Ecoline International

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA)
SISIAN-KAJARAN (NORTH-SOUTH CORRIDOR) ROAD PROJECT, ARMENIA

Volume 4. Social Environment

Source: projections of the proposed road collated from the '3D description of the Sisian-Kajaran Road', Armenian Road Department, 2022 [https://www.youtube.com/watch?v=fu-dgAwjSsU]

February 2024

Ecoline International Ltd. 1 Racho Dimchev Str., Sofia, 1000, Bulgaria www.ecoline-int.org

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Volume 4. Social Environment

Prepared by:

Ecoline International Ltd. (Sofia, Bulgaria)

Director: Dr. Maia Gachechiladze-Bozhesku
Mobile: +380 951 100 727 / +359 876 63 0522
E-mail: mgachechiladze@ecoline-int.org

SE Solutions (Pty) Ltd. (South Africa)
Director: Sean O'Beirne
Tel: +27 (0)12 643 0190
Mobile: +27 (0)82 903 9751
E-mail: sobeirne@tiscali.co.za

ATMS Solutions Ltd. (Yerevan, Armenia)
Director: Artak Ter-Torosyan
Tel.: +37410 58 36 43
Mobile: +37499 10 94 95
E-mail: artak.ter-torosyan@atms.am

Prepared for:

The "Road Department" Fund under the Ministry of Territorial Administration and Infrastructure of the Republic of Armenia

DETAILS OF DOCUMENT PREPARATION AND ISSUE:

Version	Prepared by	Reviewed by	Authorised for issue	Issue Date	Description
1	ESIA Consultant's expert team (as listed in ESIA Volume 1)	Maia Gachechiladze-Bozhesku Artak Ter-Torosyan Sean O'Beirne Graham Jacobs (cultural heritage and landscapes)	Maia Gachechiladze-Bozhesku	08.05.2023	Draft for review by Lenders and the Client
2				08.06.2023	Draft report for approval by Lenders and the Client, and translation into Armenian
3				10.07.2023	Final draft for public disclosure
4				06.02.2024	Final report updated after disclosure

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An Environmental and Social Impact Assessment (ESIA) is necessarily predictive in that it gets completed well before the project being assessed is actually implemented. The information on which the assessment is based comes from multiple sources including the feasibility report, the detailed design document, reports on studies that were conducted as part of the feasibility investigations, records of meetings, other publications, various databases, data that is collected by the team conducting the ESIA, anecdotal information and others. It is extremely difficult to verify the information that is used other than through testing the logic of that information as well as that can be done. In preparing this document, care has been taken to ensure that whatever information has been available has been accurately reproduced in the ESIA. Should information be found in this document that is incorrect then it is respectively requested that the incorrect information be brought to our attention so that the ESIA can be updated accordingly. We cannot be held accountable for information that we have accepted and reproduced in good faith regardless of the consequences of such information being incorrect. Anyone reproducing information contained in this ESIA does so entirely at their own risk.

LIST OF ABBREVIATIONS

ADB	Asian Development Bank
AMSL	above mean sea level
AoI	Area of Influence
BAP	Biodiversity Action Plan
CITES	Convention on International Trade in Endangered Species
CH	Cultural Heritage
E&S	Environmental and social
EBRD	European Bank for Reconstruction and Development
EIA	Environmental Impact Assessment
EIB	European Investment Bank
ESIA	Environmental and Social Impact Assessment
ESAP	Environmental and Social Action Plan
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
ESP	Environmental and Social Policy (of the EBRD)
ESS	Environmental and Social Standard (of the EIB)
GIP	good international practice
ha	hectare
HoReCa	hotel, restaurant, café
IFC	International Finance Corporation
IFI	International Financial Institution
ILO	International Labour Organization
kph	kilometre per hour
m	metre
MTAI	Ministry of Territorial Administration and Infrastructure of Armenia
MoE	Ministry of Environment of Armenia
NGO	Non-governmental organization
NSRC	North-South Road Corridor
NTS	Non-Technical Summary
OHS	Occupational Health and Safety
PR	Performance Requirement (of the EBRD)
RA	Republic of Armenia
RF	Resettlement Framework
RP	Resettlement Plan
RD	Road Department
SEP	Stakeholder Engagement Plan
(S)HPP	(Small) hydro-power plant
SME	Small and medium enterprise
SNCO	State Non-Commercial Organization
SPA	Special Protected Area
SR	Safeguard Requirement (of ADB)

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PREAMBLE

This document is the **Social Environment** report for the proposed greenfield Armenian Sisian-Kajaran section of the North-South Road Corridor (NSRC), Tranche 4 (the Project). It forms **Volume 4** of the Environmental and Social Impact Assessment Report (ESIA) for the Project.

The ESIA Report consists of several volumes with related annexes, as follows:

- Volume 1 – Project Definition including Project introduction, context and rationale, project description, alternatives, legal framework, and ESIA methodology;
- Volume 2 – Biodiversity including baseline analysis, risk / impact assessment (including Critical Habitat Assessment and Appropriate Assessment) and mitigation;
- Volume 3 – Physical Environment including baseline analysis, assessment and mitigation in relation to air quality and climate, noise and vibration, landscape, etc.
- **Volume 4 – Social Environment including socio-economic, gender and cultural heritage baseline analysis, assessment and mitigation, as well as stakeholder engagement (this report);**
- Volume 5 – Cumulative Impact Assessments;
- Volume 6 – Environmental and Social Management Plan (ESMP).
- Volume 7 – Conclusions and Recommendations.

The ESIA was publicly disclosed for the period of over 120 days according to the international lenders' requirements (from 21 July to 1 December 2023). In addition to the ESIA report, the ESIA disclosure package includes:

- Non-technical Summary (NTS) which is a concise and over-arching document summarising the results of the ESIA in non-technical language;
- Stakeholder Engagement Plan (SEP) that guides information disclosure and meaningful engagement with Project stakeholders, as well as a grievance mechanism;
- Resettlement Framework (RF) that guides issues related to Project-induced physical and economic displacement, land acquisition, compensations, and livelihood restoration;
- Biodiversity Action Plan (BAP) that articulates actions that can help ensure the conservation or enhancement of potentially affected habitats and species considered of particular conservation value; and
- Environmental and Social Action Plan (ESAP) that contains actions required to implement the Project in compliance with the international lenders' requirements.

Following the public disclosure, the ESIA Disclosure and Consultation Report was prepared to document and summarise the feedback from stakeholders received and engagement activities completed during the ESIA disclosure period.

The current version of the ESIA package captures the feedback from stakeholders collected during the ESIA disclosure and it will be re-disclosed, together with the ESIA Disclosure and Consultation Report, for the Project life-cycle.

The photos in this Volume are taken by the Consultant unless indicated otherwise.

All maps in this Volume are prepared by the Consultant unless indicated otherwise.

1 INTRODUCTION

This report (Volume 4 of the ESIA) analyses the socio-economic, gender and cultural heritage baseline for the Project and assesses the corresponding impacts of the Project. Where potential adverse impacts have been predicted, mitigation measures are presented; whereas enhancement measures are suggested for positive impacts. These mitigation and enhancement measures are taken forward into the Environmental and Social Management Plan (ESMP) for the Project (Volume 6 of the ESIA).

This Volume 4 also summarises the information disclosure, consultation and participation activities that have been undertaken as part of the ESIA process in accordance with the Project Stakeholder Engagement Plan (SEP).

2 SOCIO-ECONOMIC, GENDER AND CULTURAL HERITAGE BASELINE

2.1 Socio-economic Baseline Analysis

2.1.1 Introduction and Approach

This chapter builds on the analysis of socio-economic data collected in 2021-2022; the methodology deployed for the socio-economic study and its timeline are summarised **in Annex 1**, alongside a list of in-depth interviews, consultations and focus group discussions (FGDs). A detailed analysis of the female FGD is provided in **Annex 2**, and the minutes of FDGs are given in **Annex 3**.

The below sections establish socio-economic profiles at three levels falling within the Project's potential Socio-economic Area of Influence (see below):

- Syunik Region with reference to Armenia,
- Sisian and Kajaran Communities (*note that a 'community' in the Armenian administrative system is equivalent to a 'municipality' in other systems*); and
- Project-affected settlements (an aggregate profile is presented in this section, and detailed settlement profiles are available upon request).

The Project's potential socio-economic **Areas of Influence (AoIs)** (**Figure 1**) comprise:

- **Core socio-economic area of influence** (study area): this area comprises the territories of the rural settlements (administrative units) that are adjacent to or crossed by the proposed route, existing roads to be used by construction transport, and potential connecting roads and where the socio-economic receptors are exposed to impacts related to land acquisition, restricted access, and other local impacts.
- **Socio-economic area of influence** (study area): this area includes the territories of Sisian and Kajaran Communities, as well as Syunik Region, where the socio-economic receptors are exposed to direct and indirect impacts at municipal or wider level, including employment opportunities and related impacts, tax revenues, and impacts of the associated projects and transport operations.

Figure 1. Proposed Socio-economic Study Areas (Areas of Influence)

The socio-economic baseline study areas were aligned with the above areas of influences the Project and covered:

- Syunik Region (for administrative setup, demography, ethnicity, religion, and language use, structure of local economy, employment, incomes and expenditure, gender issues and existing transport and social infrastructure). The region is reviewed with reference to Armenia, as applicable.
- Sisian and Kajaran Communities (municipalities) of Syunik Region where the proposed Project is located (for demography, ethnicity, religion, and language use, employment, incomes and expenditure, and less socially protected and vulnerable groups, gender issues, social infrastructure);
- Settlements located along the proposed and connecting roads (for a variety of relevant socio-economic parameters); this covering persons and facilities that may be affected by land acquisition and land use restrictions related to the arrangement of the Project facilities (the road, tunnels, bridges, etc.) and associated facilities (e.g., transmission lines).

2.1.2 Syunik Region within the Context of Armenia

2.1.2.1 Administrative Structure

The Project is located in Sisian and Kajaran Communities of **Syunik Region** ('marz' in Armenian), in the south of the RA. In the north, the region borders on the Vayots Dzor Region,

in the south – on the Islamic Republic of Iran (the length of border is 42 km), in the west – on the Nakhijevan Autonomous Republic of Azerbaijan, and in the east – on Azerbaijan.

The area of Syunik Region is 4,506 km^2 (15.1% of Armenia). Its administrative center is **Kapan Town.** The Region includes **seven communities** (self-governing administrative units or 'municipalities') that are made of seven towns and 131 rural settlements/administrative areas[1]:

- Kapan community (Kapan town and 38 rural settlements),
- Goris community (Goris town and 12 rural settlements),
- Meghri community (Meghri, Agarak towns and 12 rural settlements),
- Kajaran community (Kajaran town and 20 rural settlements),
- Sisian community (Sisian and Dastakert towns and 34 rural settlements),
- Tatev community (8 rural settlements), and
- Tegh community (7 rural settlements).

The RA Government implements its territorial policy through regional governors. Regional governments are appointed by the RA Government.

The management of state-owned health institutions as well as public schools within the region is entrusted to the Syunik Regional Governor. The budget of the region, which includes the costs of the regional administration, as well as public entities of regional subordination, is laid down in the state budget.

2.1.2.2 Population

As of 1 January 2022, the population of Syunik Region was 134.7 thousand people[2] (4.6% of Armenia's population). The Region's population density is only 29.9 inhabitants/km^2. This is one of the lowest densities among the RA regions (the country's average population density is 99.6 inhabitants/km^2), which is *inter alia* explained by the complex mountainous terrains.

The region has the highest share of urban population among the RA regions: 67.3%[3] vs. the country's average of 43.1%. The urban population change in the Region was -2.2% in 2017-2021 against -0.3% of the national average (due to a positive dynamic in Yerevan) (**Table 1**). The region's rural population growth was -2.2% vs. the national value of -1.6% meaning that the rural settlements of Syunik Region are more vulnerable in terms of population decrease[4].

[1]Structure of Syunik Region, https://www.armstat.am/en/?nid=81&id=2324

[2] Statistical Committee of the RA, Number of permanent population of the RoA, https://armstat.am/file/article/population_01_22.pdf

[3] Most of the region's population lives in towns (Kapan- 41.5, Sisian- 14.3, Goris- 19.7, Kajaran- 6.8, Meghri- 4.2, Agarak- 3.9, and Dastakert- 0.3 thousand inhabitants).

[4] Marzes and Yerevan city of the RA in figures, statistical handbook, https://armstat.am/file/article/marzer_2021_9.pdf

Table 1. Population growth dynamics of Syunik Region and the RA in 2017-2022

1000 residents	2017	2018	2019	2020	2021	The growth rate in 2017-2021, %
Total						
Republic of Armenia	2,986.1	2,972.7	2,965.3	2,959.7	2,963.3	-0.8%
Syunik Region	138.9	138.4	137.6	137.3	135.8	-2.2%
Urban Population						
Republic of Armenia	1,901.4	1,895.8	1,894.9	1,892.1	1,895.6	-0.3%
Syunik Region	93.9	93.8	93.4	93.2	91.8	-2.2%
Rural Population						
Republic of Armenia	1,084.7	1,076.9	1,070.4	1,067.6	1,067.7	-1.6%
Syunik Region	45.0	44.6	44.2	44.1	44.0	-2.2%

The share of female population of Syunik Region (51.7%) is lower than the national average (52.8%). The rate of the region's **working age** population (66.7%) is higher than the national average (64.8%). The regional and national population split according to sex and age is given in **Table 2**.

Table 2. Population's sex and age structure in Armenia and Syunik Region

1000 residents	Age Groups				Demographic dependency ratio[5], %, January 2022
	0-14	15-29	30-62	63+	
Men, thousand residents					
Armenia	317	282	622	177	58.2
Syunik Region	12	13	31	9	52.5
Women, thousand residents					
Armenia	281	276	739	269	56.9
Syunik Region	11	13	33	13	55.6

The relatively high share of the working-age population has a positive effect on the demographic dependency ratio of the region, which is lower than the national average, calculated both for the women (55.6% against the RoA average of 56.9%) and men (52.5% against the RoA average of 58.2%). In other words, the relatively low number of "dependents" under the care of the working age population eases the "social burden" within the region.

In 2020, Syunik Region was characterized by a relatively low birth rate (9.5% against 12.3% of the national average). The highest birth rate was noted in Yerevan (15.1%). The death rates for 2020 (12.7% the region and 12.2% the national average) are biased due to COVID-19 pandemic and 2020 Nagorno-Karabakh conflict, the region's death rates of recent years were around 9.0%, which is aligned with the national average.

2.1.2.3 Ethnic Minorities

In Syunik Region, there are settlements where ethnic minorities live. During the 1987–1989 conflict over Nagorno-Karabakh, the Azeri inhabitants fled the region. Among the languages of ethnic minorities, only Russian is used in the region.

According to the latest census of 2011[6], there are only 414 ethnic minority residents, of whom 259 are Russians. Official data on national minorities are obtained from official census only, since data on nationality are not recorded in any document or register. Ethnic minorities can communicate in Russian and Armenian with public and local authorities[7].

[5] That is the ratio of dependents (people younger than 15 and 63 and above) to the working-age population (aged 16-62).
[6] The 2011 Census Results, ethnic composition of Syunik Region. https://armstat.am/file/doc/99483408.pdf.
[7] According to the interviews and consutlations held during this ESIA.

2.1.2.4 Economic Profile

Syunik Region holds an important strategic and geopolitical location. It is rich in natural resources, has a large industrial potential and is one of the largest administrative and economic units of Armenia. At the same time, Syunik remains relatively sparsely populated and economically poorly developed, which is partly due to the large distance from Yerevan, the lack of alternative means of transportation.

Syunik is the richest region in mineral resources. The major mineral products are ores of non-ferrous (copper, molybdenum, zinc and other non-ferrous) and precious (gold, silver) metals, as well as a whole range of non-metallic minerals (building and facing stones, basalt raw materials, limestone and combustible shale, marble, granite, perlite and diatomite).

The most developed sectors of the region's economy are industry (73.1%) and agriculture (12.4%) (**Figure 2**). Industry is mainly developed in Kapan, Kajaran and Meghri Communities, while agriculture (mainly grains, potatoes and vegetables) is developed in Sisian, Goris, Tatev and Tegh Communities. Meghri Community is also known for its fruit growing.

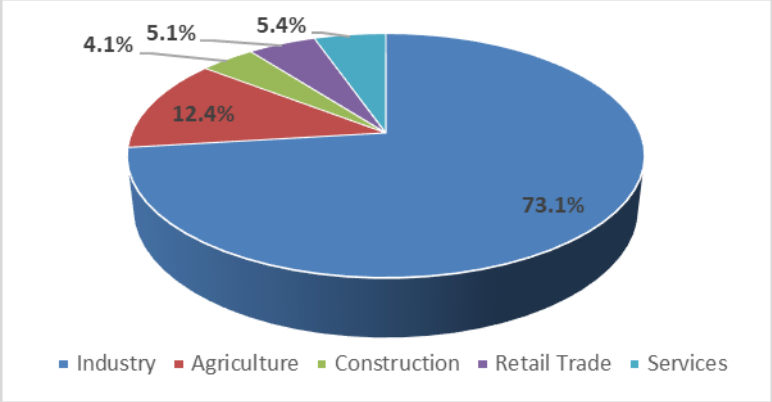


Figure 2. Structure of Syunik Region economy (2019)

The regional industrial output constitutes around 17.1%, while the share of regional agricultural output is only 6.6% of the country's total.

The leading sectors of region's industry are mining and power generation. The region's mining sector provides around 74.8% of the country's mining industry output. The Vorotan hydropower cascade as well as around 50 small hydropower plants (HPPs) provide around 9.3% of the country's energy generation and distribution output. Processing industry is underdeveloped in the region (its share in the country's total is 2.3% only).

The region's gross agricultural output constitutes 6.6% of the national agricultural output (plant growing- 3.2%, animal husbandry- 9.6%).

One of the key obstacles hindering the development of agriculture in the region is that its yield of crops (potato, vegetables, etc.) is twice lower than the respective national average.[8]

The Gross Domestic Product (GDP) of Syunik Region was 370 576.7 million AMD in 2019, which constitutes around 5.7% of the national GDP. In the meantime, the regional GDP per capita was 2,695,103 AMD, which is 22% higher than the national GDP per capita, which is due to a relatively high added value of the mining sector prevailing in the region's GDP.

[8] Marz Syunik of RA in figures, statistical handbook of 2021, https://armstat.am/file/doc/99527423.pdf. This source informed the current and next sub-sections.

2.1.2.5 Employment and Wages/Incomes and Poverty Level

*The regional men and women labour statistics and analysis are provided in **Section 2.2.3**.*

Syunik Region is distinguished by active involvement in the labour market. Thus, the labour force participation rate[9] in the region (71.2%) is around 1.2 higher than the average national indicator (58.5%). The region's unemployment rate is 13.1 %, which is much less than the country's average (18.2%).

The mean monthly net wage/income was 135,960 AMD (EUR 250) in 2020, which is the highest of the RA Regions (including Yerevan). Such high average wages are due to high-paid jobs in the mining sector.

The region's population monthly per capita income in 2020 was 78,216 AMD (EUR 145), which is 28% higher than the country's average (61,076 AMD or EUR 115).

The poverty level in Syunik Region is one of the country's lowest: in 2019, the region's poverty rate was 12.1%, while the national average rate was 26.4%.

2.1.2.6 Social Infrastructure

There are 17 health institutions in Syunik Region (excluding the midwifery stations, private medical and dental cabinet). The key regional vs national indicators of public health are given in **Table 3**. As seen from the table, the provision of medical personnel and infrastructure in the region is worse than the national average.

Table 3. The key regional and national indicators of public health[10]

per 10,000 residents	**Number of doctors**	**Number of paramedical personnel**	**Number of hospital cots**
Armenia	48.6	56.5	43.4
Syunik	18.0	49.5	33.9

There are 56 pre-school institutions in the region (29 in urban and 27 in rural settlements) with 3,903 pupils, while the pre-school institutions capacity is up to 5,100 pupils.

There are 118 secondary educational institutions in the region with 17,250 pupils and 2,199 teachers. Respectively the number of pupils per one teacher is 10.5, the number of teachers per one school is 14.1.

There is one primary (tradesman school) and seven secondary vocational educational institutions in Syunik Region (with 300 attendees in total). Syunik Region hosts five higher education institutions (including three branches of Yerevan-based institutions). The total number of students is 1,501 including 649 women.

There are four museums and two theatres in the region.

2.1.3 Administrative Structure of Communities

'Communities' in Armenia are self-governing administrative territorial units[11]. 'Local self-government' is defined as the rights and capacities of local self-government bodies to address, under their own responsibility, public issues of social importance in favour of community residents. The administrative territory of a community includes the lands of one or more settlements. The owners of these land areas can be citizens, legal entities, the community, and the state (RA).

[9] Ibid, the labour force participation rates is calculated as the labour force divided by the total working-age population.
[10] ibid
[11] The law "On local self-governance" No HO 93-N, dated 09.06.2017

The local self-government bodies are the **community council** and **the community head**, both elected for a five-year period. The community council is a representative body of the community, while the head of community represents the executive authority.

For each settlement (within a community) with more than 500 registered inhabitants, except for a community centre, an administrative head should be appointed through the community council's decision. The community council appoints **administrative heads (managers) for settlements** with less than 500 registered inhabitants, or for a group of settlements within a common administrative area.

2.1.4 Sisian Community

Sisian Community (municipality) is located in the northern part of Syunik Region. The distance from its administrative centre - Sisian Town - to Kapan (the regional centre) is 103 km and to Yerevan (the capital) is 209 km. The community borders with Tatev, Goris and Vayk (Vayots Dzor Region) communities. The administrative border of the community runs along the state border with Republic of Azerbaijan.

In summer 2022, Sisian Multi-settlement Community was enlarged through its administrative merge with Gorayk[12]. The community currently includes 36 settlements[13]. The Sisian Community Council consists of 21 members.

The Sisian Community Administration's web-site[14] currently mentions 19 administrative areas (however this may change as the reform is ongoing). Administrative heads have been appointed for most of administrative areas.

The community's population data was provided by the Sisian Community Administration in June 2022 (before the merge of Sisian and Gorayk Communities was completed in November 2022). Thus, the population statistics given in this section is relevant to the former Sisian Community (before consolidation), unless noted otherwise.

As of June 2022, Sisian Community's population was 29,791 residents. Gorayk Community's population before consolidation was 1,837 residents[15]. So, the total population of the current Sisian Community is around 31,620 residents.

As of June 2022, the urban population of Sisian Community (residents of Sisian and Dastakert towns) was 15,594 residents (52.3% of the total), the rural population was 14,197 residents (47.7% of the total). Between 2019 and 2022, the community's population **decreased by 2.3%,** while the decrease in the urban population was 2.6% and in the rural population – 2.0%.

The population growth rate of Sisian Community corresponds to the rate of Syunik Region (- 2.2%). The reasons for the negative population growth in Sisian are common for the majority of communities of the southern part of Armenia, i.e. a low birth rate and high migration (both domestic and international).

Women and men make up 49.4% and 50.6% of the community's population, respectively. The share of working age population is 63.9%, of whom 47.8 % are women. The population dynamic of Sisian Community is given in **Table 4**.

Table 4. The population dynamic of Sisian Community in 2019-2022

Population indicators	Years			
	2019	2020	2021	2022

[12] As per the amendments of the Law "On administrative structure of the RoA" ZO-266-N dated 09.06.2022.

[13] The Law "On administrative structure of the RoA" No HO-18, dated 07.11.1995, last amended 09.06.2022

[14] https://www.sisian.am/Pages/Staff/

[15] Gorayk Community's annual working plan for 2022, http://www.gorayq.am/Pages/DocFlow/Def.aspx?nt=1&dt=Projects

1. **Community population, total**	30,486	30,887	30,073	29,791
Whereof:				
- urban	16,000	16,412	15,839	15,594
- rural	14,486	14,475	14,234	14,197
Whereof:				
male	15,474	15,927	15,326	15,070
female	15,012	14,960	14,747	14,721
2. **Age structure of population**				
- Under-aged (0-15)	6,635	6,484	6,326	6,289
- Working age (16-62), total ***Whereof:***	19,881	20,113	19,469	19,039
male	10,386	10,748	10,228	9,937
female	9,495	9,365	9,241	9,102
- Elderly population, total ***Whereof:***	3,970	4,152	4,134	3,638
male	1,675	1,769	1,742	1,511
female	2,295	2,383	2,392	2,127
3. **Number of households within the community**	Not available due to an administrative reform			3,020

The unemployment rate in the community is around 23%, which is much higher than the regional (13.1%) and the national rates (18.2 %). The majority of the unemployed population are women (67.1%)[16] owing to the lack of employment opportunities for women in the urban[17] settlements of the community (urban women are mainly employed in public sector and services). Employment of the men of the community is provided, *inter alia,* through contract service in the armed forces, self-employment, public services, etc.

755 households benefit from the public social support programme (Paros)[18], another 601 households benefit from other social programmes (people with disabilities, multi-children families, etc.). No information was made available about the poverty level at the community level despite formal requests made by the Consultant. The Paros data can be used as a very approximate indicator of a poverty level (755 of out of 3,020 households).

Electricity generation dominates in the economy of Sisian Community followed by food production and non-metallic ore mining.

Sisian Community is known for the production of grain crops and livestock production. About 80% of the population is engaged in agriculture, the areas of land plots cultivated by the population differ, ranging from small plots of 100 m^2 to 25-30 ha. The main crops are wheat, barley, potato, cabbage and other vegetable crops. A serious obstacle to the development of agriculture and effective land cultivation is land fragmentation, which makes agriculture more expensive and labour-intensive. The lack of end market for agricultural products has a negative effect on development of agribusiness within the community. The livestock farms of

[16] Sisian Community Development Programme for 2018-2022, https://www.sisian.am/Pages/DocFlow/Def.aspx?nt=1&a=v&g=b635e6b0-dfb9-49ac-bcec-04f389b42add

[17] Only urban population is counted as unemployed, as rural population is considered to be made of households having land plots in ownership or use.

[18] Social support is the provision of one or more social services defined by the RA law on behalf of the RA and (or) a local self-government body to a person (family, other social group) in order to prevent or overcome a hardship. The social support is provided through social security benefits. The referred Paros social benefits are provided to households under poverty level that meet a set of criteria. For details refer to https://socservice.am/action/npastner.

the community have 14,374 heads of large cattle and 21,156 heads of small cattle. There are also around 15,000 bee colonies in the community[19].

There is one senior school (grades 10-12) and four basic schools (grades 1-9) in Sisian Town as well as a secondary school (grades 1-12) in Dastakert Town. 31 general education institutions (schools of various grades) are located in the rural settlements of Sisian Community. Sisian Town has four pre-school institutions, and 11 pre-school institutions are located in the community's rural settlements.

A branch of the Armenian National Agrarian University as well as a state college with economic/finance, nursery and agribusiness majors are located in Sisian Town.

There is a hospital (Sisian medical center) in the community, which is designed for 50 patients with 156 employees and a military hospital in Aghitu settlement with 123 employees.

There are also three healthcare centers in Gorayk, Darbas and Brnakot settlements as well as 30 paramedical and midwifery stations in the community.

2.1.5 Kajaran Community

Kajaran Community (municipality) is located in the south-western part of Syunik Region. The distance from its administrative centre – Kajaran Town – to Kapan (the regional center) is 25 km, to Yerevan (the capital) is 330 km, and to the border with the Islamic Republic of Iran - 50 km. The community borders with Kapan, Sisian, Tatev, and Meghri Communities. The administrative border of the community runs along the state border with the Nakhchevan Autonomous Republic of Azerbaijan.

Kajaran Community includes 22 settlements[20]. The community (except Kajaran town) is split into three administrative areas: Geghi, Lernadzor, and Kajarants.

The Kajaran Community Council consists of 11 members.

The community's population is 8,945 residents, including 8,567 living in Kajaran town and only 378 dwelling in rural settlements[21].

Between 2019 and 2022, the community's population grew up by around 7.6%, which is due to an increase in population of Kajaran town. The population of rural settlements remained almost unchanged over the last several years.

The town of Kajaran is one of the few settlements in Armenia where population growth was recorded, which is associated with the operation of the Zangezur Copper-Molybdenum Integrated Plant (Combine)[22], one of the largest employers in the country. Women and men make up 53.4% and 46.6% of the community's population, respectively. The share of working age population is 56.4%, of whom 49.2 % are women.

The population dynamic of Kajaran Community is given in **Table 5.**

Table 5. The population dynamic of Kajaran Community in 2019-2022

Population indicators	Years			
	2019	2020	2021	2022
1. **Community population, total**	8,315	8,256	8,687	8,945
Whereof:				

[19] Sisian Community Development Programme for 2018-2022, https://www.sisian.am/Pages/DocFlow/Def.aspx?nt=1&a=v&g=b635e6b0-dfb9-49ac-bcec-04f389b42add

[20] The Law "On administrative structure of the RoA" No HO-18, dated 07.11.1995, last amended 09.06.2022

[21] The data in this section were provided by the Kajaran community administration in June 2022, unless other sources are provided.

[22] http://www.zcmc.am/

Population indicators	Years			
	2019	2020	2021	2022
urban	7,938	7,854	8,301	8,567
rural	377	401	386	378
Whereof:				
male population	4,459	3,979	4,401	4,773
female population	3,856	4,277	4,286	4,172
2. **Age structure of population**				
- Under-aged (0-15)[23]	1,579	1,568	1,650	1,675
- Working age (16-62), total	4,703	4,670	4,865	5,048
Whereof:				
male	2,351	2,335	2,432	2,562
female	2,352	2,335	2,433	2,486
3. **Elderly population, total**	1,457	1,447	1,508	1,566
Whereof:				
male	684	680	708	737
female	773	767	800	829
4. **Number of households within the community**	1,912	1,898	1,998	2,081

The unemployment rate in the community is around 13%, which corresponds to the rate of Syunik Region (13.1%) and is much lower than the country's average (18.2 %). The majority of the unemployed are women, since the employment opportunities are mainly available in mining and construction sectors.

58 households receive support under the public social support programme (Paros), another 22 households benefit from other social programs (people with disabilities, multi-children families, etc.). No information was made available about the poverty level at the community level despite formal requests made by the Consultant. As noted above, the Paros data can be used as only a very approximate indicator of a poverty level (58 of out of 2,081 households).

Kajaran town is the country's largest mining industry centre. The Zangezur Copper-Molybdenum Combine with its annual mineral ore production of around 22 million tonnes is located in the town. There are also other industrial (production of explosives) and service (cargo transportation, maintenance of mining machinery) businesses associated with the mining facility. Five small HPPs are located within Lernadzor administrative area of the community.

Since the majority of the community's residents live in urban area (Kajaran town) and due to a major industrial employer (Kajaran mining facility), agriculture is not well developed in the community. As per 2018 data[24], the total livestock was 3,127 heads (cows, pigs, sheep and horses). The total crop land area within the community is 147 ha, the total land allocated for fruit-growing is 60 ha only. There were also 1,639 bee colonies in the community.

The community has three pre-school institutions (two in Kajaran town and one in Lernadzor rural settlement).

There are four general education institutions in Kajaran town, as well as one in each of the rural settlements of Lernadzor, Geghi and Dzagikavan.

[23] Since 01.01.2012 the able-bodied age population includes the number of men and women at the age 16-62, and under-aged are 0-15, refer to https://armstat.am/file/doc/99533248.pdf.

[24] Kajaran Community Five-year Development Plan for 2018-2022, http://www.kajaran.am/Pages/DocFlow/Def.aspx?nt=1&dt=Projects

There is a technical school in Kajaran town. No higher education institutions are in Kajaran community. The nearest city from the community, where higher educational institutions are available, is the regional center Kapan.

As per 2018 data[25] there are two hotels and 13 catering facilities in the community, as well as around 90 markets/shops and four pharmacies.

2.1.6 Project-affected Settlements: Summary of Socio-economic Baseline

2.1.6.1 Introduction

This section presents a summary of the socio-economic baseline conditions of the settlements the territories of which are expected to be crossed by or that are close to the proposed road and are considered to be exposed to potential positive and/or negative impacts of the Project. 21 rural settlements (11 in Sisian Community and 10 in Kajaran Community) and Sisian Town (the administrative centre of Sisian Community) are likely to be affected by the Project (**Table 6**)[26]. Land acquisition will take place in all these villages. Detailed socio-economic profiles of these settlements can be provided upon request.

Table 6. Potentially affected settlements relative to the proposed road in Sisian and Kajaran Communities

No.	Administrative area	Settlement (village/city)	Total population (females)	Location in relation to the proposed road
Sisian Community				
1	Ishkhanasar	1. Ishkhanasar	267 (127)	Approximately 820 m to the north of the proposed road intersection with the M-2 highway, however one isolated residential house with adjacent food outlets falls within the right-of-way
2	Sisian	2. Sisian	15,217 (7,810)	650 m to the west from tunnel TU001 (section km 4+750 - km 5+250 of proposed road)
3	Uyts	3. Uyts	517 (247)	Approximately 1,300 m to south of tunnel TU001 (section km 4+750 - km 5+250 of the proposed road)
4	Aghitu	4. Aghitu	367 (178)	The nearest residential house is located at the distance of 50 m to the north of km 7+400 of the proposed road
5	Noravan	5. Noravan	470 (226)	Approximately 1,000 m to the north of tunnel TU002 (section km 8+100 - km 8+800 of proposed road)
6	Vaghatin	6. Vaghatin	656 (313)	The nearest residential house is located at the distance of 250 m to the north of km 11+500 of the proposed road
7	Vorotnavan	7. Vorotnavan	292 (137)	Approximately 650 m to the east of bridge BR005 over the Vorotan River (section km 12+650 - km 13+200 of the proposed road)
8	Darbas	8. Shamb	453 (228)	Approximately 1300 m to the west of the proposed road, section km 15+600 - km 16+200
		9. Darbas	673 (325)	Approximately 200 m to the east of the proposed road, section km 18+700 - km 19+300
9	Getatagh	10. Getatagh	183 (85)	Approximately 200 m to the west of the proposed road, section km 20+000 - km 20+750

[25] ibid

[26] In addition, several villages may be exposed to impacts of Project construction traffic. While the roads that would be used are yet to be determined, these villages are tentatively identified in **Section 2.1.6.9** and included in the SEP for appropriate stakeholder engagement. Impacts on communities due to construction traffic are assessed in **Section 3.5.4.1**.

No.	Administrative area	Settlement (village/city)	Total population (females)	Location in relation to the proposed road
10	Lor	11. Lor	300 (149)	Approximately 170 m to the west of the proposed road, section km 22+050 - km 20+350
11	Shenatagh	12. Shenatagh	338 (159)	The proposed road passes near the eastern border of Shenatagh settlement, one house falls within the right-of-way (section km 26+200 - km 26+500)
Kajaran Community				
1	Geghi	1. Kitsk	0	Located under the bridge at the section km 36+300 - km 36+550
		2. Karut	0	Located at the distance of about 50 m to west from the road section km 38+700 - km 39+000
		3. Geghi	172 (95)	About 180-200 m to the south of the proposed road section km 45+000 - km 45+600
		4. Verin Geghavank	0 [few summer cottages]	About 90-100 m to the south of the proposed road section km 47+700 - km 48+000
		5. Geghavank	0	About 350 m to the north of the proposed road section km 50+900 - km 51+000
		6. Getishen (old name: Chayqend)	54 (30)	Located at the distance of about 400 m to west from tunnel TU007 (section km 43+900 - km 44+400)
		7. Vocheti (old name: Hajatin)	0	Located at the distance of about 500 m to west from tunnel TU007 (section km 43+900 - km 44+400)
		8. Nor Astghaberd (old name: Payahan)	57 (25)	Located at the distance of over 1,000 m to west from tunnel TU007 (section km 43+900 - km 44+400)
2	Lernadzor	9. Kavchut	70 (33)	About 65-70 m to the north-east of the proposed road, near tunnel TU009 (section km 54+300 - km 54+900)
		10. Dzagikavan (old name: Musallam)	57 (30)	About 200 m to the east of the proposed road section km 55+500 - km 55+800

Social infrastructure is depicted in **Figure 3** and **Figure 4** for Sisian Community and in **Figure 5** for Kajaran Community.

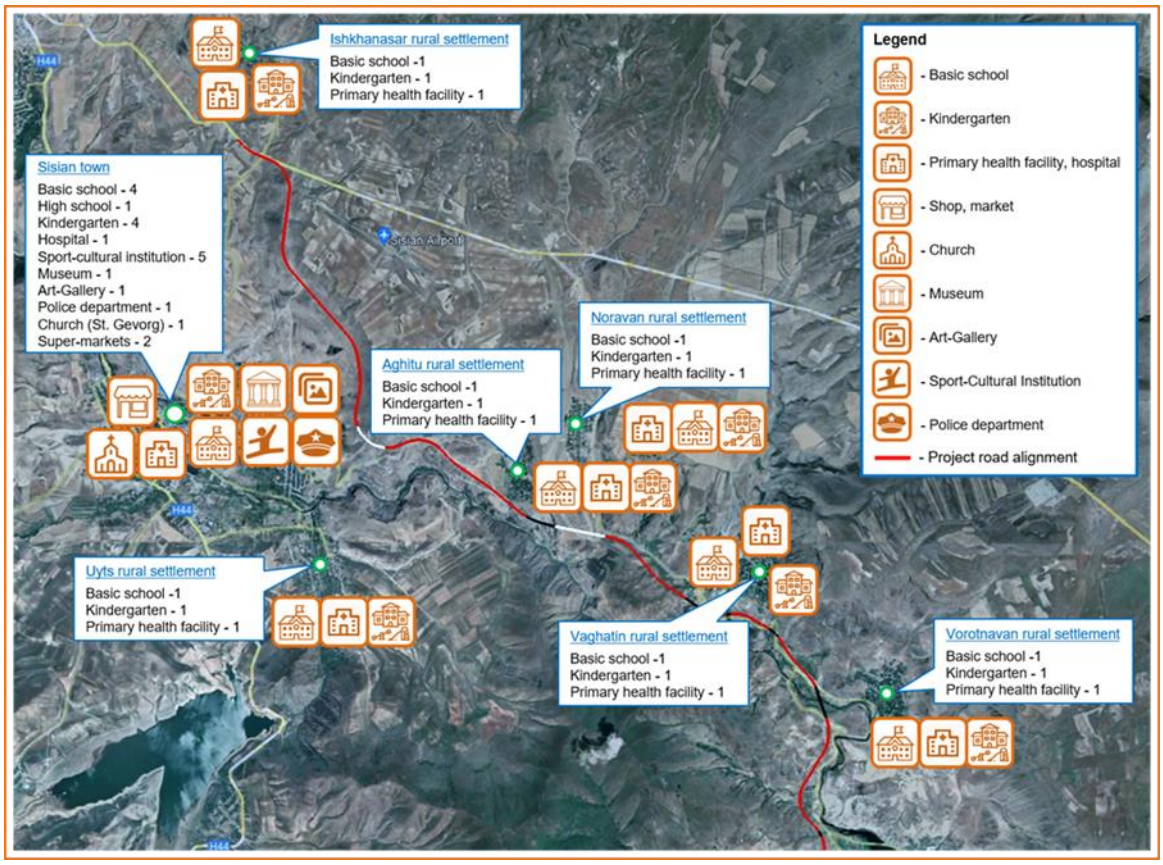
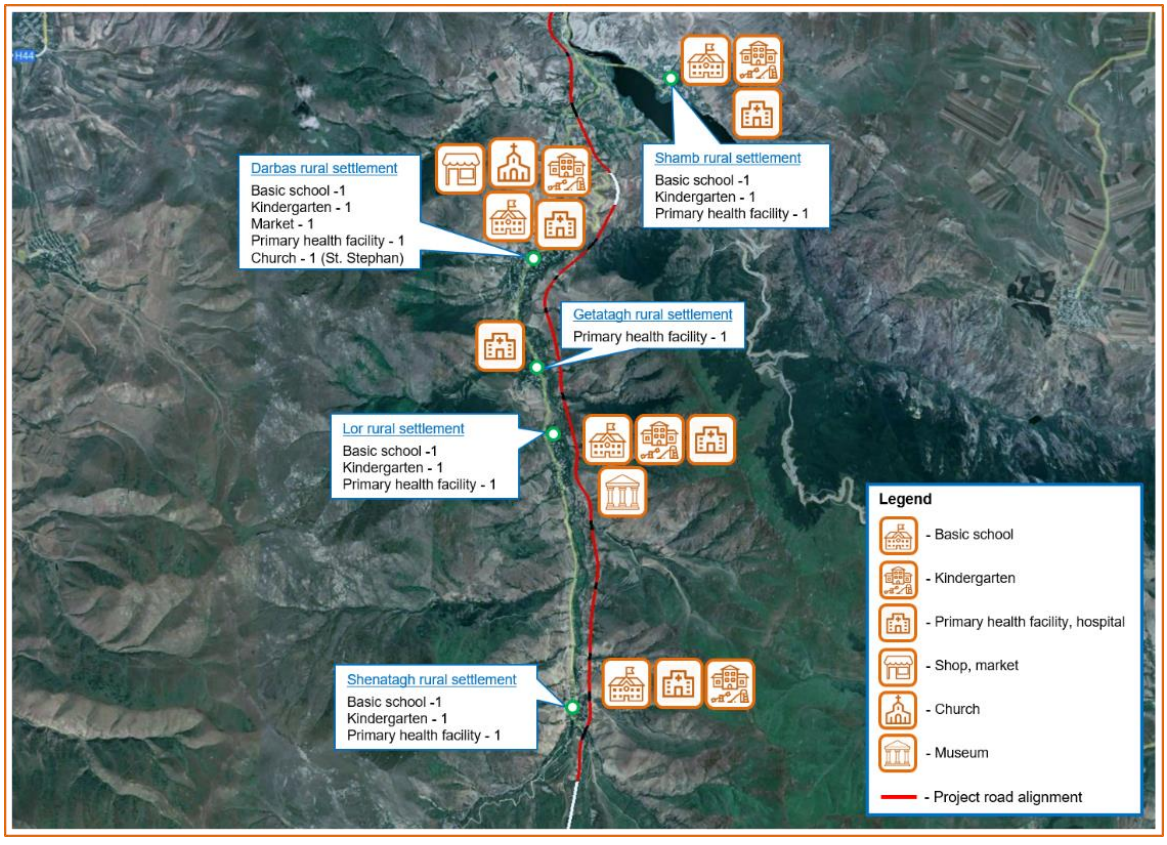


Figure 3. Mapping of Social Infrastructure Facilities in the Project-affected settlements of Sisian Community (Ishkhanasar-Vorotnavan Road Section)



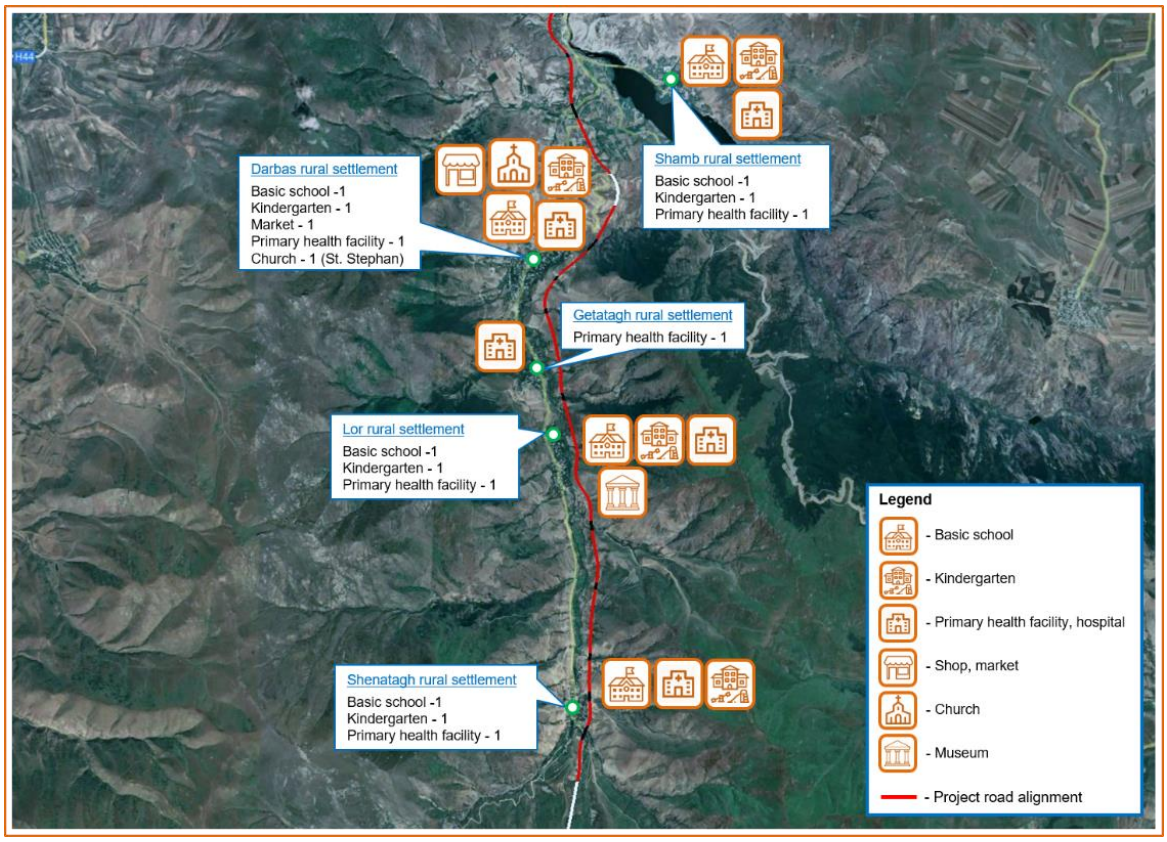


Figure 4. Mapping of Social Infrastructure Facilities in the Project-affected settlements of Sisian Community (Shamb-Shenatagh Road Section)

Figure 5. Mapping of Social Infrastructure Facilities in the Project-affected settlements of Kajaran Community

2.1.6.2 Population

The population of 12 affected settlements in Sisian Community comprise 19,733 residents (9,996 women). Most of them (77%) reside in Sisian Town (15,217 residents, including 7,810 women). The remaining population (4,516, including 2,186 women) lives in 11 small rural settlements located along the proposed road.

