԵԲՊՆ Ջրային տնտեսության պետական կոմիտեի ՋՏԾԻԳ-ի, ձեռնարկողի ներկայացուցիչներ, բնակիչներ (մասնակիցների ցանկը, տեսաձայնագրությունը ստորագրություններով կցվում է):

Հանրային քննարկումների բացման խոսքն ասաց նախաձեռնող կողմի բնապահպանական հարցերով խորհրդատու Միքայել Թևոսյանը: Նա տեղեկացրեց, որ լսումների մասին հայտարարությունը համաձայն գործող օրենքի հրապարակվել է Հայաստանի Հանրապետություն օրաթերթում, տեղադրվել է համայնքապետարանի պաշտոնական կայքում, փակցվել համայնքապետարանի ցուցատախտակի վրա:

Ծրագրի մասին ընդհանուր տեղեկություններ ներկայացրեց նախաձեռնող ընկերության թիմի ղեկավար Բերնհարդ Ֆիշերը: Նա ներկայացրեց Ծրագրի իրականացման ընթացքը, ժամանակացույցը և նախագծային այլ տվյալներ:

Ինչպես նաև նշեց, որ սույն հանդիպման հիմնական նպատակն է ներկայացնել նախատեսվող գործունեության հիմնական բնապահպանական ռիսկերը և դրանց հնարավոր ազդեցությունը մեղմող միջոցառումները:

Քննարկումների ժամանակ ներկայացվել են հետևյալ հիմնական հարցերը.

Հարց	Հարց հնչեցնող	Պատասխան	Պատասխանող
Արդյոք հաշվի են առնվել նախորդ հանրային քննարկումների ժամանակ հնչեցված առաջարկությունները	Համայնքի ղեկավարի գլխավոր խորհրդական	Վանաձորում տեղի ունեցած նախորդ հանրային քննարկումների շրջանակներում հնչեցված առաջարկությունները հաշվի են առնվել: Մասնավորապես, որպես օրինակ, նախորդ քննարկումների ժամանակ համայնքի ներկայացուցիչները նախորդ	Միքայել Թևոսյան

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		փորձը հաշվի առնելով անհանգստություն հայտնեցին այն մասին, որ շինարարություն իրականացնող ընկերությունները չեն իրականացնում բարեկարգման աշխատանքներ: Որպես լուծում նախաձեռնող կողմը ներառել է համապատասխան միջոցառում, ըստ որի շինարարական ընկերությունը պետք է հրավիրի վերահսկող կողմին աշխատանքների ավարտին բարեկարգման աշխատանքները գնահատելու և ըստ այդմ վերջնական վճարումը կատարելու համար:	
Արդյո՞ք համայնքը որևիցե վերահսկողական գործառույթ ունի տվյալ ծրագրի իրականացման ընթացքում	Համայնքի հանրային կապերի, լրատվության և արարողակարգի բաժնի պետ	Շինարարական աշխատանքների ընթացքում հատուկ բողոքարկման մեխանիզմ է գործելու, ըստ որի համայնքի ներկայացուցիչները իրենց բողոքներն ու առաջարկությունները կարող են հղել Ջրային Տնտեսության Ծրագրերի Իրականացման Գրասենյակ:	Շահանե Աբսենյան
Արդյո՞ք միջազգային փորձ ունեցող ընկերություն է իրականացնելու վերահսկողական աշխատանքներ և ինչպիսի ընթացակարգով է ընտրվելու այդ ընկերությունը:	Համայնքի հանրային կապերի, լրատվության և արարողակարգի բաժնի պետ	Այո, միջազգային փորձ ունեցող ընկերություն է իրականացնելու տվյալ Ծրագրի վերահսկողությունը, սակայն մրցութային ընթացակարգ չի լինելու, քանի որ այդ ընկերությունն արդեն ընտրված է և տվյալ	Բերնհարդ Ֆիշեր

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		Ծրագրի շրջանակներում պետք է իրականացնի թե նախագիծը և թե վերահսկողությունը շինարարության փուլում:	
Արդյո՞ք այս ծրագրի ավարտին Վանաձորում շուրջօրյա ջրամատակարարումը հնարավոր կլինի:	Համայնքի ներկայացուցիչ	Վանաձորի ջրամատակարարումն իրականացվելու է լիարժեք գործող օղակաձև սնուցման համակարգով և արդեն 2020 թվականին քաղաքի բոլոր թաղամասերը կունենան շուրջօրյա ջրամատակարարում:	Բերնհարդ Ֆիշեր

Համայնքի ներկայացուցիչը մասնակիցներին իրազեկեց, որ առջևում կա ևս 1 հանրային լսում, և բնակիչները իրենց հուզող հարցերը և առաջարկությունները կարող են դեռ ներկայացնել Վանաձորի համայնքապետարան: Ապա նա ամփոփեց հանրային լսումը՝ արտահայտելով համայնքի դրական կարծիքը:

Քննարկումները վարեց լսումների պատասխանատու
ՀՀ Լոռու մարզի Վանաձոր համայնքի
Հանրային կապերի, լրատվության
և արարողակարգի բաժնի պետ Հովսեփյան Էդիկ

Քննարկումների արձանագրեց՝ Միքայել Թևոսյան

Ձեռնարկողի ներկայացուցիչ՝ Բերնհարդ Ֆիշեր

SRP
Schneider + Partner

Լոռու մարզի
Վանաձոր քաղաքում կայացած
Հանրային լսումների արձանագրություն

Պայմանագիր՝	Համայնքային Ենթակառուցվածքի Ծրագիր (ՀԵԾ) II, Փուլ 3 – Հայաստան, Ջրամատակարարում և ջրահեռացում - BMZ No. 2013 66 343 SRP No: S.09.9035 A/B
Թեմա՝	Լոտ 2/1. «Լոռի-ջրմուղկոյուղի» ՓԲԸ սպասարկման տարածքի ջրամատակարարման ցանցի և ջրահեռացման համակարգի նախագծում, տեխնիկական և հեղինակային հսկողություն, ՀԵԾ II-Փ3-Լ
Արձանագրության համարը՝	Հանրային լսումներ Վանաձորում, N 02-Լ
Վայրը՝	Վանաձորի քաղաքապետարանի նիստերի դահլիճ
Ամիս/ամսաթիվը, ժամը՝	25.07.2017թ., ժ.՝ 11:00
Մասնակիցներ՝	• Արսեն Դարբինյան, Լոռու փոխմարզպետ • Արտյոմ Գրիգորյան, Վանաձոր համայնքի ղեկավարի առաջին տեղակալ • Արման Բերնեցյան, Վանաձորի համայնքի ղեկավարի տեղակալ • Սուրեն Աբովյան, Վանաձոր համայնքի ճՆՔ բաժնի պետ • Արթուր Օհանյան, Վանաձոր համայնքի Աշխատակազմի քարտուղար • Սուրեն Հարությունյան, Ձորագյուղ համայնքի ղեկավար • Գագիկ Ղարաջյան, Հորարձի համայնքի ղեկավար • Արթուր Ներկարարյան, Ամրակից համայնքի ղեկավար • Աշոտ Աշուղյան, Գուգարք համայնքի ղեկավար • Արայիկ Գևորգյան, Անտառամուտ համայնքի ղեկավար • Միհեր Գևորգյան, Կուրթան համայնքի ղեկավար • Արևիկ Լոքյան, ՎՊՀ բոլեջի տնօրեն, Վանաձորի Ավագանու անդամ • Հրանտ Այվազյան, Վանաձորի Ավագանու անդամ, «ԼՋԿ» ՀԿ • Վահագն Ավագյան, Վանաձորի Ավագանու անդամ • Նունե Խաչատրյան, Լոռու մարզպետարան • Աննա Գասպարյան, Լոռու մարզպետարան • Լիլիա Դավթյան, Վանաձորի համայնքապետարան • Անդրանիկ Սուքիասյան, «ՔԾՓԿ» ԲԲԸ ճարտարագետ • Լեյլա Միհասյան, «Բնապահպանություն» ԲՀԿ նախագահ • Մենուա Բրուտյան, «Լոռեցիների միավորում» ՀԿ • Հովհաննես Ղազարյան, «Ոսկե միջին» ՀԿ • Հերմինե Գասպարյան, «ԿՀ կենտրոն» ՔՀՋ ՀԿ • Լուսինե Սարգսյան, «Լոռի» հեռուստաընկերություն • Շահանե Արսենյան, ՕԻԳ Բնապահպանության փորձագետ • Բերնհարդ Ֆիշեր, SRP Համընդհանուր ծրագրի ղեկավար • Տաթև Հարությունյան, SRP Ծրագրի օգնական • Կարեն Անտոնյան, SRP Ջրամատակարարման և ջրահեռացման փորձագետ