The population of 10 affected settlements in Kajaran Community is 410 residents (213 women). In fact, all these villagers reside in five small rural settlements, whereas the other five villages – Kitsk, Karut, Verin Geghavank, Geghavank and Vocheti – have had no permanent population since at least 2011 (see **Table 6**). Very few seasonal residents do occasionally visit and/or reside in Kitsk, Karut, and Verin Geghavank villages (see the photo below). The interviews with the seasonal villagers reveal that they moved to other locations because the small villages had extremely poor living conditions, with social infrastructure being absent (no drinking water, electricity, schools, medical support, work opportunities, shops, roads / remoteness from larger towns, etc.). Seasonal residents from the abandoned villages mention that they may return to the villages if the above issues are resolved. Most of them expect that the abandoned villages may revive due to the Project. Almost all villages in both communities experience a slight increase in population in summers, when children and grandchildren arrive to the elder relatives for summer vacations. There is also an intra-village migration in the summer periods.

Figure 6. Summer cottages in Verin Geghavank settlement

Working-age population of Sisian Community's affected settlements ranges from 56% (Lor) to 69% (Vaghatin), while the average community value is 63.9%. Thus, the Project affected settlements of Sisian Community are well positioned in terms of labour force availability. As for the affected settlements of Kajaran Community, the working-age population share is available for Geghi settlement only and is lower - 54%. This, however, is in line with the community's average (56.4%).

Under-aged population (0-15) of Sisian Community's affected settlements ranges from 21% (Shamb) to 28% (Vorotnavan and Getatagh), which exceeding the community's average (21.1%) and reflected a positive trend (an increasing youth share). Under-aged population of Geghi settlement constitutes 18%, which is in line with the common picture for the community and Syunik Region.

The share of elderly population (63 and above) of the affected settlements in Sisian Community falls within 10-12%. A higher share of elderly population is registered in Lor (20%) and Shamb (16%) settlements. Other settlements of Sisian Community do not face population aging. The share of elderly population of Geghi settlement is 18%, which is slightly lower than that of the community (18.7%), yet higher than the Syunik regional average (ca. 17%).

The migration rates are low in the affected settlement, with no major demographic changes having occurred during the last ten years.

2.1.6.3 Ethnicity, Religion and Language

The affected settlements of both Sisian and Kajaran Communities are almost exclusively inhabited by Armenians (there are basically no ethnic minorities). Therefore, the communication language within the settlements is Armenian. The population, especially the elderlies have Russian communication skills, some of the youth population have basic English communication skills as they learn English at schools. The settlements' population exclusively belongs of Armenian apostolic church.

Historically, many of the Project-affected villages had churches and some of them are preserved; however currently only two churches are operational in the affected villages of Sisian Community (St. Stephan church located in Darbas village and St. Grigor church in Sisian Town) and none in the affected villages of Kajaran Community (see **Figure 3, Figure 4** and **Figure 5** and photos in **Figure 39**).

2.1.6.4 Land Use and Agricultural Activities

The total area of the Project-affected settlements of Sisian Community is around 38,900 ha. Agricultural lands constitute 34,200 ha or around 84.9%, forest lands occupy 1,900 ha or 5.0%, and residential lands are 1,600 ha or 1.6%, including 700 ha of residential areas of Sisian town. There is a shortage of agricultural land in the area, especially within the administrative boundaries of Darbas, Shamb and Vorotnavan settlements and Sisian Town. The croplands are both privately and community owned (rented to farmers). Perennial plantings are under private ownership, and the grazing lands are mainly community-owned and are used by the local villagers within their respective settlements (see the photo below). The croplands are mainly used for vegetable and melon farming, as well as for cultivating cereals.

Figure 7. Grazing of cattle in Aghitu settlement (left) and arable land in Karut settlement (right)

The total area of the Project-affected settlements of Kajaran Community is around 39,400 ha. Agricultural lands constitute 25,400 ha or 64.5%, special protected areas occupy 5,700 ha or 14.4%, and forest lands are 3,400 ha or 8.7%. Considering the sparsely populated settlements, the population of the area does not seem to experience challenges associated with a lack of agricultural lands. The croplands within the settlements are both privately and community owned (rented to farmers). Perennial plantings are under private ownership, and the grazing lands are mainly community-owned and are used by the local villagers within their respective settlements. Residents of the community are mainly engaged in horticulture, they cultivate fig, pears, apples, cherries, raspberries, blackberries, as well as cabbage, potato, beans, cucumber and tomatoes.

2.1.6.5 Employment, Incomes and Expenditures, and Livelihoods

The major employers of Shenatagh, Lor and Getatagh rural settlements are public utility / services operators and public institutions such as schools, kindergartens and health institutions. Limited employment opportunities in these villages are due to their remoteness

from the main industrial enterprises of the region. The household's incomes are mainly made up of salaries, pensions / retirement benefits and agriculture (crop farming and cattle breading). The household's average monthly income is up to 150,000 AMD (375 EUR).

The major private employers of Darbas and Shamb settlements are the "Tatni" mineral water bottling plant, "Darbas" carbonated drinks plant, and Shamb HPP. Some men serve as professional / contract soldiers. The majority of the settlements' households have at least one member employed in either private or public sector. The household's incomes are mainly made up of salaries, pensions / retirement benefits and agriculture (crop farming and cattle breading). Due to greater employment opportunities in the private sector the household's average monthly income in Darbas and Shamb settlements is up to 200,000 AMD (480 EUR). Household incomes are spent mainly for food, utility bills and clothing, and partially for education.

The residents of Vaghatin, Vorotnavan, Aghitu, Noravan and Uyts settlements are mainly employed in retail trade and services, public services/utilities operators as well as in the public sector (schools, kindergartens, health institutions, military service). The majority of the households have at least one member employed in either private or public sector. Household incomes derive from salaries, pensions/ retirement benefits and agriculture (crop farming and cattle breading). The interviewees from Vaghatin and Vorotnavan settlements also mentioned money transfers (remittances) from family members working abroad as an income source. A household's average monthly income is ca. 170,000 AMD (400 EUR).

The residents of Ishkhanasar settlement are mainly employed in the public sector (schools, kindergartens, health institutions, and military service). Average monthly wages are around 150,000 AMD (375 EUR). A household's average monthly income is up to 120,000 AMD (300 EUR).

The prevailing majority of households (also those having employed household members) are engaged in farming activities. Animal husbandry is most developed in the settlements of Lor, Shenatagh and Getatagh. Both animal husbandry and crop farming are equally developed in Darbas, Shamb, Vorotnavan, Vaghatin and Noravan settlements. In the settlements of Aghitu, Uyts and Ishkhanasar settlements crop farming is more developed than animal husbandry.

Several households in Darbas, Vaghatin and Uyts villages are involved in fishing in the Vorotan and Loradzor Rivers. Fishing is not a primary livelihood source and is mainly a leisure time, though fish is consumed in the households and forms part of the diet. There are several fish farms in this community, of which a fish farm located in Shamp village is the closest to the proposed road (ca. 1.5 km from it).

Sisian Town specializes in the food industry and building materials production and hosts a famous cheese factory. Private employment opportunities are also provided in the construction sector, retailing sector, public utility operators, as well as restaurants located in the town. The major public employers are the municipality, public schools and kindergartens of the town. The majority of the households have at least one member employed in either private or public sector. 40% of households (also those having employed household members) are engaged in farming activities. Household incomes are mainly made up of salaries, social allowances, retirement benefits, and partially come from crop farming and cattle breading. A household average monthly income is 250,000-350,000 AMD (600-850 EUR). Household spendings are mainly directed towards food, utility bills, clothing and education.

In Kajaran Community, the major public employers in the affected rural settlements are municipal schools and kindergartens. The major private employers are public utility operators and the Zangezur Copper-Molybdenum Combine. Some of the male residents serve as professional / contract soldiers. Average monthly wages of the population of the affected settlements within this community are around 150,000-180,000 AMD or 360-430 EUR (the wages of employees of the Kajaran mine (operated by Zangezur Copper-Molybdenum

Combine) are around 250,000-300,000 AMD or 600-700 EUR). In fact, the Kajaran copper-molybdenum mine is the most attractive employer in the region.

The majority of working age residents of the community are engaged in animal husbandry, gardening and farming. The main types of fruit trees are pears, apples, walnuts, residents also cultivate berries: blackberries and currants. Milk is processed to produce yogurt, butter and cheese for household own consumption. Meat and meat products obtained from animal husbandry are mainly sold among residents of nearby settlements, as well as in Kapan and Kajaran Towns.

Almost each of the affected rural settlements of both Sisian and Kajaran Communities have several households that are engaged in bee farming and honey production for own consumption. Some of households have further developed this activity and produce honey and bee-keeping crafts for sale. According to the interviews, an average annual income from a well-managed bee-keeping activity is around 200,000 AMD (500 EUR) to 2,000,000 AMD (5,000 EUR), though this differs from year to year. Bee-keeping is considered to be a very profitable activity in the villages.

Some households in about ten villages of Sisian and Kajaran Communities produce fruit vodka mainly for their own needs, but also for sale. They estimate the annual income from this activity as being around 100,000 AMD (250 EUR).

2.1.6.6 Housing and Utilities Infrastructure

The settlements of Lor, Shenatagh, Getatagh, Darbas, Vorotnavan, Vaghatin, Noravan, Aghitu, Uyts, and Ishkhanasar host 80-120m^2 private houses, mostly built in the 1950s-1980s. The houses are either one- or two-floor, made of masonry or concrete blocks. The settlement of Shamb is also built up with a few multi-apartment residential buildings built in the early 1970s. In Sisian Town, there are both private residential houses and multi-apartment buildings, which were built in the 1950s-1980s. Both stone and timber as well as reinforced concrete were used for the construction of the buildings. All affected settlements within Sisian Community are connect to the power supply network. The local potable water supply is available in all settlements. Some of the settlements have also local water discharge systems, which require reconstruction. Sisian Town and Noravan settlement are connected to the natural gas distribution network.

There are no buildings that are suitable for living in Kitsk, Karut, Geghavank and Vocheti settlements of Kajaran Community. These settlements have been abandoned for a while and are not connected to gas, power and potable water supply networks (see the photos below). Yet, some of them are attended by seasonal residents (see 'Population' **Section 2.1.6.2** above) and even some land plots are cultivated (**Figure 7**).

Figure 8. Abandoned houses in Kitsk rural settlement

Geghi, Getishen, Nor Astghaberd, Kavchut and Dzagikavan settlements of Kajaran Community accommodate 80-120m^2 private houses, mostly built in the 1950s-1980s. The houses are either one- or two-floor, built with masonry or concrete blocks.

The site visits have identified that Verin Geghavank, though formally considered 'abandoned' (no permanent population), hosts several summer houses owned by the residents of the nearby communities (mainly from Kajaran) and occupied in summer period (summer visitors). All affected settlements within Kajaran Community (apart from the abandoned ones) are connected to the power supply network. The water supply network is arranged locally in the settlements. The settlements are not connected to the natural gas distribution network.

2.1.6.7 Tourism

Sisian Town is a rather well-known tourist destination owing to tourist spots located within or in close proximity to it, such as an ancient Bronze-Iron Ages tomb with a history of 2,000 years, St. Hovhannes Church (Sisavan, **Figure 38, b)**), the rock paintings of Ukhtasar (5th-2nd millennium BC), Zorats Qarer monument (3rd-1st millennium BC, **Figure 26, d)**), the megalithic settlement of Uyts (5th-2nd millennium BC), etc. There are hotels and guest-houses providing accommodation services to visitors.

Tourism is not developed in the settlements of Lor, Shenatagh, Getatagh, Shamb and Darbas of Sisian Community. According to the local administration, the number of tourists visiting the settlement is only up to 50 annually. There are no households providing accommodation services to visitors.

The settlements of Vorotnavan, Vaghatin and Aghitu host a bigger flow of tourists due to proximity to such well-known touristic attractions as Vorotnavank Monastery (**Figure 26, b)**), Vorotnaberd, etc. There are several guest-houses in the area.

Although there is a number of tourist spots in the region, tourism is not developed in the affected settlements of Kajaran Community. As per the local administration, the annual number of tourists visiting the area is only up to 50-60. There are no households providing accommodation services to visitors.

2.1.6.8 Communications

The absolute majority of the households in the Project-affected settlements have cellular phones. Eight digital national programmes as well as a regional TV "Sosi TV" are broadcasted in the settlements. Connection to the Internet is primarily provided by Ucom and Viva-MTS.

2.1.6.9 Transport and Roads

The settlement of Ishkhanasar is located close to the M2 interstate road. The affected land plots of Sisian Town and Uyts settlement are in proximity to the M2 junction to Sisian as well as the T-8-10 "Aghitu-Noravan-H60" road. Both paved roads are in good state. The settlements of Vaghatin, Vorotan, Shamb, Darbas, Getatagh, Lor and Shenatagh are located along or in close proximity to the H-60 "M2-Vaghatin-Shenatagh" intercommunity road. The Aghitu-Shenatagh section of this road was recently rehabilitated using the World Bank financing. The paved roads within Sisian Town are in good condition, whereas the intra-settlement earth roads require upgrades.

Kitsk and Karut settlements are connected to the E117 inter-community road through a dirt road, which is heavy-going in the warm season and impassable in winter. Other affected settlements in Kajaran Community are located along or in proximity to the E117 road. The road cover is generally satisfactory; however, some sections do require rehabilitation. Intra-settlement earth roads require renovations. No public transport is available between the affected rural settlements in Sisian and Kajaran Communities and Kapan (the administrative centre of Syunik Region) and Yerevan.

In April 2022, the E&S team conducted a number of interviews with household members living along the roads leading to the Project region. Namely the residents of Geghi, Andokavan, Pukhrut, Dzagikavan, Lernadzor, Babikavan, Lor, Shamb, Vorotnavan and Ishkhanasar rural settlements were interviewed.

All interviewees indicated that traffic intensity is higher in spring and summer and much lower in winter. Residents of the Kajaran area consider the condition of the road *leading* to the M2 highway to be unsatisfactory, this section needs a major rehabilitation. The road pavement within the Sisian area is mainly in satisfactory conditions. The M2 highway is in good condition within both the Sisian and Kajaran areas. The interviewed residents complained about a long and difficult driving route when traveling to Yerevan. The interviewed residents of the Kajaran area are displeased with availability and quality of road signs, while the residents of the Sisian area indicated that the road signs are available along the entire road leading to the M2 and are in good condition. The interviewed residents mainly use personal vehicles when travelling to the nearest towns as well as to Yerevan. Use of public transport is complicated since public bus routes/stops are not available in the majority of rural settlements as well as due to unfavourable bus route schedules.

The respondents noted the movement of heavy vehicles, in particular vehicles carrying building materials, on the existing roads. The negative traffic impacts they note relate to noise and dust as well as safety for residents (especially children). For some respondents, living along the existing roads, the road brings certain opportunities, such as a convenient location for retail trade, the possibility of selling agricultural products "from the doorstep", etc.

2.1.6.10 Market Places

There are one or more food stores in each of the affected rural settlements of Sisian Community. There is also a supermarket in Darbas settlement (see the photo below), where a wide range of food and household goods is sold. In Vaghatin settlement there are three stores, where there is a quite big range of choice of food, beverages and household chemistry. For big-budget food purchase as well as purchase of clothing and household goods the population visit Sisian. Around 2/3 of agricultural products produced in the area are consumed locally, the rest is sold in Sisian, Kapan, and/or Meghri towns.

Figure 9. "Masreni" super-market in Darbas

Each of the affected settlements within Kajaran Community has one or more food stores, however with a very limited choice of products (bread, oil, coffee, sweets, and cigarette). To purchase other food, as well as clothing and household goods, local residents travel to Kapan and/or Kajaran. Sometimes, villagers barter the necessary food and household items.

2.1.6.11 Industry and Construction

There are no industrial facilities in the affected settlements of Sisian Community except for Shamb settlement, where "Tatni" mineral water bottling plant, "Darbas" carbonated drinks plant as well as Shamb HPP plant are located. There are several food / dairy processing enterprises and building materials production facilities in Sisian Town. New basic school buildings are being built in the settlements of Darbas and Vagatin. There are several private and public construction projects being undertaken in Sisian Town.

Figure 10. Tatni" Mineral Water Bottling Plant, Shamp

There are no industrial facilities in the affected settlements of Kajaran Community. At the same time, Kajaran Community is the country's largest mining industry centre. The Zangezur Copper-Molybdenum Combine is located in Kajaran Town. Five small HPPs are located within Lernadzor administrative area of Kajaran Community. There are no ongoing construction projects within the affected settlements of Kajaran Community.

2.1.6.12 Socially Vulnerable Population

65 households receive the government's social assistance in the affected rural settlements of Sisian Community. There are also 566 residents receiving retirement benefits. The incomes of socially vulnerable households are mainly made up from retirement benefits, social assistance and sales of agricultural products. According to the administrative heads of Shenatagh and Noravan villages, in each of the villages there are 10-15 families who do not receive social benefits, but live below the poverty line.

There are 25 household receiving the government's social assistance in the affected settlements of Kajaran Community. 133 residents receive retirement benefits. The incomes of socially vulnerable households are mainly made up from retirement benefits, social assistance and sales of agricultural products.

During the socio-economic field work, 16 potentially vulnerable residents[27] among the project affected households, from 13 Project-affected villages of Sisian and Kajaran Communities were interviewed (see **Annex 1**). Income of most of these families is made of pensions, state allowances and benefits, and rarely of salaries and profit from agricultural activities. Subsistence farming helps them to survive (half of the families have poultry, some have cows, and cultivate vegetables/cereals). For most them, all income is enough for only food and utilities. In both Sisian and Kajaran Communities, vulnerable population has positive expectations associated with the Project in terms of employment opportunities, tourism development and better connectivity (improved roads, shorter distances to larger towns, etc.).

2.1.6.13 Education

Within Sisian Community, there are basic schools in Lor, Shenatagh, Darbas, Shamb, Vorotnavan, Vaghatin, Aghitu, Noravan, Uyts and Ishkhanasar rural settlements (see the overview maps in **Figure 3** and **Figure 4** and samples photos below), with 469 pupils and 269 employees in total. There are the following general education schools in Sisian Town:

- Sisian senior school: 603 pupils, 66 employees,
- Sisian middle school No 1: 253 pupils, 50 employees,

[27] Including eight households with disabled persons, elderly single-pensioner households, several multi-children families (3 to 6 children), and several families below the poverty line.

- Sisian middle school No 2: 416 pupils, 62 employees,
- Sisian middle school No 4: 449 pupils, 42 employees, and
- Sisian middle school No 5: 457 pupils, 50 employees.

Sisian Town hosts a branch of the State Agrarian University. Vocational education in the town is provided by the Sisian State College with 480 pupils and 97 teachers.

Figure 11. Basic school in Shenatagh (left) and in Dzagikavan (right)

There are kindergartens in Lor, Shenatagh, Darbas, Shamb, Vorotnavan, Vagatin, Aghitu, Noravan and Uyts settlements with 181 attendees in total. There are also four pre-school institutions in Sisian Town.

Locals also choose to study in Goris, Kapan (the administrative centre of Syunik Region) and in Yerevan. The most popular educational stream among male students is engineering, and among female students - medicine (doctors and nurses) and teaching.

There are basic schools in the settlements of Geghi and Dzagikavan with 66 pupils and 49 employees (**Figure 5,** and a sample photo above). There are no schools in the rest of the affected settlements of Kajaran Community, children from these villages attend schools in Geghi, Dzagikavan and Lernadzor. There is a kindergarten in Dzagikavan settlement with 19 attendees.

There is a technical school in Kajaran Town. In the absence of higher education institutions in Kajaran Community, students attend such in the nearest city, i.e., the regional centre - Kapan.

Vocational education is popular among the youth, since it is less expensive and gives better employment opportunities, especially for those students who prefers to live in the hometown. Some of students graduating in Yerevan do not return to the hometown, since more employment opportunities are available in the capital.

2.1.6.14 Healthcare

Midwifery (outpatient) stations operate in the settlements of Lor, Getatagh, Shenatagh and Shamb (under the Darpas Healthcare Centre). The Healthcare Centre has 11 employees including a general practitioner (family doctor). Emergency medical care for the community population is provided through the Darbas Healthcare Centre.

The settlements of Vorotnavan, Vaghatin, Aghitu, Noravan, Uyts and Ishkhanasar are served through midwifery stations operating under Sisian Medical Centre. This centre has surgical, therapeutic, children's, obstetrics and gynaecology departments and provides emergency medical care and hospital services (for 50 beds, 750 patients annually), as well as outpatient services (the polyclinic provides around 410 patient consultations per day). Primary health care services are provided by family doctors, local therapist and local paediatrician in the medical centre.

A midwifery station / outpatient (belonging to the Kapan Medical Centre) operates in Geghi settlement serving both Geghi and several settlements around, including Getishen and Nor Astghaberd. Another midwifery station is located in Lernadzor rural settlement serving the Project-affected settlements of Dzagikavan and Kavchut (under the Kajaran Medical Centre).

The Kapan and Kajaran Medical Centres provide outpatient as well as primary care and emergency medical services. General practitioners (family doctors) serving the settlements work at the Kapan/Kajaran Medical Centres and pay regular visits to the settlements to provide therapeutic / medical services.

Some medical treatments (such as complicated surgical procedures) are not available within the region and are provided in Yerevan. There are no complaints about the medical services.

Speaking about the most prevalent health problems in the area among children, adult men and women (over 20 years old), medical staff from Kajaran Community differed in their views. One said that generally people were healthy and this was due to clean environment and clean water, while another opined that the most spread health problems in their area were blood pressure and diabetes and these problems were caused by people's daily activities.

Nurses from Sisian Community also gave a variety of health problems that were common in the area and their causes: from thyroid problems, blood pressure and other cardiovascular diseases to diabetes and oncology attributed to air pollution effects – all of them characteristic for adults. Some respondents also mentioned that people who are over 20 generally do not pass medical check-ups until they are called up to do so and they mostly suffer from joint and spinal pains. With regards to children, most respondents from Sisian Community mentioned that children that turn to them mainly suffer from acute respiratory diseases and there were some cases of epilepsy.

As to how local people's occupation affect people's health, medical staff from Kajaran Community said that people get sunstroke and dizziness while gardening and working under the sun. Nurses from Sisian Community noted that seasonal works are generally hard and people mostly complain of high blood pressure, joint and spinal pains, and stiffness.

2.1.6.15 The Attitude to the Project and Expectations

The overall attitude towards the Project is positive among all the interviewed and / or consulted residents of the settlements. The expectations of the population are primarily related to the development of tourism, facilitating access to markets for agricultural products, as well as the revival of the service sector in settlements along the route. There is an expectation that the relevant pedestrian crossings and agricultural passages will be provided. There are no specific Project-related concerns. The population is interested in obtaining more information about the Project implementation schedule and planned activities.

2.2 Gender Baseline Analysis

2.2.1 Introduction and Approach

The below sections look into gender profiles at three levels: Armenia with reference to the neighbouring countries, Syunik Region and Project-affected settlements. The study areas are the same as for the socio-economic study (see **Section 2.1.1**).

The international, national and regional gender information was collected from available publication and open sources. The gender data collection and gap analysis of the Project-affected settlements of Kajaran and Sisian Communities was conducted based on the ESIA's socio-economic study, including in-depth interviews and consultations with women respondents (school and kindergarten teachers, nurses, housewives, school girls, vulnerable women, pensioners, etc.) and a Focus Group Discussion (FGD) with the Project-affected women in Darbas rural settlement. The in-depth interviews and FGD scope and methodology drew upon the E&S data collection guide that was prepared in advance and agreed with the EBRD. In total, 81 women were interviewed and/or consulted (the list of in-depth interviews is provided in **Annex 1**, a detailed analysis of the female FGD is provided in **Annex 2**, and the minutes of FDGs are given in **Annex 3**).

To ensure a better inclusion of female issues into the Project baseline analysis and assessment, the members of the NGO "Women's Resource Centers" of Sisian and Kapan were engaged to help the ESIA experts collect the baseline data.

Women are active members of the communities and the paragraphs below summarise the gender-related insights to the settlements in the Project area.

2.2.2 National Gender Profile

2.2.2.1 The position of Armenia according to global gender indicators

To assess a national gender profile international organizations define the following three primary indexes, namely: the Global Gender Gap Index (GGGI)[28], the Gender Development Index (GDI), and the Gender Inequality Index (GII). **Armenia is the 114th among 156 countries of the world by the GGGI, 81st among 189 countries by the GDI, and 54th among 162 countries by the GII**[29] **(Table 7).** Armenia's rank is quite high compared to the neighboring countries: it is the first by the GII and GDI and the third by the GGGI, following Georgia and Azerbaijan (**Table 7**)*.*

Table 7. The position of Armenia the Region by Global Gender Indicators

Countries	GGGI			GDI			GII		
	Global Rank	Score	Rank in the Region	Group[30]	Value	Rank	Global Rank	Value	Rank in the Region
Armenia	**114**	0.673	**3**	1	0.982	**1**	54	0.245	**1**
Azerbaijan	**100**	0.688	**2**	3	0.943	**3**	73	0.323	**3**
Georgia	**49**	0.732	**1**	1	0.980	**2**	76	0.331	**4**
Iran	**150**	0.582	**5**	5	0.866	**5**	113	0.459	**5**
Turkey	**133**	0.638	**4**	4	0.924	**4**	68	0.306	**2**

Sources: www.weforum.org/reports/global-gender-gap-report-2021, https://report.hdr.undp.org

The calculation of the above indexes is based on several statistical indicators and they can vary substantially, predetermining the rank of the country. Therefore, comparing gender subindexes of countries is more useful in order to understand a "gender status" of a certain country.

Table 8. Gender subindexes of Armenia and South Caucasus countries

Countries	Global GGI		Economic Partnership and Opportunities		Education Attainment		Health and Survival		Political Empowerment	
	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score

[28] The GDI and GII are determined based on gender inequalities of the United Nations Human Development Index (HDI). The Global Gender Gap Index was first introduced by the World Economic Forum in 2006 to benchmark progress towards gender parity and compare countries' gender gaps across four dimensions: economic opportunities, education, health and political leadership.

[29] The latest calculations of indexes are based on the statistical data of 2020 and are published in the following reports:

- «Global Gender Gap Report, 2021» www.weforum.org/reports/global-gender-gap-report-2021,
- «Human Development Report, 2020» https://report.hdr.undp.org

[30] Countries are divided into five groups by **Gender Development Index: group 1** comprises countries with high equality in Human Development Index (HDI) achievements between women and men (absolute deviation of less than 2.5 %), **group 2** comprises countries with medium to high equality in HDI achievements between women and men (absolute deviation of 2.5–5 %), **group 3** comprises countries with medium equality in HDI achievements between women and men (absolute deviation of 5–7.5 %), **group 4** comprises countries with medium to low equality in HDI achievements between women and men (absolute deviation of 7.5–10 %) and **group 5** comprises countries with low equality in HDI achievements between women and men (absolute deviation from gender parity of more than 10 %).

Georgia	**49**	0.732	64	0.705	30	1.000	50	0.977	60	0.245
Azerbaijan	**100**	0.688	36	0.748	62	0.996	154	0.939	141	0.069
Armenia	**114**	0.673	96	0.655	46	0.998	150	0.950	132	0.091
Turkey	**133**	0.638	140	0.486	101	0.875	105	0.967	114	0.125
Iran	**150**	0.582	150	0.375	119	0.953	129	0.963	151	0.036

Source: www.weforum.org/reports/global-gender-gap-report-2021

As can be seen from **Table 8,** the global rank of Armenia is relatively high in terms of 'educational attainment' and relatively low in terms of 'health and survival', which is largely explained as being a consequence of the high sex ratio at birth of males to females. In 2015-2020, the average ratio in Armenia was 1.11[31] (to compare, in Azerbaijan - 1.13, in Georgia - 1.07, in Turkey and Iran - 1.05).

2.2.2.2 Gender equality policy and legal framework in Armenia

Gender equality in Armenia is guaranteed by the country's Constitution, national legislation, and international agreements. Over the past 30 years, the state gender equality policy has undergone significant transformations, which were dictated by the characteristics of the socio-economic development of Armenia and the understanding of gender equality priorities by the society. Basically, the emphasis of gender equality policies changed over time as follows:

- *the 1990s*, when the issues of the population's poverty, social protection, and minimum subsistence were on the government's political agenda, therefore, ***in those years the gender equality policy was aimed at assessing women's poverty and vulnerability and solving their social problems.***
- *the years 2000-2008*, when the Government of the country, with the technical support of international donor organizations, embarked on the development and implementation of the Poverty Reduction Strategy Paper and the Medium-Term Expenditure Framework. ***In 2000, a women's council was established under the RA Prime Minister to "make the voice of vulnerable groups, including women, heard" and to ensure their participation in the processes of developing pro-poor policies.*** The council included the renowned and famous women in the public and political life of the country in those years, including women leaders of dozens of non-governmental organizations (NGOs).
- *the years 2010-2015*, *when for the first time the RA government emphasized the issue of* ***gender equality*** *by adopting a political document on the* ***"Gender Policy Concept of the Republic of Armenia"*** *(2010) and defining the implementation of the necessary institutional reforms in that direction. In particular, during those years, the* ***"Strategic Programme of Gender Policy for 2011-2015"*** *(2011) and the RA Law* ***"On Ensuring Equal Rights and Equal Opportunities for Women and Men"***[32] *(2013) were adopted.*
- *after 2016* when Armenia adopted the UN Sustainable Development Goals (SDGs, which came into force on January 1, 2016) and committed to ***SDG 5 "Achieve gender equality and empower all women and girls".*** To fulfil this, the RA Government adopted the ***"2019-2023 Strategy for the Implementation of Gender Equality Policy in the Republic of Armenia"*** (2019) and approved the Plan of Actions to be implemented in this area.

[31] In the case of natural births, the index ranges from 1.02 to 1.04. In different years in Armenia, this ratio was 1.14-1.19 and this was reasoned by the spread of sex-selective abortions. In the mid 2010s relevant political and legislative measures were adopted, and as a result, the indicator somewhat improved. See: Sex-Selective Abortions as Part of Gender-Based Discrimination in Armenia: Study | Epress.am

[32] The RoA Law No HO-57-N dated 20.05.2013, https://www.arlis.am/DocumentView.aspx?DocID=83841

The RA Gender Equality Policy for 2019-2023 has the following priorities:

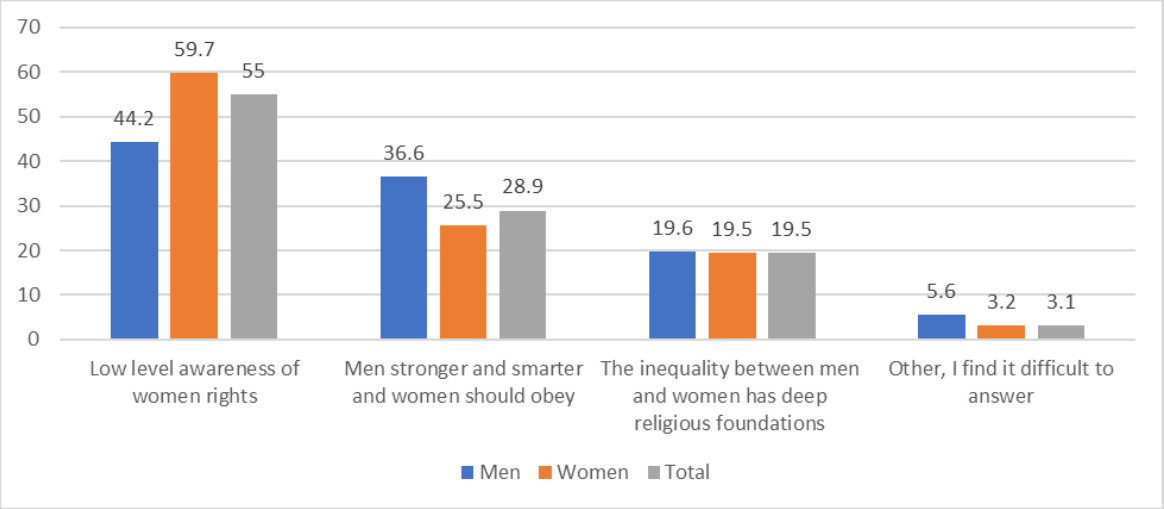
- improvement of the national mechanism for the advancement of women, equal engagement of women and men in management and decision-making,
- overcoming gender discrimination in the socio-economic area, expanding women's economic opportunities,
- expanding the full and effective participation and equal opportunities for women and men in education and science,
- expanding equal opportunities for women and men in the health sector,
- prevention of gender discrimination.

In order to manage strategic issues of gender equality and coordinate respective activities, the **Council on Women's Affairs** (under the chairmanship of the RA Deputy Prime Minister) and the **Working Group on Gender Issues** adjacent to the Council (under the leadership of the RA Deputy Minister of Labour and Social Affairs) were established in 2019. Apart from the representatives of public authorities, women leaders of 11 NGOs are engaged in both the Council on Women's Affairs and the Working Group.

2.2.2.3 Snapshot of gender inequality in Armenia

There are numerous gender analyses, surveys, and studies conducted in Armenia so far. Most of them are implemented with the financial and methodological support of international organizations, local or foreign experts, and/or institutions, mainly NGOs[33].

According to the results of the "Gender Barometer" sociological survey[34] conducted by the "Gender Research and Leadership Centre", ***about 60% of the respondents believe that the inequality between women and men is strongly emphasized in the public life of Armenia.*** As for the reasons for gender inequality, both women and men give more importance to the low level of awareness of women's rights (**Figure 12**)**.**



Source: Gender Barometer.Armenia.English.pdf (ysu.am)

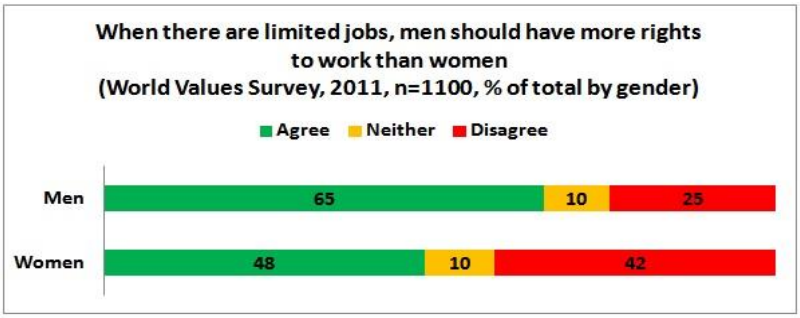
Figure 12. Main reasons for gender inequality in Armenia, % of the respondents

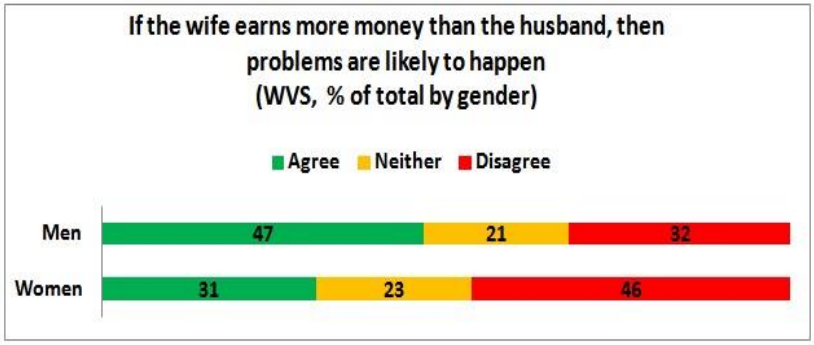
[33]The "Gender Research and Leadership Center" (ysu.am) has been operating at Yerevan State University for years, and reports on various gender research conducted in Armenia are posted on its website.

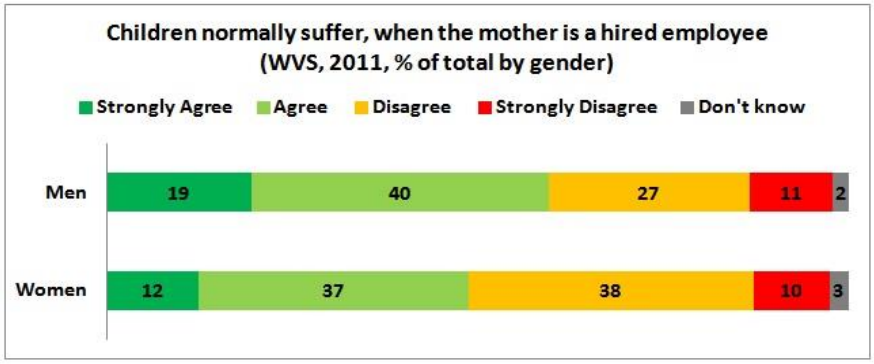
[34]The research was carried out in October-November of 2014, among 2,130 people living in ten regions of the RA and the city of Yerevan. Gender Barometer.Armenia.English.pdf (ysu.am)

Interestingly, one fifth of the respondents believes that the inequality between ***women and men in the society of Armenia has deep religious grounds.*** 36.6% of the interviewed men and 25.5% of the women mentioned the advantage of men vs. women in terms of "intelligence".