*Գ = Գործողություն Ո = Որոշում S = Տեղեկատվություն

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SRP Schneider + Partner

Լոռու մարզի
Վանաձոր քաղաքում կայացած
Հանրային լսումների արձանագրություն

	• Գևորգ Խաչատրյան, SRP Ջրամատակարարման և ջրահեռացման փորձագետ • Միքայել Թևոսյան, SRP Սոցիալական և բնապահպանության փորձագետ
Տրամադրվում է՝	Մասնակիցներին

No.	Նկարագրություն	Տեսակը*	Պատասխանատու տու/ժամկետ
0	**Ներածություն**		
	Փոխմարզպետ Ա.Դարբինյանը հանդես եկավ բացման խոսքով՝ ներկայացնելով ծրագիրը և լսումների առարկան: Ապա խոսքը տրամադրվեց խորհրդատուի ծրագրի ղեկավարին:	S	
1	**Ծրագրի ներկայացում.**		
	Համընդհանուր ծրագրի ղեկավար Բերնհարդ Ֆիշերը և սոցիալական և բնապահպանության փորձագետ Միքայել Թևոսյանը ներկայացրեցին հետևյալ տեղեկատվությունը, որն ուղեկցվում էր սույն արձանագրությանը կից պրեզենտացիայի նյութերով. 1. Ընդհանուր տեղեկատվություն 2. Ծրագրի շրջանակները (ընդգրկված բաղադրիչները) 3. Ծրագրի ժամանակացույցը 4. Բնակչության համար դրական ազդեցությունները 5. Քննարկում/հարցեր/պատասխաններ	S	
2	**Հանրային լսումների մասնակիցների կողմից բարձրացված հարցեր.**		
2.1	**Ջրի խողովակաշարերի մոնտաժում և խրամուղիների նախկին ծածկույթների վերականգնում (Արտյոմ Գրիգորյան, Վանաձոր համայնքի ղեկավարի առաջին տեղակալ)** Համայնքապետի առաջին տեղակալը հայտնեց այն մասին, որ ծրագրի նախկին փուլերում շեշտը դրվել է ջրագծերի հնարավորինս մեծ ծավալի մոնտաժման վրա՝ հաշվի չառնելով փորված խրամուղիների վերականգնման ծավալները: Առաջարկվեց աշխատանքային ծավալների մշակման ժամանակ հաշվի առնել փորված խրամուղիների գոյություն ունեցող ծածկույթների լիարժեք վերականգնման անհրաժեշտությունը:	S	
2.2	**Ջրամատակարարման իրավիճակը Տարոն թաղամասերում (Վահագն Ավագյան, Վանաձորի Ավագանու անդամ)** Առաջին հարցը վերաբերում էր Տարոն թաղամասում ջրամատակարարման և ջրահեռացման վատթար իրավիճակին, որը որոշակիորեն բարելավվել է ծրագրի առաջին և երկրորդ փուլերի իրականացումից հետո: Այստեղ հաճախակի են ջրի ճնշման անկումը և ջրամատակարարման ընդհատումները: Իսկ թվով 54 բազմաբնակարան շենքեր գոյություն ունեցող փականային հորերից մինչև շենքի կանգնակ ին մետաղական միացումների փոխարինման կարիք ունեն: Այլ մասնակիցներ ևս միացան հարցի քննարկմանը՝ կարևորելով այլ	S	

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	աղբյուրներից Տարոն թաղամասին պահանջվող ջրաքանակի ապահովումը: Խորհրդատուի կողմից պարզաբանում տրվեց այն մասին, որ այս թաղամասում բազմաբնակարան շենքերի միացումների հարցը դուրս է այս փուլի Խորհրդատուին տրված առաջադրանքից: Իսկ լրացուցիչ ջրաքանակի խնդիրը նախատեսվում էր լուծել սնուցման օղակաձև համակարգի Նովոսելցովո ջրատար-Տարոն2 ջրամբար հատվածի կառուցմամբ, որը, սակայն, Պատվիրատուի հրահանգով չեղարկվել է:		
2.3	**Նախորդ փուլերի՝ ճանապարհների վերականգնման մասով բացասական փորձը (Հովհաննես Ղազարյան, «Ոսկե միջին» ՀԿ)** Նախկին փուլերում փորված խրամուղիների փակելուց հետո ճանապարների վերջնական վերականգնումն իրականացվել է երկարատև ընդմիջումներից հետո, ինչը բազմաթիվ անհարմարություններ է պատճառել այդ տարածքներում ապրող բնակիչներին: Այդ պատճառով առաջարկվեց ծրագրի այս փուլի համար մշակել Ազդեցությունների կառավարման պլան և հետևել դրա պատշաճ իրագործմանը: Ազդեցությունների կառավարման պլանը պետք է ներկայացվի նաև համապատասխան համայնքային իշխանություններին:	S Գ	Խորհրդատու
2.4	**Նախորդ փուլերի վերաբերյալ հաշվետվությունների ստացում (Մենուա Բրուտյան, «Լոռեցիների միավորում» ՀԿ)** Մասնակիցը պահանջեց նախորդ փուլերի ավարտական հաշվետվությունները, որպեսզի հնարավոր լինի ճիշտ ուղղությամբ հասցեագրել առկա խնդիրները և բողոքները, և սույն ծրագրային փուլի լսումները որպես առիթ չօգտագործել այդ նպատակով: Մասնակիցները դրական գնահատեցին ներկայիս փուլի վաղ շրջանից իսկ հանրությանը և տեղական ինքնակառավարման մարմիններին իրազեկ պահելու նախաձեռնությունը:	Գ	Համայնքային իշխանությունները և Պատվիրատու
2.5	**Հոբարձու ջրամբարից ցանցի սնուցման խնդիր (Գագիկ Ղարաջյան, Հոբարձի համայնքի ղեկավար)** Համայնքի ղեկավարի կողմից բարձրացվեց ցանցը սնող խողովակաշարի փոքր տրամագծի խնդիրը: Խորհրդատուն տեղեկացրեց, որ այս փուլում ամբողջությամբ ուսումնասիրվել է Հոբարձի գյուղի ջրամատակարարման խնդիրը, և համապատասխան նախագծային լուծումներ են տրվել:	Գ	Խորհրդատու
2.6	**Տարոն թաղամասի ջրամատակարարման խնդիր (Սուրեն Աբովյան, Վանաձոր համայնքի ՃևՔ բաժնի պետ)** Այս խնդիրը մեկ անգամ ևս բարձրացվեց և առաջարկվեց Նովոսելցովո-Տարոն 2 ջրամբար սնուցող գծի վերակտիվացման դեպքում այն իրականացնել Փամբակ գետի հարավային կողմով և Թևոսյան փողոցով (Նարեկացի փողոցի նորակառույց ասֆալտը չքանդելու համար):		

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2.7	**Գուգարք գյուղի ջրաղբյուրներ (Աշոտ Աշուղյան, Գուգարք համայնքի ղեկավար)** Համայնքի ղեկավարը բարձրացրեց գյուղի սնուցման աղբյուրների հարցը: Խորհրդատուն տեղեկացրեց, որ գյուղը սնուցվելու է երեք տարբեր ջրամբարներից (Դիմաց, Գուգարք 1, Գուգարք 2), որոնք ջուր են ստանալու Ջրի մաքրման կայանի ջրամբարից, որի էլակետային աղբյուր են հանդիսանում «Սպիտակ ջուր» և «Ղադրի ձոր» ջրընդունիչները: Գյուղապետը նշեց, որ գյուղի որոշակի հատված նախկինում ջուր է ստացել Նովոսելցովո ջրաղբյուրներից, որոնք ջրի որակի առումով անհամեմատ ավելի նախընտրելի են: Խորհրդատուն լրացրեց, որ Նովոսելցովո ջրաղբյուրների նիշը չի բավարարում գյուղը սնուցող ջրամբարները ջրով ապահովելու համար:	S	
2.8	**Լեռնապատ գյուղի ջրամատակարում (Սարիբեկ Աբազյան, Լեռնապատ համայնքի ղեկավար)** Համայնքի ղեկավարը կարծիք հայտնեց Հին Լեռնապատի ջրամբարը պոմպի միջոցով ջրալցման նպատակահարմարության վերաբերյալ որպես ինքնահոս եղանակով սնուցման այլընտրանք առաջարկելով գոյություն ունեցող ավելի բարձրադիր աղբյուրների ներգրավումը: Հին Լեռնապատի ջրամատակարարման հարցը ծրագրի այս փուլում ներառված չէ, այդ պատճառով ուսումնասիրություններ չեն տարվել: Սակայն ներկայիս փուլով նախատեսվում է Նոր Լեռնապատի ցանցի, գոյություն ունեցող ջրամբարի և սնուցող խողովակաշարի վերականգնումը:		
2.9	**Ձորագյուղ գյուղի ջրամատակարում (Սուրեն Հարությունյան, Ձորագյուղ համայնքի ղեկավար)** Գյուղապետի կողմից առաջարկվեց շինարարական աշխատանքների ընթացքում առաջացած ավելորդ գրունտով հարթեցնել գյուղի ճանապարհները: Խորհրդատուն պատասխանեց, որ ծրագրով նախատեսվում է միայն փորված խրամուղիների վերականգնումը:		
2.10	**Կուրթան գյուղի ջրամատակարում (Մհեր Գևորգյան, Կուրթան համայնքի ղեկավար)** Նախկին փուլերով կառուցված ջրամբարի ջրթափ խողովակից հոսող ջուրը լցվում է փողոցի երթևեկելի մաս: Առաջարկվեց ջրթափ խողովակը երկարացնել մինչև մոտակա ջրագեռացման առվակը: Խորհրդատուն կստուգի իրավիճակը և լուծում կառաջարկի:	Գ	Խորհրդատու
2.11	**Ամրակից գյուղի ջրամատակարում (Արթուր Ներկարարյան, Ամրակից համայնքի ղեկավար)** Համայնքի ղեկավարը նշեց, որ Ամրակից գյուղի ջրամատակարարման ներկայիս վիճակը բավականին բարդ է: Խորհրդատուն հաստատեց, որ ծրագրի այս փուլով նախատեսվում է գործարկել նորակառույց ջրամբարը և վերականգնել բաշխիչ ցանցը:	S	