The problems of gender inequality are determined by the value system established in the Armenian society. This is evidenced by the results of another survey conducted in Armenia[35] (**Figure 13**). Although it was conducted around ten years ago, such a situation continues to exist in the society today and is recorded in many new studies and statistical data.







Source: Women in Armenia: equality through challenges! - CRRC

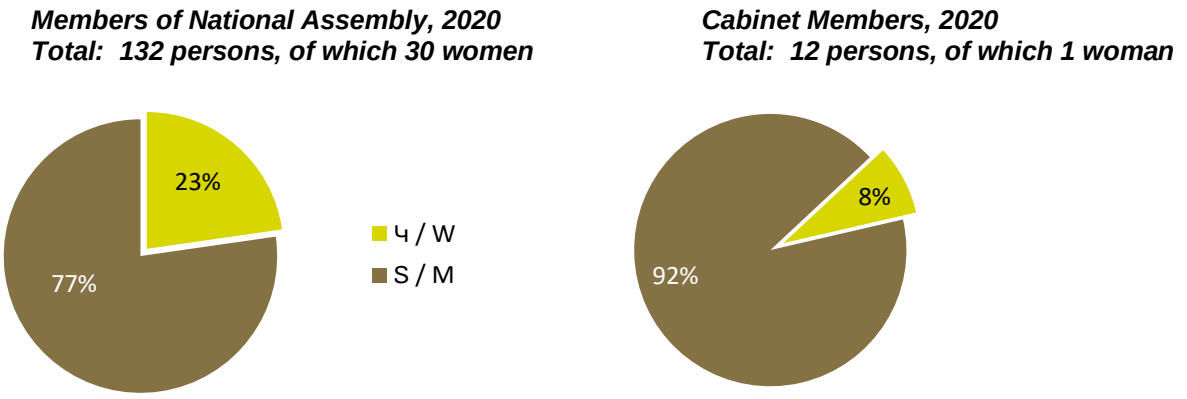
Figure 13. Gender inequality in the value system, Armenia, 2011

The above beliefs of the Armenian society have led to the following gender inequality features[36]:

[35] World Value Survey by the "Caucasian Research Resources Center, CRRC Armenia" foundation Women in Armenia: equality through challenges! - CRRC

[36] The issues of gender inequality in Armenia are diversely presented in the reports published by various international organizations. See: armenia-country-gender-equality-brief.pdf (euneighbourseast.eu); Armenia: Country Gender Assessment | Asian Development Bank (adb.org); USAID-Armenia-Gender-Analysis-Report-1.pdf (banyanglobal.com); Country Gender Profile_ ARMENIA_ENG.pdf (europa.eu); Gender equality and SDGs Armenia.pdf (unwomen.org), Microsoft Word - MEN AND GENDER EQUALITY_Final.docx (unfpa.org), etc.

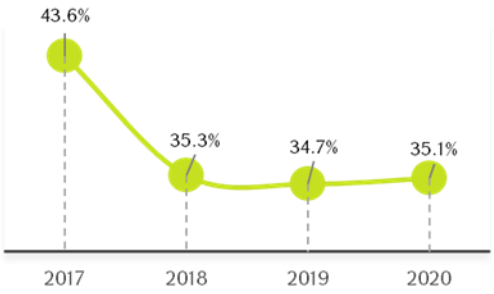
- ***Politics remains a largely male domain*** due to factors such as women having more family responsibilities than men which limits their time to invest in a political career and *perceptions that men make better leaders than women*. Women are underrepresented in ministerial positions. Community councils have few women elected as members, and women are rarely selected as heads of provinces (marzes) or deputy heads of provinces.



Source: Women and Men in Armenia, 2021, https://www.armstat.am/am/?nid=82&id=2439

Figure 14. Share of women in political positions.

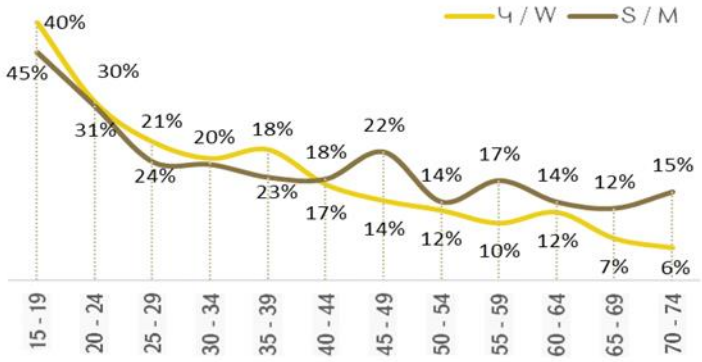
- ***Women's labour force participation is lower than that of men, and more women are working in part-time positions.*** Stereotypical gender views on feminine and masculine economic activity are limiting women's choices, with most women working in low-paid works of agriculture, education, health, and culture sectors. As a result, women earn about two-thirds of what men earn. The graph below shows ***Gender Pay Gaps in Armenia for 2017-2020***:



Source: Women and Men in Armenia, 2021, https://www.armstat.am/am/?nid=82&id=2439

Figure 15. Gender Pay Gaps in Armenia for 2017-2020

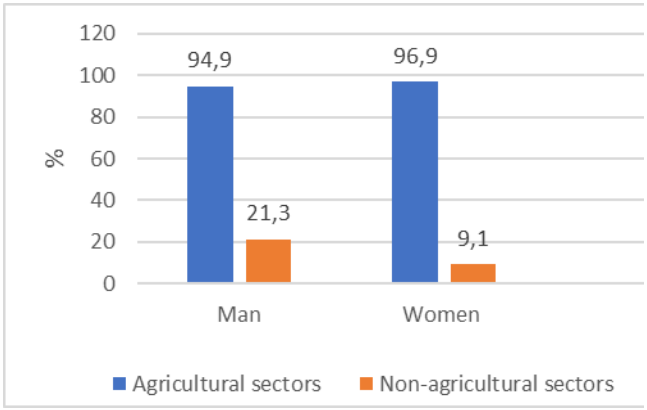
- ***Unemployment is high among young women*** who are more likely than young men to give childcare and family responsibilities as their reason for not being active in the labour force. The highest unemployment rate occurs among the age group, which is between 25 and 34 years old, coinciding with childbearing among women. This situation is complicated by low levels of pre-school attendance, especially in rural areas, where just 17.2% of children attend preschool.



Source: Women and Men in Armenia, 2021, https://www.armstat.am/am/?nid=82&id=2439

Figure 16. Unemployment rate by age groups in Armenia, 2020

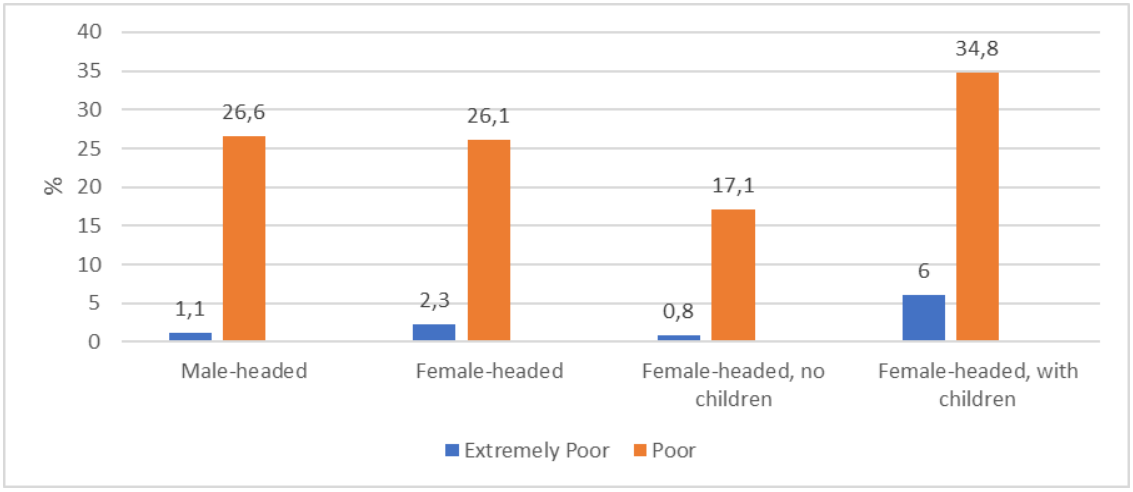
- ***Women are more likely than men to work informally in agricultural sectors.*** Informal employment excludes rural women from social protection and labour protection measures. Temporary work and the lack of consistent pay place informally working women in a vulnerable position, both from a financial and a social protection-related perspective.



Source: Labour Market in Armenia, 2021, https://www.armstat.am/file/article/lab_market_2021_4.4.pdf

Figure 17. Informal employment rate in agricultural and non-agricultural sectors, 2020

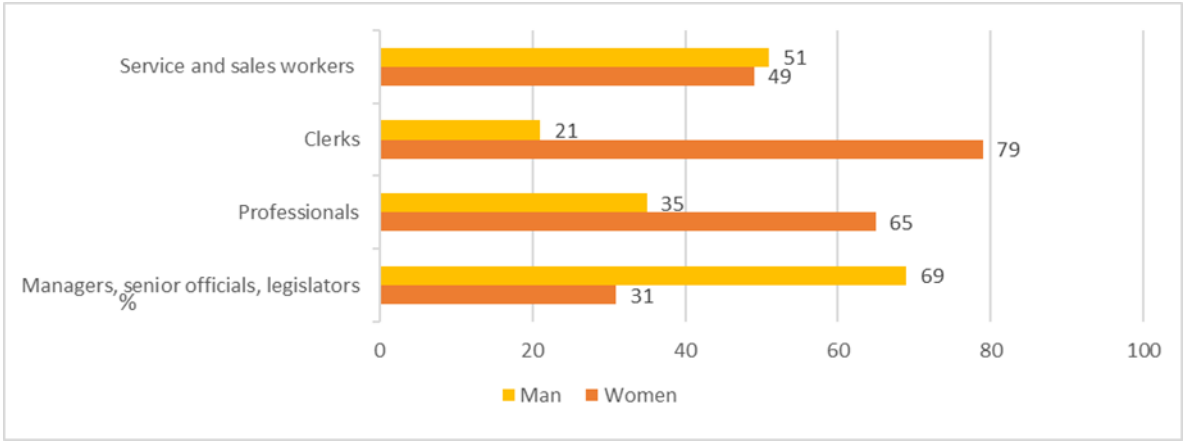
- ***There are relatively more extremely poor women than men in Armenia***. The poorest households in the country are households headed by women and households with children under six years old. There are more women-headed households among extremely poor households (2.3%) than households headed by men (1.1%). Gender differences exist in child poverty, as there are more girls (2.8%) among extremely poor children than boys (1.8%).



Source: Social Snapshot and Poverty in Armenia, 2021, https://armstat.am/file/article/poverty_2020_a_2..pdf

Figure 18. Poverty rate by gender of household head, 2019

- ***There is a lack of women's economic empowerment in Armenia***. Persistent vertical and horizontal segregation[37] leads to women's lower levels of representation as managers/leaders. Although employed young women demonstrate higher educational attainment and are engaged in more non-manual and skilled work than young men, young men are *twice more likely to work in managerial positions than young women.*



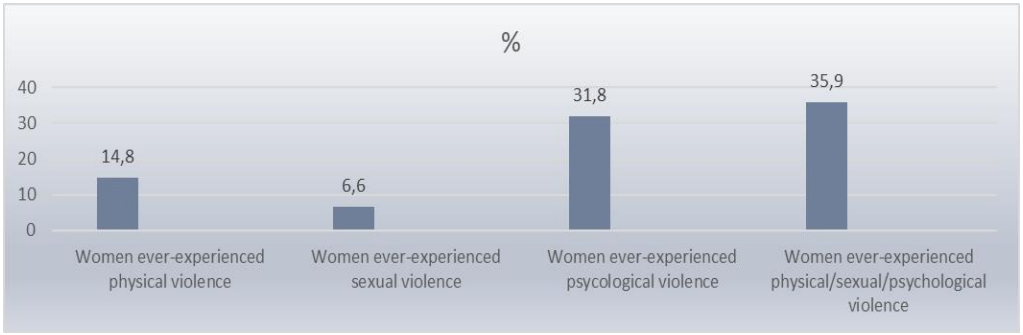
Source: Women and Men in Armenia, 2021, https://www.armstat.am/am/?nid=82&id=2439

Figure 19. Employed population by occupational groups, 2020

- ***Violence against women remains among the unresolved issues in Armenia*** due to the "closed" cultural environment and functioning social norms. The violence is likely to be hidden because of many reasons, including the shame of speaking out about the phenomenon, the fear that violence may escalate, and most often, the fact that many women cannot distinguish the manifestations of violence, considering them a daily, ordinary routine. However, the survey conducted among about 3,000 women in Armenia revealed that *nearly 36% of ever-partnered women experienced physical, sexual, and/or psychological violence*.[38]

[37]Horizontal segregation arises when men and women do different types of work, e.g., women teach, and men are engaged in machine repair services; vertical segregation assumes a situation where women do not get jobs above a particular rank in organizations because of their gender.

[38]Survey on Domestic Violence Against Women, 2021 / Statistical Committee of the Republic of Armenia (armstat.am)

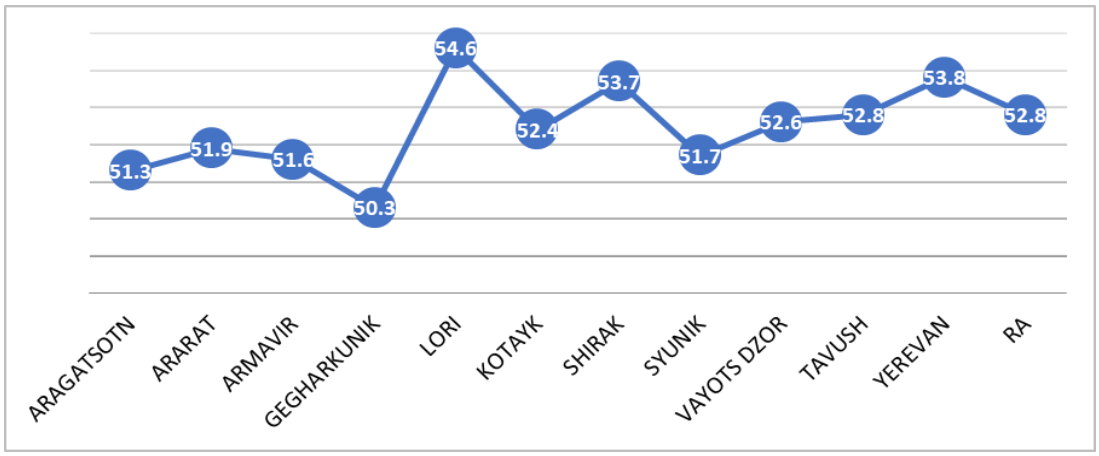


Source: Survey on domestic violence against women, 2021, https://armstat.am/en/?nid=82&id=2487

Figure 20. Gender-based violence in Armenia, 2021

2.2.3 The Gender Profile of Syunik Region

The share of women in Syunik Region's population is 51.7%, which is lower than the national average (52.8%), whereas ***the proportion of working age population (16-62 years) in the region is higher (66.7%) than the national average - 64.8 %.***



*Source: calculated based on the statistical collection data **"Women and Men in Armenia, 2021"**, https://www.armstat.am/am/?nid=82&id=2439*

Figure 21. Share of women (%) in the population by region and for the RA, 2021

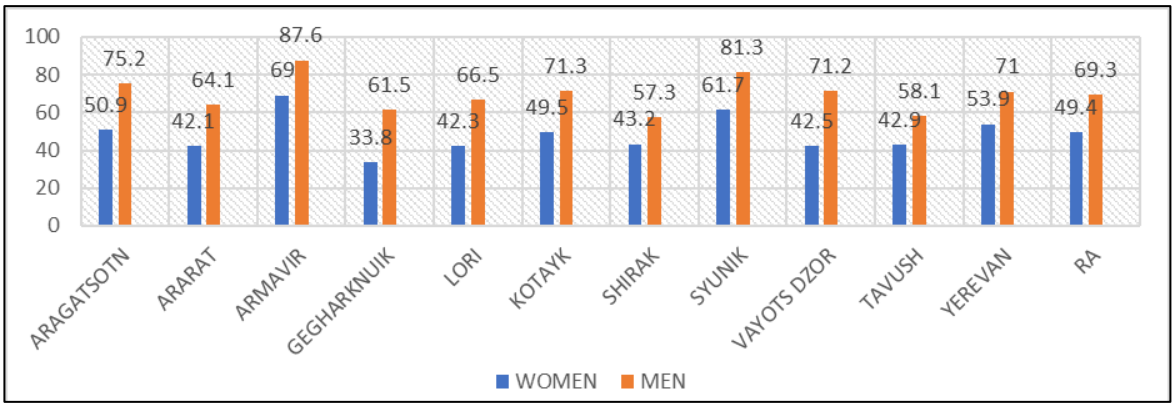
A relatively high share of the working-age population has a positive effect on the demographic dependency ratio[39] of the region, which is lower than the national average ratio, calculated for both women (55.6 vs the RA average coefficient of 56.9) and men (52.5 versus the RA average coefficient of 58.2)[40]. In other words, ***the lower number of "dependents" under the care of the working-age population reduces the "social burden" of the region.***

Syunik Region's population in very active in the labour market. **The labour force participation rate[41] there is 1.2 times higher than the national average** index. Gender-wise, it is 1.17 times higher for male participation, and **1.25 times higher for female participation**. For both, men and women, this regional indicator is the second highest across the country.

[39]The demographic dependency ratio is calculated by dividing the total number of children (0-15) and pensioners (63 and older, as the working retirement age defined by RA law) by the working age population (16-62 years).

[40]https://www.armstat.am/am/?nid=82&id=2439

[41]The labour force participation rate is the proportion of the labour force (ie, of employed and unemployed) in the labour resources (total the working-age population).

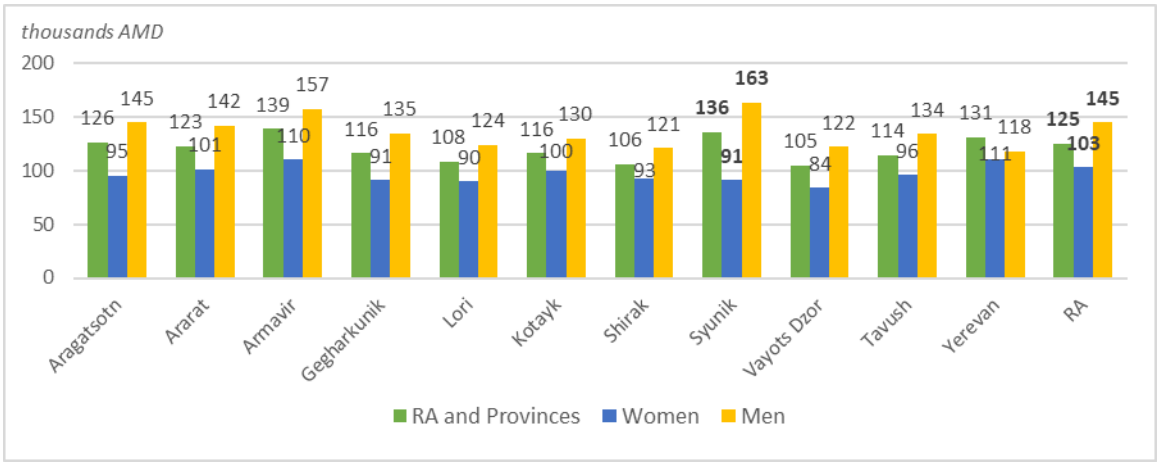


Source: prepared based on statistical collection data "Labour Market in Armenia, 2021", https://www.armstat.am/am/?nid=82&id=2447

Figure 22. The Rate of Women's Labour Force Participation by Region, 2020, %

41.2% of the employed population in Syunik Region are women, whereas, in the average annual number of the officially registered unemployed population, women make up 72%[42], which means that ***women are more vulnerable in terms of both employment and unemployment*** compared to men in the labour market of the region.

In terms of average monthly net salary/income, the region ranks second in the country, after Armavir province (see below).



Source: *prepared based on statistical data "Labour Market in Armenia, 2021", https://www.armstat.am/file/article/lab_market_2021_6.pdf*

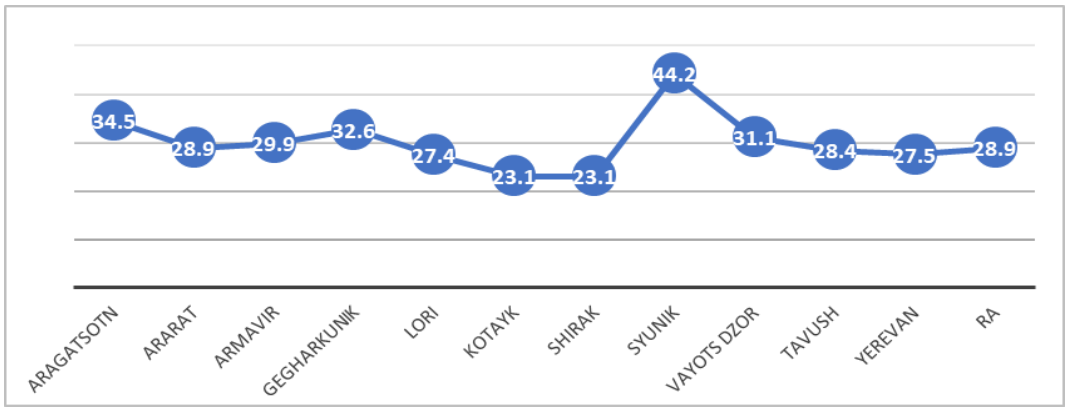
Figure 23. Average monthly net income of women and men [43], 2020

As can be seen from **Figure 23**, in Syunik Region ***the highest income for men in Armenia are*** recorded, 163,000 AMD / month, or 1.12 times more than the national average. At the same time, ***women's income in the region is quite low:*** 91,000 AMD / month, which is 88% of the national average. ***In other words, gender inequality in the region is inter alia expressed by a significant difference between women's and men's incomes.*** The

[42] https://www.armstat.am/am/?nid=82&id=2447

[43] The presented data refer to the net labour income of employees received from their main employment, after the deduction of taxes and other compulsory payments defined by law.

coefficient of the ***gender pay gap calculated based on income data is 44.2% in Syunik Region, while the national coefficient is 28.9%***.[44]



Source: calculated based on the statistical collection data "Labour Market in Armenia, 2021", https://www.armstat.am/file/article/lab_market_2021_6.pdf

Figure 24. Regional indicators of the gender pay gap, %, 2020

Women demonstrate not only the high labour participation level, but also a high economic activity in Syunik Region. The following indicators are illustrative of this: ***28.3% of women aged 15-49 in the region have a bank account, 98.2% have a mobile phone, 45.3% use a mobile phone to make financial transactions*** (for comparison, these indicators for Yerevan City are 26.3%, 99.0%, and 33.2%, respectively)[45]. Interestingly, more women use mobile phones for financial transactions in the region than men (***45.3% versus 29.1%)***, which manifests a ***rather important role of women in managing the family budget,*** *as well as their greater openness to using innovative approaches in daily life.*

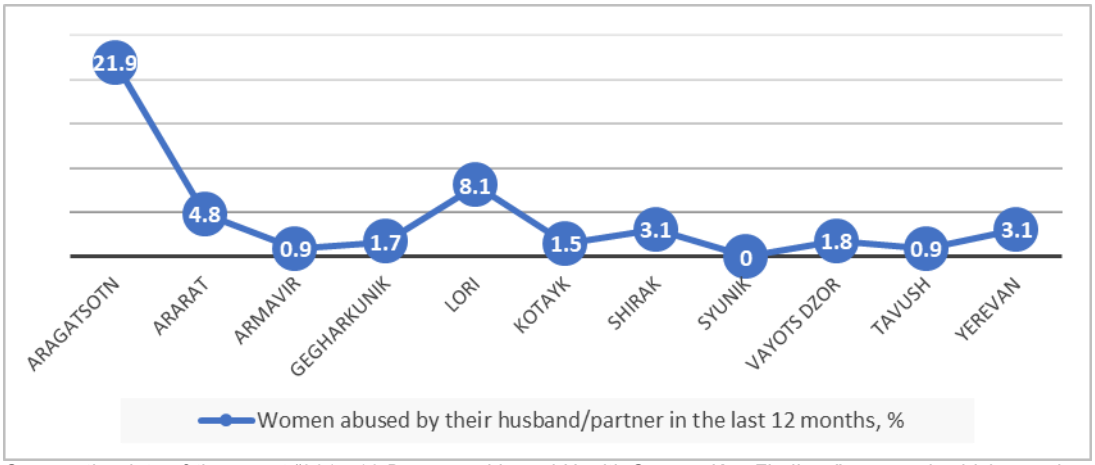
27.4% of region's households engaged in agriculture are headed by women (the national value is 25%). 52.4% of female-led farms engage in only land cultivation, 3.3% in only livestock and/or poultry farming, and 44.3% in mixed farming activities[46].

The active role of women of Syunik Region in the labour market, agricultural management, execution of financial transactions, and other economic operations is largely due to the equal rights of women and men in the families. Moreover, ***in terms of cases of domestic violence and gender-based violence, this region is the only one in the country where women have not reported any cases of violence against them.***

[44]The gender pay gap is calculated as the ratio of the difference between the average monthly wages of men and women to men's salaries. In 2020, the Statistical Committee of Armenia, with the support of the UN Women organization, carried out a gender analysis of the labour market, emphasizing the issues of wage inequality between women and men. According to the results of the research, wage inequality is based on the highly expressed gender nature of employment. The most "masculine", highest-paying industries are mining, electricity, gas construction, transportation, and public administration. Women are more likely to be employed in relatively low-paying education, health, and social security sectors. "Analysis of the gender pay gap and gender inequality in the labour market in armenia" https://armstat.am/am/?nid=82&id=2281.

[45]"Women and Men in Armenia, 2021" https://www.armstat.am/am/?nid=82&id=2439.

[46]The data source is the 2014 report on the comprehensive agricultural census carried out by the RA Statistical Committee (Agricultural census, 2014) https://www.armstat.am/am/?nid=82&id=2439.



Source: the data of the report "2015-16 Demographic and Health Survey, Key Findings" are used, which are also published in the collection "Women and Men in Armenia, 2021" , https://www.armstat.am/am/?nid=82&id=2439

Figure 25. Physically or sexually abused women, %

Women are also represented in the administrative structures of the region to a significant extent:

- One of the two deputy regional governors is a woman.
- Five out of 13 departments within the Syunik Regional Administration are headed by women[47].

The process of community enlargement that took place in 2017 had a negative impact on women participation in the **local self-governance**. Currently, Syunik Region has seven enlarged communities and not a single female community head.

2.2.4 Gender Issues and Gap Analysis of the Project-Affected Settlements

2.2.4.1 Women's legal and customary[48] rights

As it was noted above, the RA adopted the laws "On Ensuring Equal Rights and Equal Opportunities for Women and Men" (2013) and "Gender Equality Policy of the RA Government 2019-2023" (2019), as well as the Plan of Actions to be implemented in this area. So, Armenia has established a proper legal and institutional framework in relation to gender issues. Due to traditional systems there are still cases where the land transmitted to the son is a sample of application of customary rights (see below).

2.2.4.2 Women's right to land ownership

Women's right to own land in Armenia is protected by law, for example daughters' right to inherit land is well governed (in cases where the parents did not prepare a will for sons only). Due to traditional systems, there are still cases where the land transmitted to the son, and in that case the daughter should refuse her share formally. In case of divorce, land can be split between the spouses if this land was bought during the marriage period. Several land plots in all the affected settlement within the Project are registered to the females or jointly registered to female and male family members. **Registering land to females is considered to be normal and locally accepted.**

[47] http://syunik.mtad.am/structure/

[48] Customary rights to lands and resources refers to patterns of long-standing community land and resource usage in accordance with Indigenous Peoples' and local communities' customary laws, values, customs, and traditions, including seasonal or cyclical use, rather than formal legal title to land and resources issued by the state, https://www.un-redd.org/glossary/customary-rights

We live on my pension and the harvest from cultivating our land, the land belongs to me after the death of my husband, we cultivate it with my two sons.

In-depth interview with vulnerable households' female members

2.2.4.3 Awareness raising on gender issues

National NGOs (Women Resource Centre, Sose Women NGO) with the guidance and support of international organisations delivered several trainings in Darbas, Geghi, and Vorotnavan administrative areas to enhance women's understanding of gender gaps, women's rights protection and advocacy, ethnicity-related gender inequality particularities, and different patterns of social integration. However, the coverage of such trainings is not enough to achieve a representative sample in the settlements / villages.

2.2.4.4 Residence and comfort, utilities and sanitation

As summarised in **Section 2.1.6.6** and detailed in the profiles of the Project-affected settlements (**Section 2.1.6**), houses in the villages are mainly one- or two-storey. No issues were mentioned in terms of living space. In fact, the largest concern of the women in the villages is the absence of natural gas, and in several settlements – the absence or insufficient operation of sewage systems. The interviewed rural women, especially those employed in schools were concerned about the absence of a centralized heating in rural schools.

There is no gas in the community, so there is no centralized heating system in the school, which hinders the organization of the educational process in the winter months, also there is a need of renovation, the class rooms for practical lessons need re-equipment.

Vaghatin settlement's basic school female teacher

During the socio-economic study, the residents reported that drinking water pipelines in almost all settlements were old and the taste of the water was of concern, especially during the rainy seasons. They also mentioned waste management and sewage disposal problems within the settlements that worried them, because such issues negatively affect the environment and sanitary conditions.

The quality of drinking water is not good, there is sewage disposal in the village, but it discharges into an open area outside the village, which is problematic, there are frequent water pipeline accidents and it flows for days on the streets, which has its dangerous consequences.

Nurse of midwifery station of Vaghatin settlement

2.2.4.5 Food and nutrition

According to the in-depth interviews, the nurses of Geghi, Noravan, Ishkhanasar, Aghitu, Vaghatin, Getatagh and Darbas settlements' midwifery stations believe that the residents of their communities eat quite healthy food as their diets are to a large extent based on the agricultural and husbandry products they cultivate, produce or purchase in the area. According to the study results, overall, the nutrition of residents of affected communities considered as normal. Whilst the income of the families was not considered sufficient in order to diversify the food, it was highlighted that the quality and taste characteristics of food are high and it is ecologically clean because it is produced / processed in one's own farm and with one's own effort.

Everything we sow, produce, is healthy, because the water is clean, the environment is clean, and the food brought from outside is unhealthy, because of fertilizers used. We eat healthier here than people living in Sisian or Kajaran towns.
Participant of FGD held with women in Darbas village

2.2.4.6 Women occupations, skills and access to employment

In the Project affected settlements women are engaged in:

- agriculture resulting in both monetary and non-monetary incomes,
- paid public sector work (e.g., at kindergartens, schools, and medical units),
- paid private business, such as shops, hairdresser's saloon, pharmacy, bakery, etc. within the villages,
- unpaid household work / household member care.

The interviewees stated that there were less opportunities for women and that finding a job is easier for men within the villages, as there are several industrial facilities such as Zangezur Copper Molybdenum Combine, Tatni Water Plant where mainly men are employed. At the same time, men are also involved in constructions within the settlement (renovation of schools, kindergartens, residential buildings, etc.), while women are mainly engaged in horticulture, agriculture and gardening.

There are many male employees in the municipalities and local governing bodies, in the nearby military units and in hydropower plants operating in the neighbourhood, but very few women. Meanwhile the main staff of schools, medical units, and kindergartens are women. At the same time, some of these families stay without male support when the soldiers leave for military missions (these can take from several weeks to a year). According to the FGDs held, local men are engaged in seasonal agricultural works, and both men and women are involved in selling the agricultural products at nearby communities' marketplaces (mainly Kapan, Meghri and Artsakh).

The gender stereotypes that men should be a sole breadwinner, while women should do the household chores is nowadays slowly changing in the Project affected settlements, as both men and women pick up/create any jobs and opportunities that may be required at the labour market.

No statistics and feedback are available about gender wage gap in the affected settlements, as local seasonal agricultural support work is not formalised, informal employment is not rare, and men and women take different types of jobs so that the wage-wise comparison is not feasible.

The local villagers believe that a monthly salary should be around 100,000-150,000 AMD per an adult family member to allow them to lead a decent living.

2.2.4.7 Access to finance

Women and men have equal access to credit under the laws of the RA. There are no financial institutions in the Project affected settlements (the nearest financial institutions are located in Sisian and Kajaran towns), so both women and men need to travel to those towns or to Kapan town. Pensioners receive their pensions from the Sisian and Kajaran communities' post-staff once a month, except for the residents of Sisian and Kajaran towns who visit the local banks. A joint household planning of the expenditures based on the joint income is widely practised.

2.2.4.8 Access to services

According to the FGD and semi-structured interviews, girls and boys have equal access to education, and the literacy rate is reported to be almost 100%.

In Geghi, Geghavank, Getishen, Nor Astghaberd, Kavchut, Vocheti, and Verin Geghavank, there are no kindergartens to meet the local demand. Thus, many women need to take care of children at home or, if they work, engage other household members in child-care.

All community members have equal access to electricity, have complete power coverage, and have access to mobile / cell networks. Natural gas is available in only some Project affected settlement. Further, several villages suffer from the absence of stable water supply systems which causes some problems with housekeeping. According to the interviewees, the main concern for the hygiene and sanitary situation relates to the absence of water supply and sewage systems. Medical services are equally provided to all local residents. Access to the public transport (wherever exists) is equal to men and women within the communities. Unified social services which are available in Sisian and Kajaran community, are equally accessible to men and women.

2.2.4.9 Safety in household and in village

Women and girls live in houses or flats together with their family members.

Women in the villages perceive their houses as a safe area.

The socio-economic study results show that in some cases women's concern is the poor conditions of housing. As was found out in several Project affected settlements (Geghi, Getishen, Kavchut, Vorotnavan, Shenatagh, Uyts), there are residential houses which are in bad condition in terms of broken/leaking roofs, rotten floors, broken windows, or the bathrooms and toilets being outside of the house (and thus inconvenient to use).

> *Our house conditions are awful, it is in a very bad condition, the roof is leaking, and it is cold and humid during the winter season.*
>
> *Vulnerable woman from Kavchut settlement*

From this point of view, the living conditions of the urban population of Sisian and Kajaran towns are much better, which has a positive effect on the quality of life.

> *The bathroom and the toilet are outside, which is very uncomfortable.*
>
> *Vulnerable woman from Shenatagh settlement*

Concerning crime, as per the obtained statistics, it is stated to be at low levels, with violent crime virtually unheard of and cases of theft and other crimes are rare. The armed people in the area are the Police officers that work at the Police Station in Sisian and Kajaran communities, and also men serving in the military units. Public lighting in the streets of the villages considered to be sufficient by women and they can freely move within the settlements in both day-time and early dark.

No domestic violence (no cases of wife, husband or child abuse) has been reported during the socio-economic study.

2.2.4.10 Feedback on the Project

During the socio-economic study sufficient attention was paid to respondents' perceptions, fears, expectations and concerns about the Project. Overall, the respondents have positive expectations from the Project, mainly in terms of jobs opportunities and improved transportation. It was highlighted by the respondents that with renovated and improved roads, inter-settlement connectivity will be improved, for instance, inter-settlement transport will be launched which is more accessible to the vulnerable members of the society. This will mean that the villagers will be able to use public transport more often, spending less money on transportation and reach the destinations that they wanted to but could not reach earlier.

The respondents expressed hope that the improvement of the road network will contribute not only to a better connection with neighbouring settlements, but also with Sisian, Kapan, and Kajaran Towns and the capital of Yerevan.

They also noted that if transport communications will be improved, a flow of tourists to the communities/villages will increase. Consequently, trade activities will be invigorated, life in villages will become more active and the population may increase.

The interviewees also mentioned that with the road network development the quality of life within the affected communities/settlements will increase, which will consequently stimulate the development of the communities' infrastructure; schools and kindergartens will be constructed, street lighting, entertainment and recreational spots will be established, and cultural events can be held. Women and children will be the key beneficiaries of such developments.

2.2.4.11 Summary

To summarise the above analysis and the studies completed within the Project, the following gender concerns and gaps exist that can be potentially considered during the Project:

- Women in the affected villages are found to be more vulnerable than men in terms of employment opportunities within the villages.
- Women are worried about for the environmental situation locally in relation to waste management, sewage disposal and water supply pipelines.
- Stereotypes that some jobs can be taken on by men only (not meaning purely construction activities requiring the application of physical power) or by women only still exist.
- A rather significant gender pay gap is noted in the region due to the fact that women are largely employed in the lower-paid public sector, whereas men work in the higher-paid mining and energy industrial sectors, as well as in the military service.
- Less time is available for women to acquire additional training or jobs as they need to devote more time to the household care (especially, when the men need to leave for military services).

2.3 Cultural Heritage Baseline

ESIA Volume 1 reviews the national legislation pertaining to cultural heritage (CH), as well as the CH-related international conventions to which Armenia is a signatory (key legal clauses are also summarised in **Annex 4)**. The Ministry of Education, Science, Culture and Sports is the executive authority of the RA that elaborates and implements policies in cultural heritage, including protection of historical and cultural monuments.

2.3.1 Introduction

This CH baseline section was prepared based on:

- the review of the available research and scientific data, including both published and unpublished tangible and intangible CH information (as contained in the archives of the Institute of Archaeology and Ethnography, and the International Council on Monuments and Sites (ICOMOS) – Armenia),
- historical-cultural and archaeological field surveys performed in 2016 during the Tranche 4 - Sisian-Kajaran Road Section detailed design stage (financed by the ADB), as well as i) the analysis of alternatives from the CH perspective completed during the Project feasibility study in 2016 (performed to the ADB requirements); and ii) CH baseline sections of the EIA report that was prepared as per the national and ADB

requirements and that obtained a positive conclusion of the State Environmental Review in March 2018 (including a review and approval by the Ministry of Culture),

- the E&S Consultant's inception missions and scoping visits to the Project area held in April and December 2021, respectively,
- socio-economic studies completed for this ESIA in June-July 2022 that included interviews and consultations with local residents / bearers of tangible and intangible CH information / users of the identified CH sites; as well as additional consultations with the local authorities in July - September 2022 in order to *inter alia* verify the local use of the cultural heritage sites and cross-check the data collected from the local residents (see **Annex 1**), and
- fieldwork carried out by two researchers-archaeologists [49] from the Institute of Archaeology and Ethnography under the RA National Academy of Science for this ESIA in November 2022.

The 2022 field study included the verification of the findings within the Sisian-Kajaran road alignment and adjacent areas that were identified in 2016, as well as a survey of the locations of eight spoil disposal areas (SDAs) proposed in the detailed design (not explored in 2016).

The following RA legal acts were also used during the CH identification and description:

1) The RA Government Decision No. 2322-N dated 29.12.2005 "On approval of the State List of Immovable Historical and Cultural Monuments in the RA Syunik Region";
2) The RA Government Decision No. 967-N dated 14.08.2008 "On Approval of the List of the RA Monuments of Nature";
3) The RA Government Decision No. 385-N dated 15.03.2007 "On Approval of the List of State-owned Immovable Historical and Cultural Monuments that are not subject to Alienation/Acquisition".

Further details on the tangible and intangible CH study areas, and baseline data collection, sorting and analysis methodology are presented in **Annex 4**.

The sections that follow review both tangible CH and ICH starting with the wider contextual setting and focusing on the local CH conditions and potential.