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Հանրային լսումների արձանագրություն

2.12	**Ծրագրի իրականացման ընթացքին հետևելու նպատակով աշխատանքային խմբի ստեղծում (Հրանտ Այվազյան, Վանաձորի ավագանու անդամ, «Լոռու զարգացման կենտրոն» ՀԿ)** Առաջարկ ներկայացվեց աշխատանքային խմբի ստեղծման վերաբերյալ, որը ամսական կամ եռամսյակային հանդիպումների միջոցով կկարողանա հետևել ծրագրի իրականացման ընթացքին, իրազեկել հանրությանը և նպաստել բնակչության հետ առաջացող խնդիրների լուծմանը:	S	
3	**Հանրային լսումների փակում** Երկար և ինտենսիվ քննարկումներից հետո փոխմարզպետը փակեց Հանրային լսումները և շնորհակալություն հայտնեց բոլոր մասնակիցներին:		

Լոռու մարզպետարան

Ա.Դարբինյան _____

Վանաձորի համայնքապետարան

Ա.Գրիգորյան _____

Խորհրդատու

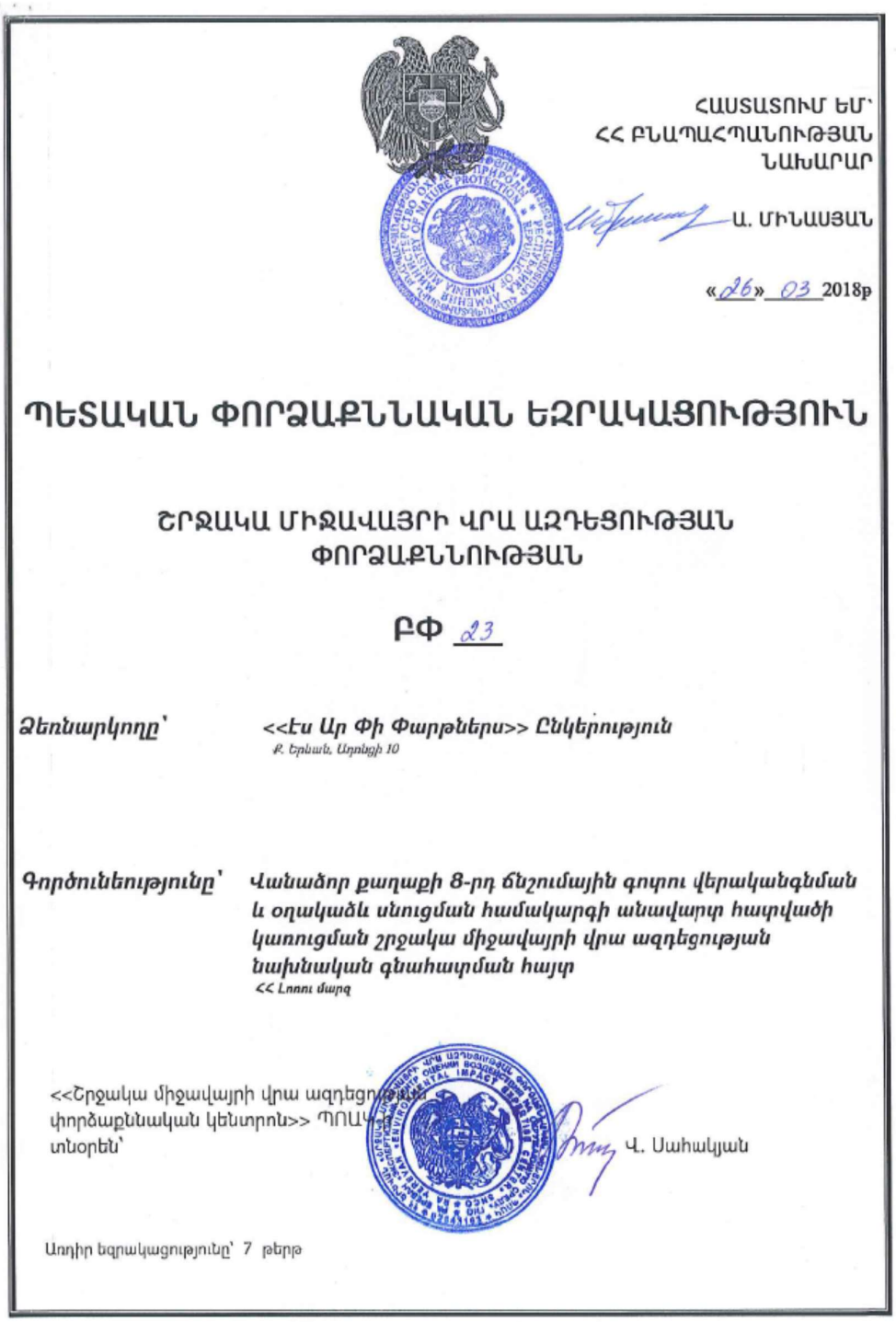
Բ.Ֆիշեր _____

Առդիրներ
1 - Մասնակիցների ցանկ
2 – Խորհրդատուի կողմից պատրաստված պրեզենտացիա

*Գ = Գործողություն Ո = Որոշում S = Տեղեկատվություն

Photos of the public consultations:

ANNEX 5:
State Environmental Expertise Conclusion



ՀԱՍՏԱՏՈՒՄ ԵՄ՝
ՀՀ ԲՆԱՊԱՀՊԱՆՈՒԹՅԱՆ
ՆԱԽԱՐԱՐ

Ա. ՄԻՆԱՍՅԱՆ

«26» 03 2018թ

ՊԵՏԱԿԱՆ ՓՈՐՁԱՔՆՆԱԿԱՆ ԵԶՐԱԿԱՑՈՒԹՅՈՒՆ

ՇՐՋԱԿԱ ՄԻՋԱՎԱՅՐԻ ՎՐԱ ԱԶԴԵՑՈՒԹՅԱՆ
ՓՈՐՁԱՔՆՆՈՒԹՅԱՆ

ԲՓ 23

Ձեռնարկողը՝ *<<Էս Ար Փի Փարթներս>> Ընկերություն*
ք. Երևան, Արոնցի 10

Գործունեությունը՝ *Վանաձոր քաղաքի 8-րդ ճնշումային գոտու վերականգնման և օղակաձև սնուցման համակարգի անավարտ հատվածի կառուցման շրջակա միջավայրի վրա ազդեցության նախնական գնահատման հայտ*
ՀՀ Լոռու մարզ

<<Շրջակա միջավայրի վրա ազդեցության
փորձաքննական կենտրոն>> ՊՈԱԿ-ի
տնօրեն՝ Վ. Սահակյան

Առդիր եզրակացությունը՝ 7 թերթ

ՊԵՏԱԿԱՆ ՓՈՐՁԱՔՆՆԱԿԱՆ ԵԶՐԱԿԱՑՈՒԹՅՈՒՆ
ՇՐՋԱԿԱ ՄԻՋԱՎԱՅՐԻ ՎՐԱ ԱԶԴԵՑՈՒԹՅԱՆ ՓՈՐՁԱՔՆՆՈՒԹՅՈՒՆ

թիվ ԲՓ 23

‘26’ 03 2018թ.