2.3.2 Regional Tangible Cultural Heritage Context

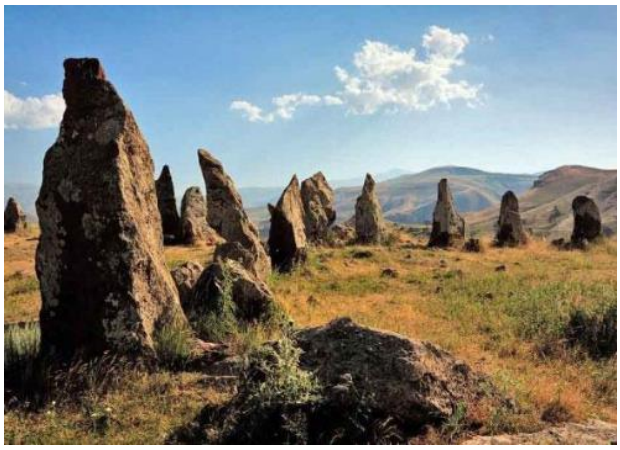
Syunik Region is rich in historical and cultural monuments. It is one of the most beautiful areas in Armenia and hosts important historical and cultural heritage sites. The area is mountainous with large, deep gorges of mountain rivers and poorly investigated archeologically. Almost all roads in Syunik Region are surrounded by beautiful monuments and/or sacred sites. The important historical monuments include the Tatev Monastery (**Figure 26, a)**), Vorotnavank Monastery (**Figure 26, b)**), Vahanavank Monastery (**Figure 26, c)**), "Zorats Qarer" standing stones near Sisian (**Figure 26, d)**), the medieval cave-dwellings of Khndzoresk (**Figure 26, e)**) and natural heritage such as Sev Lich (**Figure 26, f)**) and Shikahogh. **None of the mentioned sites are in proximity to the proposed road.**

[49] The same archaeologists were involved in the 2016 historical, cultural and archaeological study, hence the ESIA capitalised on their knowledge related to the historical and cultural monuments located in/around the planned road.

a) Tatev Monastery

b) Vorotnavank Monastery

c) Vahanavank Monastery



d) "Zorats Qarer" standing stones

e) "Khndzoresk" medieval cave-dwellings

f) "Sev Lich" Lake natural preserve

Figure 26. Famous historical and cultural heritage sites and nature monuments of Syunik Region

2.3.3 Tangible Cultural Heritage along the Proposed Road and their Potential to be Affected

2.3.3.1 CH sites/units identified along the proposed road

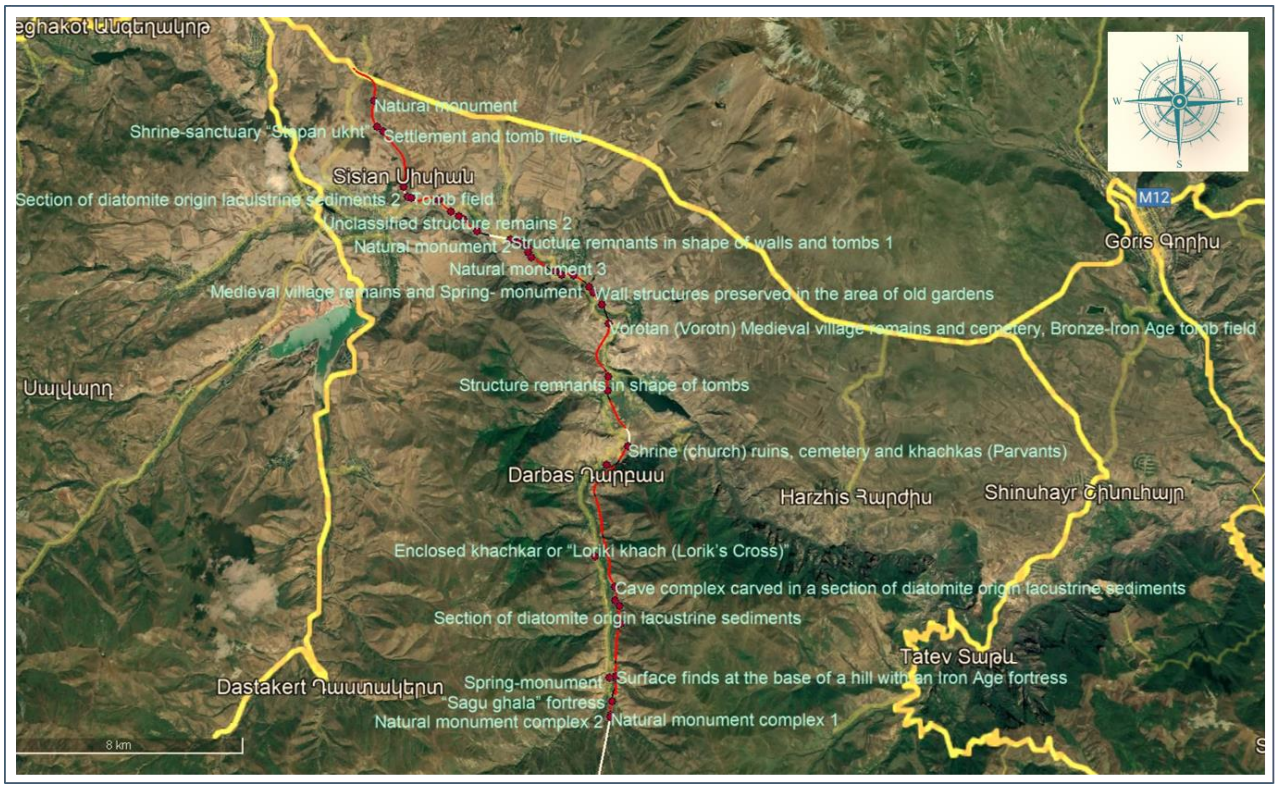
As a result of the historical, cultural and archaeological surveys performed in 2016 and 2022, in total **76 units** of cultural, historical, archaeological, natural, paleontological and spiritual importance were identified within 500m on both sides of the proposed road's right of way (RoW). These include caves, tomb fields, cemeteries, shrines, churches and monasteries, fortresses, units of archaeological, historical-cultural, and spiritual significance; fossils,

sections of diatomite origin lacustrine sediment, raw-material source (units of geological significance), and natural heritage units.

The overview map of the CH units identified along the proposed Sisian-Kajaran road is presented in **Figure 27** (note that the CH units in relation to potential SDAs are discussed in the next section). The noted 76 CH units are concentrated in 54 locations or sites (**Table 9**), of which 10 sites are registered in the State List of Immovable Historical and Cultural Monuments in the RA Syunik Region (per RA Government Decision No. 2322-N), one site (Spring-monument) is well-known in the region, but not registered in any state list of monuments and 43 sites were discovered during the field surveys. According to expert judgement (**Table 9**), 34 out of 54 identified sites can be viewed as being of national importance. The remaining two and 18 sites could be of regional and local importance, respectively. Overall, 46 sites (67 units) are predicted to have a potential to be affected.

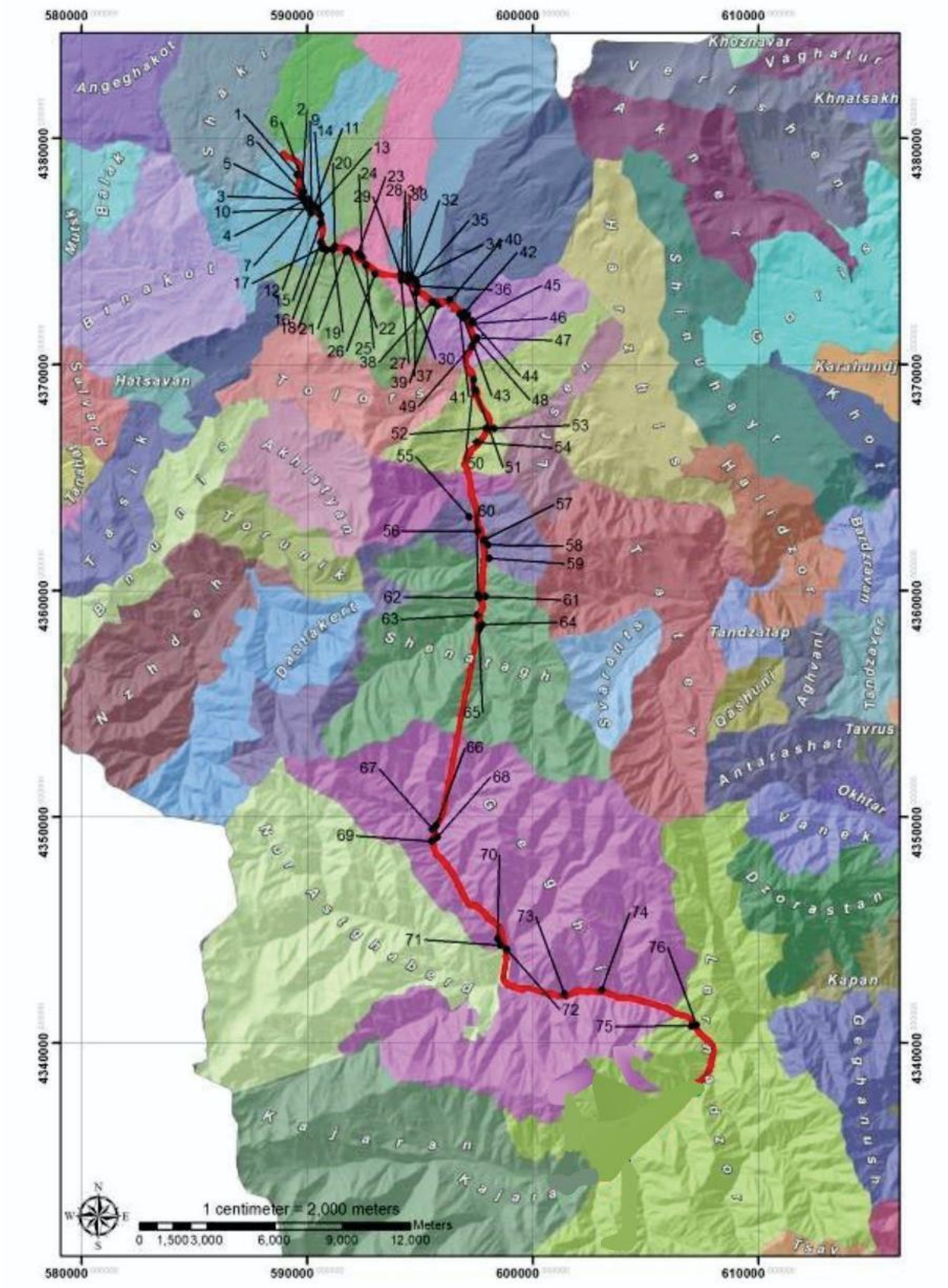
Detailed maps were drawn for each site indicating i) a type of the identified CH site, ii) its potential size (where the information is available or assumptions can be made), iii) an assumed buffer zone[50], iv) an estimated distance to the edge of the RoW, and v) a location of the CH site against the proposed road embankment. Examples of the detailed maps are proposed below (following the table), and the maps for all 76 CH units are incorporated in **Annex 5**.

[50] Buffer zones (or 'protection zones' as per the national law) are legally established for the registered sites, where required. Buffer zones for newly discovered CH sites shall be defined by the RA Ministry of Culture for each site (upon registration and due investigations). The size of the protection zone depends on several factors, such as physically visible boundaries of the site, its underground dimensions (determined based on expertise and experience), and its state/ conditions. The Ministry of Culture develops a so-called 'project of protection zones' for tangible CH monuments, which defines not only the dimensions of buffer zones, but also the types of activities (including construction) that are allowed, restricted or prohibited within them. In the absence of the legally established buffer zones for the identified CH sites, for the purpose of the ESIA, 'assumed buffer zones' have been drawn using a risk-based and precautious approach and considering the state of the site, vibration considerations, and experience from other projects in the region. The assumed buffer zones range from 25 m for natural monuments and point sites of local/regional importance to 50 m for other types of sites. No assumed buffer zones are indicated for sites falling within the road footprint (that is, the RoW and embankment).



a) CH sites along the Sisian-Shenatagh section

b) CH sites along the Qirs-Kajaran section



c) Overview of the CH site along the whole proposed road and potential SDAs

Figure 27. Cultural heritage units identified along the proposed road

Table 9. The identified sites of cultural, historical, archaeological, natural, paleontological and spiritual importance along the planned Sisian-Kajaran road

Coding of types: NM - Natural monuments, HA&SM - Historical-architectural and spiritual monuments, AM - Archaeological monuments, GM - Geological monuments

*Sites that are likely to be affected are marked in light green. * means a distance from the CH site to the proposed road embankment where additionally added. ** means access to a CH site may be affected*

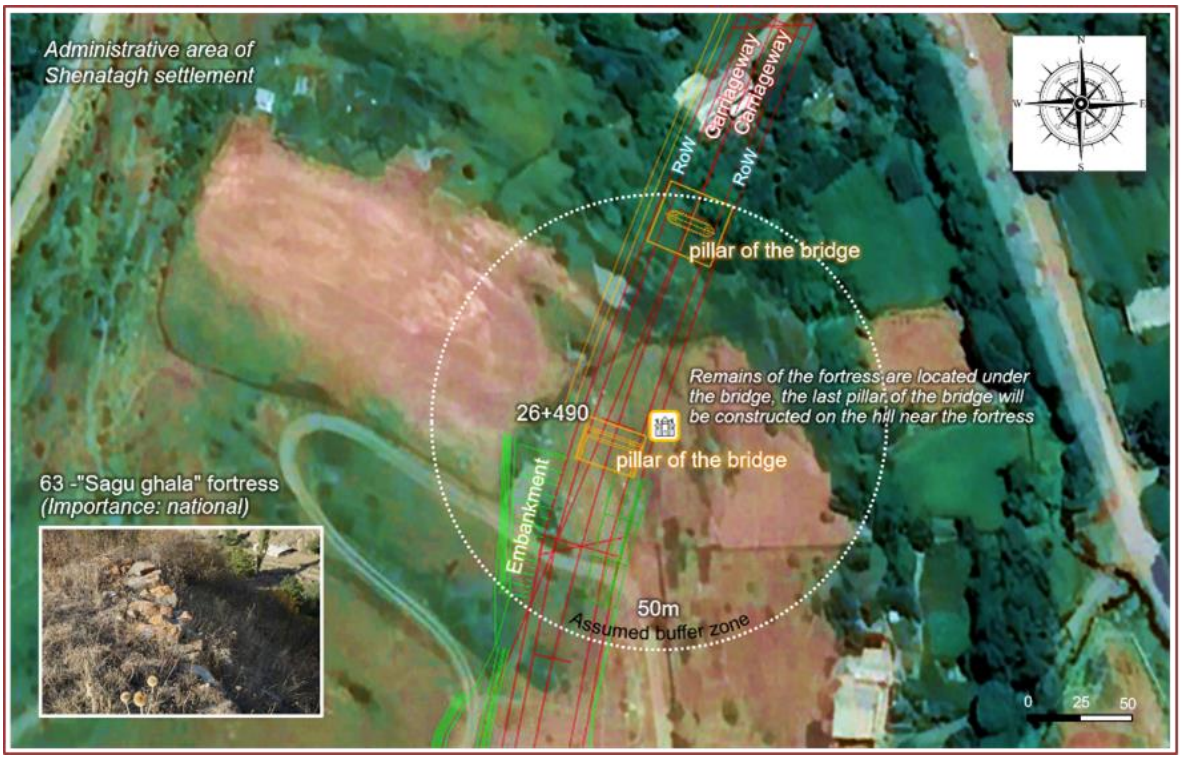
Site	CH units	Type of the CH monument	Location, point	Settlement (administrative area)	Period or age of the site	Type of CH	Distance from the road RoW	Direction relative to the road	Potential to be impacted	CH code from the State List of Monuments / CH Status	Potential importance (national, regional, local)
1	1	Natural monument	km 1.4+50	Sisian	-	NM	0	right	likely	newly discovered	local
2	2	Shrine-sanctuary “Stephan Ukht” **	km 2.3+20	Sisian	Medieval-Modern Period	HA&SM	12	left	likely	newly discovered	regional
3	3-15	Settlement and tomb field	km 2.5+50 – km 3.7+50	Sisian	Bronze-Iron Ages, High Medieval Period	AM	0-80	right	likely	8.6.4.1	national
4	16	Section of diatomite origin lacustrine sediments 1	km 4.6+00	Sisian	Pleistocene	GM	0	centre	likely	newly discovered	local
5	17	Section of diatomite origin lacustrine sediments 2	km 4.9+50	Sisian	Pleistocene	GM	0	right	likely	newly discovered	local
6	18-20	Tomb field	km 5.1+00 – km 5.5+50	Uyts	Bronze Age	AM	24-140	both sides	likely	newly discovered	national
7	21	Unclassified structure remains 1	km 6.0+00	Aghitu	-	AM	0	right	likely	newly discovered	national
8	22	Natural monument 1	km 6.0+40	Aghitu	-	NM	40	right	likely	newly discovered	local
9	23	Unclassified structure remains 2	km 6.5+50	Aghitu	-	AM	0	left	likely	newly discovered	national
10	24	Structure remnants or settlement 1	km 6.8+50	Aghitu	Classical Period-Medieval	AM	0	right	likely	newly discovered	national
11	25	Tomb field or cemetery	km 7.0+20	Aghitu	Early Medieval	AM	20	right	likely	newly discovered	national
12	26	Structure remnants or settlement 2	km 7.6+30	Aghitu	Bronze-Iron Ages, Classical Period, Medieval	AM	0	centre	likely	newly discovered	national
13	27-29	Structure remnants in shape of walls and tombs 1	km 8.7+90 – km 8.8+30	Aghitu	-	AM	0	centre	likely	newly discovered	national
14	30	Natural monument 2	km 9.0+30	Aghitu	Lower Quaternary	NM	0	right	likely	newly discovered	local
15	31	Structure remnants in shape of walls and tombs 2	km 9.0+90	Aghitu	-	AM	40	right	likely	newly discovered	national
16	32	Natural monument 1	km 9.2+20	Noravan	Upper Quaternary	NM	38	right	unlikely	newly discovered	local
17	33	Natural monument 2	km 9.2+50	Noravan	Upper Quaternary	NM	0	right	likely	newly discovered	local
18	34	Wall structure remnants near Natural monument 2	km 9.2+50	Noravan	-	AM	43	right	likely	newly discovered	national
19	35	Natural monument 3	km 9.4+00	Noravan	-	NM	85	right	unlikely	newly discovered	local

Site	CH units	Type of the CH monument	Location, point	Settlement (administrative area)	Period or age of the site	Type of CH	Distance from the road RoW	Direction relative to the road	Potential to be impacted	CH code from the State List of Monuments / CH Status	Potential importance (national, regional, local)
20	36	Remnants of a truncated settlement	km 9.5+00	Noravan	-	AM	0	left	likely	newly discovered	national
21	37	Natural monument 3	km 9.7+00	Aghitu	Lower Quaternary	NM	15-40	right	likely	newly discovered	local
22	38	Section of diatomite origin lacustrine sediments	km 10.6+00	Vaghatin	Pleistocene	GM	50 / 30*	right	likely	newly discovered	local
23	39	Surface finds around wall structure remnants	km 10.8+90	Vaghatin	Late Chalcolithic (First half of the IV Millennium BC)	AM	0	left	likely	newly discovered	national
24	40	Wall structure remnants	km 11.2+30	Vaghatin	-	AM	0	centre	likely	newly discovered	national
25	41	Medieval village remains and Spring-monument **	km 11.9+00	Vaghatin	High or Late Medieval Period	HA&SM	0	right	likely	newly discovered	National (spring is local)
26	42-45	Wall structures preserved in the area of old gardens	km 12.1+00 – km 12.5+90	Vaghatin	High or Late Medieval Period	AM	0-160	right	likely	newly discovered	national
27	46	Section of diatomite origin lacustrine sediments	km 12.5+90	Vorotan	Pleistocene	GM	0	left	likely	newly discovered	local
28	47-49	Vorotan (Vorotn) Medieval village remains and cemetery, Bronze-Iron Age tomb field	km 13.2+40 – km 13.5+50	Vorotan	Bronze-Iron Ages, Classical Period, Early and Late Medieval Periods	AM	0	left	likely	8.78.2 and 8.78.2.1	national
29	50	Flint raw-material source for making stone tools	km 15.2+00	Darbas	-	GM	23	right	likely	newly discovered	national
30	51	Structure remnants in shape of tombs	km 15.6+60	Darbas	Bronze-Iron Ages	AM	0	right	likely	newly discovered	national
31	52-53	Shrine (church) ruins, cemetery and khachkars (Parvants)	km 17.6+90	Darbas	13th-15th centuries	HA&SM	0-100	right	likely	8.31.3	national
32	54	“Arzuman’s bridge” and Medieval road	km 18.6+00	Darbas	1675	HA&SM	190	left	unlikely	8.31.10	national
33	55	Enclosed khachkar or “Loriki khach (Lorik’s Cross)”	km 22.2+00	Lor	1271	HA&SM	410	left	unlikely	8.41.2.1	national
34	56	Cave complex carved in a section of diatomite origin lacustrine sediments	km 22.7+50	Lor	20th century	AM	5	left	likely	newly discovered	national
35	57	Mardakayr Medieval village remains and Tsaru S. Hovhannes church, tomb field	km 23.1+60	Lor	II-I Millennium BC, 1686	HA&SM	48	left	likely	8.41.6 and 8.41.4	national
36	58	Medieval village remains	km 23.3+90	Lor	High Medieval Period	AM	50 / 20*	right	likely	newly discovered	national

Site	CH units	Type of the CH monument	Location, point	Settlement (administrative area)	Period or age of the site	Type of CH	Distance from the road RoW	Direction relative to the road	Potential to be impacted	CH code from the State List of Monuments / CH Status	Potential importance (national, regional, local)
37	59	Section of diatomite origin lacustrine sediments	km 23.9+50	Lor	Pleistocene	GM	53	right	unlikely	newly discovered	local
38	60	Spring-monument	km 25.7+00	Shenatagh	1981	HA&SM	190	left	unlikely	-	regional
39	61	Surface finds at the base of a hill with an Iron Age fortress	km 25.6+60	Shenatagh	Iron Age	AM	0	right	likely	newly discovered	national
40	62	Cave complex carved in a section of diatomite origin lacustrine sediments	km 25.7+00	Shenatagh	Late Medieval Period-Modern	AM	17-20	right	likely	newly discovered	national
41	63	“Sagu ghala” fortress	km 26.4+90	Shenatagh	Medieval	AM	0	right	likely	8.71.1	national
42	64	Natural monument complex 1	km 26.9+20	Shenatagh	Neogene	NM	0	left	likely	newly discovered	local
43	65	Natural monument complex 2	km 26.9+90	Shenatagh	Neogene	NM	0	left	likely	newly discovered	local
44	66	Medieval village remains 1	km 36.1+40	Geghi, Qirs section	13th-15th centuries	AM	0	right	likely	newly discovered	national
45	67	Church	km 36.3+00	Geghi, Qirs section	18th century	HA&SM	0	centre	likely	8.112.1.2	national
46	68	Medieval village remains 2	km 36.6+50	Geghi, Qirs section	15th-17th centuries	AM	45	right	likely	8.112.1.1	national
47	69	Medieval and modern cemetery	km 36.7+20	Geghi, Qirs section	15th-20th centuries	AM	30	right	likely	8.112.1.1.1	national
48	70	Siliceous limestone raw-material source 1	km 42.3+00	Geghi, Karut section	-	GM	225	left	unlikely	newly discovered	local
49	71	Natural monument 1	km 42.5+70	Nor Astghaberd	-	NM	25	left	likely	newly discovered	local
50	72	Natural monument 2	km 42.6+40	Nor Astghaberd	-	NM	0	right	likely	newly discovered	local
51	73	Siliceous limestone raw-material source 2	km 47.0+00	Geghi	-	GM	55	left	likely	newly discovered	local
52	74	Structure remains (Medieval village remains)	km 48.6+00	Geghi, Verin Geghavanq section	Medieval	AM	10	left	likely	newly discovered	national
53	75	Cave-complex Lernadzor-1	km 53.2+20	Lernadzor, Kavchut section	-	AM	0	centre	likely	newly discovered	national
54	76	Tomb field	km 53.3+60	Lernadzor, Kavchut section	Bronze-Iron Ages	AM	60	right	unlikely	newly discovered	national

NB: A potential of the Project to bring about a visual impact for Vorotnavank Monastery is discussed in ESIA Volume 3.

Shrine-sanctuary «Stephan Ukht» (km 2.3+20)



Sagu ghala fortress (km 26.4+90)

Figure 28. Examples of detailed maps of CH units identified along the proposed road

The spatial distribution of the identified CH sites/units by administrative areas and settlements is the following:

- Sisian - 5 sites / 17 units,
- Uyts - 1 site / 3 units,

- Aghitu - 10 sites / 12 units,
- Noravan - 5 sites / 5 units,
- Vaghatin - 5 sites / 8 units,
- Vorotan - 2 sites / 4 units,
- Darbas - 4 sites / 5 units,
- Lor - 5 sites / 5 units,
- Getatagh - 0 sites / 0 units,
- Shenatagh - 6 sites / 6 units,
- Geghi - 7 sites / 7 units,
- Geghi (Nor Astghaberd settlement) - 2 sites / 2 units,
- Lernadzor (Kavchut settlement) - 2 sites / 2 units.

The identified 76 CH units (54 CH sites) were classified into four types: 1) Archaeological monuments, 2) Historical-architectural and spiritual monuments, 3) Geological monuments and 4) Natural monuments[51]. The breakdown of the CH sites/units per types is given below.

Table 10. The CH sites along the proposed road grouped by type

No	CH types	Number of sites	Number of units	Codes of Units
1	Archaeological monuments	27	48	3-15, 18-20, 21, 23, 24, 25, 26, 27-29, 31, 34, 36, 39, 40, 42-45, 47-49, 51, 56, 58, 61, 62, 63, 66, 68, 69, 74, 75, 76
2	Historical-architectural and spiritual monuments	8	9	2, 41, 52-53, 54, 55, 57, 60, 67
3	Geological monuments	8	8	16, 17, 38, 46, 50, 59, 70, 73
4	Natural monuments	11	11	1, 22, 30, 32, 33, 35, 37, 64, 65, 71, 72
Total		**54**	**76**	

Archaeological monuments include:

- one cave-dwellings (unit 75),
- two artificially carved cave complexes (units 56, 62),
- one fortress (unit 63),
- 35 settlements, medieval village remains, temporary shelters, uncertain structures and wall remnants, industrial-economic structures (units 3-15, 21, 23, 24, 26, 27-29, 31, 34, 36, 40, 42-45, 47-49, 58, 66, 68, 74),
- 13 burial complexes - tomb fields, cemeteries, separate tombs (units 3-15, 18-20, 25, 27-29, 31, 47-49, 51, 53, 57, 69, 76), and
- two points of surface finds, which have definite archaeological contexts (units 39, 61).

Historical-architectural and spiritual monuments are represented by shrines, churches, spring-monuments, khachkars (cross-stones), stellae and bridges; few of them can be considered attractive in terms of future tourism development in the region (see **Figure 29**). Churches, as a rule, are built within the boundaries of the medieval village remains, and/or their areas often accommodate cemeteries.

[51] The classification of the studied CH sites/units by the natural, geological, archaeological, historical and spiritual significance is conditional and done for the purpose of assessment and management of further exploration / mitigation.

Unit 54. "Arzuman's bridge" and Medieval road in Darbas, km 18.6+00

Unit 55. Enclosed khachkar or "Loriki khach (Lorik's Cross)", km 22.2+00

Figure 29. Historical-architectural and spiritual monuments with potential to support tourism development

From the eight studied geological monuments, five are paleontological localities (units 16, 17, 38, 46 and 59) and three are raw-material sources suitable for making stone tools (units 50, 70 and 73). Traces of recent human activity or group visits can be observed in the vicinity of one of the sites with raw material sources.

The natural monuments are divided into two types: i) units that are situated within the Project footprint and can be relocated (**Figure 30**); and ii) sites that inevitably will be affected but cannot be relocated due to their size and occupied area (**Figure 31**). Close to the majority of the natural monuments, traces of artificial wall structures were noticed.

Unit 1. Natural monument in Sisian, km 1.4+50

Unit 30. Natural monument 2 in Aghitu, km 9.0+30

Figure 30. Examples of natural monuments that can be relocated

Unit 64. Natural monument complex 1 in Shenatagh, km 26.9+20

Unit 72. Natural monument 2 in Nor Astghaberd, km 42.5+80

Figure 31. Examples of natural monuments that will be affected but cannot be relocated

2.3.3.2 Identification of CH sites/units that can be affected by Project implementation

The prediction of whether certain CH sites/units can be affected by the Project activities relied on several considerations:

- a location of a CH site fully or partially falling within the proposed road alignment (that is a ca.16 m road's RoW or within the embankments and secondary roads – see maps in **Annex 5**) is the key determinant for assessing the potential for the Project impact on this site. As seen from **Table 9**, many sites partly or fully fall within the future road footprint (note that such sites are indicated as being at a '0 m' distance from the road). Whether the CH sites would be located over the tunnels, under the bridges, etc. was also considered to scope out certain CH sites from further assessment;
- another important consideration is whether archaeological monuments have any underground structures/barriers (burial complexes, remnants of fortresses, churches and shrines, other surface finds and traces) and thus have a potential to extend into/under the proposed road[52];
- a distance from a CH site to the proposed road alignment is considered in combination with the scientific, historical, or traditional importance and condition the CH site, as well as its local use;
- the presence of the CH units in the State List of Immovable Historical and Cultural Monuments in the RA Syunik Region and expert opinion of the archaeologists on their protection status were considered during the impact identification exercise as well.

The size, spread and rarity / availability of similar artifacts/sites in the vicinities and region were assessed in combination with the above aspects in order to determine a sensitivity of the potentially affected CH sites. **Annex 5** describes the historical, architectural, archaeological, geological, and natural monuments that can be affected by the Project construction and summarises the results of the completed impact identification and sensitivity and visibility assessment for the individual sites.

In total, 46 sites (67 units) can be potentiality affected due to Project implementation, of which:

[52] E.g., site 6 (**Table 9**) though being located 24-140 m from the road has a potential to extend to it underground and thus might be damaged.

- 26 are archaeological monuments (units 3-15, 18-20, 21, 23, 24, 25, 26, 27-29, 31, 34, 36, 39, 40, 42-45, 47-49, 51, 56, 58, 61, 62, 63, 66, 68, 69, 74 and 75);
- Nine are natural monuments (units 1, 22, 30, 33, 37, 64, 65, 71 and 72);
- Six are geological monuments (units 16, 17, 38, 46, 50 and 73); and
- Five are historical-architectural and spiritual monuments (units 2, 41, 52-53, 57 and 67).

Table 11 shows that the potentiality affected CH sites / units constitute 85% / 89% of all sites / units identified along the proposed road.

Table 11. Total number of CH sites/units compared with the potentially affected ones presented by CH types

No	CH types	Number of sites		Number of units		% of affected sites / units
		Total	Potentially affected	Total	Potentially affected	
1	Archaeological monuments	27	26	48	47	**96 / 98**
2	Historical-architectural and spiritual monuments	8	5	9	6	**63 / 67**
3	Geological monuments	8	6	8	6	**75 / 75**
4	Natural monuments	11	9	11	9	**82 / 82**
Total		**54**	**46**	**76**	**68**	**85 / 89**

Most affected by Project implementation would be the archaeological monuments (96%), followed by natural monuments (82%) and geological monuments (75%). Least affected can be historical-architectural and spiritual monuments (63%).

The key concerns and suggested measures following a mitigation hierarchy concept are discussed below for **each type of CH sites/units.**

2.3.3.3 Main concerns and measures for archaeological monuments

Archaeological monuments that have underground structures as well as adjacent and separate graveyards (tomb fields and cemeteries) can be partly affected during the Sisian-Kajaran road construction. They are likely to represent serious barriers for the Project as, if there is no possibility to change the alignment, the preservation of historical-cultural value of such sites will require excavation and relocation of the gravestones (or other part of the sites falling within the road footprint).

Five of the 26 archaeological monuments that will be potentially affected are considered to be especially sensitive and potentially most exposed to the Project impacts. These are (in the order of descending sensitivity):

1) the settlement and tomb field near the Qaraberd fortress between km 2.5+50 - km 3.7+50 (Sisian administrative area, units 3-15);
2) Vorotan (Vorotn) Medieval village remains and cemetery and Bronze-Iron Age tomb field between km 13.2+40 - km 13.5+50 (Vorotan administrative area, unit 47-49);
3) the "Sagu ghala" fortress (Shenatagh administrative area, unit 63) located at km 26.9+20;
4) Medieval village remains 1 (Geghi administrative area, Kitsk (Qirs) settlement, unit 66) located at km 36.1+40.
5) Lernadzor-1 cave complex (Lernadzor administrative area, Kavchut settlement, unit 75) located at km 53.1+80.

If no possibility is found for the road to be re-aligned at the indicated chainages (as proposed as part of the CH mitigation measures in **Annex 9** which will be part of the Cultural Heritage Management Plan), the excavation of the first two sites would bring about significant time and financial costs, as these archaeological complexes occupy large areas and contain different types of units from various time periods. The other three sites are smaller in scale.

It should be noted that CH expert team consideration, as well as consultations with the RA Ministry of Culture took place in 2016-2017 (during the early design and EIA preparation stages) in order to avoid impacts on as many CH sites as possible and to define an optimal route from the CH perspective. That time, the national CH experts closely worked with the designers and explored the possibility to relocate the proposed road away from the identified CH sites. The relocation suggestions were accepted at various locations. This cooperation resulted in the current preferred alignment, which is seen by the CH experts and Ministry of Culture as optimal given the concentration of CH sites in the area.

A possibility to further re-align the proposed road to avoid the major sites has been re-raised during this ESIA[53]. However, the expert discussions have suggested that any possible major adjustments were already considered in 2016-2017 when comparing the alternative routes, whereas minor adjustments are unlikely to be useful in that they will bring about additional impacts on CH and a need for larger surveys and excavations. A workshop held in April 2023 with the representatives of the Ministry of Education, Science, Culture and Sport, and National Academy of Science resulted in the conclusion that no realignment of the road is likely to be required in relation to the registered CH sites based on the available information. Further consultations with ICOMOS Armenia in May 2023 did not yield additional re-alignment proposals. However, the final decisions will be made as per the mitigation hierarchy, and the micro-siting options to avoid and/or minimise impacts, as suggested in **Annex 9,** will be the priority.

The remaining 22 archaeological sites require small-scale test excavations (trial trenching) in order to determine their scientific potential. This research can lead to the need of additional safeguard excavations (see **Annex 9**).

In some sections, the absence of the CH sites can be explained by historical landslide processes (for example in the Darbas-Senatagh section). Thus, it can be assumed that during the construction works new artifacts/sites can be identified that will require additional studies (such as visual observation, analysis and classification of the identified archaeological materials, trial trenching, plotting of the area under impact and, if relevant, consideration of micro-siting / adjustments to the road elements against this area, consultations with the competent authorities, as needed, and/or safeguard excavations). The timelines of the studies will depend on the nature of the chance finds.

In many sections of the proposed road alignment, the construction works (such as topsoil clearing, earth works, or excavations) will have to be implemented under the control of the Contractor's CH Expert, with periodic monitoring by the Supervision Engineer's CH Monitor.

[53] While this EBRD-commissioned ESIA considers the results of earlier CH studies, it also completes its assessments against the CH standards of EBRD PR8, EIB ESS 10 and ADB SR1. The mitigation hierarchy principle is intrinsic to lenders safeguard policies meaning that all subsequent decisions should be based on it. As part of the ESIA, the key components of the CH analysis as per lenders standards have been performed as follows: a) baseline studies have been completed; b) heritage experts have been engaged; c) regulator/relevant agencies have been consulted; and d) consulting with key users/custodians/other key stakeholders has been partly completed and will be accomplished during the ESIA disclosure (refer to the Stakeholder Engagement Plan and **Section 4** of this Report).

2.3.3.4 Main concerns and measures for historical-architectural and spiritual monuments

Some sites with historical-cultural and spiritual significance can become a barrier for the road construction works. They require special attention as they play a role for lifestyle of the local residents. Three such sites can be affected as a result of Project implementation, namely:

- Spring monument (Vaghatin administrative area, unit 41, km 11.9+00),
- Shrine (church) ruins with adjacent cemetery and khachkars (Darbas administrative area, units 52-53, km 17.6+90),
- Church (Geghi administrative area, Kitsk (Qirs area), unit 67, km 36.3+00).

All three mentioned monuments require test excavation and the latter two require a change in location of a bridge pillar or configuration of embankment (see **Annex 9)**. Additional mitigation measures will be required for each unit, such as safeguard excavations, construction of protection walls, restriction of vibration-generating activities, etc. (**Annex 9).**

2.3.3.5 Main concerns and measures for geological monuments

Only open or visible / surface sections of the geological-paleontological sites were identified. However, the visible parts do not reflect the actual dimensions of these formations. Although, as per the available maps, they spread out for dozens of kilometres, it is incorrect to conclude that all the parts of these deposits contain paleontological localities and/or that all of them have a scientific value.

Whilst these units cannot become a barrier for the road construction project and would not delay the construction process, they will require additional studies and inventories in order to determine the appropriate mitigation measures.

Furthermore, the implementation of the construction activities will create an opportunity to study these recently discovered sections. In parallel with the construction works it is proposed to carry out archaeological excavations and to undertake mitigation measures for each unit only when paleontological localities are confirmed.

2.3.3.6 Main concerns and measures for natural monuments

Nine out of 11 natural monuments can be affected during the construction works. Syunik Region is rich in such monuments. Their abundance can be explained by a complex and unique geological formation of the area, especially the existence of Quaternary volcanism. Syunik Region has the best examples of the natural monuments in Armenia, where the creative hand of the nature worked for millennia. Some of them can catch eye and may imply an aesthetic / visual attraction.

Most of natural monuments are not included in the State List of Monuments of Nature and do not have determined geological, aesthetic or cultural values. Some of them are objects of ancient cult or were used by people starting from at least the Chalcolithic period.

Natural monuments are the most difficult CH units to manage in response to the Project impacts. If no re-alignment is possible, those affected units that fall within the proposed road's footprint will have to be relocated; however, there is no experience in Armenia of implementing such kind of activities and each unit will require an individual approach and solution.

It is assumed that some of these units can be reinstalled in the vicinity of the proposed road as decorative and aesthetic elements of the local landscape. Such a solution can be suggested for the following units: km 1.4+50 (Sisian administrative area, unit 1), km 9.0+30 (Aghitu administrative area, unit 30), km 9.2+50 (Noravan administrative area, unit 33), km 9.7+00 (Aghitu administrative area, unit 37). No preservation is possible for natural monuments at km 26.9+20 (Shenatagh administrative area, unit 64), km 26.9+90 (Shenatagh administrative area, unit 65), km 42.5+70 and km 42.6+40 (both in Nor Astghaberd settlement of Geghi administrative area, unit 71 and unit 72, respectively).

2.3.4 Tangible Cultural Heritage at the SDAs Proposed in the Detailed Design

The locations of eight SDAs as proposed in the detailed design are presented in **Figure 27**.

A detailed description of CH sites identified during the 2022 field survey of the SDA sites and their environs is provided in **Annex 6.** To summarise the findings (

Table 12):

- two SDAs (DA 006 and DA 008) have no CH sites or units within their areas or around;
- two SDAs (DA 001 and DA 007) require a creation of buffer zones for protection of the historical-cultural units located at their boundaries;
- four SDAs require additional studies in terms of confirming the existence of paleontological sites (DA003, DA 004 and DA 005) and a tomb field / necropolis (DA 002).

Additionally proposed alternative SDAs in the Shenatagh and Qirs valleys and Lernadzor tailings facility (see **Section 3.9 in Volume 1 of the ESIA**) will need to be studied as well (see **Annex 9**).

The Construction Contractor will be obliged to undertake the recommended surveys and protection measures before these sites can be used for spoil disposal.

Table 12. Archaeological issues related to the SDAs proposed in the detailed design

SDAs	Settlement / administrative area	CH sites/unit identified	Actions
DA 001	Aghitu	Several historical-cultural sites are found at the south-western boundary of DA 001	Creation of a buffer zone for the CH sites before any spoil disposal (this is Unit 21, mitigation proposed in **Annex 9**)
DA 002	Aghitu	Potentially Bronze-Iron Age period burial mounds	Additional study required and possibly excavations, which will be carried out together with the mitigation actions for units 28, 31, 34, 36, and 37 (see **Annex 9**)
DA 003	Darbas	Sections of diatomite lacustrine deposits of Pleistocene, which contain rich fossilized flora and fauna allowing to reconstruct the climate and environments of the past	Additional study required (included in **Annex 9**)
DA 004	Darbas	Sections of diatomite lacustrine deposits of Pleistocene	Additional study required (included in **Annex 9**)
DA 005	Darbas	Sections of diatomite lacustrine deposits of Pleistocene	Additional study required (which will be carried out together with the mitigation actions for units 52-53, see **Annex 9**)
DA 006	Geghi (Qirs)	No finds	no action **NB: this SDA is to be significantly reduced due to biodiversity issues and due to its inefficient remaining size is suggested to be excluded from the Project**
DA 007	Geghi (Karut)	Possibly the traces of water canals supporting the operation of water mills during the late Medieval period	Creation of a buffer zone for the CH sites before any spoil disposal **NB: This site was rejected during the ESIA process due to biodiversity issues and concerns of the local authorities**
DA 008	Lernadzor (Kavchut)	No finds	No action

SDAs	Settlement / administrative area	CH sites/unit identified	Actions
			NB: This site was rejected during the ESIA process due to biodiversity issues and concerns of the local authorities

2.3.5 Intangible Cultural Heritage

This section reviews Intangible Cultural Heritage (ICH) at three levels: national - Armenia, regional - Suynik Region, and local - Sisian and Kajaran Communities (or municipalities) and settlements along the proposed road. Conclusion on the potential of the Project to affect ICH is provided at the end of this section.

2.3.5.1 National context

Armenia is one of the oldest countries in the world with its ancient history and unique culture. Scientific research, numerous archaeological findings and old manuscripts prove that the Armenian Highlands are the very Cradle of Civilization. References concerning Armenia and the Armenian ethnicity are preserved in Sumerian, Assyrian, Persian, Egyptian and other texts of ancient peoples. Nowadays the Republic of Armenia is located in the North-Eastern part of the Armenian Highland and occupies its 1/10th part. Rich archaeological heritage of Armenia dates 2 million years back: Palaeolithic, Neolithic and Chalcolithic Ages, Bronze and Iron Ages, Hellenistic period, Middle Ages, etc. The world's oldest leather shoe (5,500 years old), sky observatory (7,500 years old), depictions of agriculture (7,500 years old) and wine-making facility (6,100 years old) all were found in the territory of Armenia.