<<Վանաձոր քաղաքի 8-րդ ճնշումային գոտու վերականգնում և օղակաձև սնուցման համակարգի անավարտ հատվածի կառուցում>> շրջակա միջավայրի վրա ազդեցության նախնական գնահատման հայտ

Պատվիրատու՝	<<Էս Ար Փի Փարթներս>> ՍՊԸ
Նախագծող՝	<<Էս Ար Փի Փարթներս>> ՍՊԸ
Ներկայացված նյութեր՝	Նախնական գնահատման հայտ <Գ> կատեգորիա
Տեղադրման վայրը՝	ՀՀ Լոռու մարզ, ք. Վանաձոր

Ներկայիս Վանաձորի ջրամատակարարման համակարգը բաղկացած է մատակարարման և բաշխման մի քանի գոտիներից, որոնց մատակարարումն իրականացվում է քաղաք մտնող յոթ առանձին աղբյուրներից: Ջուրը ստացվում է ինչպես ստորգետնյա աղբյուրներից, այնպես էլ մակերևութային ջրընդունիչներից, իսկ յուրաքանչյուր աղբյուր ուներ իր մատակարարման հիմնական գոտին: Ջրակորուստները մեծ են, արտադրված ջուրը օրական միայն մի քանի ժամվա համար է բավարար, իսկ քաղաքի բարձրադիր մասերի և շատ շենքերի մատակարարման համար պահանջվում է տեղային պոմպերի շահագործում: Այս ծանր խնդրի լուծման համար կազմվել է ծրագիր, որի նպատակը «Լոռի-ջրմուղկոյուղի» ՓԲԸ-ի սպասարկման տարածքներում պատշաճ և հուսալի ջրամատակարարման և ջրահեռացման ապահովումն է:

2003թ.-ին Ծրագրի իրականացման տարածքներում կայուն ջրամատակարարման և ջրահեռացման իրականացման հնարավորությունների հետազոտման և գլխավոր պլանի մշակման ժամանակ, ինչպես նաև նախագծման 1-ի փուլ ժամանակ (2007-2008թթ.), պլանավորվել և իրականացվել են հետևյալ ծրագրային հիմնահարցերը.

- ջրամատակարարման համակարգի բաղադրիչների վերականգնում, ջրաղբյուրներից բավարար ջրաքանակների ապահովում, գլխավոր ջրատարների վերականգնում և նոր բաշխիչ ցանցերի կառուցման միջոցով տեխնիկական ջրակորուստների նվազեցում,
- վերահսկելի ճնշումային գոտիների ստեղծմամբ, յուրաքանչյուր գոտին առանձին ջրամբարի միջոցով մատակարարման, ինչպես նաև ջրաչափերի տեղադրման և սնուցող ջրատարներին ուղղիղ միացումների անջատման շնորհիվ կառավարելի համակարգի ստեղծում,
- ջրմուղների կառավարման և շահագործման հմտությունների բարձրացում, առևտրային կորուստների նվազեցում և ջրամատակարարման համակարգերի

վերականգնման ժամանակ ու դրանից հետո ենթակառուցվածքի կայուն շահագործման և սպասարկման պատշաճ ապահովում,

- կոյուղու ցանցի կառուցում և կոյուղաջրերի հեռացման ապահովում, տների նկուղներում և այլուր կոյուղու հետևանքով հիգիենիկ խնդիրներից խուսափում,
- կոյուղու նոր մաքրման կայանների կառուցում՝ սպասարկման տարածքից կոյուղաջրերի մաքրման համար:

Առաջին փուլի ծրագրային միջոցառումները բաժանված են եղել հետևյալ բաղադրիչների.

1. անհապաղ միջոցառումներ,
2. ջրաչափերի մատակարարում,
3. փոխադրամիջոցների, սարքերի, գործիքների և այլ նյութերի մատակարարում,
4. արհեստանոցների, վարչական շենքերի և ավտոտնակների վերականգնում,
5. ջրամատակարարման և ջրահեռացման վերականգնում:

Համաձայն Ծրագրի փուլ 1-ի ջրամատակարարման և ջրահեռացման համակարգերի վերականգնման աշխատանքները ներառել են հետևյալ հիմնական բաղադրիչները.

- ջրընդունիչների (կապտաժների) վերականգնում,
- DN 1000-ից մինչև DN 200 տրամագծով գլխավոր ջրատարների համակարգի վերականգնում և ընդարձակում,
- փոքր պոմպակայանների կառուցում,
- քլորակայանների կառուցում և վերականգնում,
- երկաթբետոնե նոր ՕԿՋ-ների կառուցում և վերականգնում,
- մակերևութային ջրերի մշակման համար խմելու ջրի մաքրման կայանի ժամանակավոր վերականգնում,
- վանաձորի գոյություն ունեցող ջրամատակարարման բաշխիչ ցանցի բաժանում ճնշումային գոտիների,
- գոտի առ գոտի և շրջաններով Վանաձորի նոր բաշխիչ ցանցի և տնային միացումների 55%-ի կառուցում, ներառում է DN 250 - DN 50 տրամագծով ջրագծերը և տնային միացումները: Այնուամենայնիվ, 40%-ը միայն ոչ պարտադիր էր և կախված էր առկա միջոցներից,
- Շահումյան, Դարպաս, Լեռնապատ գյուղերի նոր բաշխիչ ցանցերի և տնային միացումների կառուցում, ներառում է DN 125 - DN 32 տրամագծով ջրագծերը և տնային միացումները,
- գյուղերի ջրամբարների միացում գլխավոր ջրատարների համակարգին և բաշխիչ ցանցերին, որոնք բաղկացած են DN 125 - DN 50 տրամագծով ջրագծերից,
- Նովոսելցովոյի ջրաղբյուրների ջրհավաք տարածքի համար որպես ջրապաշտպանական միջոցներ դրենաժային կանալի և խողովակապատ դրենաժի վերականգնում (միայն ոչ պարտադիր),
- կոյուղու որոշ հատվածների վերանորոգում:

Այսպիսով, Ծրագրի առաջին փուլի իրականացման արդյունում կանխատեսվում է տեխնիկական կորուստների որոշակի չափի կրճատում: Փուլ 2-ի ծրագրային միջոցառումները բաժանված են եղել հետևյալ բաղադրիչների.

1. ***Փուլ 1.***

- 3 ջրամբարների կառուցում և 1-ի վերականգնում,
- 50-400մմ ներքին տրամագծի 53.0կմ ջրի բաշխիչ խողովակաշարերի կառուցում՝ հիմնականում թիվ 2, 9, 10, 11 և 12 ճնշումային գոտիներում,
- մոտ 2.000 տնային միացումների և փոխկապակցումների իրականացում:

2. Փուլ 2.

- 50-400մմ ներքին տրամագծի 84.0կմ ջրի բաշխիչ խողովակաշարերի կառուցում՝ հիմնականում թիվ 6.1, 6.2 և 7, փոքր ծավալներով նաև թիվ 8, 9, 11, 12 և 13 ճնշումային գոտիներում,
- մոտ 7.000 տնային միացումների և փոխկապակցումների իրականացում,
- Վանաձորի թվով 17 ընտրված հատվածներում 3.400մ կոյուղագծերի վերակառուցում, ներառյալ գոյություն ունեցող տնային միացումները և դիտահորերը:

Բաշխիչ ցանցերի փոխարինումը հիմնականում սահմանափակվել է Վանաձոր քաղաքով: Առաջին փուլի ավարտից հետո համակարգի դուրս մնացած հատվածների վիճակը մնում էր վատթար (ներառյալ ոչ պարտադիր աշխատանքները), քանի որ դրանք ոչ ամբողջությամբ էին ընդգրկվել Ծրագրի երկրորդ փուլի շրջանակում: Մասնավորապես, խոսքը վերաբերում է Վանաձորի 8-րդ ճնշումային գոտուն և Նովոսելցովո ջրատարի երկայնքով տեղակայված 13 գյուղական համայնքներին: Համակարգի հենց այս հատվածներն են ընդգրկվել երրորդ փուլի մեջ: Նախատեսվող Փաթեթ Ա-ն ներառում է հետևյալ աշխատանքները.

1. Թիվ 8 ճնշումային գոտու վերականգնում՝ ծրագրային տարածքի բնակչության և ջրապահանջարկի կանխատեսում, ջրամատակարարման ընթացիկ վիճակի գնահատում, հիդրավլիկական հաշվարկներ, գոյություն ունեցող ջրամբարների ծավալների գնահատում, աշխատանքների իրականացում,
2. Նովոսելցովո-Տարոն 2 ջրի փոխադրման նոր համակարգի միացումներ:

Ներկայացված նախատեսվող գործունեության նպատակն է վերակառուցել Վանաձոր քաղաքի ջրամատակարարման ցանցը և ապահովել կայուն, հուսալի ջրամատակարարում: Նախնական գնահատման հայտի ներկայացված փաթեթում ներառված են հիմնականում Վանաձորի ջրամատակարարման համակարգի բաղադրիչները՝ թիվ 8 ճնշումային գոտու վերակառուցման աշխատանքները և բացակայող հատվածների կառուցումը: Համաձայն, որի նախատեսվում է բաշխիչ համակարգերի նախագծում մինչև 350մմ ներքին տրամագծով խողովակաշարերի համար դիտարկվում են ԲԽՊԷ (HDPE), իսկ 400մմ և ավելի մեծ տրամագծով խողովակաշարերի համար՝ցեմենտե մեկուսացմամբ և արտաքին պոլիէթիլենե ծածկույթով կռելի թուջից խողովակները: Նախատեսվող գործունեության համար օգտագործվող բարձր խտության պոլիէթիլենե խողովակները (HDPE) պետք է արտադրված լինեն PE100 նյութից: Ընդ որում նախագծման համար հիմք է ընդունվել այն, որ պետք է գործածվեն ստանդարտ չափի գործակից (ՍՉԳ) 17 ունեցող խողովակները, քանի որ դրանք, համաձայն DIN 8074-ի դրանց անվտանգության գործակիցը կազմում է 1.25 և ունեն 10 բար ապահով աշխատանքային (100.0մ) ջրի ճնշում: 250մմ-ից մեծ տրամագծով փականները պետք է լինեն դարձկեն փականներ: Բացի այդ 250մմ և փոքր տրամագծով փականները պետք է լինեն մուտքի փականներ, իսկ կարճ տիպի փականները պետք է կիրառվեն ըստ անհրաժեշտության՝ տեղի սահմանափակության դեպքում (օրինակ՝ բետոնային հորերում): Ըստ հայտի խողովակաշարերի մոնտաժման աշխատանքների ժամանակ նախատեսվում է խողովակաշարերը կառուցել ճանապարհներում կամ դրանց երկայնքով, ինչպես նաև արահետներով՝ երթևեկելի մասի տակ, ճամփեզրից մոտ 1,2մ հեռավորության վրա: Վանաձորի թիվ 8 ճնշումային գոտու բաշխիչ համակարգի կողմից սպասարկվող տարածքը հիմնականում կազմված է գեոդեզիական մեծ տարբերություններ ունեցող հատվածներից: Այս պատճառով պահանջվում է ճնշումային գոտու խիստ տարբերակված համակարգի իրականացում, որով ջրատարերում առավելագույն ճնշումները պետք է համապատասխանեցվեն անհաժեշտ պահանջներին՝ խուսափելով շենքերի ներքին համակարգերում գերճնշման

առաջացումից և սպառողների կողմից ջրի ոչ նպատակային օգտագործումից և ջրակորուստներից, որը և հաշվի է առվել նոր ցանցի նախագծային փաստաթղթերում: Համաձայն, որի գոտում ջրի ճնշումը պետք է համապատասխանի քաղաքաշինական ձևին այնքանով, որքանով տեխնիկապես հնարավոր է սահմանափակելու բարձրահարկ շենքերի համար բուստերային պոմպերի անհրաժեշտությունն և առավելագույնս տնտեսելու պոմպամղման ծախսերը: Նախատեսվող աշխատանքները իրականացվելու են շինարարական տեխնիկայի օգտագործմամբ, իսկ որոշ հատվածներում՝ նաև ձեռքի աշխատանքով: Աշխատանքները ցերեկային ժամերին կազմակերպելիս տրթևեկության, աշխատանքների ժամանակացույցը և պայմանները կհամաձայնեցվեն Վանաձորի համայնքապետարանի համապատասխան բաժինների հետ: Իսկ աշխատանքների իրականացման ժամանակ առաջացած շինարարական աղբը կհեռացվի Վանաձորից 7.0կմ հեռավորության վրա գտնվող աղբավայր՝ համապատասխան օգտագործման թույլտվությամբ: Աշխատանքները նախատեսվում է սկսել 2019թ.-ի գարնանը և ավարտել այդ նույն տարվա աշնանը: Բնառեսուրսներից օգտագործվելու է միայն ջուր աշխատողների խմելու տնտեսական նպատակների և աշխատանքային հարթակների ջրցանի համար: Ըստ նախնական գնահատման խմելու տնտեսական նպատակների համար կպահանջվի 225.0մ³ թարմ ջուր, ջրցանի համար՝ 110.0մ³, ընդամենը աշխատանքների ամբողջ ընթացքում՝ 335.0մ³:

Համաձայն նախնական գնահատման հայտի՝ ներկայացվող գործունեության իրականացման ժամանակ, բնապահպանական ռիսկերը հիմնականում կապված են շինարարական աշխատանքների հետ, դրանք են.

- հողային աշխատանքների ընթացքում առաջացող փոշի,

- շինարարական տեխնիկայի շահագործման արդյուքում առաջացող աղմուկ,

- շինարարական տեխնիկայի և տրանսպորտային միջոցների շահագործման ժամանակ օգտագործվող վառելիքի այրման արգասիքները,

- տրանսպորտային երթևեկության ինտենսիվացում:

Թվարկված գործընթացների ազդեցությունը նվազեցնելու և փոխհատուցելու նպատակով սույն հայտում՝ ըստ ազդեցության ուղղությունների, բերված են հետևյալ հիմնական բնապահպանական միջոցառումները: Օդային ավազանը աղտոտումից պահպանելու համար նախատեսված են.

- սորուն շինարարական նյութերը՝ ցեմենտը, ավազը և այլն, պահեստավորել կոնտեյներում կամ ծածկի տակ,

- տրանսպորտային միջոցների կառավարման օպտիմալացում՝ խուսափելու համար բեռնատար փոխադրամիջոցների ավելորդ երթևեկությունից,

- շինարարկան աշխատանքների ժամանակ փոշին նստեցնելու համար իրականացնել տարածքի ջրցան և հողային զանգվածի խոնավացում,

- նյութերի տեղափոխման ժամանակ բեռնատարի թափքը ծածկել թաղանթով,

- կարգաբերել մեքենաները և շարժիչները պատշաճ կերպով, համաձայն սարքավորումների տեխնիկական անձնագրերի,

- բոլոր տրանսպորտային միջոցների և սարքավորումների կանոնավոր տեխնիկական սպասարկում համապատասխան կենտրոններում:

Ջրային ռեսուրսների արդյունավետ օգտագործման և տեղանքի ջրային հոսքերը լրացուցիչ աղտոտումից զերծ պահելու նպատակով նախատեսվում է

- շինարարական հարթակների ջրցանը իրականացնել այնպես, որ չառաջանան

ջրային հոսքեր,

- շինարարական և տրանսպորտային միջոցների լվացումն և սպասարկումն անհրաժեշտ է իրականացնել շինհրապարակից դուրս՝ Վանաձոր քաղաքի մասնագիտացված լվացման կետերում և տեխնիկական սպասարկման կայաններում,
- շինարարական անձնակազմի կենցաղային սպասարկումը իրականացնել ջրմուղ կոյուղու Վանաձորի մասնաճյուղի կենցաղային հնարավորությունների սահմաններում:

Հողածածկի պահպանության համար նախատեսվում են.

- վառելիքի և քսայուղերի պահեստները կտեղադրել հատուկ հատկացված տեղամասում՝ բետոնապատ մակերեսի վրա,
- նվազեցնել հողի արտաքին շերտի հեռացումը ռացիոնալ կերպով կազմակերպելով աշխատանքները,
- հանված հողի արտաքին շերտը պահեստավորել հատուկ վայրում, բացառելով մակերևութային ջրերի հետ շփումը,
- աշխատանքների ավարտից հետո բարեկարգել տարածքները, օգտագործելով արդեն իսկ հանված հողը,
- շինարարության համար հատկացված տարածքի տարբեր մասերում տեղադրել աղբի հավաքման տարողությունները:

Ըստ նախնական գնահատման շինարարության ընթացքում կառաջանա 80.0-ից 85.0մ³ ծավալի շինաղբ, որը նախատեսվում է տեղափոխել Վանաձորի քաղաքապետարանի կողմից 7.0կմ հեռավորության վրա հատկացված վայր:

Աղմուկի մակարդակը նվազեցնելու համար նախատեսվում է բեռնատար փոխադրամիջոցների երթևեկությունն իրականացնել միայն ցերեկային ժամերին, հնարավոր դեպքերում օգտագործել ցածր ձայնային մեխանիկական սարքվորումներ՝ ձայնախլացուցիչներով:

Ընդհանրացնելով և վերլուծելով ներկայացված նախնական գնահատման հայտի փաստաթղթերը, ՀՀ բնապահպանության նախարարության համապատասխան ստորաբաժանումներից ստացված կարծիքները, իրականացված հանրային քննարկումների արդյունքները, ինչպես նաև փորձաքննական գործընթացում առաջարկությունների և դիտողությունների հիման վրա կատարված լրամշակումները կարելի է անել հետևյալ եզրահանգումները.

Շինարարական աշխատանքների իրականացման արդյունքում ակնկալվող հնարավոր բացասական ազդեցությունները կլինեն աննշան, կարճատև և տեղային: Դրանք կներառեն, սակայն չեն սահմանափակվի հետևյալով՝ մակերևութային ջրերի աղտոտում, հողի էրոզիա, որոնք առաջանում են հանված հողի, շինարարական թափոնների ոչ պատշաճ հեռացման/տեղադրման հետևանքով, կառուցման և վերակառուցման ընթացքում նավթամթերքի, յուղերի հնարավոր արտահոսք, օդի ժամանակավոր աղտոտում՝ կախված շինարարության ընթացքում բեռնատարների ինտենսիվ երթևեկությունից, փոսերի և խրամուղիների փորման ժամանակ տեղի բնակչությանն անհանգստություն պատճառող աղմուկ և վիբրացիա:

Շինարարության և շահագործման ընթացքում նախագծով նախատեսված միջոցառումների արդյունքում տարածքի աղտոտվածությունը՝ շրջակա միջավայրի բոլոր բաղադիչներով, կգտնվի թույլատրելի նորմերի սահմաններում: Նախնական հայտում ներկայացված են կեղտաջրերի հավաքման և հեռացման, աղբահեռացման, մթնոլորտի աղտոտվածության նվազեցման, աղմուկի մակարդակի, տարածքների վերականգնման և

բարեկարգման հարցերը: Նախատեսված են շրջակա միջավայրի բարելավմանն ուղղված բավարար միջոցառումներ: Բնապահպանական միջոցառումների նպատակն է նվազեցնել գործունեության ազդեցությունը շրջակա միջավայրի վրա և վերականգնել բոլոր այն տեղամասերի նախնական վիճակը, որոնք կենթարկվեն գործունեության ազդեցության: Շինարարական աշխատանքների ժամանակ առաջացող արտանետումները կունենան ժամանակավոր բնույթ և կարտանետվեն հարթակային աղբյուրներից: Իսկ ըստ ներկայացված մոնիթորինգի ծրագրի՝ շրջակա միջավայրի վրա ազդեցության մակարդակը իրատեսորեն գնահատելու նպատակով, նախատեսվում է աշխատանքների իրականացման ընթացքում կազմակերպել օդային ավազանի, ջրահոսքերի, աղմուկի մակարդակի, հողածածկի վիզուալ հսկողություն, իսկ աշխատանքների ավարտից հետո տեղամասերի վիճակը գնահատել շինարարական կապալառուի, խորհրդատուի և Վանաձորի համայնքնապետարանի կողմից ստեղծված աշխատախմբի կողմից:

Նոր կառուցվող ջրագծերի և օրվա կարգավորման ջրամբարի վերանորոգման աշխատանքներից ակնկալվող դրական բնապահպանական և սոցիալական ազդեցություններն իրենց բնույթով կլինեն երկարատև՝ նպաստելով ազդակիր համայնքի բնակչության սոցիալական և տնտեսական բարեկեցության բարելավմանը: Ներկայացված մոնիթորինգի իրականացման պլանը հնարավորություն կտա վերահսկելու նախատեսված միջոցառումների իրականացումը:

Ծրագիրը նպատակաուղղված է ապահովել կայուն և անխափան ջրամատակարարում, որը իր հերթին դրական ազդեցություն կունենա բվնակչության կենսամակարդակի վրա: Բացի այդ, կրճատելով ջրային կորուստները, ծրագիրը կնպաստի ջրային ռեսուրսների ավելի նպատակային և խնայողական օգտագործմանը: Արդյունքում նախատեսվող գործունեության իրականացմամբ պայմանավորված դրական սոցիալ-տնտեսական ազդեցությունները զգալիորեն կգերակշռեն այն բնապահպանական ռիսկերը, որոնք կապված են աշխատանքների իրականացման հետ:

Նշեմ նաև, որ համաձայն <<Շրջակա միջավայրի վրա ազդեցության գնահատման և փորձաքննության մասին>> օրենքի հոդված 20-ի 7-րդ կետի՝ փորձաքննական եզրակացությունը կորցնում է ուժը, եթե նախատեսվող գործունեության իրականացումը չի սկսվում փորձաքննական եզրակացության տրվելուց հետո՝ մեկ տարվա ընթացքում:

Փորձաքննական պահանջներ

1. Մինչ գործունեության իրականացումն անհրաժեշտ է ՀՀ օրենսդրությամբ սահմանված կարգով ստանալ համապատասխան համաձայնություններ և թույլտվություններ (սեփականաշնորհված տարածքներ, սեփականատերերի գույքի գնահատում և փոխհատուցում և այլն):
2. Շինարարական աշխատանքների իրականացման ընթացքում անհրաժեշտ է խստագույնս հետևել նախնական գնահատման հայտում ամրագրված բնապահպանական և սոցալական կառավարման ծրագրի պահանջներին, իսկ դրանց չբավարարման դեպքում ներառել լրացուցիչ միջոցառումներ՝ պարտադիր կարգով պահպանելով բնապահպանական, կառուցման և շահագործման հետ կապված բոլոր նորմերը:
3. Շինարարության իրականացման փուլում՝ շինարարական աշխատանքների կազմակերպման պլանի մշակման ընթացքում, ներկայացված նախագծային հիմնական լուծումներից շեղվելու դեպքում (որը կբերի շրջակա միջավայրի վրա զգալի ազդեցության) անհրաժեշտ է ՀՀ օրենսդրությամբ սահմանված կարգով ներկայացնել ՀՀ բնապահպանության նախարարություն՝ շրջակա միջավայրի վրա ազդեցության փորձաքննության:

4. Գործունեության ընթացքում իրականացվող շրջակա միջավայրի բաղադրիչների (ջուր, օդ, հող և այլն) մոնիթորինգի, հետնախագծային միջոցառումների իրականացման և վերլուծության հաշվետվությունը պետք է հասանելի լինի պետական շահագրգիռ մարմինների և հասարակայնության համար:
5. Շինարարության և շահագործման ընթացքում առաջացած շինաղբը (կենցաղային աղբ), ինչպես նաև ջրօգտագործումն անհրաժեշտ է իրականացնել ՀՀ օրենսդրությամբ սահմանված կարգով:
6. Անհրաժեշտ է շինանյութերի և թափոնների տեղափոխումն իրականացնել փակ ծածկ ունեցող բեռնատար ավտոմեքենաներով՝ քաղաքի և հարակից բնակելի տարածքում փոշու արտանետումները նվազեցնելու համար:
7. Նախատեսվող շինարարական աշխատանքներն անհրաժեշտ է իրականացնել և ավարտել Վանաձորի համայնքապետարանի հետ համաձայնեցված՝ սահմանված օրվա ժամին, բնակելի տարածքներում աղմուկի և երթևեկության առավելագույն բեռնվածության ավելացումից խուսափելու համար:

ԵԶՐԱԿԱՑՈՒԹՅՈՒՆ

<<Էս Ար Փի Փարթներս>> Ընկերության կողմից ներկայացված <<Վանաձոր քաղաքի 8-րդ ճնշումային գոտու վերականգնում և օղակաձև սնուցման համակարգի անավարտ հատվածի կառուցում>> շրջակա միջավայրի վրա ազդեցության նախնական գնահատման հայտի վերաբերյալ տրվում է դրական եզրակացություն՝ վերը նշված փորձաքննական պահանջների պարտադիր կատարման պայմանով:

Գլխավոր մասնագետ Կ. Մովսիսյան

English translation

(The Coat of Arms of the RA)

Approved
Minister of Nature Protection of the Republic of Armenia
(Seal of the Ministry of Nature Protection of the RA) (Signature) A. Minasyan

26.03.2018

STATE EXPERTISE CONCLUSION ON ENVIRONMENTAL IMPACT ASSESSMENT BP23

Initiator: "SRP Partners" Company
Yerevan, Adonts str 10

Activity: Application for Preliminary Assessment of Environmental Impact by Rehabilitation of the Pressure Zone 8 of the city of Vanadzor and Construction of the Unfinished Section of Ring Feeder System
Lori Region, RA

Director of "Center for the Environmental Impact Assessment" State Non-Commercial Organization (Seal and signature) V. Sahakyan

Attached conclusion – 7 pages

STATE EXPERTISE CONCLUSION

ON ENVIRONMENTAL IMPACT ASSESSMENT

Number BP23

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Application for Preliminary Assessment of Environmental Impact by Rehabilitation of the Pressure Zone 8 of the city of Vanadzor and Construction of the Unfinished Section of Ring Feeder System

Client:	"SRP Partners" LLC
Designer:	"SRP Partners" LLC
Submitted Materials:	Application for Preliminary Assessment Category "G"
Place of Installation:	Vanadzor, Lori Region, RA

The current water supply system in Vanadzor consists of several zones of water supply and distribution which are supplied from 7 separate sources entering the town. The water is supplied both from underground sources and surface water intakes and each of the sources has its main zone of water supply. The level of water loses is high and the water produced is enough for supplying only some hours during the day, also some upland parts of the town and many buildings need local pumps for water supply. To solve this tough problem a project is made up which aims to provide proper and safe water supply and sanitation in the service areas of "LORI WATER & SEWERAGE" CJSC.