Armenia is also often referred to as the Land of Noah based on biblical scripts. As Noah's ark came to rest on the Ararat Mountain, which at that time was part of Armenia, some his sons and grandsons stayed on these. It is commonly accepted that the Armenians are the direct descendants of his son Japheth.

Armenia was the first country in the world to adopt Christianity as a state religion in 301 A.D. Since then Christianity has played a critical role in shaping the Armenian people. Religion has been an essential part of Armenian identity and has influenced the course of history.

Armenian letter art and its cultural expressions constitute the centuries-old art of Armenian scripts, the rich culture of decorating letters and its various uses. The element is based on the Armenian alphabet created in 405 A.D. by Mesrop Mashtots (**Figure 32**), following a 'one-letter-for-one-sound' principle. The element is also distinguished by its wide range of ornamental scripts, generally classified by their shapes; knots, birds, animals, people, and mythical or imaginary creatures. Since their invention, Armenian letters have not only served their primary function to create written heritage, but also as numbers, cryptographs, riddles etc. Today, the letters are also used in handicrafts[54]. Armenian letter art has penetrated almost all layers of society, particularly folk art. In 2019, the "**Armenian letter art and its cultural expressions"** were inscribed on the UNESCO's[55] Representative List of the Intangible Cultural Heritage of Humanity.

[54] https://ich.unesco.org/en/RL/armenian-letter-art-and-its-cultural-expressions-01513

[55] UNESCO Convention for "The Safeguarding of Intangible Cultural Heritage" was ratified by the RA in 2006

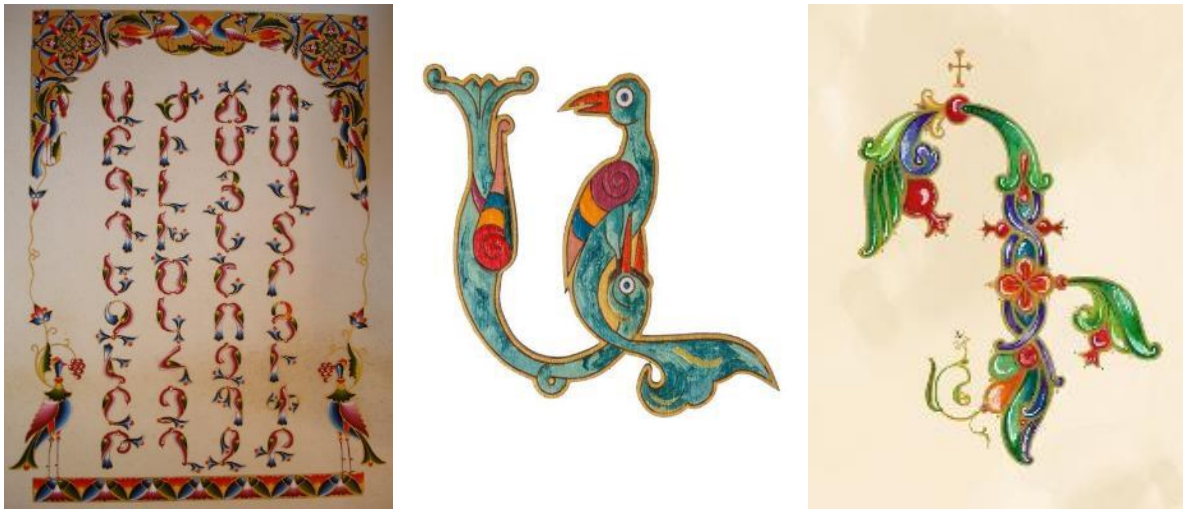


Figure 32. Armenian alphabet and samples of their ornamental expression

Apart from the Armenian letters, five Armenian Intangible Cultural Heritage (ICH) values are included into the representative list of the UNESCO Intangible Cultural Heritage of Humanity. These ICH values are briefly described below:

- **Kochari, traditional group dance (2017)** (**Figure 33, a)**)

Kochari is a traditional dance that is widely performed throughout Armenia during holidays, festive celebrations, family ceremonies and other social events. It is open to all participants, irrespective of age, gender or social status. Kochari provides a sense of shared identity and solidarity, contributes to the continuity of historical, cultural and ethnic memory, and fosters mutual respect among community members of all ages. It is transmitted through both non-formal and formal means, and is one of the rare traditional dances whose chain of transmission has never been interrupted[56]. Nowadays, Kochari is an indispensable part of any celebrations or festivals with men and women of all ages joining hands and shoulders to dance to the music of their ancestors.

- **Duduk and its Music (2008) (Figure 33, b))**

The duduk, the Armenian oboe, is a double-reed wind instrument characterized by a warm, soft, slightly nasal timbre. It belongs to the category of aerophones.The soft wood of the apricot tree is the ideal material for the body of the instrument. The roots of Armenian duduk music go back to the times of the Armenian king Tigran the Great (95-55 BC). It accompanies popular Armenian traditional songs and dances of the various regions and is played at events, such as weddings and funerals. Over the last few decades, the popularity of Armenian duduk music has faded, in particular in the rural areas where it originated[57].

- **Performance of the Armenian Epic of "Daredevils of Sassoun or 'David of Sassoun" (2012) (Figure 33, c))**

The Armenian epic Daredevils of Sassoun recounts the story of David of Sassoun, a defiant and self-reliant youth, who by the grace of God defends his homeland in an unequal duel against the evil. The epic falls within the tradition of heroic folktales that dramatize and voice the deepest sentiments and aspirations of a nation. The epic is told in a lyrical voice with rhythmic enunciation, while separate cantos are sung in a rhyming poetic style. Usually the

[56] https://ich.unesco.org/en/RL/kochari-traditional-group-dance-01295
[57] https://ich.unesco.org/en/RL/duduk-and-its-music-00092

epos teller sits, wearing national costume and is accompanied by a duduk melody. The epic-telling art has no gender, age or professional limitations[58].

- **Armenian Cross-Stones Art. Symbolism and Craftsmanship of Khachkars (2010) (Figure 33, d))**

Khachkars are outdoor steles carved from stone by craftspeople in Armenia and communities in the Armenian diaspora. They act as a focal point for worship, as memorial stones and as relics facilitating communication between the secular and divine. Khachkars reach 1.5 m in height, and have an ornamentally carved cross in the middle, resting on the symbol of a sun or wheel of eternity, accompanied by vegetative-geometric motifs, carvings of saints and animals. Khachkars are usually created using local stone and carved using chisel, die, sharp pens and hammers. Once finished, the Khachkar is erected during a small religious ceremony[59].

- **Lavash - the Preparation, Meaning and Appearance of Traditional Bread as an Expression of Culture in Armenia (2014) (Figure 33, e))**

Lavash is a traditional thin bread that forms an integral part of Armenian cuisine. Its preparation is typically undertaken by a small group of women, and requires great effort, coordination, experience and special skills. A simple dough made of wheat flour and water is kneaded and formed into balls, which are then rolled into thin layers and stretched over a special oval cushion that is then slapped against the wall of a traditional conical clay oven. Lavash plays a ritual role in weddings, where it is placed on the shoulders of newlyweds to bring fertility and prosperity. The group work in baking lavash strengthens family, community and social ties[60].

a) Kochari dancing

b) Duduk

[58] https://ich.unesco.org/en/RL/performance-of-the-armenian-epic-of-daredevils-of-sassoun-or-david-of-sassoun-00743
[59] https://ich.unesco.org/en/RL/armenian-cross-stones-art-symbolism-and-craftsmanship-of-khachkars-00434
[60] https://ich.unesco.org/en/RL/lavash-the-preparation-meaning-and-appearance-of-traditional-bread-as-an-expression-of-culture-in-armenia-00985

c) Performance of the Armenian Epic

d) Armenian cross-stones (khachkars)

e) Lavash preparation

Figure 33. Armenian ICH values inscribed in the UNESCO's representative list

In addition to the six ICH values on the UNESCO's representative list, Armenia has ICH values of **national significance**. As per the last amendment (dated 24.03.2022) to Annex 2 of the RA Government decision No. 310-A, the RA list of ICH values currently consists of 51 ICH values (including the six internationally recognized ICH) represented by the national songs and musical instruments, dances, ethnic cuisine, handcrafts (carpet weaving, knitting, embroidery, wood art, pottery, forging, etc.), pilgrimage, and so forth.

2.3.5.2 Regional context

In general, apart from the kochari group dance, the rest of Armenia's ICH values inscribed in the UNESCO's representative list, can be met in Syunik Region. Lavash, included in both UNESCO and national lists of ICH values, is an integral part of the Armenian cuisine and culture and is widely spread in all regions of Armenia and in Syunik Region specifically. The story about 'David of Sassoun" is studied in all educational institutions of Armenia and therefore it is well known to all Armenians, regardless their geographical location, gender and age. As noted earlier, duduk is produced from the apricot tree, so its music is more typical for the people of the Ararat Valley that is the homeland of apricot orchards.

From the 51 ICH values of national significance, 15 are widespread in Syunik Region. As noted above, Lavash, included in both UNESCO and national lists of ICH values, is an integral part of Armenian cuisine, including in Syunik Region. Gata, an Armenian sweet bread or pastry, baked in tondir (a underground clay oven) or in conventional oven is another unique dish of the Armenian cuisine. While Gata is adored throughout the whole country, each region has its own way to bake it. Often, Gatas are decorated with different ornaments and words. It is a widespread practice to put a coin inside a Gata before baking it and, whoever finds the piece with the coin, will have good luck and many happy returns.

The tradition of tondir (underground clay oven) producing which is used for cooking of lavash, gata and other dishes of the national cuisine is also an ICH value of national significance. This tradition was spread in rural areas of Syunik, Shirak, Aragatsotn, Kotayk and Ararat Regions of Armenia. However, nowadays, tondirs are replaced by modern electrical ovens. Meanwhile, in some restaurants, the tondir and lavash preparation process is used as a tool to attract tourists and visitors.

Some food and beverage and their preparation processes in Syunik Region are eventually altered into the traditions and/or festivals that annually are celebrated by local people and visitors specially attending the region for the noted events. Part of these traditions and celebrations is inscribed on the RA list of ICH values and includes:

- Vodka preparation from fruits also known as a Mulberry vodka festival is celebrated in Syunik Region. The event takes place in Goris town or Qarahundge village in summer / early autumn. During the event, the participants demonstrate not only vodka preparation process (**Figure 34, a)**), but also other hand-made food, such as gata, salted (marinade) vegetables, grown fruits from their gardens, etc. (**Figure 34, b)**). Sometimes, traditional music, dances and songs accompany Mulberry vodka festivals.

a) Vodka preparation process

b) Demonstration of hand-made products and grown fruits

Source: https://armenpress.am/arm/news/896327.html

Figure 34. Mulberry vodka festival

- Preparation of salted (marinade) beetroot (tsakhattu in Armenian, **Figure 35**) is another tradition characteristic to the rural settlements of Goris town. The bearers of this tradition are middle aged and elderly women. Very often women of several families are joined together to prepare the salted beetroot. The process is accompanied by fun stories and songs.

Figure 35. Salted (marinade) beetroot ('tsakhattu' in Armenian)

- Tradition of kurkut ritual dish in Kapan. This dish is prepared from wheat, barley and beef that cooked together and roasted with butter. It is a traditional dish for New Year celebration, for wedding and christening ceremonies. In 2019, the first kurkut festival was organized in Kapan town.
- The tradition of making dried persimmon and figs. This tradition is specific for Meghri town and surrounding villages only. The dried fruits are prepared in summer and autumn season, mainly from persimmon, figs, apricot, plum, apple, pear and grape. However, the mild climate of Meghri area creates favourable conditions specifically for persimmon and figs orchids.

New Year celebration and Trndez ritual are also included into the national list of ICH values. Trndez ritual is rooted in Armenian pagan tradition and is celebrated on 13 of February. The purifying qualities of fire were at the centre of pre-Christian Armenian tradition. According to several sources, people believed that the strength of the fire would eradicate the winter's cold and allow for fertile land and a prosperous harvest. Couples - especially newlyweds - would jump over the Trndez flames for luck, prosperity, and fertility (**Figure 36**). New Year is a family holiday and celebrated in all regions of Armenia.

Figure 36. Trndez ritual

Tar (a string instrument) is a long-necked, waisted lute family instrument, used by many cultures and countries including Iran, Armenia, Uzbekistan, Armenia, Georgia, Tajikistan (Iranian Plateau), Turkey, and others near the Caucasus and Central Asia regions. The Tar music is spread in Syunik, Shirak, Gegharqunik and Tavush regions of Armenia. Starting from the second half of the 20th century, tar training and performing arts were also introduced into the professional sphere (music schools, academies, and conservatories) in Armenia.

Traditional carpet weaving. Archaeological excavations verify the ancient history of carpet making tradition in Armenia and in Syunik region in particular. Carpet weaving tradition prospered in the Middle Ages (9th-13th centuries), which is evidenced by Armenian and foreign bibliographic information. Among the ancient examples of carpets, the "Erakhoran", "Anahit", "Artsivi", "Dragon fight scene", and "Guhar" are of exceptional value.

2.3.5.3 Local setting

Traditions and rituals and use of sacral and other cultural fabrics

Traditions, rituals and other ICH values of international and national significance that were practiced by population of the Project affected settlements for years are disappearing as a result of the "urbanization" of the rural areas located along the Project alignment and availability of road infrastructure between the villages and community centres (Sisian, Kajaran and Kapan towns). For example, the lavash preparation tradition that was widespread in rural areas in the past, nowadays has faded as lavash is regularly delivered to the rural market by the bakeries from Sisian town (in case of villages located along the Sisian-Shenatagh road section) and from Kapan town (in case of villages located along the Qirs-Kajaran road section).

Migration of young people from the villages to the towns for education and employment purposes is another reason why the local traditions are not transferred from the old to young generation. Carpet weaving traditions were popular in the Project region in the past, in Sisian Town and villages of Sisian Community specifically. In the Sisian History Museum[61] (located in Sisian town) the examples of "Sisian", "Uyts", "Brnakoth[62]" and "Zangezur" carpets are exhibited (**Figure 37**). It can be noted that the names of carpets are characterized by their unique ornament and bear the names of towns (Sisian), villages (Uyts, Brnakoth) or regions (Zangezur). However, nowadays, only few persons are engaged in carpet making in the region.

Zangezur *Sisian* *Uyts* *Brnakoth*

Figure 37. Carpet with unique ornaments specific to settlements of the Project region

The khachkar producing craft is not typical for the residents of the Project region, however, khachkars can be observed in several places along the planned road. Some of them are famous spiritual sites, which attract not only locals, but also tourists. Such attractions are, for example, Loriki Khach (**Figure 38, a)**) dated 1271 – a monument at the entrance of Lor village, two khachkars located on both side of the road near St. Hovhannes church (**Figure 38, b)**) and a khachkar-water spring (**Figure 38, d)**) near the road to Vaghatin village.

Another sacred place is a funerary monument (6th-7th centuries AD) (**Figure 38, c)**) located in Aghitu village. Often, near the sacred sites there are separate places that are furnished with tables, benches and braziers for barbecue making. The residents of the villages as well as visitors use these sites during the week-ends and events celebration.

[61] http://www.sisianmuseum.am/index.php?lng=1

[62] Brnakoth - village of Sisian community (not affected by the Project)

a) Loriki khach in Lor, 415 m from the proposed road

b) two khachkars near the road to St. Hovhannes church, 360 m from the proposed road

c) Funerary monument in Aghitu, 400 m from the proposed road

d) khachkar-water spring near the existing road to Vaghatin, 140 m from the proposed road

Figure 38. Sacred sites along the proposed road

New Year holidays and Trndez ritual are widely celebrated in the settlements of the Project affected area, typically with families at home.

The residents of Darbas, Shamb, Getatagh, Lor and Shanatagh villages perform their wedding and baptizing ceremonies in St. Stephan church located in Darbas village (**Figure 39, a)**), while the residents of Vorotan, Vaghatin, Uyts, and Aghitu visit St. Grigor church in Sisian Town (**Figure 39, b)**).

Each of the mentioned villages have at least one church; however, part of them is semi-destroyed and others do not operate (**Figure 40**). Only St. Hovhannes church in Lor settlement has been rehabilitated recently, but is not serviced by custodians (**Figure 41**). In exceptional cases, custodian/churchman from Darbas church is invited to perform ceremonies in St. Hovhannes church. The residents of Geghi, Nor Astghaberd, Barikavan, Kavchut and Lernadzor villages hold their wedding ceremonies in the churches of Kapan and Kajaran towns.

From all of the Project affected settlements only Darbas celebrates the Day of the Village (5 of May). Darbas villagers also feast the Golden Autumn Holiday (25 of October). The population of Shamb, Lor, Getatagh and Shenatagh participates in the noted celebrations to some extent.

a) St. Stephan church in Darbas, 500 m from the proposed road

b) St. Grigor church in Sisian Town

Figure 39. Operating churches in Darbas and Sisian settlements

a) The Holy Mother of God Church in Getatagh, 380 m from the proposed road

b) St. Gevorg Church in Lor settlement, 270 m from the proposed road

Figure 40. Semi-destroyed and inactive churches

Figure 41. Hovhannes Church in Lor settlement

The commemoration ceremony in rural settlements along the planned road alignment is carried out in a deceased person's house. After the funeral the attendees gather in the Village Hall to commemorate the deceased person, which is accompanied with dinner and toast speaking. Each settlement has its own cemetery that is usually located within the settlement or in the vicinities (**not in proximity to the proposed road**).

There are two museums in the settlements of the Project area. The first one, Sisian History Museum (**Figure 42, a)**) is located in Sisian Town and the second - Memorial house of Hamo Sahyan, a well-known Armenian poet, is located in Lor village (**Figure 42, b)**).

Tradition of fruit vodka making in domestic conditions is widely practiced in the Project region. Apple, plum, pear and mulberry are the main sources for vodka making. This tradition has not been commercialized so far, however can be seen as an additional element to attract visitors/tourists to the region after Project implementation.

a) Sisian History Museum

b) Memorial house of Hamo Sahyan, Lor

Figure 42. Museums within the Project region

Cultural landscapes[63]

Cultural landscapes along the proposed road can refer to several types of cultural landscapes, namely (photos of some natural and cultural landscapes are also provided in **Section 2.11 of the ESIA Volume 3 Physical Environment**):

- rural vernacular[64] (**Figure 43**),
- rural and urban ethnographic[65] (e.g., **Figure 38**), and
- historic sites[66] (e.g., **Figure 29**).

There are no designated landscapes[67] in the vicinities of the proposed road. Nor are there cultural landscapes that have a protected status under the national law.

Rural vernacular landscapes in the region are found near the villages, and usually present small settlements formed along / near rivers with farms and fields around. Ethnographic landscapes can be found in the towns, such as Sisan, they are urban and usually include urban traditional architecture. Rural ethnographic landscapes can be noted within the villages.

[63] Cultural landscapes include tangible and intangible characteristics, such as natural systems and features, spatial organization and land use. Cultural landscapes are historically significant places that show evidence of human interaction with the physical environment. Their authenticity is measured by historical integrity, or the presence and condition of physical characteristics that remain from the historic period.

[64] Cultural landscapes that evolved through use by the people whose activities or occupancy shaped that landscape. Through social or cultural attitudes of an individual, family or a community, the landscape reflects the physical, biological, and cultural character of those everyday lives.

[65] Cultural landscapes containing a variety of natural and cultural resources that associated peoples define as heritage resources.

[66] Cultural landscapes that are significant for their association with a historic event, activity, or person.

[67] Landscapes that were consciously designed or laid out by a landscape architect, master gardener, architect, or horticulturist according to design principles.

Figure 43. Examples of rural vernacular cultural landscapes (view at the local cemetery and houses in Kavchut)

Settlements in the Project communities that form the cultural landscapes can be divided into two large groups according to their structure and type. The first group includes the nucleated villages, clustered around a central point, such as a village church. The second group are linear villages, clustered around a central public space, but along a line; the line can be natural, such as a river bank or a transportation route, such as a road.

The villages in the Project area are either of dispersed and compact type. According to their positions the affected villages are located in the mountainous, hilly or plain part of the terrain. Several villages in the southern part of the proposed road are abandoned. Cultural landscapes along the northern part of the proposed road are more diverse.

Along the proposed road, there are many villages with tangible cultural heritage units that form part of the rural cultural landscape of the region. Tangible cultural heritage of the villages and areas along the proposed road include the traditional and sacral buildings and monuments that have protected status, as well as recently discovered sites of cultural, historical, archaeological, natural, paleontological and spiritual importance.

Conclusion on whether ICH is likely to be Affected

The desktop studies, visits to the sites / buildings that are / can be associated with ICH values, investigations into the local traditions and rituals, and consultations with the local residents, including the carriers of the ICH information / values such as the heads of administrative units

/ settlements, male and female villagers, pensioners, and Sisian Museum staff allow to conclude that:

- no adverse impacts on ICH that is registered in the national list of values and representative list of UNESCO are expected due to the Project. On the contrary, the presence of some of the ICH values, such as baking Lavash, crafting Duduk and playing Duduk music, seeing Armenian cross-stones (Khachkars) in the villages located along the proposed road can serve as an additional trigger for the tourism and trade development in the region. **It was stressed by several interview / focus group respondents that the construction of the proposed road would be expected to help revive the national traditions, practices, and rituals.**
- a negative impact is predicted for the spring monument (Vaghatin administrative area, unit 41, km 11.9+00, adjacent to the Medieval village remains) that is considered important by some of the local residents and occasionally used by the locals who enjoy having rest near the spring, and
- cultural landscapes can be affected, especially on the northern side of the Bargushat tunnel (the assessment of the cultural landscapes is embedded in the landscape and visual amenity assessment, **ESIA Volume 3, Section 3.8**).

3 ASSESSMENT OF POTENTIAL SOCIO-ECONOMIC AND CULTURAL HERITAGE IMPACTS AND RISKS AND MITIGATION MEASURES

3.1 Potential Impacts on Economy

3.1.1 Introduction and AoI

This section concerns the expectations for Project-driven economic development. Project-related procurement of certain goods and services is assumed to increase the demand for such goods/services at the respective markets. The further knock-on effects are a) increased incomes of Project good suppliers and service providers (sub-contractors) and businesses servicing direct and indirect Project employees as well as incentives for expanding such businesses and potentially opening new ones (and creating new jobs); and b) increased business taxes and salary-related payments to the budgets (to be paid by the Client, Construction Contractor, Project suppliers and sub-contractors and supporting businesses) and contributing to increased welfare of the population of respective territories. In addition, once built the new road will improve connectivity of and transportation safety within the Project region and its accessibility from the other parts of the country, and therefore cause multiplier effects of the regional economic development.

The AoI for impacts on the economy covers territories of Sisian and Kajaran Communities, as well as Syunik Region as a whole and may extend to the national (Armenia) level. The AoI embraces the **core AoI** (**Figure 1**) comprising territories of the affected villages (rural settlements affected by land acquisition, and /or adjacent to or crossed by the proposed route, existing roads to be used by construction transport, and potential connecting roads).

*Note: Project-related employment opportunities and impacts on the labour markets are reviewed in detail in a separate section (**Section 3.2**) below.*

3.1.2 Reference Criteria

For the purposes of impact assessment, the socio-economic baseline conditions as described in **Sections 2.1.2, 2.1.4**, **2.1.5,** and **2.1.6** above are used as the reference criteria for assessing economic impacts due to the Project construction and operation.

Then, the impacts are considered in relation to the to the relevant legislation of Armenia, EBRD PR 1, EIB ESS 1, and ADB Safeguard Policy Statement (2009) (SR 1) (for details on the requirements see **Section 4 of ESIA Volume 1**; and for the methodology of impact assessment refer to **Section 5 of ESIA Volume 1**).

3.1.3 Assumptions and Limitations

No decision is available about the number and location of Project construction camps and/or other accommodation options (hotels, rented apartments/houses) for Project transient construction staff. Thus, for the purpose of this assessment, the transient workers are assumed to be placed in several locations, e.g., potentially in two construction camps in the environs of Shenatagh and Qirs villages (or the northern and southern portals of Bargushat tunnel), and in specially arranged premises at Sisian and Kajaran towns.

Local workforce that will be recruited in the villages and towns in the Project area will be transported to construction sites; in specific cases, depending on the work schedules and remoteness of construction sites, they can be accommodated at the construction camps.

Land allocated for construction camps and warehouses for construction materials and equipment will be acquired via lease agreements. The locations of such facilities are not yet defined; however, the selection of sites will be guided by the principles of the Resettlement Framework developed for the Project.

The Client is assumed to maximise, to the extent possible, procurement of goods and services at the local, municipal, and regional levels.

3.1.4 Impact Assessment: Construction

3.1.4.1 Impacts Related to Procurement of Goods and Services

During the construction phase the Construction Contractor will procure a range of raw materials, various products, equipment, and services to address the Project needs. Many construction goods and necessary equipment will need to be brought afar. However, some necessary products and materials are produced or sold in the affected municipalities or other parts of the Project region: construction materials (e.g., sand, gravel, cement), diesel fuel (for construction vehicles), food products, etc[68]. As a result, an increased demand is predicted for such goods produced and/or sold on the respective markets.

The indicative list of business-to-business services for the Project to be purchased at the construction stage include:

- Transportation of construction materials and equipment;
- Transportation of construction workers to/from construction sites;
- Vehicle repair;
- Accommodation of transient construction staff (hotel accommodation or apartment rental services);
- Food supply and catering service for Project staff;
- Security services for construction sites and warehouses of construction materials;
- Consulting services including logistics, construction supervision, IT support, etc.

[68] For example, Sisian Community is known for the production of grain crops and livestock production, while Sisian Town specializes in the food industry and building materials.

It is expected that considerable part of these services can be provided by companies based in the affected municipalities and/or other parts of Syunik Region.

The influx of transient workers to the affected municipalities will generate additional demand for personal services for these workers (e.g. hairdressers, laundries, repair shops for shoes and clothes), recreation services (e.g. cafeteria, bars) and food retail service in locations where the migrants are placed (locations for construction camps to be confirmed). The expected locations for provision of such services would be community centres (Sisian and Kajaran towns) and possibly villages that will be closer to the construction camps.

The aggregated impact of Project-related procurement at the construction phase is analysed below.

Impact of Project-related procurement of goods and services on respective markets due to construction					
Impact Nature	Positive			Negative	
	Project-related procurement will result in the increased demand for certain goods and services needed for the Project on the respective markets. This increases the amount of goods produced/sold and services provided, and consequently raises income and contributes to an increased welfare of people running respective businesses and their employees. In addition, this may stimulate Project suppliers and sub-contractors to expand their businesses and potentially open new ones.				
Impact Type	Direct	Indirect	Reversible	Irreversible	
	The increased demand for goods/service markets related to the Project development is a direct impact and it results in series of indirect knock-on economic effects (see above). These are reversible as they occur only during the construction phase (ca. six years).				
Impact Duration	Temporary	Short-term	Medium-term	Long-term	Permanent
	The impact is considered to be short-term to medium-term as it would manifest during the Project construction phase, but at some locations it may last for a shorter period of time.				
Impact Extent	Local	Municipal (Community)	Regional	National	International
	The impact can affect municipal, regional and national markets of goods and services. Some necessary goods will be brought to the Project area afar while others are produced or sold in the affected settlements and municipalities (e.g., construction materials, fuel, food products). In turn, hotel, restaurant, café (HoReCa) and personal services for transient workers are expected to be provided by local and/or municipal sub-contractors, transportation – by municipal and/or regional sub-contractors, level, while consulting services – by companies based in the country capital.				
Impact Magnitude	Negligible	Low	Medium	High	
	The impact adds benefits as it results in increased welfare of people running businesses and their employees. Due to construction, a number of parameters characterizing markets are expected to show positive dynamics including a) amounts of certain goods produced/sold and services provided and b) number of businesses - potential Project suppliers and sub-contractors. It is short-term to medium-term by duration, reversible and extends to municipal, regional and national levels.				
Receptor Value / Sensitivity	Very low (at the national level)	Low (at the regional level)	Medium (at the municipal level)	High	
	Receptors are markets of specific goods and services important for the Project of different levels (municipal, regional, and national). The receptor sensitivity depends on a) current amounts of certain goods produced/sold and services provided and b) the current number of businesses – potential Project suppliers and sub-contractors at each market. The larger the baseline value for each parameter, the lower sensitivity of each market of concern to the impact. The receptor sensitivity can be viewed as medium at the municipal level, low at the regional level, and very low at the national level.				
Impact Significance	Negligible (at the national level)	Minor (at the regional level)	Moderate (at the municipal level)	Major	
	Impact significance is a function of sensitivity of the receptors and impact magnitude and would be negligible at the national level, minor at the regional level, and moderate at the municipal level.				

Mitigation/Enhancement Measures

The following enhancement measures will increase the magnitude of the potential beneficial impact at the municipal markets and businesses operating at these markets:

- Oblige the Construction Contractor to develop (prior to construction) and implement (during the construction phase) **the Procurement Plan** in line with the national legislation, EBRD PR 1, EIB ESS 1 and ADB SR 1; this Plan will aim at maximising and prioritising procurement within the affected municipalities subject to service/product requirements.

Residual Impacts

If the enhancement measures are delivered effectively the **impact magnitude** could increase to **high**. The **residual significance** of this beneficial impact would be **minor at the national level, moderate at the regional level, and major at the municipal level**.

Monitoring

Monitoring will occur as per the indicators in the Procurement Plan and information included in the reports to Lenders.

3.1.4.2 Impacts of Project-related Tax Payments

The Project requires permanent and temporary land acquisition (to be completed before the beginning of construction works), hiring construction workers and procuring goods and services (see detailed in **Section 3.1.4.1**).

During the construction phase the Client will property tax, vehicle property tax, environmental tax, value added tax (VAT) and salary-related social taxes for the newly employed RD staff. The Construction Contractor will disburse payments for leased land in private and municipal ownership (if applicable), pay property tax, vehicle property tax, VAT, income tax, presumably duties for imported goods and/or equipment for the Project and salary-related social taxes for newly employed construction workers.

In addition, the Project suppliers and sub-contractors and businesses servicing direct and indirect Project employees will pay their own taxes (e.g., VAT and/or sales tax, vehicle property tax, environmental tax, income tax, salary-related social taxes for their employees).

The Project would result in the overall increase in tax payments to the national budget and budgets of the affected municipalities and in resulting increase in budget revenues.

The aggregated impact of increased payments to the budgets is analysed below.

Impact of the Project-related tax and other payments to the budgets due to the construction					
Impact Nature	Positive			Negative	
	The Project would result in the overall increase in tax payments to the national budget and budgets of the affected municipalities (compared to the baseline levels) and resulting increase in budget revenues. This would contribute to welfare of people living within the respective territory (a community or the country as a whole).				
Impact Type	Direct	Indirect	Reversible	Irreversible	
	The impact is related to the Project development and considered to be indirect as this is a knock-on effect of Project-related procurement of goods and services (see above) and/or possessing land or properties, and reversible as it can occur only during the construction.				
Impact Duration	Temporary	Short-term	Medium-term	Long-term	Permanent
	The impact is short- to medium-term as it would manifest during the Project construction phase (up to six years), but at some locations it may last for a shorter period of time.				
Impact Extent	Local	Municipal (Community)	Regional	National	International
	The impact is to manifest at the municipal and national levels as Project-related tax payments, salary-related payments and payments for the leased land (if applicable) are distributed between the national budget and budgets of the communities where the respective businesses are based.				

Impact of the Project-related tax and other payments to the budgets due to the construction				
Impact Magnitude	Negligible (at the national and municipal levels)	Low	Medium	High
	Due to construction, budget revenues from business tax payments, salary related payments and land lease payments will increase. The impact adds benefits as it results in increased welfare of people living within the respective territories. It is short-term to medium-term by duration, reversible and extends to municipal and national levels. The impact magnitude depends on the contribution of Project-related revenues in relation to the whole amount of revenues - the larger this share, the higher the impact magnitude. The impact magnitude is viewed as negligible both at the national and municipal levels.			
Receptor Value / Sensitivity	Very low (at the national level)	Low	Medium (at the municipal level)	High
	Receptors are budgets of Sisian and Kajaran Communities and the national budget. The receptor sensitivity depends on the total budget amount – the smaller the total budget, the higher receptor sensitivity. The receptor sensitivity can be viewed as medium at the municipal level and very low at the national level.			
Impact Significance	Negligible (at the national level)	Minor (at the municipal level)	Moderate	Major
	Impact significance is a function of sensitivity of the receptors and impact magnitude and would be negligible at the national level and minor at the municipal level.			

Mitigation/Enhancement Measures

The following enhancement measures should be implemented to increase the magnitude of the beneficial impact of increased tax payments:

- Oblige the Construction Contractor to develop (prior to construction) and implement (during the construction phase) the **Procurement Plan** in line with the national legislation, EBRD PR 1, EIB ESS 1 and ADB SR 1; this Plan will aim at maximising and prioritising procurement within the affected municipalities subject to service/product requirements.

Residual Impacts

If the enhancement measures are delivered effectively, the **impact magnitude** could increase to **low at the municipal level** remaining **negligible at the national level.** The **residual significance** of this beneficial impact would become **moderate** at **the municipal level** and remain **negligible at the national level**.

Monitoring

Monitoring will occur as per the indicators in the Procurement Plan and information included in the reports to Lenders.

3.1.5 Impact Assessment: Operation

3.1.5.1 Improved Conditions for Economic Development

Once completed, the new road would become an element of North-South Road Corridor (NCRC), which would improve accessibility of Armenia and trading opportunities in the region. The expected benefits related to the Project (Tranche 4) include:

- significantly reduced travel time (from 2-3 hours to 1 hour); and
- increased transportation safety at the road and reduced vehicle maintenance costs for the road users due to the improved quality of road surface.

The expected economic effects of the operational road include:

- better connectivity of Syunik Region and improved access to the northern part of the country including Yerevan;
- improved conditions for development of tourism and recreation in Sisian and Kajaran Communities and in Syunik Region as a whole; and
- promotion of various roadside businesses (e.g., trading centres, cafeteria, food markets; refuelling stations, and so forth).

It can be expected that many businesses in tourism and recreation sector as well as roadside businesses would be small and medium enterprises (SMEs). Therefore, the Project would finally promote SME development in the Project region including both, an increase in the number of such businesses and a profitability of the existing ones.

The aggregated impact of the Project on SME development in the Project region is analysed below.

Impact of the Project on the economic development due to the operations					
Impact Nature	Positive				Negative
	The Project would improve conditions for development of tourism and recreation in Sisian and Kajaran Communities and in Syunik Region as a whole and promote various roadside businesses (e.g., trading centres, cafeteria, food markets; refuelling stations, and so forth). One can expect an increase in both the number of such businesses and the profitability of the existing ones.				
Impact Type	Direct	Indirect	Reversible	Irreversible	
	The impact is seen as indirect as this is a knock-on effect of operation of the newly built road and its technical characteristics: reduced travel time along the road and improved road surface quality. The impact is viewed as reversible as it will last during the lifetime of the Project.				
Impact Duration	Temporary	Short-term	Medium-term	Long-term	Permanent
	The impact is considered as long-term as the road will exist during the next 20-30 years as minimum and its operation will trigger regional and local economic development including tourism and recreation and the roadside services				
Impact Extent	Local	Municipal (Community)	Regional	National	International
	The Project is to promote SMEs at the municipal and regional levels.				
Impact Magnitude	Negligible	Low	Medium	High	
	The impact adds benefits as it results in increased welfare of people running SMEs and their employees and potential creation of new jobs. As a result, more residents of the region would benefit from the Project. It is permanent by duration, irreversible and extends to municipal, regional, and national levels.				
Receptor Value / Sensitivity	Very low	Low (at the regional level)	Medium (at the municipal level)	High	
	Receptors are SMEs in tourism and recreation and HoReCa sectors as well as roadside businesses in Sisian and Kajaran Communities and in Syunik Region. The receptor sensitivity depends on share of expected new SMEs in relation to the baseline values. The larger this share, the higher sensitivity of each receptor. The receptor sensitivity can be viewed as low at the regional level and medium at the municipal level.				
Impact Significance	Negligible	Minor (at the regional level)	Moderate (at the municipal level)	Major	
	Impact significance is a function of sensitivity of the receptors and impact magnitude and would be low at the regional level and medium at the municipal level.				

Mitigation/Enhancement Measures

No enhancement measures are envisioned.

Residual Impacts

The residual significance of this beneficial impact would be **minor at the regional level and moderate at the municipal level**.

Monitoring

N/A

3.1.5.2 Impacts Related to Procurement of Goods and Services

During the Project operation phase the Company will hire a maintenance contractor for a 5-year period to conduct routine, periodic, and accidental road maintenance works.

The Maintenance Contractor is assumed to be selected among the existing reputable companies providing road maintenance services. Its permanent staff will be supported by temporary staff (semi-skilled and unskilled workers and potentially part of skilled workers) to be recruited in the affected municipalities.

To conduct road maintenance works the Maintenance Contractor will procure raw and construction materials and the following services:

- Transportation of materials and equipment;
- Transportation of maintenance workers to/from sites;
- Vehicle repair;
- Accommodation of transient maintenance staff (hotel accommodation or apartment rental services);
- Food supply and catering service for maintenance staff;
- Security services for maintenance sites and warehouses of construction materials.

The above-mentioned goods and services can be procured at the national, regional, municipal and local levels. It is expected that considerable part of them would be provided by companies based in the affected municipalities and/or other parts of Syunik Region. Some Project suppliers and sub-contractors of the construction phase are likely to be involved into the Project at the operation phase as well. At the same time, they will experience drop in demand for their goods and services compared to the construction phase.

The aggregated impact of Project-related procurement at the operations is analysed below.

Impact of Project-related procurement of goods and services on respective goods/service markets due to the operation					
Impact Nature	Positive			Negative	
	Project-related procurement will result in sporadic peaks in a) demand for raw and construction materials produced and/or sold in Syunik Region and b) demand for accommodation and catering services for transient staff of the Maintenance Contractor visiting the Sisian and Kajaran municipalities. This would result in sporadic peaks in amounts of certain goods produced/sold services provided, and in income of good suppliers and service providers and businesses servicing direct and indirect Project employees, and therefore in welfare of people running respective businesses and their employees.				
Impact Type	Direct	Indirect	Reversible	Irreversible	
	The increased demand for goods/service markets related to the Project development is a direct impact and it results in series of indirect knock-on economic effects (see above). These effects are reversible as they occur only during relatively short periods of increased demand for goods/services for maintenance works lasting for several months.				
Impact Duration	Temporary	Short-term	Medium-term	Long-term	Permanent
	The impact is considered to be short-term as it would manifest during relatively short periods of increased demand for goods/services lasting for several months.				
Impact Extent	Local	Municipal (Community)	Regional	National	International
	The impact can affect municipal, regional, and national markets of goods and services.				
Impact Magnitude	Negligible	Low	Medium	High	
	The impact adds benefits as it results in increased welfare of people running businesses and their employees. During road operation, amounts of certain goods produced/sold and services provided are expected to grow but these peaks in demand is not expected to be prominent. The impact is short-term term by duration, reversible and extends to municipal, regional and national levels.				

Impact of Project-related procurement of goods and services on respective goods/service markets due to the operation				
Receptor Value / Sensitivity	Very low (at the national and regional level)	Low (at the municipal level)	Medium	High
	Receptors are municipal, regional and national markets of specific goods and services required for road maintenance. The receptor sensitivity depends on a) current amounts of certain goods produced/sold and services provided and b) the current number of businesses – potential Project suppliers and sub-contractors at each market. The larger the baseline value for each parameter, the lower sensitivity of each market of concern to the impact. The receptor sensitivity can be viewed as very low at the national and regional levels and low at the municipal level.			
Impact Significance	Negligible (at the national and regional levels)	Minor (at the municipal level)	Moderate	Major
	Impact significance is a function of sensitivity of the receptors and impact magnitude and would be negligible at the national and regional levels and minor at the municipal level.			

Mitigation/Enhancement Measures

The following enhancement measures should be implemented to increase magnitude of the potential beneficial impact at the municipal markets and businesses operating there:

- Oblige the Maintenance Contractor to develop and implement **the Procurement Plan** in line with the national legislation, EBRD PR 1, EIB ESS 1 and ADB SR 1; such Plan will aim at maximizing procurement within the affected municipalities subject to service/product requirements.

Residual Impacts

If the enhancement measures are delivered effectively, the **impact magnitude** could increase to **medium.** The residual significance of this beneficial impact would not change though remaining **negligible at the national and regional levels** and **minor at the municipal level.**

Monitoring

Monitoring will occur as per the indicators in the Procurement Plan and information included in the reports to Lenders.

3.1.5.3 Impacts of Project-related Tax Payments

As mentioned above, the Client plans to contract the Maintenance Contractor to conduct road maintenance works; the Client will only monitor the activities of the Maintenance Contractor. The Project-related tax payments during the operations phase include:

- Client's tax payments (vehicle property tax, VAT, income tax, environmental tax, land lease payments (for land in municipal ownership) (if applicable) and salary-related social taxes for the employed operational staff;
- Maintenance Contractor's tax payments; and
- Tax payments by Project suppliers and sub-contractors contracted to support the operational works and by businesses servicing direct and indirect Project employees (e.g., value added tax (VAT), and/or sales tax, salary-related social taxes for their employees, possibly duties for imported goods and/or equipment, and salary-related social taxes for their employees).

Therefore, the Project would result in the overall increase in tax payments and other budget payments to the national budget and budgets of the affected municipalities (compared to the baseline levels) and increase in budget revenues.

The aggregated impact assessment is analysed below.

Impact of the Project-related taxes and other payments to the budgets due to the operation					
Impact Nature	Positive			Negative	
	The Project would result in the overall increase in tax payments to the national budget and budgets of the affected municipalities. Increased budget revenues contribute to welfare of people living within the respective territory (a community or the country as a whole).				
Impact Type	Direct	Indirect	Reversible	Irreversible	
	The impact is related to the Project development and considered to be indirect as this is a knock-on effect of Project-related procurement of goods and services (see above) and reversible as it occurs only during relatively short periods of increased demand for goods/services lasting for several months.				
Impact Duration	Temporary	Short-term	Medium-term	Long-term	Permanent
	The impact is considered to be short-term as it would manifest during relatively short periods of increased demand for goods/services lasting for several months				
Impact Extent	Local	Municipal (Community)	Regional	National	International
	The impact is to manifest at the municipal and national levels as Project-related tax payments, salary-related payments and lease payments for the leased state land are distributed between the national budget and budgets of the communities where the respective businesses are based.				
Impact Magnitude	Negligible (at the national and municipal levels)	Low	Medium	High	
	Due to road maintenance, budget revenues from business tax payments, salary related payments and land lease payments will increase. The impact adds benefits as it results in increased welfare of people living within the respective territories. It is short-term by duration, reversible and extends to municipal and national levels. The impact magnitude depends on the contribution of Project-related revenues in relation to the whole amount of revenues - the larger this share, the higher the impact magnitude. The impact magnitude is viewed as negligible both at the national and municipal levels.				
Receptor Value / Sensitivity	Very low (at the national level)	Low	Medium (at the municipal level)	High	
	Receptors are budgets of Sisian and Kajaran Communities and the national budget. The receptor sensitivity depends on the total budget amount – the smaller the total budget, the higher the receptor sensitivity. The receptor sensitivity can be viewed as medium at the municipal level and very low at the national level.				
Impact Significance	Negligible (at the national level)	Minor (at the municipal level)	Moderate	Major	
	Impact significance is a function of sensitivity of the receptors and impact magnitude and would be negligible at the national level and minor at the municipal level.				

Mitigation/Enhancement Measures

The following enhancement measures should be implemented to increase the magnitude of the beneficial impact of increased tax payments:

- Oblige the Maintenance Contractor to develop and implement **the Procurement Plan** in line with the national legislation, EBRD PR 1, EIB ESS 1 and ADB SR 1; such Plan will aim at maximising procurement within the affected municipalities subject to service/product requirements.

Residual Impacts

If the enhancement measures are delivered effectively, the **impact magnitude** of this beneficial impact would still be **negligible** both at the **municipal and regional levels**. The

residual significance would remain **negligible** at the national level and **minor** at the municipal level.

Monitoring

Monitoring will occur as per the indicators in the Procurement Plan and information included in the reports to Lenders.

3.2 Potential Impacts on Employment and Labour Markets

3.2.1 Introduction and AoI

This section concerns the potential impacts on employment and labour markets due to creation of jobs associated with the Project. The Project is expected to result in creation of the new jobs during the construction phase. The employment opportunities include: i) **direct jobs** (by the Client and Construction Contractor), ii) **indirect jobs** (by Project supplies and sub-contractors) and iii) **induced jobs** (provided by businesses servicing direct and indirect Project employees).

During the operation less new employment opportunities are expected, whereas the construction-related job contracts would be closed. The new permanent jobs will be associated with development of roadside services along the road (trading centres, cafeteria, refuelling stations, and so forth). In addition, maintenance works will create a limited number of permanent jobs for managers and engineers and temporary jobs for skilled, semi-skilled and unskilled workers. Overall, the Project is expected to expand the range of employment options and reduce the number of the unemployed in the population.

The AoI for impacts on the economy covers territories of Sisian and Kajaran Communities, as well as Syunik Region as a whole and may extend to the national (Armenia) level. The AoI embraces the **core AoI** (**Figure 1**) comprising territories of the affected villages (rural settlements affected by land acquisition, and /or adjacent to or crossed by the proposed route, existing roads to be used by construction transport, and potential connecting roads).

3.2.2 Reference Criteria

For the purposes of impact assessment, the number of the unemployed and current employment opportunities within the affected territories as described in **Sections 2.1.2**, **2.1.4**, **2.1.5**, and **2.1.6** above are used as the reference criteria for assessing impacts due to the Project construction and operation.

Then, the impacts are considered in relation to the relevant legislation of Armenia, the EBRD PR 2, EIB ESS 8 and ADB SR 1 and cross-cutting gender aspects, and driven by a risk-based approach (for details on the requirements see **Section 4 of ESIA Volume 1**; and for the methodology of impact assessment refer to **Section 5 of ESIA Volume 1**). In addition, the Resettlement Framework for the Project have been taken into account.

3.2.3 Assumptions and Limitations

The construction workforce for the Project is assumed to consist of both Armenians and expatriates. Most of the construction staff are expected to be based in Syunik Region.

Mostly male workers are expected to meet the Project requirements during this phase.

An influx of Project staff (both direct and indirect workers) is expected to two affected municipalities during the construction. Staff visits to the Project area can be both short-term, for several days or weeks, and long-term, with some staff members staying in the Project area throughout the construction phase. No decision is available about the approaches to arranging accommodation for the transient construction staff. For the purpose of this assessment, the transient workers are assumed to be placed in several locations, e.g., potentially in two construction camps in the environs of Shenatagh and Qirs villages (or the northern and

southern portals of Bargushat tunnel), and in specially arranged premises at Sisian and Kajaran towns. The locations for accommodation of transient construction staff will be selected as a result of consultations between the Client, Construction Contractor, and local authorities.

Local workforce that will be recruited in the villages and towns in the Project area will be transported to construction sites. In specific cases, depending on the work schedules and remoteness of construction sites, they can be accommodated at the construction camps.

The Client is assumed to maximise, to the extent possible, procurement of goods and services at the local, municipal and regional levels.

3.2.4 Impact Assessment: Construction

During the construction phase the Client and Construction Contractor will employ managers engineers, as well as skilled, semi-skilled and unskilled workers.

According to the Investment Programme[69], at least 400-500 people will be involved in the Project at the construction phase. Data on worker skill categories and periods of construction labour force ramp-up and ramp-down are currently not available.

Work periods for some of construction personnel are expected to be short-term and may not require deployment for the full construction period, as different qualifications and abilities will be required at various stages of the construction process: initially earthworks and civil works, followed by specialist tunnelling works, electrical installations, and so on. The exact figure of construction staff will be dependent on the Construction Contractor's solutions for resourcing.

For the purposes of this assessment 500 people is taken as a tentative estimate for peak number of staff present at the construction sites. In addition, the following tentative estimates for manpower by skill categories for the construction phase are proposed:

Engineers	Managers	Workers	Total
11	4.5	84.5	100%
55	22	423	500 Project employees

Note: the ratio between the engineers, managers and workers is determined based on the RA Document MDS 12-46.2008 "Methodological Recommendations for the Development and Design of Plan for Organization of Construction, Plan for Organization of Demolition (Dismantling) Works and Plan of Work's Implementation".

Both Armenian citizens and expatriates can be involved into the Project. For a similar ongoing NSRC project, 89% of the construction staff working on site at the moment were Armenians. For the purposes of this assessment, it is assumed that 80-85% of construction staff would be Armenians, and they will be distributed across all skill categories per the above shares.

Therefore, the estimated construction-related **direct employment opportunities for the Armenians** are 60-65 engineers and managers and 340-360 workers including skilled (e.g., welders, electrical technicians, surveyors, machinists, bomb technicians, and crane operators), semi-skilled (e.g., truck/bulldozer drivers, security guards) and unskilled workers (e.g., those engaged in earthworks and civil works).

Engineers and managers and part of skilled workers are expected to be recruited mainly in Yerevan and other cities of Armenia and in Kapan, the capital of Syunik Region. All positions of semi-skilled and unskilled workers and potentially part of positions of skilled workers would be staffed by residents of the affected municipalities including villages from the core AoI.

Project suppliers and sub-contractors may potentially expand their businesses or open new businesses (compared to the baseline level) and may hire new staff to meet the increased

[69] Adopted by the Government Decision of 24 September 2021 No. 1564-Ա.

demand for their products/services, which is Project-related indirect employment. In addition, the Project will promote induced employment, i.e. creation of jobs resulting from increased spending and consumption by direct and indirect employees (see **Section 3.1.4.1** for details). Therefore, the Project would create **indirect and induced employment opportunities** for skilled, semi-skilled and unskilled workers (e.g., drivers, sales assistants, hairdressers, sewers, cleaners, cooks at the catering agencies and food industry enterprises, and security guards) in Syunik Region mainly in Sisian and Kajaran Communities primarily in Sisian, Kajaran towns, Kapan City and Shenatagh and Quirs villages and potentially in some other villages of the affected municipalities.

Based on findings of the study of employment effects of the infrastructure projects[70] a ratio of the sum of indirect and induced jobs to direct jobs is estimated as 2, i.e. creation of one direct job is assumed to trigger two indirect and induced jobs. Therefore, about 1,000 new indirect and induced jobs might be created due to the road construction.

Both male and female employees of different categories can staff these potential positions with Project suppliers, sub-contractors and servicing businesses during the construction.

The impact of Project-related creation of direct, indirect, and induced jobs at the local, municipal, regional, and national levels at the construction phase is analysed below.

Impact of the Project-related job creation on employment and labour markets due to construction					
Impact Nature	Positive				Negative
	The road construction is assumed to result in the increased number of vacancies at the labour markets of various level: for i) engineers and managers and skilled, semi-skilled, and unskilled Project workers and ii) skilled, semi-skilled and unskilled staff of Project suppliers and sub-contractors; iii) managers and skilled, semi-skilled and/or unskilled workers of businesses servicing Project direct and indirect employees. The knock-on effect would be a wider range of employment opportunities for the population of the communities and the region. The impact is beneficial as it contributes to increased welfare of employees.				
Impact Type	Direct	Indirect		Reversible	Irreversible
	The Project results in creation of both direct jobs and as well as indirect jobs (with Project suppliers and sub-contractors) and induced jobs (with businesses benefiting from spending by Project direct and indirect employees). Therefore, the Project results in both direct and indirect impact on employment. The aggregated impact on employment is viewed as reversible as it occurs only during the construction phase (ca. six years).				
Impact Duration	Temporary	Short-term	Medium-term	Long-term	Permanent
	The impact is considered to be short-term to medium-term as it would manifest during the Project construction phase (ca. six years), but at some locations it may last for a shorter period of time.				
Impact Extent	Local	Municipal (Community)	Regional	National	International
	The Project can affect the local (affected settlements), municipal (Sisian and Kajaran Communities), regional (Syunik Region) and national labour markets. Engineers and managers and part of skilled workers are assumed to be recruited at the national and				

[70] Based on the data on employment effects of the road development projects, the ratio of the sum of indirect and induced jobs to direct jobs may total 1.67, 2.83, 0.57 and 3.6. Following the conservative approach, the ratio value 2 is applied within the current assessment.

References:

EIB. 2015. Employment Impact of EIB Infrastructure Investments in the Mediterranean Partner Countries. Summary report. June 2015. Section 3.3. https://www.eib.org/attachments/country/femip_study_summary_employment_impact_en.pdf

IFC. 2013. IFC Jobs Study: Assessing Private Sector Contributions to Job Creation and Poverty Reduction. January 2013. https://www.ifc.org/wps/wcm/connect/a93ef4fe-8102-4fc2-8527-5aff9af7f74f/IFC_FULL+JOB+STUDY+REPORT_JAN2013_FINAL.pdf?MOD=AJPERES&CVID=jMRYe5J

<table>
<tr><th colspan="5">Impact of the Project-related job creation on employment and labour markets due to construction</th></tr>
<tr><td></td><td colspan="4">regional levels (in Yerevan, other cities of Armenia outside Syunik Region, and Kapan). All positions of semi-skilled and unskilled workers and potentially part of positions of skilled workers would be staffed by residents of the affected municipalities as a whole and villages from the core AoI in particular.
The Construction Contractor will procure goods and services at the local, municipal, regional and national levels (see Section 3.1.4.1 for details) and Project direct and indirect employees increase the demand for certain services within the two affected communities. Project suppliers and sub-contractors and businesses servicing the Project employees may decide to expand their business and potentially create new ones, which would result in increased demand for labour and opening new vacancies.</td></tr>
<tr><td rowspan="2">Impact Magnitude</td><td>Negligible (at the national level)</td><td>Low (at the regional level)</td><td>Medium (at the municipal and local levels)</td><td>High</td></tr>
<tr><td colspan="4">The impact adds benefits as it results in increased welfare of the employees of the Construction Contractor, Project supplies and sub-contractors and businesses servicing direct and indirect employees. Due to the road construction, the range of employment opportunities would expand and the number of the unemployed would to certain extent decrease within respective territories. The impact is short-term to medium-term by duration, reversible and extends to local, municipal, regional and national levels.
The Project may create up to 500 direct and 1,000 indirect and induced jobs; of which 10% is supposed to be staffed at the national level, 20% - at the regional level, and 70% - by residents of the affected municipalities including residents of the affected villages. The ratio of the combined number of new jobs emerging at each labour market to the total number of the unemployed at the respective level is estimated as 0.04% at the national level (Armenia outside Syunik Region), 4.6% at the regional level (Syunik Region outside two affected municipalities) and 19.8% at the municipal level (for two affected municipalities including the affected villages).
Therefore, the impact magnitude is viewed as negligible at the national level, low at the regional level and medium at the municipal and local levels.</td></tr>
<tr><td rowspan="2">Receptor Value / Sensitivity</td><td>Very low (at the national level)</td><td>Low (at the regional level)</td><td>Medium (at the municipal and local levels)</td><td>High</td></tr>
<tr><td colspan="4">Receptors are people of working age living i) in the affected villages, ii) in the two affected municipalities outside these villages, ii) in Syunik Region outside the Sisian and Kajaran Communities, and iv) in Armenia outside Syunik Region. The sensitivity of these receptors depends on the baseline unemployment rate and the existing range of employment opportunities within the respective territory: the higher the unemployment rate and less employment opportunities available for the population (and higher expectations regarding potential new jobs), the higher sensitivity of each market of concern to the impact. The availability of alternative employment opportunities and sources of livelihood (e.g., subsistence agriculture) for the affected population would decrease the receptor sensitivity to the impact.
Therefore, the receptor sensitivity is viewed as very low at the national level, low at the regional level, and medium at the municipal and local levels.</td></tr>
<tr><td rowspan="2">Impact Significance</td><td>Negligible (at the national level)</td><td>Minor (at the regional level)</td><td>Moderate (at the municipal and local levels)</td><td>Major</td></tr>
<tr><td colspan="4">Impact significance is a function of sensitivity of the receptors and impact magnitude and would be negligible at the national level, minor at the regional level, and moderate at the municipal and local levels.</td></tr>
</table>

Mitigation/Enhancement Measures

The following enhancement measures should be implemented to increase the magnitude of the potential beneficial impact on employment:

- Develop (prior to construction) and implement a **Recruitment Policy for the Project** in line with the Armenian labour laws, EBRD PR2, EIB ESS8 and ADB SR1 and ILO Conventions, and the to-be-developed Company's Human Resource Policy (the Supervision Engineer to support this action);

- Oblige the Construction Contractor to maintain an effective, culturally appropriate and gender-responsive grievance mechanism set up by the RD for project workers.
- Oblige the Construction Contractor to develop (prior to construction) a detailed **Construction Phase Recruitment Plan**, have it approved by the Client at least a month before the construction, and implement it. The plan will *inter alia*:
  - Specify the qualifications and skill levels for the construction staff;
  - Prioritise the employment of people living in two Project-affected municipalities and in particular residents of villages crossed by the road route, subject to their qualification;
  - Contain training provisions for the potential local workforce;
  - Establish a female employment target as at least 15% for the Project construction workforce.
- Oblige the Construction Contractor to conduct at the design phase an **Accommodation Option Risk Assessment** and use its findings to identify suitable locations and methods for accommodation of transient workers in the affected region.
- Oblige the Construction Contractor to develop a **Construction Phase Labour and Working Conditions Management Plan, Construction Camp Management Plan** and **Worker Code of Conduct** in line with Armenian labour laws, EBRD PR2, EIB ESS8 and ADB requirements**,** have them approved by the Client at least a month before the construction, and implement it. These documents would cover both direct and indirect employees and set out specific requirements for Project primary suppliers and sub-contractors. They would include *inter alia*:
  - a labour training programme,
  - Worker Code of Conduct induction and monitoring;
  - preventive measures to manage **gender-based violence and harassment risk** during construction; and
  - **Worker Accommodation Management Sub-plan** (building on the Accommodation Option Risk Assessment) with requirements for worker accommodation in compliance with the Armenian labour, sanitary and health standards, EBRD PR 2, EIB ESS 8, ADB requirements, EBRD/IFC guidance on worker accommodation (2009), ILO Workers' Housing Recommendation 1961 (No. 115), and EBRD's COVID-19 recommendations, and **gender-specific** provisions.
- Oblige the Construction Contractor to develop a **Demobilisation Plan**, have it approved by the Client during the first six months of the construction period. The plan would:
  - Provide the schedule for hiring and firing groups of Project direct employees during the construction phase;
  - Specify benefits for the demobilised construction staff including e.g.
    - paid trainings at the adult training centres for the demobilised unskilled workers on their choice to enhance their further employment perspectives;
    - provision of an employment reference/confirmation letter and a skills/training log.

Residual Impacts

If the enhancement measures are delivered effectively, the **residual significance** of this beneficial impact **would be major at the local and municipal levels but** will remain **negligible at the national level and minor at the regional level**.

Monitoring

Monitoring will occur as per the indicators in the Construction Phase Recruitment Plan, Labour and Working Conditions Management Plan, Grievance Log records for assessing grievance redress progress, Construction Camp Management Plan, and Demobilisation Plan and information included in the reports to Lenders.

3.2.5 Impact Assessment: Operation

During the operation phase construction-related labour contracts initiated by the RD and the Construction Contractor will be closed.

At this stage the Client is likely to hire only several managers and engineers (e.g., a community liaison officer) and will commission a Maintenance Contractor to conduct routine, periodic and accidental road maintenance works.

The Maintenance Contractor is assumed to be selected among the existing reputable companies providing road maintenance services with the existing staff including engineers, managers, and skilled workers. The mobile maintenance crews would comprise existing permanent staff of the Maintenance Contractor and temporary staff (presumably skilled, semi-skilled and/or unskilled workers) to be recruited in the affected municipalities.

Estimates of manpower requirements (direct jobs by the Client and Maintenance Contractor) for the Project operation phase are currently not available. A core maintenance team could potentially comprise 30-40 permanent staff to be supported by several (10-15) temporary workers, mainly men, hired locally on a short-term to medium-term basis where/if necessary.

The Maintenance Contractor is supposed to procure the raw and construction materials for maintenance works and a range of services similar to ones procured at the construction phase (e.g. worker transportation, vehicle repair, accommodation and catering for transient staff, etc.) (see **Section 3.1.5.2** for details). Such goods and services can be procured at the national, regional, municipal and local levels. It is expected that considerable part of them would be provided by companies based in the affected municipalities and/or other parts of Syunik Region. Contracts with some Project suppliers and sub-contractors of the construction phase may be resumed at the operation phase. At the same time, such suppliers and service providers would experience drop in demand for their goods and services compared to the construction phase would not create new jobs during the road operations.

The maintenance crews will be sporadically present in the Project area and create a demand for some personal services and retail for transient Project maintenance workers. This may trigger a very small number of **induced** short-term **employment opportunities** (e.g., sales assistants, repair specialists, waitress, etc.) at different locations at different time periods. The number of induced jobs is expected to be very small compared to the construction phase due to a drop in demand for pertinent goods and services; it would be around 50 at peak demand.

At the same time, **new permanent jobs** are supposed to arise in the Project area due to opening and/or expansion of **roadside facilities** (trading centres, cafeteria, refuelling stations, and so forth). In response to the increased demand for services for transit drivers a refueling station, a shop, a vehicle repair station, a cafeteria, and a motel for 10 rooms can be opened along the planned road or the existing businesses of these types may hire new staff. Around 50-55 vacancies for men and women are expected to be offered to residents of the affected villages and/or Sisian and Kajaran towns.

The Impact of Project-related creation of direct, indirect, and induced jobs at the local, municipal, regional, and national levels at the operations is analysed below.

Impact of the Project-related job creation on employment and labour markets due to operation		
Impact Nature	Positive	Negative
	During road operations construction-related jobs will be closed. Instead, the new direct permanent and temporary jobs will emerge including engineers and managers with the	

<table>
<tr><th colspan="6">Impact of the Project-related job creation on employment and labour markets due to operation</th></tr>
<tr><td></td><td colspan="5">Client and skilled, semi-skilled and/or unskilled temporary workers with the Maintenance Contractor. No new indirect employment opportunities are expected at this stage. The induced employment opportunities would be very limited and short-term. The aggregated Project-related indirect and induced employment would decrease compared to the construction phase due to a drop in demand for pertinent products and services. At the same time, the operational road would widen employment opportunities for the population of the affected communities and the region as a whole, In particular, new permanent jobs are supposed to arise due to opening and/or expansion of the roadside services (trading centres, cafeteria, refuelling stations, and so forth). Overall, the total numbers of Project-related vacancies on the municipal, regional, and national labour markets are expected to exceed the baseline values during the operations.
The impact is beneficial as it contributes to increased welfare of employees.</td></tr>
<tr><td rowspan="2">Impact Type</td><td colspan="2">Direct</td><td colspan="2">Indirect</td><td>Reversible</td><td>Irreversible</td></tr>
<tr><td colspan="5">Road maintenance would result in creation of new direct jobs (with the Client and Maintenance Contractor) and a limited number induced jobs (with businesses servicing transient maintenance workers). In addition, new permanent jobs are expected to arise due to development of roadside services. Therefore, the impacts on employment are both direct and indirect.
The aggregated impact on employment is viewed as reversible as it will manifest within the road lifetime will not extend further.</td></tr>
<tr><td rowspan="2">Impact Duration</td><td>Temporary</td><td>Short-term</td><td>Medium-term</td><td>Long-term</td><td>Permanent</td></tr>
<tr><td colspan="5">The impact is considered to be long-term as the road will exist at during the next 20-30 years as minimum and will create demand for labour related to road maintenance works and operation of roadside businesses.</td></tr>
<tr><td rowspan="2">Impact Extent</td><td>Local</td><td>Municipal (Community)</td><td>Regional</td><td>National</td><td>International</td></tr>
<tr><td colspan="5">The Project-related employment opportunities can affect the local (affected villages), municipal (Sisian and Kajaran Communities), regional (Syunik Region) and national labour markets.
Direct Project staff (engineers and managers and part of skilled workers of the Maintenance Contractor and engineers and managers of the Client) are assumed to be recruited at the national and regional levels (in Yerevan, other cities of Armenia outside Syunik Region, and Kapan). Part of skilled workers and all semi-skilled and unskilled workers are likely to be hired in the affected communities as a whole or in villages from the core AoI.
The Project induced jobs (with businesses servicing Project direct and indirect employees) and jobs created by roadside business are supposed to be staffed mainly residents of settlements crossed by the road.</td></tr>
<tr><td rowspan="2">Impact Magnitude</td><td colspan="2">Negligible (at the national and regional levels)</td><td colspan="2">Low (at the municipal and local levels)</td><td>Medium</td><td>High</td></tr>
<tr><td colspan="5">The impact adds benefits as it results in increased welfare of the employees of the Client, is Maintenance Contractor, and businesses servicing Project direct and indirect employees.
Due to the road operation, the range of employment opportunities would expand and the number of the unemployed would to certain extent decrease within respective territories. The impact is long-term by duration, reversible and extends to local, municipal, regional and national levels.
The Project is assumed to result in creation of 20-30 new direct jobs (both permanent and temporary) and ca. 50 induced jobs (in periods of peak demand for services for maintenance workers), of which 10% is supposed would be staffed at the national level (in Armenia outside Syunik Region), 20% - at the regional level (in Syunik Region outside two affected municipalities), and 70% - by residents of the affected municipalities including residents of the affected villages. In addition, up to 50-55 potential new jobs associated with the opening and/or expansion of the roadside businesses would be offered for residents of the Project-affected settlements.
The ratio of the Project-related combined number of new jobs emerging at each labour market to the total number of the unemployed within the respective territory level is estimated as less than 0.01% at the national level, 0.25% at the regional level and 2.09% at the municipal level.
Therefore, the impact magnitude is viewed as negligible at the national and regional levels, and low at the municipal and local levels.</td></tr>
</table>

Impact of the Project-related job creation on employment and labour markets due to operation				
Receptor Value / Sensitivity	Very low (at the national level)	Low (at the regional level)	Medium (at the municipal and local levels)	High
	Receptors are people of working age living i) in the affected villages, ii) in the two affected municipalities outside these villages, iii) in Syunik Region outside the Sisian and Kajaran Communities, and iv) in Armenia outside Syunik Region. The sensitivity of these receptors depends on the baseline unemployment rate and the existing range of employment opportunities within the respective territory: the higher the unemployment rate and less employment opportunities available for the population (and higher expectations regarding potential new jobs), the higher sensitivity of each market of concern to the impact. The availability of alternative employment opportunities and sources of livelihood (e.g., subsistence agriculture) for the affected population would decrease the receptor sensitivity to the impact. Therefore, the receptor sensitivity is viewed as very low at the national level, low at the regional level, medium at the municipal level, and high at the local level.			
Impact Significance	Negligible (at the national and regional levels)	Minor	Moderate (at the municipal and local levels)	Major
	Impact significance is a function of sensitivity of the receptors and impact magnitude and would be negligible at the national and regional levels and moderate at the municipal and local levels.			

Mitigation/Enhancement Measures

The following enhancement measures should be implemented to increase magnitude the potential beneficial impact on employment:

- Oblige the Maintenance Contractor to develop (prior to road operation) a detailed **Operation Phase Recruitment Plan**, have it approved by the Client at least a month before starting maintenance works, and implement it. The plan will *inter alia*:
  - Specify the qualifications and skill levels for the maintenance staff;
  - Prioritise the employment of people living in two Project-affected municipalities and in particular residents of villages crossed by the road route, subject to their qualification;
  - Contain training provisions for the potential local workforce;
  - Establish a female employment target as at least 15% for the Project maintenance workforce.
- If large-scale maintenance is planned, oblige the Maintenance Contractor to conduct (at the construction phase) an **Accommodation Option Risk Assessment** and use its findings to identify suitable locations and methods for accommodation of transient workers in the affected region.
- Oblige the Maintenance Contractor to develop an **Operation Phase Labour and Working Conditions Management Plan** and **Worker Code of Conduct** in line with Armenian labour laws, EBRD PR2 and EIB ESS8**,** have them approved by the Client at least a month before the road commissioning, and implement it. These documents would cover both direct and indirect employees of the Maintenance Contractor and set out specific requirements for Project primary suppliers and sub-contractors. They will include *inter alia* a labour training programme, **preventive measures to manage gender-based violence and harassment** risk during maintenance works including requirements to worker accommodation, which should comply with the Armenian labour, sanitary and health standards, EBRD PR 2, EIB ESS 8, ADB requirements, EBRD/IFC guidance on worker accommodation (2009), ILO Workers' Housing Recommendation 1961 (No. 115), and EBRD's COVID-19 recommendations, and **gender-specific** provisions.

Residual Impacts

If the enhancement measures are delivered effectively, the **residual significance** of this beneficial impact would not change though remaining **moderate at the municipal and local levels** and **negligible at the national and regional levels**.

Monitoring

Monitoring will occur as per the indicators in the Operation Phase Recruitment Plan and Labour and Working Conditions Management Plan and information will be included in the reports to Lenders. Performance of the worker grievance mechanism will be monitored as well.

3.3 Potential Impacts on Land, Land-based Livelihoods and Use of Natural Resources

3.3.1 Introduction and AoI

This section concerns the potential impacts on land, assets and land-based livelihoods of local villagers, as well as their use of natural resources due to i) the Project-related land acquisition and ii) road construction and operation. These impacts will occur in the **core socio-economic AoI** (**Figure 1**) comprising the settlements where land will be acquired and restriction of access to assets and natural resources may manifest.

3.3.2 Reference Criteria

For the purposes of impact assessment, the baseline conditions are described in **Section 2.1.** The impacts are considered in relation to the EBRD PR 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement (2019); ADB SR 2: Involuntary Resettlement (2009), EIB ESS 6: Involuntary resettlement (2022), and the applicable national legislation of Armenia (for details on the requirements see **Section 4 of ESIA Volume 1**; and for the methodology of impact assessment refer to **Section 5 of ESIA Volume 1**).

In addition, this section considers the Resettlement Framework (RF) developed for the Project, as well as the preliminary findings of surveys completed as part of the Resettlement Plan preparation.

3.3.3 Assumptions and Limitations

As noted in the Project Description (**ESIA Volume 1, Section 2**), the Construction Contractor will be responsible for siting some Project components such as laydown areas, construction camps, access roads and spoil disposal areas. Land for these components will be temporarily acquired in line with the RF provisions. Thus, this section assesses the temporary land take impacts and provides relevant recommendations at higher level only.

3.3.4 Impact Assessment: Pre-Construction and Construction

3.3.4.1 Impacts on land use and agricultural activities

While a large part of the proposed road will run via tunnels (13 km) and bridges (5km), land acquisition will be required to accommodate the road and its structural elements (connecting roads, retaining walls, embankments, etc.). The Project requires permanently acquiring 570 land plots (2,932,280.88 m^2) (see **Table 13**) in 14 administrative units. Of these 570 land plots,

- private owners/users own/use 276 plots (12.2% of the acquired land area);
- the state owns 41 plots (19.2% of the acquired land area), and
- the community (municipality) owns 253 plots (68.7% of the acquired land area).

In total, 392 AHs will be impacted as follows:

- 276 land plots owned/used by 369 AHs, of which 236 plots are agricultural, 34 – residential and 6 – of other land use categories (of these, 29 private plots are used by legalizable users and 26 plots by non-legalizable / informal users for growing trees and crops).
- 2 residential buildings belonging to 2 AHs (one in Shenatagh and another in Ishkhanasar),
- 9 non-residential structures belonging to 4 AHs (including 2 food service points and 1 gas fuelling station belonging to 3 AHs in Ishkhanasar, 3 sheds and 3 barns);
- 28 community plots are leased, of which 23 plots are agricultural and leased by 22 AHs; the rest is leased to legal persons;
- 2 community plots are used by 1 informal user to grow fruit trees;
- 6,895 fruit trees on 135 plots owned/used by 167 AHs,
- 45,352.84m^2 of crops on 34 land plots owned by 57 AHs, and so on (**Table 13**).

The census identified 61 vulnerable households, and they will receive vulnerability allowance as envisioned in the RF. 199 households are likely to be severely affected and they are entitled to severity allowance as per the RF.

There is a risk of triggering several orphan land plots and several non-affected land plots losing access to them – these issues will be resolved at the outset of the Resettlement Plan implementation. In addition, several land plots are affected so insignificantly that they are not counted in the above table and would be avoided by adjusting the road route by 1-2 m.

Table 13. Summary of Impacts Related to Permanent Land Acquisition according to the Preliminary Findings of the Resettlement Plan Surveys

Impact Category	Plot	Affected area / length or quantity	% of area	AH per Type of Impact	AP per Type of Impact	Remarks
	No.	m²/m/No.		No.	No.	
	A. Land Impacts					
A1. Private land	276	356,547.02	12.2	369	1465	
A2. Community Land (inclusive of A3 data):	253	2,013,149.90	68.7	23	91	Out of 23 AHs, 1 is informal user
A3. Community land lease and sublease	*28*	*398,570.04*		*22*	*58*	*All AHs and land plots are included in A2*
A4. State Land	41	562,583.96	19.2	0	0	
Total	**570**	**2,932,280.88**	**100.0**	**392** (without double counting)	**1556** (without double counting)	
	B. Impact on Buildings and Structures					
B1. Residential	2	2		2	11	All AHs are included in A1
B2. Non-Residential	4	9		4	19	2 AHs included in B1
B3. Improvements	3	3		3	14	1AH included in B1 and 2HHs in B2
	C. Impact on Crops					
C1. Wheat	12	20,325.56		19	74	All AHs are included in A1
C2. Alfalfa	19	23,226.65		34	138	
C3. Melilot	2	1,799.67		3	21	
C4. Timothy	1	0.96		1	8	
Total	**34**	**45,352.84**		**57**	**241**	
	D. Impact on Trees/Bushes					
D1. Fruit Trees	135	6,895		167	584	13 AHs are included in A2
D2. Timber Trees	56	330		46	129	5 AHs are included in A2
D3. Decorative Trees	3	31		1	3	1 AH is included in A1
Total	**194**	**7256**		**214**	**716**	
	E. Impact on Business and Employment					

E1. Food service point	2	2		2	9	AHs are included in A1
E2. Gas Station	1	1		1	5	AH is included in E1
	F. Movable Assets on Land Plots					
F1. Container	1	1		1	5	AH is included in E1, B1 and A1
F2. Tank	1	1		1	5	AH is the same as in F1
	G. Severely Affected and Vulnerable Households and Income restoration					
G1. Severely AHs losing 10% or more of productive land	138	n/a		199	308	AHs are included in A1 and A2
G2. AHs to be relocated	2	n/a		2	11	AHs are included in B1 and A1
G3. AHs losing commercial/ business establishments	2	n/a		2	9	1 AH is included in G2
G4. Vulnerable HHs	49	n/a		61	157	29 AHs are included in G1
Total	**570**					

Since the plots have multiple owners, the number of AH is higher than the number of plots. According to RA legislation a property can be owned by several owners (equity co-ownership or fixed -share ownership), who have equal (or as fixed) rights to the property and hence are equally (or as fixed) eligible for compensation.

Affected Household (AH)	All members of a household residing under one roof and operating as a single economic unit, who are adversely affected by the Project's impact.
Affected Person (AP)	Any legal or natural person permanently or temporarily affected by the Project - by alienation of real estate (land, house, building/structure) belonging to him/her or actually used by him/her, etc.
Severely AHs	Include AHs (i) losing 10% or more of their productive assets/income generating which is the total land holding of the AH compared to the affected land by the project, (ii) physically displaced AH and (iii) households losing commercial/business establishments.
Vulnerable AHs	HHs registered in the family benefit system (FBS) of Armenia and receiving a family allowance as well as HHs headed by a single parent, an elderly person (people of pension age), a person with disability (of 1st or 2nd group) or by a woman where there is no other person of working age, except for elderly persons (people of pension age), persons doing compulsory military service in the Armed Forces of the RA, persons having disability of 1st or 2nd groups, and students up to 23 years of age studying full-time at educational institutions

Most of the resettlement impacts will occur along the **northern section** of the proposed road, within Sisian Community, that is, the acquisition of 267 out of 276 privately-owned plots and 192 out of 253 community-owned plots, as well as the relocation of one AH and three businesses.

The overall share of the private agricultural land loss is 36.83% (320,780.42 m^2 out of 870,896.86 m^2) across 236 private agricultural plots. Not all agricultural land is used. For instance, only 12.7% of privately-owned agricultural plots are cultivated in the affected settlements of Sisian Community and much less in Kajaran Community. However, in Kajaran Community, the community land leased by farmers is used to grow gardens, fruit trees, shrubs, hay and other fodder for livestock and to graze cattle.

The baseline analysis shows that most of the HHs performs farming activities (crop farming, animal husbandry, bee-keeping, vodka-making, gardening, etc.) and have at least one member employed in either private or public sector (**Sections 2.1.6.4** and **2.1.6.5**). The produced agricultural products are both sold and consumed internally, thus contributing to monetary and non-monetary incomes of the HHs. Very rarely are HHs distinguished by only land-based livelihoods. In fact, the interviews and FGDs show that the HHs incomes are mainly made up of salaries, pensions / retirement benefits, agriculture, state allowances, and remittances (for few households). As per the surveys for the Resettlement Plan, not a single case of dependence solely on agriculture was identified. The villages along the proposed road that led more land-dependent life-styles, due to various reasons, became de-populated during the last 20-30 years (such as Kitsk, Karut, Verin Geghavank, Geghavank and Vocheti). Overall, agriculture remains to be one of the main sources of income for the AHs, its share in total HH income varies from 8.7% in Getatagh to 43.1% in Geghi.

The permanent land acquisition shall be completed before the start of the construction works. Temporarily land needs will be identified when the Construction Contractor is selected and handled on the needs base in line with the RF provisions.

3.3.4.2 Impacts on pastures

A small part of community land that are used by local farmers as pastures will be affected (1.67%) (**Table 14**). Most of the impact is expected to occur in Aghitu, Noravan, Nor Astghaberd and Lernadzor villages. During the key-informant interviews and FGDs the respondents were asked to indicate on map the pastures that are in use. As a result, it appeared that not all designated pasture areas that would be affected were used. According to the expert assessment and consultations with the heads of the respective administrative units, the impact on cattle-breeders can be easily mitigated as alternative pasture areas are available in the vicinities of the affected pastures. However, attention is to be paid to retaining or providing alternative access to pastures.

Table 14. Share of Affected Pastures

Community	Settlement	Total Pasture			% of affected pastures
		Land plots	Total Area	Affected Area	
		No.	m^2	m^2	
Sisian	Iskhanasar	0	0	0	0
	Sisian	1	22,618.05	1,248.50	5.52
	Uyts	0	0	0	0
	Aghitu	5	518,383.31	65,616.88	12.66
	Noravan	1	66,730.82	9,710.16	14.55
	Vaghatin	0	0	0	0
	Vorotnavan	4	2,587,777.52	51,310.24	1.98
	Darbas	11	2,827,689.06	99,049.28	3.50
	Getatagh	1	1,194,328.57	56,042.37	4.69
	Lor	2	9,256,704.00	105,189.42	1.14
	Shenatagh	2	6,128,852.36	24,486.78	0.40
Kajaran	Geghi	7	19,931,767.21	241,848.67	1.21
	Nor Astghaberd	1	694,974.86	55,845.74	8.04
	Lernadzor	1	182,773.76	16,578.92	9.07
Total	**14.00**	**36.00**	**43,412,599.52**	**726,926.96**	**1.67**

3.3.4.3 Impacts on locally used natural resources and related livelihoods

Gathering forest products and herbs: According to the FGDs and interviews, gathering of non-timber forest products (mushrooms, berries, walnuts, and hazelnuts) is relatively popular in the northern area (e.g., Darbas). This is done for HHs own consumption, *very* few families sell forest products. Herbs and medicinal plants are collected in the fields, but this activity is of very limited extent and nowadays becomes recreational.

Wood is still considered the main source of heating for some 60% of HHs in the area, though some settlements switched to gas and electricity, e.g., Lernadzor (ca. 100% gas heating), Sisan and Shenatagh (both, 70% mix of electricity and gas), Ishkhanasar (50% gas) and so on. Timber trees are grown by many HHs, however collecting firewood in the forest and buying wood from suppliers is also practiced. Chopping timber is legally regulated. There are very few forested / semi -forested areas along the roads – mainly at the distance of 700-900m from Darbas, Lor and Getatagh, and Geghi and much farther for Dzagikavan – that are used by the local residents, and access to them might appear to be restricted during construction.

Fishing: Several families in Darbas, Vaghatin and Uyts villages practice fishing in the Vorotan and Loradzor Rivers as a recreational activity (subject to having a fishing permit; though some informal practices are noted). Fishing is not their primary livelihood source and fish is consumed in the HHs. Fish farms located in the settlements (e.g., in Shamp) are not likely to be affected by the Project's water take. Water in rivers is also used by cattle for drinking (all

villages are connected to the piped water supply and do not extract water from the rivers). Access to rivers may be restricted in some sections of the road.

Hunting: The local residents state that they do not go hunting. In general, hunting is regulated in the Zangezur protected area. No impact on hunting is expected.

Recreational time-spending: As noted in the socio-economic baseline, recreation and tourism is underdeveloped in the project area, though there is a potential given the availability of cultural heritage sites. None of the water or mountain activities (such as climbing, mountain hiking, and kayaking) were mentioned during the interviews, FGDs and consultations. Walks to forests are mainly linked to gathering. One recreational place that is visited locally for small picnics is the khachkar-water spring near the existing road to Vaghatin, 140 m from the proposed road (**Figure 38**) (impact on it is considered in the cultural heritage section below). Another similarly used location is Spring monument (Vaghatin administrative area, unit 41, km 11.9+00) (impact on it is considered in the cultural heritage section below).

The assessment of the above impacts is summarised below (NB: Secondary impact on agricultural activities due to dust emissions as addressed in **ESIA Volume 3. Section 3.1. on air quality assessment**).