In 2003 in the project implementation areas during the studies of the possibilities and general plan development as well as during the first phase (2007-2008) the following project issues were planned and implemented:

- Rehabilitation of the components of water supply system, providing enough water from water sources, rehabilitation of main pipelines and reduction of technical loses of water through construction of new distribution networks,
- Creation of controlled system through creation of controllable pressure zones, supplying each zone by a separate reservoir as well as installation of water meters and by division of feeder lines into direct connections.
- Improvement of water supply management and operation skills, reduction of commercial loses and during and after rehabilitation of water supply systems proper implementation of sustainable operation and maintenance of the substructure,

- To provide construction of the sewerage system and sanitation of sewage, to prevent hygienic problem resulted from the sewage in the house basements and elsewhere,
- Construction of new wastewater treatment plants for wastewater treatment in the service areas.

The project measures in the first phase are divided into the following components:

1. Urgent measures,
2. Supply of water meters,
3. Supply of vehicles, equipment, tools and other materials,
4. Rehabilitation of workshops, administrative buildings and garages,
5. Rehabilitation of water supply and sanitation systems.

According to the Phase 1 of the Project the rehabilitation of the water supply and sanitation systems include the following main components:

- Rehabilitation of water intakes (captation),
- Rehabilitation and expansion of the water main system with the diameter from DN 1000 to DN 200,
- Construction of small pumping stations,
- Rehabilitation and construction of chlorination stations,
- Construction and rehabilitation of new r/c daily regulation reservoirs,
- Temporary rehabilitation of the potable water treatment plant for the treatment of surface water,
- Division of the existing water supply distribution network in Vanadzor into pressure zones,
- Construction of 55% of the new distribution network and house connections in each zone and district of Vanadzor including water mains and house connection with the diameter of DN 250 – DN 50. However, 40% was non-compulsory and depended on the existing available resources,
- Construction of new distribution networks and house connections of the villages of Shahumyan, Darpas, Lernapat including water mains and house connections with the diameter of DN 125 –DN 32,
- Connection of reservoirs in the villages to the main pipeline system and distribution networks consisting of water mains with the diameter of DN 125- DN 32,
- Rehabilitation (only non-compulsory) of drainage channel and piped drainage as waterproof measures for the catchment areas of Novoseltsovo water sources,
- Renovation of some parts of sewage:

So, as a result of the implementation of the first phase of the Project some reduction of technical loses is anticipated. The Project measures for phase 2 are divided into the following components:

1. **Phase 1**
   - Construction of 3 reservoirs and rehabilitation of 1 reservoir,
   - Construction of 53.0 km of water distribution pipelines with the internal diameter of 50-400 mm mainly in pressure zones 2, 9, 10, 11 and 12,
   - Implementation of about 2000 house connections and interconnections.

2. **Phase 2**
   - Construction of 84.0 km of water distribution pipelines with the internal diameter of 50-400 mm mainly in pressure zones 6.1. 6.2 and 7 as well as in pressure zones 8, 9, 11, 12 and 13 with small volume,
   - Implementation of about 7000 house connections and interconnections.
   - Rehabilitation of the 17 selected parts of sewage pipelines with the length of 3400 m including the existing house connections and manholes.

   The limit of the replacement of distribution networks is mainly Vanadzor. After the end of the first phase the parts not included were in a bad condition (including the non-compulsory works) as they were not fully included in the framework of the second phase. Particularly, the above mentioned refers to pressure zone 8 in Vanadzor and 13 villages located along the water main of Novoseltsovo. These are the parts of the system included in the third phase. The designed Package A includes the following works:

   1. Rehabilitation of pressure zone 8, forecast of the population and eater demand of the project area, assessment of the existing water supply condition, hydraulic calculations, assessment of capacity of the existing reservoirs, implementation of the works,
   2. Connections of the new transmission system of Novoseltsovo-Taron 2.

The aim of the presented designed activity is to reconstruct the water supply network of Vanadzor and provide sustainable and safe water supply. In the package of the application for the initial assessment the components of water supply system of Vanadzor are mainly included i.e the reconstruction works of pressure zone 8 and the construction of missing parts. So distribution networks are designed and for the pipeline with the internal diameter of up to 350 mm HDPE pipes are designed and for the pipelines with the diameter of more than 400 mm pipes from cast iron with outer polyethylene cover are designed. The pipes used for the designed activities should be made from PE100 material. The design is based on the notion that pipes with standard size ratio (SSR) 17 should be used as according to DIN 8074 their safety rate is 1.25 and safe working pressure (100.0 m) is 100 bars. The valves with the diameter bigger than 250 mm should be butterfly valves. Besides, the valves with the diameter of 250 mm and smaller should be gate valves and short type of valves should be used if needed in case of place limitation (e.g in concrete manholes): As per the application during the pipeline installation

the pipeline is designed to be constructed in the roads or along them as well as along the paths under the traffic area with about 1.2 m distance from the roadside. The area under the service of the distribution network of Vanadzor pressure zone 8 mainly consists of the parts with geodesic big differences. This is why a strictly differentiated system of the pressure zone is needed which will adjust the maximum pressure in the water mains with the needed requirements avoiding overpressure in the internal system of the buildings and not targeted water consumption by the consumers and water loses which is taken into consideration in the design documents of the new network. According to the above mentioned water pressure should be as appropriate for the civil construction form as technically possible to limit the need of buster pumps for multistore buildings and maximally save the pumping expenses. The designed works should be carried out using construction machinery and in some parts manually. For carrying out the works during daytime the schedule of traffic and conditioned should be agreed with the corresponding departments of the municipality of Vanadzor. The waste resulted from the construction should be disposed to the dump with a distance of 7.0 km from Vanadzor in case of availability of the use permit. The works are anticipated to start in spring of 2019 and finish in autumn of the same year. From natural resources only water will be used for the workers for drinking, consumption purposes and for spaying the working platforms with water. According to the initial assessment 225.0 m^3 fresh water will be needed for drinking purposes, 110.0 m^3 for water truck so the whole quantity needed in works will be 335.0 m^3.

According to the application for the initial assessment during the presented activities the environmental risks are mainly connected with constructing works. The risks are:

- Dust resulted from the earthworks,
- Noise resulted from the operation of construction equipment,
- Combustion products as a result of fuel usage for the operation of construction equipment and vehicles,
- Traffic intensification.

To reduce and compensate the influence of the enumerated processes the following main environmental measures are brought in the given application according to the impact directions. To prevent air pollution:

- To store the bulk construction materials e.g. cement, sand, etc in containers or under cover,
- Optimization of vehicle management in order to avoid excessive traffic of truck vehicles,
- During the construction works for dust suspension to wet the soil in the area,
- To cover the truck bed with film when transporting the materials,
- To adjust the vehicles and engines properly according to the technical passports of the equipment,
- Regular maintenance of all vehicles and equipment in the corresponding centers.

In order to effectively use water resources and prevent water flows from excessive pollution it is anticipated to:

- To spray water in the working platforms in a way to avoid water flows,
- The cleaning and maintenance of construction and transportation equipment should be done out of the site, in the specialized washing points and technical service stations in Vanadzor,
- Household service of construction stuff should be carried out within the possibilities of the Vanadzor branch of water and sewage.

To protect the groundcover it is anticipated:

- To install fuel and lubricant storages in the special areas on the concrete surface,
- To reduce the removal of the top layer of the soil rationally managing the works,
- To store the top layer of the removed ground in a special place preventing contact with water,
- After completion of the works to improve the areas with the removed soil,
- To install containers for waste collection in different parts of the construction area.

According to the initial assessment 80.0-85.0 m^3 of construction waste will be produced which should be transported to the dump on a distance of 7.0 km designated by the municipality of Vanadzor.

In order to reduce the noise it is designed to organize the traffic of trucks only during the daytime and if possible to use low voice mechanical devices equipped with sound baffles.

Summarizing and analysing the submitted application documents for preliminary assessment, the opinions of corresponding departments of the RA Ministry of Nature Protection, the results of public hearings as well as the amendments based on the suggestions and comments the following conclusions are made:

The negative impacts resulted from the construction works will be insignificant, short-term and local. They will include but not be limited to the following: surface water pollution, soil erosion which will be the result of non-proper removal/installation of excavated soil and construction waste, possible leakage of oil and lubricants during construction and rehabilitation works, temporary air pollution resulted from the intense traffic of trucks, noise and vibration during excavation of manholes and trenches causing complaints among the local population.

During construction and operation as a result of the measures designed by the project the pollution of the area including all the components of the environment will be within the permissible limits. The issues of wastewater collection and removal, waste removal, reduction of environmental pollution and noise, rehabilitation and improvement of the areas are presented in the application for the preliminary assessment. There are enough measures designed for the environment improvement. The goal of the environmental measures is to reduce the impact of the activities on the environment and restore the initial state of all the areas impacted by the activities. The emissions during the

construction will be temporal and will be emitted from platform sources. According to the presented project monitoring for realistic assessment of the impact on the environment it is designed to organize visual control of the water basin, water flows, level of noise, earth cover and after the completion of works to get the assessment of the site condition by the construction contractor, consultant and working group of Vanadzor municipality.