It should be noted that there could be a **positive impact on wider agricultural activities** which due to its **insignificance** is not analysed below. This positive impact relates to existing farmers opting to produce more for selling to workers that will come to the construction area. The magnitude of the positive impact is seen as negligible as not many of the HHs would be capable to intensify their agricultural activities and make them more income-oriented.

Impact of Project-related land acquisition on local land use and land-based livelihoods, and impacts on activities related to use on natural resources					
Impact Nature	Positive			Negative	
	Land use and agriculture: The Project require permanent and temporary land acquisition which is a negative impact on the local livelihoods that to various extent are dependent on agricultural activities. Other natural resource use: access to forest and rivers might be restricted in few locations.				
Impact Type	Direct	Indirect		Reversible (for temporary land take and other resource use)	Irreversible
	Land use and agriculture: The loss of land and assets thereon is direct and irreversible, and so is the impact on the agricultural activities. Temporary land take will be reversible as it will occur during the construction phase and then returned to the owners. Other natural resource use: the impact is direct as it links to construction works and reversible.				
Impact Duration	Temporary	Short-term (for other natural resources)	Medium-term (for temporary construction use)	Long-term	Permanent (for land take)
	Land use and agriculture: The land needed to accommodate the proposed road is acquired permanently. Land will be required temporarily for the construction works being short-term at some locations to medium-term at others (the construction duration is six years). Other natural resource use: restricted access may occur for a (very) short period of time.				
Impact Extent	Local	Municipal (Community)	Regional	National	International
	Land use and agriculture: The impact will manifest in the settlements and thus is local. Other natural resource use: The impact will manifest at the local level as well.				
Impact Magnitude	Negligible (for other natural resources)	Low	Medium	High (for land use and agriculture)	
	Land use and agriculture: The magnitude is seen as high as most of HHs in the affected settlements are engaged in agriculture and many of them generate income from selling the processed products. Other natural resource use: The magnitude would be negligible given the limited local use.				

Impact of Project-related land acquisition on local land use and land-based livelihoods, and impacts on activities related to use on natural resources				
Receptor Value / Sensitivity	Very low	Low (for other natural resources)	Medium	High (for land use and agriculture)
	Land use and agriculture: Receptors are owners/users of land plots affected by land acquisition, owners/users of plots adjacent to construction sites, and owners/users that lose access to plots and pastures. The receptor sensitivity is overall viewed as high. Other natural resource use: Receptors are those residents that use the natural resources. Given limited dependence on such resources, the sensitivity is seen as low.			
Impact Significance	Negligible (for other natural resources)	Minor	Moderate	Major (for land use and agriculture)
	Land use and agriculture: Impact significance would be major. Other natural resource use: Impact significance would be negligible.			

Mitigation Measures

- Implement the **Resettlement Plan** developed for the Project and ensure no civil works are permitted prior to full compensation of all located PAPs for project affected land, assets and income loss;
- Provide alternative temporarily access to properties and natural resources (pastures, land plots, businesses, forests and rivers), access to which could be temporarily restricted due to construction activities. The **Traffic Management Plan and Site-specific E&S Management Plans** should contain detailed information on restricted paths and alternative roads based on consultations with the local authorities and residents;
- Resolve the cases of permanent blockage of access to several land plots unaffected by acquisition via providing alternative permanent access;
- Arrange additional underpasses for cattle via extending the designed culverts or including new passes in the design at the locations proposed by female and male residents of the affected settlements (for the current proposals refer to **Annex 7**); the RD will use the FIDIC Yellow Book to ensure that the Construction Contractor would address all proposed mitigation in relation to cattle crossings, and will additionally observe that this is done in a participatory manner.
- Prior to construction works engage with the bee-keepers in the affected villages and map the locations of the bee-hives against the construction sites and access roads (yet to be determined). In case the bee-hives are located closer than 90-100m (taking a conservative approach) from the construction sites and access roads, assist the bee-keepers in the relocation of the bee-hives farther from the sources of disturbance.
- Complete any additional land acquisition (temporary or permanent) in line with the provisions of the RF (including for the associated facilities, such as a power line, which are yet to be determined in the updated project design). If additional economic and/or physical displacement is identified to be triggered, develop and implement a corresponding additional Resettlement Plan(s).

Residual Impacts

If the mitigation measures are delivered effectively, the **residual impacts on land use and agricultural activities would be minor to moderate**; and the **residual impact for users of other natural resource would be negligible**.

Monitoring

Monitoring will be implemented as envisioned in the Resettlement Plan, including regular Resettlement Plan Compliance Reports and a Completion Audit, Traffic Management Plan and Site-specific E&S Management Plans.

3.3.5 Impact Assessment: Operation

No land take for the operations is envisioned, thus no resettlement impacts are expected. Temporarily used land will be returned to the pre-Project use following reinstatement (for instance, the construction camp, storage or spoil disposal areas).

Agricultural livelihoods are not expected to be affected given that underpasses for cattle and agricultural vehicles will be constructed as envisioned in the detailed design and additionally prescribed above (and transmitted to the ESMP).

Local livelihoods related to natural resources and ecosystem services are not expected to be affected at the operational phase.

3.4 Potential Impacts on Public Utilities, Services and Transport Infrastructure

3.4.1 Introduction and AoI

This section concerns the impacts on public utilities, services and infrastructure associated with the Project. The impact assessment covers the following groups of receptors:

- Facilities that will service the Project and/or its staff:
  - Healthcare facilities where Project staff will address in case of a medical emergency;
  - Municipal infrastructure facilities (power supply, water supply and wastewater treatment, and waste disposal facilities);
- Existing public roads to be used for delivery of construction goods and equipment, and transportation of construction workers;
- Infrastructure, mainly of linear type, crossed by the Project roadway and its 12 secondary (service) roads:
  - power supply facilities;
  - water supply and sewage networks;
  - gas supply networks;
  - irrigation/drainage systems;
  - various underground telecommunication, power, and other cables;
- Social infrastructure facilities potentially affected by Project activities – those located along the planned roadway, Project service roads, and roads used for Project-driven transportation activities.

The potential AoIs for impacts on public utilities, services and infrastructure are defined as:

- **Direct impact area** that includes a road footprint, comprising the proposed road's 'right-of-way' (15.4 m as per the Project design[71]) plus 10m from both sides of the road. Areas where road reinforcements, embankments, culverts, bridges, and other elements were designed, are considered as the road footprint as well, thus treated as the direct impact area. The same principle of direct impact area was applied to connections to secondary roads and intersections.
- **Wider impact area** including:
  - residential areas within 100 m from the proposed roadways of the Project main road and service roads; this coincides with the AoI for high impacts of vibration from blasting;

[71]Consists of carriageway (9.9m), road shoulders (called 'road edges' in the detailed design) (2×0.6m), safety strips (called 'emergency lanes' in the detailed design) (2m on one side+1.1m on the other side) and verges (2×0.7m).

- settlements of Syunik Region crossed by the Project roadway, the Project service (secondary) roads and other roads used for transportation of goods, equipment and Project workers;
- Sisian and Kajaran Communities and Syunik Region and a whole.

3.4.2 Reference Criteria

For the purposes of the impact assessment, the description of the existing relevant municipal, transport and social infrastructure in the Project-affected settlements and communities as described in **Sections 2.1.2, 2.1.4**, **2.1.5,** and **2.1.6** are used as the initial reference criteria for assessing impacts on public utilities, services and infrastructure due to the Project construction and operation.

Then, the impacts are considered in relation to the relevant legislation of Armenia, the EBRD PR 4, EIB ESS 9 and ADB SR 1 and driven by a risk-based approach (for details on the requirements see **Section 4 of ESIA Volume 1**; and for the methodology of impact assessment refer to **Section 5 of ESIA Volume 1**). In addition, the Resettlement Framework for the Project have been taken into account.

3.4.3 Assumptions and Limitations

Same as made for assessing risks and impacts on economy, employment and labour markets, and land use (see the above sections). Specific potential impacts / risks considered in this section are more focused on the local and municipal levels and supplement the labour and procurement splash effects that extend further to Syunik Region and the national level.

3.4.4 Impact Assessment: Construction

3.4.4.1 Impact on Healthcare Facilities

The construction staff may experience a need to address the medical centres in the Project area in case the first aid kits that are to be available at construction site are not sufficient or in case of medical emergencies. This may trigger the risk of increased load on existing healthcare facilities in the Project area and may intervene with healthcare activities of the local residents.

The transient Project staff (direct workers by Construction Contractor and suppliers and sub-contractors) are assumed to be placed in several locations, presumably in two construction camps in the environs of Shenatagh and Qirs villages (or the northern and southern portals of the Bargushat tunnel), and in specially arranged premises at Sisian and Kajaran towns. Taking the precautionary approach, 150 direct and 150 indirect workers hired at the regional and national level may be present in the Project region in peak periods. Up to 120 people are assumed to stay at each construction camp, and 20-30 people will be accommodated in Sisian and Kajaran towns.

At each construction camp there will be a medical unit and a medical staff, which would present on site round-the-clock to provide first aid/primary healthcare and implement preventive measures against outbreaks of communicable diseases including COVID-19. In case of a medical emergency, an in-house doctor would provide primary care to an affected person and arrange transportation to one of the nearby healthcare facilities.

As explained in **Section 2.1.6.14**, within 10 km distance from the proposed roadway there are civil healthcare centres in Sisian and Kajaran, and a military hospital in Aghitu settlement. In addition, Kapan Healthcare Centre in the regional capital is about 15 km by road from the southern part of the planned road. The Sisian, Kapan and Kajaran Medical Centres provide outpatient as well as primary care and emergency medical services and also include hospitals for 50, 20 and 85 beds respectively. Some medical treatments (such as complicated surgeries) are unavailable in the region and are provided in Yerevan. The interviews with

residents of the affected villages revealed no complaints about the quality / availability of medical services.

The impact of the Project on healthcare facilities and their local residents using their services at the construction phase is analysed below.

Impact of the Project on healthcare facilities due to construction					
Impact Nature	Positive			Negative	
	The impact is considered as negative as the road construction implies the influx of transient staff (both direct and indirect workers) to the Project region and resulting additional demand for medical services and additional pressure on the existing medical infrastructure in the Project area. These may intervene with healthcare activities of the local residents and decrease accessibility of medical services for them.				
Impact Type	Direct	Indirect	Reversible	Irreversible	
	The increased demand for medical services markets related to the Project development is a direct impact and it results in series of indirect knock-on economic effects (see above). These are reversible as they occur only during the construction phase (ca. six years).				
Impact Duration	Temporary	Short-term	Medium-term	Long-term	Permanent
	The impact is considered to be short-term to medium-term as it would manifest during the Project construction phase (ca. six years), but at some locations it may last for a shorter period of time.				
Impact Extent	Local	Municipal (Community)	Regional	National	International
	The transient construction workers are assumed to be placed in two construction camps – in the environs of Shenatagh and Qirs villages (or the northern and southern portals of Bargushat tunnel), and in specially arranged premises at Sisian and Kajaran towns. In case of medical emergency, a seek/injured person would be transported to the one of the healthcare centres nearby the planned road (in Sisian, Kajaran or Kapan – depending on the location where the emergency occurs and severity of health issues. In extraordinary cases (e.g., in case of need for a complicated surgery), the injured person would be transported to Yerevan. As the transient staff based in the construction camps would receive primary care from the inhouse medical staff, additional load on primary care facilities in Project-affected villages is not expected; only medical centres would be affected by additional load. Therefore, the impact is supposed to manifest mainly at the municipal and regional levels but may extent, in some cases, to the national level.				
Impact Magnitude	Negligible	Low	Medium	High	
	The construction staff may experience a need to address the local medical centres in case primary care by the inhouse medical staff is not sufficient or in case of medical emergencies. The estimated manpower requirements for the construction phase are about 500 direct employees (with the Client and Construction Contractor) and about 500 indirect employees (with Project suppliers and sub-contractors). 30% of the direct and indirect staff can be present in the Project region in peak periods, which totals 300 people. About 240 of transient staff are assumed to stay at the two construction camps (in the northern and southern parts of the road alignment) and 40-60 people – in hotels/guesthouses in Sisian and Kajaran towns (or Kapan). As the number of transient Project staff present in the Project region is rather high (300 people at peaks), a risk of an increased demand for medical services and additional load on the existing healthcare facilities in the region could be seen as high. At the same time, the presence of the in-house medical staff providing primary care services at the construction camps would allow to avoid load on primary care facilities in the affected villages and reduce risk magnitude to low, especially given the OHS provisions and monitoring activities. Therefore, the impact magnitude is viewed as low.				
Receptor Value / Sensitivity	Very low	Low	Medium	High	
	Receptors are healthcare facilities and their users. As local interviewees based in Project-affected settlements did not complain on the quality and/or availability of medical services local healthcare facilities are assumed to be sufficiently developed and equipped. Taking into account the combined number of beds in the nearby hospitals (155 beds in total), the sensitivity of the regional healthcare facilities to potential additional demand for medical services related to the Project could be viewed as low. At the same time, in case of a new outburst of COVID-19 or similar communicable				

Impact of the Project on healthcare facilities due to construction				
	disease and sharp increase in the number of local patients in hospitals, the sensitivity would increase. The receptor sensitivity is considered as medium.			
Impact Significance	Negligible	Minor	Moderate	Major
	Impact significance is a function of sensitivity of the receptors and impact magnitude and would be moderate.			

Mitigation/Enhancement Measures

The following mitigation measures should be implemented to decrease the magnitude of the potential adverse impact:

- Oblige the Construction Contractor to:
  - include medical units operating round-the-clock into the detailed design for construction camps;
  - include the medical emergency to the **Emergency Response Plan**; and
  - provide notice in advance to local healthcare facilities about the number of workforce and duration of work.

Residual Impacts

If the mitigation measures are delivered effectively, the **residual significance** of this adverse impact would become **minor**.

Monitoring

Monitoring will occur as per the indicators in the Emergency Response Plan and Labour and Working Conditions Management Plan and information included in the reports to Lenders.

3.4.4.2 Impacts on the Road Infrastructure

The construction materials, machinery and equipment will be transported to the warehouses, and from warehouses to the Project construction sites by roads. In addition, construction workers are commute to/from construction sites; Company's buses or private cars will be used for workers' transportation. The construction sites will be accessed by the existing roads or by new Project service (secondary) roads which would provide connections between the existing roads and the new Project road.

The expected expansion of the regional road network due to commissioning of new roads is discussed in **Section 3.4.5** below; the current section is focused on impacts on the existing roads.

As explained in the baseline, the existing road network of the Project-affected settlements includes paved roads in good condition with some sections recently rehabilitated (M2 interstate road and T-8-10 "Aghitu-Noravan-H60" road). The road pavement of inter-community road H-60 "M2-Vaghatin-Shenatagh" is generally satisfactory; however, some sections do require rehabilitation. Intra-settlement roads are earth roads and require upgrade.

Due to mountainous landscape, the density of the road network in Syunik Region is relatively low. The road network in Kajaran Community is less developed that in Sisian Community. Some Project-affected settlements have only one road connecting them with the outer world.

The potential adverse impacts on the existing road infrastructure of Syunik Region related to the Project-driven transportation activities includes:

- Deterioration (intensive wear and degradation) of road payment on the existing roads that would carry heavy vehicles servicing the Project;
- Risk of damage and even collapse of bridge crossings at the existing roads if they are used though not designed to carry heavy vehicles; and

- Decreased traffic throughput capacity of the public roads due to lower speed kept by heavy vehicles servicing the Project.

These impacts are analysed below. The safety risks for road users (residents of Sisian and Kajaran Communities and other parts of Syunik Region) are analysed in **Section 3.5**.

Impacts of the Project-related transportation activities on the existing road infrastructure at the construction phase					
Impact Nature	Positive		Negative		
	The impacts of Project-driven transportation activities on the existing road infrastructure are considered as negative since they would intensify traffic on Sisian-Shenatagh (either via Sisian or Norovan) and Tatev-Kapan (H45) roads, as well as on local roads within Project-affected settlements due to transportation of construction goods, equipment and workers to/from construction sites. This may worsen the condition of the road physical structures (road pavement, road fencing, bridge crossings) and operational parameters (frequency of congestion events, traffic throughput capacity) of the affected roads.			
Impact Type	Direct	Indirect	Reversible	Irreversible	
	The impacts of Project construction-related transportation activities on physical structures and operational parameters (see above) are viewed as direct and reversible as they occur only during the construction phase (ca. six years).				
Impact Duration	Temporary	Short-term	Medium-term	Long-term	Permanent
	The impacts are considered to be short-term to medium-term as it would manifest during the Project construction phase (ca. six years), but at some locations it may last for a shorter period of time.				
Impact Extent	Local	Municipal (Community)	Regional	National	International
	The routes for transportation of construction materials, equipment and workers have not been developed by this time. However, one can assume that different roads within Syunik Region would be used to service the Project road construction. The impact is assumed to manifest mainly at the local and municipal levels but may also extend to the regional level.				
Impact Magnitude	Negligible	Low	Medium	High	
	The Project would use the existing public roads and newly built Project service roads connecting the existing roadways with the proposed road. Where required, the existing roads used by the Project are supposed to be upgraded and made suitable for heavy trucks. The use of these roads would be short-term to medium term and the intensity of construction traffic would fluctuate during the construction phase. The impact magnitude would be highest at the beginning of construction works at each location when heavy construction machinery and large amounts of construction materials and equipment are delivered to a construction site or spoil disposal site. However, the duration of such periods of the highest load are supposed to be short. Taking a precautionary approach, the impact magnitude is viewed as medium during the most part of the construction phase with short-term splashes to major related to delivery of the construction machinery, materials and equipment to specific construction sites.				
Receptor Value / Sensitivity	Very low	Low	Medium	High	
	Receptors are the existing public roads affected by construction-related transportation. The road network of Syunik Region is not very much developed. Several road sections in the vicinity of the proposed roadway are reported to be in poor condition and/not suitable for heavy vehicles (see **Section 2.1.6.9** for details). The number and length of such road sections is not known at this stage. For the purpose of this assessment, the receptor sensitivity can be graded as medium.				
Impact Significance	Negligible	Minor	Moderate	Major	
	Impact significance is a function of sensitivity of the receptors and impact magnitude and would be moderate (during the most part of the construction phase) and high (during short-term periods of delivery of the construction machinery, materials and equipment to specific construction sites).				

Mitigation/Enhancement Measures

The following mitigation measures should be implemented to decrease the magnitude of this potential adverse impact:

- Oblige the Construction Contractor to:
  - Conduct a Road Safety Audit (RSA) to assess the physical conditions of existing roads and bridge crossings in the Project area in order to i) assess risks of road pavement damage and bridge collapse, ii) predict traffic intensity and traffic throughput capacity, and iii) assess risks of traffic accidents at specific road sections;
  - Develop (using RSA findings) an optimal Construction Traffic Scheme and approve it with due municipal, traffic police authorities, and/or road authorities. Based on this, develop and implement the **Construction Traffic Management Plan,** as part of the plan preparation, it is necessary to:
    - assess the conditions of the existing unpaved and paved tracks within the selected routes to determine if they need to be upgraded or rehabilitated to bear the weight of the Project's heavy vehicles, and undertake this enhancement as needed;
    - map sensitive social infrastructure (in particular, schools, kindergartens, and healthcare facilities), residential buildings and cultural heritage sites (churches and cemeteries, monuments) located in settlements along the roads that will be used by Project transport;
    - check the presence of adequate signage on speed limits or other specific warning signs around the mapped sensitive social infrastructure, residential buildings and cultural heritage sites; if/where necessary apply for installation of additional signage to ensure road safety and safety of buildings;
    - consult and document the consultations with the representatives of the affected municipalities and settlements about which road they would prefer the construction traffic to use.
  - Coordinate any track/road upgrade or rehabilitation activities with due municipal and roads authorities, local users, and other stakeholders as needed;
  - As per the ESMP and SEP, provide information to the local residents about the start of construction traffic movement at least two weeks before the construction commences;
  - Following construction, rehabilitate the used public roads, if affected, to the pre-project or better condition.

Residual Impacts

If the mitigation measures are delivered effectively, the **residual significance** of the adverse impacts on the existing road infrastructure in the Project area would become **negligible**.

Monitoring

Monitoring will occur as per the indicators in the report on RSA findings, the report on pre-construction conditions survey, Construction Traffic Management Plan and information included in the reports to Lenders.

3.4.4.3 Impacts on the Power Supply, Waste Management and Water and Sanitation Systems

Impact on the power supply system

Design solutions on temporary power supply for construction sites are currently not available.

For the purposes of this assessment, it is assumed that construction camps would be connected to the existing power supply network via transmission lines (underground or above-ground). Mobile diesel generators would be used to produce electricity for construction sites (for site lightening, lighting and electrical heating of the on-site accommodation premises, powering GPS, mobile telephones and other portable equipment). The construction machinery and equipment used at the construction sites would be diesel-fuelled.

The regional power supply system includes own power generation facilities – three large HPPs comprising the Vorotan Hydropower Cascade and around 50 small HPPs. Two HPPs are located at reservoirs near the Project area. The regional power supply system has been designed to meet requirements of energy intensive mining operations present in the region and currently does not face power shortage. The accidental power cuts that periodically occur in the region, primarily in rural areas are explained by poor condition of power distribution facilities (transmission lines and substations).

The Project construction activities will result in an increased load on the regional power supply system but this additional load would be insignificant and far below the system's capacity threshold.

Impact on the waste management system

The construction works would result in the generation of various waste streams including hazardous materials, thereby creating additional pressure on the existing waste disposal facilities in the region.

The key solid waste streams generated at the Project construction sites are as follows (see **ESIA Volume 1** for details):

- Excavated materials (spoil) from drilling, excavation and other earthworks;
- Residues of concrete and asphalt mixture ('construction waste');
- Construction machinery maintenance waste (lubricants, diesel fuel residues, oily rags, spent storage batteries, tires, etc.);
- Hazardous waste generated at the construction camps, concrete and asphalt plants (such as spent oil and lubricants, used tires, batteries, ferrous and non-ferrous scrap, used welding electrodes, oily rags, contaminated soil, empty fuel, lubricants and chemicals containers, etc.)
- Roadway demolition waste (applicable to sections to be upgraded);
- Ferrous and not-ferrous metal scraps;
- Packaging from construction materials and dye and paint containers; and
- Household waste generated by construction workers (packaging materials, food waste).

Following the principles of waste management hierarchy, it is planned to minimise to the extent possible, amount of waste subject to landfilling and maximise reuse and recycling of waste materials.

A considerable part of excavated materials (about 4 mln tonnes, 25%) and a portion of concrete and asphalt residues will be reused during road construction works (as for road backfilling and embankments); the other will be placed at a designated spoil disposal area in the vicinity of the proposed roadway.

Used oil, tires, batteries, metal scraps, ferrous and non-ferrous scrap, oily rags and contaminated soil is a be collected separately and periodically delivered/passed to the licensed waste management companies.

Waste packaging materials (cardboard, paper, and wood) and waste timber from clearing of construction can be landfilled. In line with GIP on waste management these waste categories

are assumed to be reused/recycled: e.g., timber waste from construction site clearance from tree felling and can be used by locals as fuel.

Household waste generated by construction workers will be disposed at one of the two authorized municipal landfills of Syunik Region. Waste generated at the construction sites in the northern part of road alignment would be directed to a landfill in the vicinities of Sisian Town. Another landfill located in Kapan Community would accept waste materials generated in the southern part of the road alignment.

The Project workers might generate about 37.5 tonnes of household waste per year. Roughly, about half of this may be generated additionally by workers residing at construction camps. In 2015, the total amount of waste subject to landfilling generated in Syunik Region was about 12,000 tonnes per year[72]. Project-related annual generation of non-hazardous waste to be disposed of would comprise only 0,4% of the total amount of generated waste.

Therefore, one can expect that the regional municipal landfills would have sufficient remaining capacity to receive the Project's waste in addition to waste flow normally received by these facilities.

Impact on water and sanitation systems

No water from the centralised water supply systems is expected to be used for the Project. It is planned to purchase drinking water and extract technical water from the Vorotan River (the Contractor needs to acquire a water use permit from the Ministry of Environment).

As to wastewater generated at the construction site, rainwater and drainage water from the construction sites will be accumulated in special on-site reservoirs to be used for fire-fighting purposes. Household wastewater generated at the construction sites and construction camps will be collected by a licensed company and treated at a wastewater treatment plant(s). The amount of household wastewater generated at the Project sites is expected to be negligible compared to the total incoming wastewater stream.

Overall, the Project impact on water and sanitation systems is considered as insignificant and therefore, not assessed further.

The impact of the Project on power supply and waste management systems and local residents using their services at the construction phase is analysed below.

Impacts of the Project on power supply and waste management facilities at the construction phase					
Impact Nature	Positive			Negative	
	The Project will result in additional load on the existing power supply and waste management systems. The increased load on power supply system may trigger incidents and resulting power cuts, which in turn would affect the use of this infrastructure. The increased load on waste management facilities would reduce their capacity to accept waste.				
Impact Type	Direct	Indirect		Reversible	Irreversible
	Additional loads on existing power supply and waste management systems are direct impacts having as an indirect effect, that is the deterioration of living conditions for users of this infrastructure. The impacts are reversible as they occur only during the construction.				
Impact Duration	Temporary	Short-term	Medium-term	Long-term	Permanent
	The impacts are considered to be short-term to medium-term as they would manifest during the Project construction phase (ca. six years), but at some locations it may last for a shorter period of time.				

[72] Strategic Environmental Assessment of the "Strategic Development Plan, Road Map and Long Term Investment Plan for the Solid Waste Management Sector in Armenia", 2017. https://unece.org/fileadmin/DAM/env/eia/documents/EaP_GREEN/1_Homepage/Armenia/SEA_report_Armenia_final_August_2017.pdf

Impacts of the Project on power supply and waste management facilities at the construction phase					
Impact Extent	Local	Municipal (Community)	Regional	National	International
	The impacts would influence infrastructure facilities in the Project-affected municipalities (transmission lines and substations) and those serving the region as a whole (landfills). The impacts are assumed to manifest mainly at the local and municipal levels but may also extend to the regional level.				
Impact Magnitude	Negligible	Low	Medium	High	
	The Project would use existing municipal solid disposal facilities and trigger construction of two transmission lines connecting the construction camps with the existing networks. The magnitude of the increased loads on existing infrastructure is viewed as negligible for waste management system and low for power supply system. Taking the precautionary approach, the magnitude of the impacts is viewed as low.				
Receptor Value / Sensitivity	Very low	Low	Medium	High	
	Receptors are existing power supply and waste management systems comprising pertinent facilities. These facilities are expected to be maintained by their operators in the proper operational state and have own connection, use and safety protocols. Their sensitivity is seen as low.				
Impact Significance	Negligible	Minor	Moderate	Major	
	Impact significance is a function of sensitivity of the receptors and impact magnitude and is seen as minor				

Mitigation/Enhancement Measures

The following mitigation measures should be implemented to decrease the magnitude of this potential adverse impact:

- Oblige the Construction Contractor to develop and implement the **Waste Management Plan**; the Plan would prescribe the following:
  - Maximise the onsite re-use of excavated materials and demolition waste as backfilling materials;
  - Organise dedicated areas for segregated waste collection (with labelled containers for temporary accumulation of various waste types) at the construction sites;
  - Contract specialised waste management organisations to collect hazardous waste for safe disposal.
- Oblige the Construction Contractor Develop and implement **Construction Site Operating Procedures** (with site specifics indicated as needed) including Waste Management Instructions;
- Regularly (monthly) inspect construction sites to check compliance with waste management requirements (including those for hazardous waste);
- Consider the feasibility of using solar PV panels to partially cover power requirements of construction camps.

Residual Impacts

If the mitigation measures are delivered effectively, the **residual significance** of the adverse impacts on the affected public utilities in the Project area would become **negligible**.

Monitoring

Monitoring will occur as per the indicators in the Waste Management Plan, Construction Site Operating Procedures and information included in the reports to Lenders.

3.4.4.4 Impacts on Infrastructure Facilities Crossed by the New Project Roads

The Project envisions construction of the 60-km highway and 14 service (secondary) roads with the total length of 8,250 m and rehabilitation of some roads to be used for transportation of construction materials, equipment and workers.

The following activities will take place at the construction sites which may damage the facilities within the direct impact area:

- Site preparatory works, clearing and grubbing, and removal of topsoil;
- Trenching and vehicle and machinery movement within the construction sites;
- Vehicle movements along the service roads.

At the moment, the proposed road is known to interfere with the following infrastructure facilities (based on the 2021-2022 stakeholder consultations and earlier FS/EIA studies):

- Gas pipelines:
  - Above-ground low-pressure gas pipelines (supplying Qarahundge restaurant and Ishkhanasar village);
  - Above-ground middle-pressure gas pipeline (supplying Aghitu village and military hospital);
  - Iran-Armenia main gas pipeline, which reportedly cross the proposed roadway in three points in Darbas and in one point in Geghi;

    Note: as per consultations with the operator of the gas supply system, gas supply infrastructure has not been changed since 2016 and no additional pipelines are expected to be found within the planned road alignment.
- An irrigation water pipe in Darbas;
- Power supply facilities:
  - Two overhead transmission lines (“Vaghatin” 6 kV and “Kap Shamb BCK”) from the 35/6 kV substation of "Shamb" Hydropower Plant are expected to be crossed by the planned road at km 13+000 and km 14+000 respectively (as was discussed with the representatives of "Electric Networks of Armenia" CJSC "Tatev" branch).

In addition, various underground telecommunication, power, and other cables may potentially intersect with the alignment as well.

The impact of the Project on infrastructure facilities crossed by the new Project roads is analysed below.

Impact of the Project on infrastructure facilities crossed by the new roads during the construction phase					
Impact Nature	Positive		Negative		
	All facilities intersecting with the proposed road may be damaged due to site preparation, excavation, and other on-site construction works. Each affected facility requires relocation.				
Impact Type	Direct	Indirect	Reversible	Irreversible	
	The impact is direct as it implies moving the facility outside the roadway, i.e. permanent change of its location or alignment. In the process of relocation the facility will not operate but this period is supposed to be very short.				
Impact Duration	Temporary	Short-term	Medium-term	Long-term	Permanent
	The impact is considered as short-term as relocated facilities will be not functional during a short period of time and resume its operations soon after the relocation is completed.				
Impact Extent	Local	Municipal (Community)	Regional	National	International

Impact of the Project on infrastructure facilities crossed by the new roads during the construction phase				
	The impact will manifest within the roadways of the Project roads and their vicinities and therefore does not extend beyond the local level. At the same time, affected facilities are part of larger systems (e.g., power supply system, gas pipeline network).			
Impact Magnitude	Negligible	Low	Medium	High
	The impact implies permanent change of location or alignment of the affected facility due to its relocation. At the same time, functions of the affected facility would be secured and it would resume operations soon after relocation. Taking the precautionary approach (and potential risk of complications with the relocation, delays in re-commissioning the facility resulting in longer interruption of facility service) the impact magnitude is viewed as low.			
Receptor Value / Sensitivity	Very low	Low	Medium	High
	Receptors are existing public utilities including those being part of the critical infrastructure (e.g. power supply facilities). Taking the precautionary approach, the receptor sensitivity can be graded as medium.			
Impact Significance	Negligible	Minor	Moderate	Major
	Impact significance is a function of sensitivity of the receptors and impact magnitude and would be moderate.			

Mitigation/Enhancement Measures

The following mitigation measures should be implemented to decrease the magnitude of this potential adverse impact:

- Oblige the Construction Contractor to develop and implement the **Utilities Protection and Relocation Plan**; as part of the Plan preparation:
  - Conduct a pre-construction field survey of the proposed routes for the main road and service roads to identify infrastructure facilities built after 2016-2017, when input data for the detailed design was collected;
  - Develop detailed design for relocation of each affected facility based on the technical conditions received from the owner and in compliance with the Armenian design standards; the detailed designs should be approved by owners of the affected facilities and include estimations of utility relocation costs;
  - Engage with the infrastructure operators to ensure that they notify persons who will be affected by disruption of the service supply and provide alternative services, as much as possible.
- Ensure utility relocation costs are part of the Project costs.

Residual Impacts

If the mitigation measures are delivered effectively, the **residual significance** of the adverse impacts on the infrastructure facilities subject to relocation would become **negligible**.

Monitoring

Monitoring will occur as per the indicators in the the Utilities Protection and Relocation Plan, Utilities Relocation Procedure, and information included in the reports to Lenders.

3.4.4.5 Impacts on Social Infrastructure Facilities along the Roads

Besides road structures, the Project will affect residential areas located along the Project roadway, Project service roads, and other local and regional roads used for transportation of construction goods, equipment, small-sized construction machinery, and construction workers to/from construction sites. The factor of impact on buildings and structures is vibration from a)

operation of construction machinery and equipment, b) movements of heavy vehicles within the construction sites and outside them, and c) blasting.

The impact areas are:

- Within about 20 m from the minimal charge blasting source and within about 100 m from the tunnel portals (as there is a potential for larger charge blasting) due to vibration from blasting; vibration from the operation of the construction machinery and onsite heavy vehicle movements is expected to be much more localised.
- without about 15-25 m[73] from roadways of the existing roads used by Project's construction vehicles due to vibration from movements of heavy vehicles on paved roads.

The receptors for this impact would be social infrastructure facilities within the above impact areas; they may include schools, kindergartens, healthcare facilities, sports, recreation, cultural facilities (museums, 'houses of culture' or else), administrative buildings and public spaces, acting churches, and acting cemeteries.

No social infrastructure facilities were identified within 100 m on either side of the Project road and Project service roads.

It is currently unknown which roads of Syunik Region would be used for Project-related transportation. Meanwhile, within 25 m from the existing roads of the Project-affected settlements, which can potentially service the Project needs, there are at least five schools (in Norovan, Vorotan, Geghi, and the Adult Education Centre and a dance school in Sisian) and two churches (in Darbas and Getatagh), a monastery (Vorotnavank Monastery), a military hospital in Aghitu, and a stadium (in Sisian). Similarly, social infrastructure facilities may be found along other roads in the region that can be used by the Project transport.

The potential adverse impacts on the social infrastructure facilities along the Project roads are analysed in the table below. Impacts on users of these facilities (local residents) are discussed in **Section 3.5** (community health and safety).

Impacts on social infrastructure facilities along the Project roads at the construction phase					
Impact Nature	Positive		Negative		
	In the Project-affected villages no existing social infrastructure facilities were identified within the impact areas. However, there are social infrastructure facilities located along the existing roads, which can be used for Project-related transportation during construction (schools and other educational facilities, churches, a monastery, a hospital, and a stadium). They could be affected by vibration from movements of heavy vehicles along the roads and potentially damaged as a result of traffic accidents. In addition, Project-related transportation activities may potentially impede access to these facilities if pertinent road sections are to be rehabilitated to meet the design standards for roads used by heavy vehicles. As the Project would worsen physical conditions or decrease accessibility of the receptors, the impacts are considered as negative.				
Impact Type	Direct	Indirect	Reversible	Irreversible	
	The impacts are direct and reversible as they occur only during the construction phase of the Project				
	Temporary	Short-term	Medium-term	Long-term	Permanent

[73] The approximate width of the vibration impact zone on the buildings from roads varies from 15 to 25 m from the roadway (Kavetsky Y., Kovalska-Kochvara A., Stipulya K. 2011. Analysis of vibration comfort criteria for people in assessing the condition and design of buildings // World Academy of Natural Sciences, Engineering and Technology. T. 59, p. 1496-1502. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.294.8999&rep=rep1&type=pdf).

Impacts on social infrastructure facilities along the Project roads at the construction phase					
Impact Duration	The impact is considered to be short-term to medium-term as it would manifest during the Project construction phase (ca. six years), but at some locations it may last for a shorter period of time.				
Impact Extent	Local	Municipal (Community)	Regional	National	International
	The routes for transportation of construction materials, equipment and workers have not been identified by this time. However, Project construction sites are located within territories of the Project-affected villages, and one can assume that existing roads of the Project affected settlements and some roads of Syunik Region would service the Project road construction. The impact is assumed to manifest mainly at the local and municipal levels but may also extend to the regional level.				
Impact Magnitude	Negligible	Low (for receptors not affected by road upgrade works)	Medium (for receptors affected by road upgrade works)	High	
	Within the current assessment, five schools and other educational facilities, two churches, a monastery, a hospital, and a stadium located in Project-affected settlements were identified as those potentially affected by the Project-related transportation. Similar situation is expected in the other settlements of Syunik Region, which would be crossed by Project transportation routes. This is particularly applicable to villages as the share of the local roads in the total length of the roads is low in many villages of the region, especially in its southern part, do not have bypass roads. The impact is viewed as reversible, having short-to medium term and would manifest at the local, municipal and regional levels. It is assumed that appropriate road signage and speed limits have already installed at the roads to protect sensitive receptors along the roads (e.g., schools and churches). Therefore, the impact magnitude is viewed as low for receptors at the road sections, which do not require upgrade, and medium for receptors along to-be-upgraded road sections.				
Receptor Value / Sensitivity	Very low	Low	Medium	High	
	Receptors are social infrastructure facilities potentially affected by the Project (presumably, only by the Project construction traffic). These facilities are expected to be maintained by their operators properly and have own safety protocols and already protected by appropriate road signage and speed limits. Taking the precautionary approach, the receptor sensitivity can be graded as medium.				
Impact Significance	Negligible	Minor	Moderate	Major	
	Impact significance is a function of sensitivity of the receptors and impact magnitude and would be moderate for both receptor categories (at locations where road upgrade/rehabilitation works are required and not required).				

Mitigation/Enhancement Measures

Implement the Construction Traffic Management Plan (**Section 3.4.4.2**).

Residual Impacts

If the mitigation measures are delivered effectively, the **residual significance** of the adverse impacts on the social infrastructure facilities area would become **minor to negligible**.

Monitoring

Monitoring will occur as per the indicators in the report on the pre-construction conditions survey, Construction Traffic Management Plan and information included in the reports to Lenders.

3.4.5 Impact Assessment: Operation

3.4.5.1 Impacts on the Road Infrastructure

The Project envisions construction of the 60-km highway and 14 service roads with the total length of 8,250 m. This would increase the length of the regional roads by 7%. Minor sections of existing roads included into the planned road (500m section of the existing M2, part of planned interchanges) will be upgraded or rehabilitated. In addition, some existing public roads of the region including paved and unpaved to be used for transportation of construction materials, equipment and workers, might need to upgraded or rehabilitated to meet the requirements to roads used by heavy vehicles.

Once commissioned, the road would improve the connectivity of the region as it would create for the first time a direct connection between Sisian and Kajaran. The travel time between two parts of the region, and from Sisian and Kajaran Communities would decrease and opportunities for economic exchange and business development would expand. Of particular importance is that population from Project-affected villages would have improved access to community centres and Yerevan, and therefore to their medical, educational and cultural services and markets of selling products of their subsistence agriculture. In turn, access to the Project area from other parts of the region and would also increase, which would improve business development opportunities (in roadside services or tourism).

In addition, the Project would stimulate development of road infrastructure along the proposed road servicing transit drivers and region's residents (a refueling station, a shop, a vehicle repair station, a cafeteria, and a motel).

The Project's impacts on the existing road infrastructure and resulting benefits are analysed below.

The Project's impacts on the existing road infrastructure at the operations phase					
Impact Nature	**Positive**	Negative			
	The Project envisions expansion and improvement of the existing regional road network due to construction of the new modern roads and upgrade of some existing roads. The knock-on effects at the regional and municipal levels would be an improved connectivity of the region and opportunities for economic exchange between its northern and southern parts. At the local level, such effects include improved access to community centres and their services for people living in the Project-affected villages and opening new business development opportunities (in roadside services, recreation, tourism) and improved road infrastructure. Finally, the Project is assumed to improve quality of life for people of the region.				
Impact Type	**Direct**	**Indirect**	**Reversible**	Irreversible	
	The impacts are direct impacts and they result in series of indirect knock-on effects (see above). The impact is viewed as reversible as it will last during the lifetime of the Project.				
Impact Duration	Temporary	Short-term	Medium-term	**Long-term**	Permanent
	The impact is considered to be long-term as it would last as the new roads exist (during the next 20-30 years as a minimum).				
Impact Extent	**Local**	**Municipal (Community)**	**Regional**	National	International
	The number and length of existing roads to be rehabilitated is not known at this stage but one can assume that majority of such roads would be close to or within Project-affected settlements. However, some roads in other parts of Sisian and Kajaran Communities, and somewhere in Syunik Region outside the affected communities may also be coved by the upgrade. The impact is supposed to manifest at the local, municipal and regional levels.				
Impact Magnitude	Negligible	Low	**Medium**	High	
	The Project results in expansion of the regional road network (the total length of the regional roads would increase by 7%) and improves conditions of some existing roads. The Project impact also improves connectivity of Syunik Region, exchange between Sisian and Kajaran Communities, and access of local residents to other parts of the communities, of the region and other parts of the country, The impact is viewed as reversible as it will last during the lifetime of the Project. Therefore, the impact magnitude is viewed as medium.				

The Project's impacts on the existing road infrastructure at the operations phase				
Receptor Value / Sensitivity	Very low	Low (at the regional level)	Medium (at the municipal level)	High (at the local level)
	Receptors are complexes of roads and residents i) of the region, ii) of two affected communities and iii) of Project affected settlements. The receptors' sensitivity can be viewed as high at the local level, medium at the municipal level, and low at the regional level.			
Impact Significance	Negligible	Minor (at the regional level)	Moderate (at the municipal level)	Major (at the local level)
	Impact significance is a function of sensitivity of the receptors and impact magnitude and would be major at the local level, moderate at the municipal level and minor at the regional level.			