The anticipated environmental and social positive impacts resulted from the renovation of new daily regulating reservoir and construction of new pipelines will be long term improving the social and economic welfare of the population in the affected communities. The presented monitoring plan will provide an opportunity to control the implementation of the designed measures.

The project is aimed to provide sustainable and continuous water supply which in its turn will positively impact the welfare of the population. Besides, reducing water loses the project will promote more targeted and economical usage of water. So the social-economic positive impacts of the activities will significantly prevail the environmental risks relating to the construction works.

I would also like to mention that according to point 7 of Article 20 of the law “On Environmental Impact Assessment and Expertise” the expertise conclusion shall be deemed as null and void if the implementation of designed activities does not start within one year after the expertise conclusion is provided.

Expertise Requirements

1. Before the implementation of the activities it is necessary to obtain all the corresponding consents and permissions (private properties, property assessment and compensation, etc) stipulated by the RA legislation.
2. During the construction works it is necessary to strictly follow the requirements of the environmental and social management program stated in the application for preliminary assessment and in case it fails to meet them additional measures should be included to keep environmental, construction and operation norms.
3. In the phase of construction during development of the work management plan in case of deviating from the main design solutions (which will result in huge environmental impact) it is necessary to present to submit it to the RA Ministry of Nature Protection for the expertise on the environmental impact as stipulated by the RA law.
4. The report on the implementation and analysis of post-design measures during the monitoring of the components (water, air, soil, etc) of the environment should be available for all the state interested bodies and public.
5. The management of the waste (domestic) from construction and operation as well as water usage should be carried out as stipulated by the RA legislation.
6. The transportation of construction materials and waste should be done in trucks with covers to reduce dust emissions in the town and adjacent residential areas.

7. The designed construction works should be done in coordination with Vanadzor municipality during the fixed hours in order to avoid the increase in maximum load of traffic and noise in the residential areas.

CONCLUSION

A positive conclusion is given on the application for the preliminary assessment of the environmental impact by the project “Rehabilitation of Pressure Zone 8 and Construction of the Incomplete Ring Feeder System of the Town of Vanadzor” implemented by the company “SRP Partners” provided that the expertise requirements are met.

Chief Specialist (Stamp of Environmental Impact Expertise Center) (Signature) K. Movsisyan

ANNEX 6: Communication with Client

Meeting with WSPIU on environmental issues took place on 16 January, 2018.

Minutes of meeting prepared and attached below:

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Minutes of Meeting
Environmental Meeting no 01 L/NA

Contract:	**Communal Infrastructure Program (CIP) II, Phase 3 – Armenia, Water and Sanitation - BMZ No. 2013 66 343 SRP No: S.09.9035 A/B**
Subject:	Environmental issues of the Lot-2/1 and Lot 2/2: Design, Technical and Author Supervision of the water supply network and sewer systems of the Lori Water and Sewerage CJSC service areas and Nor Akunq service areas - CIP II-P3-L / NA
MOM-No.:	Environmental Meeting no 01 L/NA
Place of meeting:	RA Yerevan, Head Office of "Water Sector PIU" SA (WSPIU)
Date/time:	16/01/2017, 15:00
Participants:	Employer –WSPIU: • Martiros Nalbandyan, Environmental Specialist • Shahane Arsenyan, Environmental Specialist • Lernik Asatryan, Engineer AWSC Consultant – SRP Armenia • Bernhard Fischer – Overall Project Manager • Tatev Harutyunyan – Project Assistant • Mikael Tevosyan – Environmental Specialist
Distributed to:	Participants

No.	Description
0	**Main Topics Discussed**
	1) Comments provided by the WSPIU on the Draft Detailed Design Report of Package A (Lori 2/1-1), Book 3a (ESIA, Action and Management Plan) received on 12/01/2018 2) Comments provided by the WSPIU on the Draft Tender Documents of Package B (Nor Akunq 2/2-2), Book 4-d (Section 20) Conceptual Design Report of Waste Water Treatment Plant of Armavir and Metsamor (Environmental and Social Impact Assessment) received on 22/12/2018.

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Minutes of Meeting
Environmental Meeting no 01 L/NA

1	**Clarification about the comments provided by the WSPIU on the Package A(2/1-1), ESIA, Action and Management Plan, prepared by Mr. Mikael Tevosyan** • Name and contacts of ESIA Report preparers or responsible person/agencies are missing in the provided Detailed Design. *Appropriate changes will take place in the final version of the report.* • In accordance with the Item 4.1.6 Project activities are not the subject for expertise, however they are not the subject for the 2nd stage of expertise. *WSPIU representatives were informed that the Consultant already started local EIA preparation. Therefore, the appropriate changes will be conducted.* • Also, public hearings were held during the 1st stage of expertise. However, there is no information about it. *Public consultation, which conducted previously, cannot cover legislation requirements of RA according to local EIA procedure. Therefore, we should manage new public consultation processes according local EIA procedure. Meanwhile, we will inform WSPIU about the public consultations and we hope that WSPIU representatives could join us during those consultations.* *The MoM of this first public hearing will be attached to the final version of the ESIA and Detailed Design Documents* • Number of project-affected people, involvement of stakeholders are missing in the report. Positive and negative social impacts are also presented superficially. *Information presented in the RPF.* • Chapter 6 "Positive and Negative Environmental and Social Impacts" covers that all damages and losses of land users must be entirely compensated. It is not noted, who are those land users, how many land users are involved? *Information presented in the RPF.* • It is not also noted what kind of issues related to the resettlement there are. Is the resettlement required under this project? *Information presented in the RPF.* • Precise deadlines and responsible people are noted in the presented Grievance Redress Mechanism, we kindly ask you to justify and refer to the source. *Information presented in the RPF.* • In the Management Plan it is noted that the paragraph "WSPIU will need to hire environmental and social experts..." should be removed as Environmental and Social specialists are already working at the WSPIU. *Appropriate changes will take place in the final version of the report.* **Parties agreed to make appropriate changes into the document after revision of the KfW, so that all comments could easily be incorporated and disclosed as a final version.**

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Minutes of Meeting
Environmental Meeting no 01 L/NA

2	**Discussions on comments provided by the WSPIU on Package B (Nor Akunq 2/2-2), Conceptual Design Report of Waste Water Treatment Plant of Armavir and Metsamor; Book 4-d (Section 20) of the Draft Tender Documents (Environmental and Social Impact Assessment) delivered on 22/12/2017, took place during the meeting.** • Mr. Martiros Nalbandyan designated the main position of the WSPIU *In the TOR of the Package B(2/2-2) clearly mentioned that the Contractor should proceed the Environmental Impact Assessment according the requirements of RA for the Armavir WWTP.* • Consultant has another opinion on that particular matter. • Consultant's position, presented by Mikayel Tevosyan *Implementing the full procedure of the local EIA is not possible at the actual stage (Detailed Design is not available yet, it is the task of the Contractor) and it is not reasonable for overall Project implementation. It has to be mentioned that the receipt of the conclusion of EIA from local authorities during this phase of the Project implementation has many risks. Particularly, if after the receipt of the conclusion the CONSTRUCTION ACTIVITIES will not start within 1 year, then the conclusion considers as not valid any more. Besides, any changes that would be made during the detailed design will result that the EIA conclusion will be considered as void. Nevertheless, as a solution, the Consultant suggests conducting only initial phase due to local EIA procedure until receipt of the TOR for the EIA.* • Client's position, presented by Martiros Nalbandyan and Shahane Arsenyan *According to the RA LAW on "EIA and Expertise" as a "design document"(which should be subject of expertise) considered not only "Detailed Design" but also Technical Reports, Technical-Economical Justification Report (Feasibility Study) Technical-Economical Calculations. According to the RA LAW on "EIA and Expertise", the validity issue of the conclusion during 1 year, refers not to the CONSTRUCTION ACTIVITIES but to the future PLANNED ACTIVITIES (regardless it is construction or any other), which means that expertise positive conclusion should be provided by Consultant at this stage, which will be required for the Client to initiate next stage of the project. Conducting only initial phase is not enough for this stage and such kind of procedure (conducting only initial phase) is not defined in the existing legislation, it will considered as a started but not finished expertise process, which will give nothing to both, Consultant and Client, because for the future Detailed Design however new EIA and new expertise processes are required.* • The parties have come to the following agreement: *The Consultant will start the Environmental Impact Assessment and will fulfill all the steps required for the Environmental Expertise as prescribed by the Armenian legislation up to obtaining the positive conclusion of the Expertise.* *In future, with the selected Contractor in place, in case of a requirement for amendment of the obtained conclusion because of modification of the Conceptual design and/or preparation of the detailed Design by the Contractor, the Consultant shall be released from the obligation to provide such an amendment and the Contractor shall be responsible for further required procedure in order to obtain the positive Environmental Conclusion to the Detailed design*

For and on behalf of the Client (WSPIU)

(Environmental Specialist)

For and on behalf of the Consultant (SRP)

(Overall Project Manager)

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