Residual Impacts

The residual significance of this beneficial impact would be **major at the local level, moderate at the municipal level and minor at the regional level**.

Monitoring

N/A.

3.4.5.2 Impact on the Power Supply System

The operational road would require electricity for lighting and ventilating the tunnels and lighting the roadway. The electricity demand estimates are not yet available. The operational road would increase the load on the regional power supply system but this additional load is assumed as being insignificant and being far below the system's capacity threshold. The Project's impact on the power supply system at the operation phase is viewed as negligible and not assessed further.

3.4.5.3 Impacts on the other Public Utilities and Services

At the operation stage the number of transient Project staff present in the Project area would be considerably less that during the construction (see **Section 3.2.5**). Thus, Project-related additional **load on the healthcare facilities** is viewed as negligible and not assessed further.

The nature of Project impacts on **waste management** and **water supply and sanitation systems** are similar to those at the construction phase. However, magnitude of impacts (in terms of amounts of effluents and waste generated) would be much less than in the construction phase and is considered as negligible. Therefore, the significance of such impacts cannot be viewed other than negligible and not assessed further.

The operational road, which would largely bypass the residential areas of the Project-affected villages, is supposed to be used by transit drivers and local residents driving far. As a result, traffic intensity at the village internal roads is not expected to increase, and may possibly decrease and thus accessibility of social infrastructure will not be affected. To this end, operational traffic-related risks to **social infrastructure facilities** are seen negligible.

No interference with **the existing public infrastructure** will occur at the operation phase.

3.5 Potential Impacts/ Risks to Public Health, Safety, and Security

3.5.1 Introduction and AoI

This section describes impacts on public health, safety and security, associated with the Project's construction and operation phases. The AoI of the risks to / impacts on public health, safety and security covers residents of the villages in Sisian and Kajaran Communities, and Syunik Region as a whole.

*Impacts on public health due to potential air pollution and high noise levels associated with construction works within the construction sites and road operation are described in **ESIA Volume 3 Sections 3.1** and **3.2,** respectively. The below assessment covers remaining impacts and risks to public health, safety, and security.*

3.5.2 Reference Criteria

The impact assessment was conducted with reference to the relevant Armenian legislation, EBRD PR 4, EIB ESS 9, and ADB Safeguard Policy Statement (2009) (for details on the requirements see **Section 4 of ESIA Volume 1**; and for the methodology of impact assessment refer to **Section 5 of ESIA Volume 1**).

The assessment also draws upon the results of the assessment of impacts described in **ESIA Volume 3 Section 3.1** (Air Quality), **3.2** (Noise and Vibration), **3.3.** (Geology and Geo-hazards), and current **Volume 4** baseline (**Sections 2.1** and **2.2)** and assessment (especially, **Sections 3.4** (Public Infrastructure) and **3.6** (OHS)**.**

3.5.3 Assumptions and Limitations

Continuous stakeholder engagement and functioning grievance mechanism are assumed to be maintained throughout the Project construction and operation phases to allow for timely coordination and resolution of public concerns, including in the sphere of community health, safety, and security.

3.5.4 Impact Assessment: Construction

3.5.4.1 Risks of Traffic Accidents

The risk is associated with the road traffic incidents involving local population and Project associated transport. Pedestrians and bicyclists are at greatest risk of serious injury from collisions with moving vehicles. Children are generally the most vulnerable due to lack of experience and knowledge of traffic related hazards, and their small size making them less visible to drivers.

Risks of Traffic Accidents					
Impact Nature	Positive			Negative	
	The impact is negative arising due to the transit of the Project related vehicles.				
Impact Type	Direct	Indirect		Reversible	Irreversible
	The impact is direct and irreversible.				
Impact Duration	Temporary	Short-term	Medium-term	Long-term	Permanent
	The impact for an affected person can be from short-term to permanent disability.				
Impact Extent	Local	Municipal	Regional	National	International
	The impact can reach regional level if the accident takes place during delivery of materials/people from other regions of the country.				
Impact Magnitude	Negligible	Low	Medium	High	
	The magnitude is considered to be medium.				
Receptor Value / Sensitivity	Negligible	Low	Medium	High	
	The sensitivity of the receptors is considered medium.				
Impact Significance	Negligible	Minor	Moderate	Major	
	The impact significance is moderate.				

Mitigation Measures

- When developing the **Construction Traffic Management Plan**, consult the local population to identify sensitive times and receptors to which traffic restrictions should apply, e.g., when pupils go to and return from school, when people attend the church and cemetery (applicable for some side roads that can potentially be used by delivery vehicles).

- Develop and delivery road safety information programmes, with a focus on school children, in those villages where roads will be used by Project's heavy transport;
- Locate and design pedestrian crossings in consultation with the local residents (for the list of proposed locations refer to **Annex 8**), local and municipal authorities and traffic police bodies.
- Train employees on road safety with a focus on manoeuvring in mountainous terrains and in bad weather conditions, as well as on actions in case of traffic accidents.

Residual Impacts

The residual risk significance is **minor**.

Monitoring

Collect and analyse data on all traffic accident during the Project implementation, with specific attention to those involving local population if any. Also, monitoring will occur as per the indicators in the Traffic Management Plan.

3.5.4.2 Risks to Public Health due to Project Construction Traffic

The Projects envisions transportation of construction materials, equipment, and small-sized construction machinery to the construction sites by heavy vehicles including those with trails. In addition, construction workers will commute daily by the Contractor's service buses or their private cars. As the density of the road network in Syunik Region is relatively low (see **Section Annex 9**), and not all settlements have bypass roads, part of Project's construction vehicles will travel across the residential areas. Project-driven transportation activities may result in public health impacts associated with:

- air pollution due to emissions of exhaust gases from internal combustion engines of moving vehicles and road dust;
- elevated noise and vibration levels due to construction vehicle movements.

The receptors of this impact would be residents, whose houses are located along the roads used by construction vehicles (heavy trucks including those with trails, buses, and private cars). Sensitive receptors are the elderly, children, and people with chronic respitarory and cardiovascular diseases.

It is assumed that sensitive receptors may experience *psychological discomfort (nuisance) or physical discomfort* due to exposure to the above health hazards. In the interviews with the ESIA team, the road-side households in villages that might be used by the Project transport pointed out that noise and dust (in summers and springs) were among the negative traffic impacts.

The magnitude of potential health impacts at each section of the road network primarily depends on the distance between the roadbed and affected residential houses, as well as on the traffic volume and share of heavy vehicles in the traffic flow.

According to the baseline traffic count, the daily average traffic volume for the Goris-Kajaran road[74] is 4,742 vehicles including 642 trucks (13% of the traffic flow). With the assumption that 80% of counted vehicles travel in daytime, the average hourly traffic volume would be about 240 vehicles per hour in daytime. The estimated noise level for roads with such traffic

[74] Traffic and O.D. Survey Report, Sisian - Kajaran Road Section of Tranche 4, IRD ENGINEERING S.R.L, 2022

volume and a speed limit of 60 km/h [75] is 60-61 dBA at a distance of 15 m from the road[76], which exceeds the standard noise level for residential houses in daytime (55 dBA). Noise measurements within the Project-affected settlements confirmed that at some locations daytime noise thresholds may be exceeded: the exceedances were registered for point ER3 - Darbas village, near St. Stephan Church, and ER5 -Lor village, near St. Gevorg church and residential houses) (see Volume 3 for details). PM10 and PM2.5 concentrations measured at eight villages near the existing roads have been much lower than the WHO and Armenian standards (see Section 2.3, Volume 3).

As per the analysis of satellite images and field observations, for many roads within the rural settlements of the Project area the distance from the residential houses to the roadbeds is less than 15 m. If pertinent roads are included into the Construction Traffic Scheme (see **Section 3.4.4.2**, *Mitigation/Enhancement Measures*) residents of houses along the roads may be exposed to elevated noise levels and possibly dust concentrations in the ambient air in daytime, most likely in spring and summer when traffic is much more intensive.

The potential adverse impacts on the public health due to construction traffic along the Project roads are analysed in the table below.

Impacts on public health due to construction traffic					
Impact Nature	Positive			Negative	
	Residents of houses along the roads to be used for Project-related transportation of construction materials, machinery and equipment as well as construction workers would be exposed and may experience nuisance from elevated noise levels and potentially elevated dust concentrations in the ambient air in daytime, presumably in spring and summer. This is a negative impact.				
Impact Type	Direct	Indirect		Reversible	Irreversible
	The impacts are direct and reversible as they occur only during the construction phase of the Project.				
Impact Duration	Temporary	Short-term	Medium-term	Long-term	Permanent
	The impact is considered to be short-term to medium-term as it would manifest during the Project construction phase (ca. six years), but at some locations it may last for a shorter period of time.				
Impact Extent	Local	Municipal (Community)	Regional	National	International
	The routes for transportation of construction materials, equipment and workers have not been identified yet. It may be assumed that existing roads of the Project-affected settlements and some other roads of Syunik Region would be used to service the Project road construction. The impact is assumed to manifest mainly at the local and municipal levels but may also extend to the regional level.				
Impact Magnitude	Negligible	Low		Medium	High
	Some of the villages are by-passed by the existing roads, especially in the Kajaran part of the Project area, whereas in the Sisian to Shenatagh section the existing road often goes through the villages. Similar situation is expected in other settlements of Syunik Region, which would be crossed by Project transportation routes (that is, both by-passing and crossing). At the same time there are many tracks that can be adjusted and used by the Project transport to reach specific locations at the slopes or gorges. Depending on the baseline traffic volume and number of Project vehicles, impact magnitude can be from low to medium (in the periods of peak traffic). As the exact number of potentially affected houses				

[75] This speed limit is a default one for roads within the residential areas of Armenia.

[76] U.S. NRC. 2012. Construction Noise Impact Assessment // Biological Assessment Preparation. Advanced Training Manual. https://www.nrc.gov/docs/ML1225/ML12250A723.pdf

Impacts on public health due to construction traffic				
	cannot be identified now, following the precautionary approach the impact magnitude is seen as moderate.			
Receptor Value / Sensitivity	Very low	Low (for non-sensitive receptors)	Medium (for sensitive receptors)	High
	Receptors are residents of the houses along the roads to be used for Project vehicles during construction phase. The elderly, children, and people with chronic respiratory and cardiovascular diseases are viewed as sensitive receptors. The other residents of roadside houses are assumed to be of medium senstitivity.			
Impact Significance	Negligible	Minor (for non-sensitive receptors)	Moderate (for sensitive receptors)	Major
	Impact significance is a function of sensitivity of the receptors and impact magnitude and would be minor for moderate for both receptor categories (at locations where road upgrade/rehabilitation works are required and not required).			

Mitigation/Enhancement Measures

The following mitigation measures should be implemented to decrease the magnitude of this potential adverse impact:

- Oblige the Construction Contractor to:
  - Implement the **Construction Traffic Management Plan** (which already priorities by-passing option and reduction of vehicle trips). The plan is to include:
    - Map residential houses along the transportation route;
    - Ensure watering or more effective dust suppression measures, such as chemical binding, at these sensitive locations to control road dust emissions in dry days of spring and summer;
    - Avoid to the extent possible movement of construction vehicles during the periods of peak traffic at the affected roads (holidays and morning and evening traffic peaks);
    - Avoid movement of heavy vehicles across the villages at night time.

Residual Impacts

If the mitigation measures are delivered effectively, the **residual significance** of the adverse public health impacts would become **minor**.

Monitoring

Monitoring will occur as per the indicators in the Construction Traffic Management Plan, as well as the community grievance log-book, and information included in the reports to Lenders.

3.5.4.3 Risks of Emergency Situations

No impact is expected on the local residents due to possible emergency situations during the construction phase, since all impacts would be within the Project construction sites.

3.5.4.4 Risks of Communicable Diseases

The risk is associated with the possibility of infection diseases to be brought to the local communities by the Project employees. Such diseases include sexually transmitted infections, Measles, Rubella, Hepatitis B and C, Tuberculosis, COVID19, and other infectious diseases.

Risks of Communicable Diseases during the construction

Impact Nature	Positive			Negative	
	The impact is negative, can affect a large portion of local population if not controlled.				
Impact Type	Direct	Indirect		Reversible	Irreversible
	The impact is direct and irreversible.				
Impact Duration	Temporary	Short-term	Medium-term	Long-term	Permanent
	The impact is short- term, limited to the project construction phase.				
Impact Extent	Local	Municipal	Regional	National	International
	The impact is local to municipal considering potential interactions between the workforce and local population.				
Impact Magnitude	Negligible	Low	Medium	High	
	The magnitude is low (for sexually transmitted) to medium (for other infectios diseases) due to potentially high contagiousness and rapid spread of some viruses (i.e. respiratory).				
Receptor Value / Sensitivity	Negligible	Low	Medium	High	
	The sensitivity of the receptors is medium.				
Impact Significance	Negligible	Minor	Moderate	Major	
	The impact significance is moderate.				

Mitigation Measures

- Maximize use of the local workforce.
- Accommodate non-local workers in the worker camps.
- Establish communication with the local hospitals to receive timely updates in case of the major increase in cases of communicable diseases in the communities.
- Deliver awareness raising campaigns on health issues for settlements close to construction camps (via posters, leaflets, through health clinics, community meetings), in cooperation with local health authorities and/or relevant NGOs.
- Implement the Labour and Working Conditions Management Plan and Community and Occupation Health and Safety Management Plan.
- Ensure that the trainings for workers on the Worker Code of Conduct and GBVH cover sexually transmitted infections.

Residual Impacts

The residual risk significance is **minor**.

Monitoring

Continuously monitor a number of the Project workers on a sick leave to allow timely identification of highly contagious infections. Also, monitor as per the indicators in the Labour and Working Conditions Management Plan and Community and Occupation Health and Safety Management Plan.

3.5.4.5 Impacts of the Project Security Provisions

The available design decisions do not specify security arrangements for the Project's implementation. For the purpose of this assessment, it is assumed that the Project will envision physical security during the construction and operation stages (e.g., fencing and access controls; and security personnel). To avoid a risk of trespassing, the Project will conduct stakeholder engagement and community safety briefings. Given the low levels of crime in the communities, the risks related to vandalism and theft are considered to be negligible. Social tensions are possible if the security staff is unfamiliar with the local lifestyle and customary modes of behaviour. The reliability of the technical security devices and the proper behaviour of the security staff would shape the overall quality of the security service.

Impacts of the Project security provisions during operations				
Impact Nature	Positive		Negative	
	The impact is negative due to potential restrictions imposed on local communities.			
Impact Type	Direct	Indirect	Reversible	Irreversible

	The impact is direct and reversible, as the safety provisions can be adjusted if feasible and necessary.				
Impact Duration	Temporary	Short-term	Medium-term	Long-term	Permanent
	The impact is short- term and limited to the construction phase.				
Impact Extent	Local	Municipal	Regional	National	International
	The impact is local to municipal considering potential security arrangements.				
Impact Magnitude	Negligible	Low	Medium	High	
	The magnitude is low.				
Receptor Value / Sensitivity	Negligible	Low	Medium	High	
	The sensitivity of the receptors is low, prior public consultations haven't revealed any major concerns from the public in this regard.				
Impact Significance	Negligible	Minor	Moderate	Major	
	The impact significance is minor.				

Mitigation Measures

- Ensure that security services provider would have proved record of similar services.
- Ensure that physical security provisions envisioned in the Project (such as perimeter fencing and access controls) are implemented.
- As part of the Worker Code of Conduct, develop a section to govern the behaviour of security personnel on site, in the camp, in the local community, and with other employees.
- Provide training on the Worker Code of Conduct to security personnel with a specific focus on appropriate conduct, respect of human rights, engagement with stakeholders, and appropriate use of force, cultural sensitivity and other.
- Inform the residents of the villages about the Project's security arrangements in advance of their implementation.
- Ensure the Project workers and local residents have free access to the workers' and community grievance mechanisms, respectively.
- Take all necessary security measures to prevent theft, or unauthorised use, by providing suitable locks, lockable containers and/or lockable valves where necessary.

Residual Impacts

The residual risk significance is **negligible**.

Monitoring

Monitor performance of the security personnel (e.g. inspection checks against the Worker Code of Conduct). Timely response to the public complaints, review /status assessment of Grievance Log records, if any.

3.5.5 Impact Assessment: Operation

3.5.5.1 Impacts on Road Safety

Project implementation will have an overall positive impact on the road safety at the regional level and beyond. It is expected to reduce traffic accidents and related risks, especially given that the road will not cross the residential areas. Location of the important road public infrastructure, i.e. pedestrian crossings is designed in consultation with the local residents. Provision of underpasses and safer driving conditions should result in reduced accident rates.

Impacts on Road Safety					
Impact Nature	Positive			Negative	
	The impact is positive since it will improve road safety in the communities.				
Impact Type	Direct	Indirect		Reversible	Irreversible
	The impact is direct and reversible in case if the road and related infrastructure is not well maintained.				
	Temporary	Short-term	Medium-term	Long-term	Permanent

Impact Duration	The impact is permanent for the new road.				
Impact Extent	Local	Municipal	Regional	National	International
	The impact extent can be visible at all levels from local to international.				
Impact Magnitude	Negligible	Low	Medium		High
	The magnitude is medium.				
Receptor Value / Sensitivity	Negligible	Low	Medium		High
	The sensitivity of the receptors is medium.				
Impact Significance	Negligible	Minor	Moderate		Major
	The impact significance is moderate.				

Mitigation/Enhancement Measures

- Ensure timely maintenance of the road and related infrastructure.
- Develop and implement road safety programmes for the local settlements, specifically covering school children and farmers (shepherds - to prohibit cattle on the highway).

Residual Impacts

The impact significance remains **moderate**.

Monitoring

Collect and analyse data on the number of traffic accidents during the Project operation stage, including involving livestock.

3.5.5.2 Risks of Traffic Accidents

Despite anticipated improvements in road safety due to the construction of the new road, risks of traffic accidents involving residents of the settlements within the Project AoI remain.

Risks of Traffic Accidents					
Impact Nature	Positive			Negative	
	The impact is negative arising due to the construction labour coming to the Project communities.				
Impact Type	Direct	Indirect	Reversible		Irreversible
	The impact is direct and irreversible.				
Impact Duration	Temporary	Short-term	Medium-term	Long-term	Permanent
	Impact duration is permanent.				
Impact Extent	Local	Municipal	Regional	National	International
	The impact is local to municipal as it will not extend beyond the Project affected villages and Sisian and Kajaran communities.				
Impact Magnitude	Negligible	Low	Medium		High
	The magnitude is medium.				
Receptor Value / Sensitivity	Negligible	Low	Medium		High
	The sensitivity of the receptors is considered medium.				
Impact Significance	Negligible	Minor	Moderate		Major
	The impact significance is moderate.				

Mitigation Measures

Same as for the construction stage.

Residual Impacts

The residual impact significance is **minor**.

Monitoring

Same as for the construction stage.

3.5.5.3 Impacts on Public Health from Operational Traffic

The operational road, which would largely bypass the residential areas of the Project-affected villages, is supposed to be used by transit drivers and local residents driving far. As a result, traffic intensity at the village internal roads is not expected to increase, and may possibly decrease, compared to the baseline level. To this end, operational traffic-related impacts on public health are seen as **negligible** and not assessed further.

3.5.5.4 Risks of Emergency Situations

During the road operation stage, emergency situations caused both by the physical failure of the road infrastructure and vehicles, or due to unsafe behaviour of the road users can occur in the tunnels, on the bridges, and anywhere along the road. For the assessment of impacts of geo-hazards on road users refer to **ESIA Volume 3, Section 3.3**.

Risks of Emergency Situations during the operational phase					
Impact Nature	Positive			Negative	
	Possible emergency situations include fires and medical emergencies in the tunnels, collapse of bridges and structures (due to earthquakes or other major weather events), accidents during transportation of dangerous goods.				
Impact Type	Direct	Indirect	Reversible	Irreversible	
	The negative impact is direct and irreversible.				
Impact Duration	Temporary	Short-term	Medium-term	Long-term	Permanent
	The impact for an affected person(s) can be from short-term to permanent.				
Impact Extent	Local	Municipal	Regional	National	International
	The impact is local to regional depending on the scale, and might require involvement of the regional rescue brigades, accommodation in the regional hospitals etc.				
Impact Magnitude	Negligible	Low	Medium	High	
	The impact magnitude is medium.				
Receptor Value / Sensitivity	Negligible	Low	Medium	High	
	The sensitivity of the receptors is considered medium.				
Impact Significance	Negligible	Minor	Moderate	Major	
	The impact significance is moderate.				

Mitigation Measures

- Implement planned tunnel design characteristics[77] (see **Volume 1, Section 2.5**) such as escape ways and access to them, SOS and fire extinguishers, fire system, longitudinal ventilation to prepare for emergency situations in the tunnels. Conduct regular maintenance of the fire system and electrical equipment.
- Conduct timely maintenance of the road surface and related infrastructure.
- Develop **Operations Emergency Preparedness and Response Plan** for the road operation phase addressing both reactive (accident based) and proactive road safety actions.
- In case of major accidents caused by the national hazards or release of hazardous materials, national regulatory frameworks and response plans should apply.

Residual Impacts

The residual impact significance is **minor**.

Monitoring

[77] In compliance with the "Safety Requirements for Tunnels in the Trans-European Road Network Regulations" (Directive 2004/54/EC).

Collect and analyse data on any emergency situations taking place along the road if any, develop corrective action plans.

3.6 Potential Impacts on Occupational Health and Safety

3.6.1 Introduction and AoI

This chapter of the ESIA describes occupational health and safety (OHS) risks to the workers and other staff (non-employee workers), performing tasks associated with the Project. The chapter focuses on hazardous conditions and at-risk behaviours that can occur on the Project's sites and when commuting to the sites. It also considers broader health risks related to local geographical, climatic, and social conditions.

Specific OHS issues associated with the construction and operation of roads can be grouped around physical hazards, chemical hazards, and noise[78]:

- Road construction personnel can be exposed to a variety of physical hazards, mainly from operating machinery and moving vehicles, but also working at elevation on bridges and overpasses, and in tunnels. There are also other OHS risks, common to any construction site such as risks of falls from machinery or structures, risks of falling objects, work in confined spaces, trenches, electrical hazards, exposure to adverse weather conditions and other.
- Chemical hazards in road construction, operation, and maintenance activities are primarily associated with exposure to dust, exhaust emissions, crystalline silica and asphalt fumes during the operation of heavy equipment and motor vehicles, work in tunnels and other.
- Exposure to high levels of noise and vibration by construction and maintenance personnel is caused by heavy equipment operation and from working in the proximity to moving vehicles. As most of these noise sources cannot be prevented, special control measures should be put in place to reduce cumulative exposure.

These OHS issues to the extent they are applicable to the Project are assessed below.

3.6.2 Reference Criteria

For the purposes of impact assessment, the tentative manpower requirements for the construction phase estimated in the Investment Programme[79] are considered, together with the assumptions made in **Sections 3.1** and **3.2** above regarding the construction camps, sourcing of manpower, and commute options. Baseline assessment of the physical environment and applicable chapters of the assessment of the potential environmental impacts, provided in **ESIA Volume 3**, are acknowledged.

In addition, the impacts are considered in relation to the relevant Armenian legislation, EBRD PR 4, EIB ESS 9, and ADB Safeguard Policy Statement (2009) and relevant guidance notes (i.e. EBRD Guidance note on Safe working in confined spaces (2020)) (for details on the requirements see **Section 4 of ESIA Volume 1**; and for the methodology of impact assessment refer to **Section 5 of ESIA Volume 1**).

[78] IFC: Environmental, Health, and Safety Guidelines for Toll Roads (2007).

[79] Adopted by the Government Decision of 24 September 2021 No. 1564-Ա.

3.6.3 Assumptions and Limitations

It is assumed that the main language of communication among workers and other staff is Armenian. To the extent possible it is expected that visual signs of hazards and restricted areas will be posted using universally recognized standard – ISO 7010[80]. In case of international workers involvement, clear translation of the OHS information will be provided.

All construction workers are expected to be aware of the Worker Code of Conduct (see mitigation measures in **Sections 3.2**), with regards to the principles of mutual respect, integrity, non-discrimination, and gender equality with the aim to prevent conflicts leading to at-risk behaviour.

Specific provisions with regards to the COVID19 pandemic are expected to be identified based on the assessment at the time of the start of the Project (if applicable EBRD and IFC Guidance Notes should be consulted)[81].

3.6.4 Impact Assessment: Construction

3.6.4.1 Risks of Emergency Situations

Emergency situations are one of the major risks of severe and group injuries that can occur at the Project sites. They can occur spontaneously and develop rapidly. Therefore, it is critical to the success of any emergency response that an appropriate emergency plan is set up. All personnel must be well trained and competent to handle the situation.

Risks of Emergency Situations					
Impact Nature	Positive			Negative	
	Possible emergency situations include fires, spills and improper storage of hazardous materials, fuels, and gas cylinders, medical emergencies, impacts of adverse weather events, geohazards, earthquakes and other.				
Impact Type	Direct	Indirect		Reversible	Irreversible
	The negative impact is directly related to the Project construction stage and irreversible in case human health is affected.				
Impact Duration	Temporary	Short-term	Medium-term	Long-term	Permanent
	The impact for an affected worker(s) can be from short-term to permanent disability.				
Impact Extent	Local	Municipal	Regional	National	International
	The impact is local to municipal, it will not extend beyond the Project affected villages and Sisian and Kajaran communities.				
Impact Magnitude	Negligible	Low		Medium	High
	The impact magnitude is high.				
Receptor Value / Sensitivity	Negligible	Low		Medium	High
	Wherever human health is at risk the receptor sensitivity must be seen as high. In this case, however, the sensitivity of the receptors is considered medium as numerous criteria will be applied during the selection of the workforce, including good physical health, professional knowledge and experience etc.				
Impact Significance	Negligible	Minor		Moderate	Major
	The impact significance is moderate. Mitigation measures are necessary to reduce the impact magnitude and potential damage to workers' health.				

Mitigation Measures

[80] ISO 7010:2019 Graphical symbols — Safety colours and safety signs — Registered safety signs. Available at: https://www.iso.org/standard/72424.html

[81] EBRD procurement considerations and guidance to clients. https://www.ebrd.com/documents/procurement/procurement-covid19-guidance.pdf.

Interim Advice for IFC and EBRD Clients on Migrant Workers and COVID-19. Available at: https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/publications/publications_tipsheet_covid-19_migrantworkers.

A set of the following mitigation measures can be introduced to reduce risks and impacts of the emergency situations on workers' health and safety:

- Develop a **Construction Emergency Preparedness and Response Plan**, covering the relevant types of emergency situations possible at the Project sites and corresponding plan of actions, and train all workers on its key provisions.
- Assess the need and provide sufficient number of the fire extinguishers and first aid kits in the Project sites, at the construction camps, and in the vehicles used for workers' commute.
- Define weather conditions under which the construction works should be paused and resumed only upon authorization.
- Allow smoking only in the designate areas of the Project sites and construction camps, equip these areas with fire extinguishers/fire sand and necessary equipment.
- Organize proper storage of hazardous chemicals and materials, provide secondary containment for liquid substances to minimize impacts in the event of chemical release or accidental spill.
- Maintain electrical safety standards, including restricted access to electrical equipment, its safe storage and maintenance.
- In case of a major accident (fire, spill), conduct and independent investigation of the root causes and develop an action plan.

Residual Impacts

With the implementation of the mitigation measures, emergency situations can be prevented and impact significance reduced to **minor.**

Monitoring

Monitoring activities should include regular maintenance of the firefighting equipment, first aid kits, electrical equipment, and chemical storage areas.

3.6.4.2 Risks of Vehicles Collusions

The risk of equipment and vehicles collisions includes accidents involving heavy machinery, other mobile equipment, and transport vehicles moving on site, accidents that occur during delivery of materials/people to the Project sites, as well as accidents that can happen to employees driving private or company cars, when using taxi, public transport, and injuries on the parking area within the Project or camps territory.

Risks of Vehicles Collusions during the construction phase					
Impact Nature	Positive			Negative	
	Driving under alcohol influence, in difficult terrain, at night/with poor visibility, in unfavourable weather conditions (heavy rain, icy road), speeding, as well as poor technical conditions of the vehicle increase the risks of traffic collisions.				
Impact Type	Direct	Indirect		Reversible	Irreversible
	The impact is directly related to the Project construction stage and irreversible in case human health is affected.				
Impact Duration	Temporary	Short-term	Medium-term	Long-term	Permanent
	The impact for an affected worker(s) can be from short-term to permanent disability.				
Impact Extent	Local	Municipal	Regional	National	International
	The impact can reach regional level if the accident takes place during delivery of materials/people from other regions of the country.				
Impact Magnitude	Negligible	Low		Medium	High
	The impact magnitude is considered to be medium.				
Receptor Value / Sensitivity	Negligible	Low		Medium	High
	Wherever human health is at risk the receptor sensitivity must be seen as high. In this case, however, the sensitivity of the receptors can be considered medium as professional selection criteria will be applied to drivers and operators of heavy machinery.				
	Negligible	Minor		Moderate	Major

Impact Significance	The impact significance is moderate. Implementation of the mitigation measures is necessary to reduce the impact magnitude and potential damage to workers health.

Mitigation Measures

- Oblige the Construction Contractor to develop and implement a construction-stage **Community and Occupational Health and Safety Management Plan** to manage worker safety. In relation to vehicle accident, it should cover:
  - Establishment of work zones to separate workers on foot from traffic and equipment by the use of protective barriers or installation of channelling devices (e.g. traffic cones and barrels).
  - Establishment of the maximum vehicle speeds in work zones at 5 km/h.
  - Compliance with the maintenance schedule and timely repair of mobile equipment and vehicles.
  - Training of workers in safety issues related to their activities, such as the hazards of working on foot around equipment and vehicles; and safe practices for work at night and in other low-visibility conditions, including use of high-visibility safety apparel and proper illumination for the work space (while controlling glare so as not to blind workers and drivers).

Residual Impacts

With the implementation of the mitigation measures, on-site collisions can be prevented and impact significance reduced to **minor.**

Monitoring

Monitoring process should include visual observation of the compliance with the speed limits, pre-shift inspection of the equipment and transport vehicles, periodical medical examination of drivers as per national requirements.

3.6.4.3 Risks of Exposure to High Noise Levels

The operation of heavy machinery and equipment such as drills, bulldozers, pavers during the road and tunnels construction causes increased noise levels in the working zone. This section deals with the impact of noise on construction workers. For impacts on local population of the nearby village please see **Section 3.5** above.

Risks of Exposure to High Noise Levels					
Impact Nature	Positive			Negative	
	Various activities required for the construction of the roadway generate noise. Simultaneous work of multiple equipment increases the negative noise load on workers.				
Impact Type	Direct	Indirect	Reversible	Irreversible	
	The impact is direct and irreversible during the Project construction stage.				
Impact Duration	Temporary	Short-term	Medium-term	Long-term	Permanent
	The negative impact of high noise levels can cause temporary or permanent hearing damage/ loss.				
Impact Extent	Local	Municipal	Regional	National	International
	The impact is local, will affect workers on-site.				
Impact Magnitude	Negligible	Low	Medium	High	
	The impact magnitude is medium.				
Receptor Value / Sensitivity	Negligible	Low	Medium	High	
	Wherever human health is at risk the receptor sensitivity is medium.				
Impact Significance	Negligible	Minor	Moderate	Major	
	The impact significance is moderate. As most of the noise sources cannot be prevented during construction, control measures should be applied to protect employees from high noise levels at work.				

Mitigation Measures

The Community and Occupational Health and Safety Management Plan should include the necessary mitigation measures, such as:

- use of personal hearing protection by exposed personnel.
- implementation of work rotation programs to reduce cumulative exposure.
- screening noisy construction equipment and activities behind mobile screens.

Residual Impacts

With the implementation of the mitigation measures, the residual impact of noise can be lowered to **minor.**

Monitoring

Conduct visual inspections of workers using appropriate PPEs, maintain work rotation where necessary.

3.6.4.4 Risks of Performance of High Hazardous Tasks

High hazardous tasks are associated with high safety risks and require appropriate training and medical check of employees.

Risks of Performance of High Hazardous Tasks					
Impact Nature	Positive			Negative	
	High-hazardous tasks associated with the Project include welding/hot grinding, work in confined spaces, elevated and overhead work. Performance of these tasks is related with high safety risks and requires appropriate training and medical check of employees.				
Impact Type	Direct	Indirect		Reversible	Irreversible
Impact Duration	Temporary	Short-term	Medium-term	Long-term	Permanent
	The impact can be from short-term to permanent if human health is affected.				
Impact Extent	Local	Municipal	Regional	National	International
	The impact is local, will affect workers on-site.				
Impact Magnitude	Negligible	Low		Medium	High
	The magnitude is considered to be medium.				
Receptor Value / Sensitivity	Negligible	Low		Medium	High
	The sensitivity of the receptors is considered medium. The medical requirements for such positions are included in the job descriptions, employees are required to pass pre-hiring medical check and periodical medical control to fit such positions.				
Impact Significance	Negligible	Minor		Moderate	Major
	The impact significance is considered to be moderate.				

Mitigation Measures

The Community and Occupational Health and Safety Management Plan should include such measures as:

- Control that only qualified workers with appropriate medical check are performing high-hazardous tasks.
- Establish a permit-to-work system for the performance of high-hazardous tasks.
- Control use appropriate PPE when performing high-hazardous tasks.

Residual Impacts

The residual risk significance is **minor**.

Monitoring

Visual observations of the use of PPEs by authorized supervisors, control of the permit-to-work registration forms.

3.6.4.5 Risks of Electrical Injuries

Performance of electrical works and use of electrical equipment are potential causes of electrical injuries. Unprotected direct contact with any source of electricity can cause severe injuries to human body.

Risks of Electrical Injuries					
Impact Nature	Positive			Negative	
	The impact is negative to human health and safety.				
Impact Type	Direct	Indirect		Reversible	Irreversible
	The impact is direct and irreversible.				
Impact Duration	Temporary	Short-term	Medium-term	Long-term	Permanent
	The impact duration depends on the severity of the potential injury and can be from short-term to permanent.				
Impact Extent	Local	Municipal	Regional	National	International
	The impact is local, can affect workers on site.				
Impact Magnitude	Negligible	Low		Medium	High
	The magnitude is medium.				
Receptor Value / Sensitivity	Negligible	Low		Medium	High
	The sensitivity of the receptors is considered medium.				
Impact Significance	Negligible	Minor		Moderate	Major
	The impact significance is moderate.				

Mitigation Measures

The Community and Occupational Health and Safety Management Plan should include such measures as:

- Only allow electrical equipment in good conditions, with solid insulation and in unchanged manufactured design to be used at the Project sites.
- Only employees who passed appropriate training and hold certificates should have access to the high-voltage equipment and/or perform electrical works.

Residual Impacts

The residual risk significance is **minor**.

Monitoring

Conduct regular site inspections with consideration of electrical safety requirements.

3.6.4.6 Risks of Exposure to High Levels of Air Pollution

Impact on workers is mainly associated with exposure to dust emissions that result from construction activities themselves, and from the movement of equipment and traffic over temporary unpaved roads at the construction site. Dust emissions often vary substantially from day to day, depending on the level of activity, specificity of operations, and the prevailing meteorological conditions. Detailed information on air quality and simulated annual average concentrations of PM_{10} are described in **EISA Volume 3, Section 3.1.**

Risks of Exposure to High Levels of Air Pollution					
Impact Nature	Positive			Negative	
	The main air emissions from road construction are Nitrogen Dioxide (NO2), Sulphur Dioxide (SO2), Carbon Monoxide (CO), and dust (containing particulate matter (PM10 and PM2.5)). For road construction phase dust is the major concern as other emissions are not as significant.				
Impact Type	Direct	Indirect		Reversible	Irreversible
	The impact will directly affect workers and is irreversible.				
Impact Duration	Temporary	Short-term	Medium-term	Long-term	Permanent
	Should dust result in adverse health impacts these would be at least long term and potentially permanent.				

Impact Extent	Local	Municipal	Regional	National	International
	The impact is local, limited to the workers on-site.				
Impact Magnitude	Negligible	Low	Medium	High	
	The predicted ambient PM_{10} concentrations are seen to exceed the Armenian standards in close proximity to the source of the emissions.				
Receptor Value / Sensitivity	Negligible	Low	Medium	High	
	The sensitivity of the receptors is high, the impact is cancerogenic and has cumulative effects.				
Impact Significance	Negligible	Minor	Moderate	Major	
	The impact significance is major.				

Mitigation Measures

In addition to measures in **EISA Volume 3, Section 3.1,** the following mitigation measures should be applied to reduce air emissions from the construction activities as part of the Community and Occupational Health and Safety Management Plan:

- Timely maintenance of work vehicles and machinery.
- Provision of adequate ventilation in tunnels or other areas with limited natural air circulation.
- Minimizing dust from material handling sources, such as conveyors and bins, by using covers and/or control equipment;
- Minimizing dust from open area sources, including storage piles, by using control measures such as installing enclosures and covers, and increasing the moisture content;
- Implementation of the dust suppression techniques to minimize dust from vehicle movement on unpaved roads.
- Mandatory use of PPEs (masks with PM10 filters) by the workers when performing operations that generate high volumes of dust.

Residual Impacts

If the dust control measures will reduce concentrations of PM_{10} below the WHO Air Quality Guidance (2021), the impact significance of dust from construction activities could be reduced to **minor.**

Monitoring

In **EISA Volume 3, Section 3.1.4**, two forms of monitoring are recommended namely:

- Dust fallout monitoring using dust buckets as a relatively cost-effective measure of overall dust loading; and,
- Episodic continuous measurement campaigns to determine the airborne PM_{10} concentrations in areas where there is possible human exposure to the same.

3.6.4.7 Risks of Climate Stress

This risk is related to the migrant workers, which might experience health issues due to the changes of the climate and terrain conditions, i.e., high altitudes, extreme weather conditions.

Risks of Climate Stress					
Impact Nature	Positive		Negative		
	The impact can negatively affect migrant workers.				
Impact Type	Direct	Indirect	Reversible	Irreversible	
	The impact is direct and reversible.				
Impact Duration	Temporary	Short-term	Medium-term	Long-term	Permanent
	The impact is temporary, as workers will gradually adjust to the new climate conditions.				
Impact Extent	Local	Municipal	Regional	National	International
	The impact extent is local.				

Impact Magnitude	Negligible	Low	Medium	High
	The impact magnitude is low, can cause temporary discomfort and absence at work.			
Receptor Value / Sensitivity	Negligible	Low	Medium	High
	The sensitivity of the receptors is low since employees are required to pass pre-hiring medical check-up.			
Impact Significance	Negligible	Minor	Moderate	Major
	The impact significance is considered to be minor.			

Mitigation Measures

The Community and Occupational Health and Safety Management Plan should include such measures as:

- Provide portable drinking water at Project sites and remind workers about the importance of staying hydrated.
- Identify weather conditions under which outdoor works should be paused / limited (in particular, extreme (hot/cold) temperatures).

Residual Impacts

The residual impact is considered **negligible.**

Monitoring

Maintain free access and availability of drinking water to all employees. Timely refill first aid kits.

3.6.4.8 Risks of Infectious Diseases

Analysis of the baseline conditions in the region did not reveal information regarding high rates of certain infectious diseases, including COVID19. However, influx of people from various geographic locations can cause a potential spike of infections among workers.

Risks of Infectious Diseases					
Impact Nature	Positive			Negative	
	The impact is negative, can affect a large number of workers if not controlled.				
Impact Type	Direct	Indirect		Reversible	Irreversible
	The impact is direct and irreversible.				
Impact Duration	Temporary	Short-term	Medium-term	Long-term	Permanent
	The impact is short- to medium-term.				
Impact Extent	Local	Municipal	Regional	National	International
	The impact is local to municipal considering potential interactions between the workforce and local population.				
Impact Magnitude	Negligible	Low		Medium	High
	The magnitude is medium due to potentially high contagiousness and rapid spread of the virus.				
Receptor Value / Sensitivity	Negligible	Low		Medium	High
	The sensitivity of the receptors is medium.				
Impact Significance	Negligible	Minor		Moderate	Major
	The impact significance is moderate.				

Mitigation Measures

The Community and Occupational Health and Safety Management Plan should include such measures as:

- Communicate to workers in an easy manner the procedure of taking a sick leave.
- Cover medical emergencies in the Emergency Preparedness and Response Plan.
- Include the topic of spread and prevention of infection diseases to the safety induction training for all Project workers.

Consider additional precautious measures with regards to COVID19 virus based on the assessment at the time of the start of the Project (if applicable EBRD and IFC Guidance Notes should be used)[82].

Residual Impacts

The residual impact is considered **minor.**

Monitoring

Continuously monitor number of workers on a sick leave to allow timely identification of highly contagious infections.

3.6.5 Impact Assessment: Operation

3.6.5.1 Risks of Emergency Situations

During the operation stage, third-party workers will be involved in the road and infrastructure maintenance and repair works. Performance of these activities might be interrupted by the emergency situations, caused by natural hazards or unsafe behaviour.

Risks of Emergency Situations during operations					
Impact Nature	Positive			Negative	
	Possible emergency situations include fires, medical emergencies, impacts of adverse weather events, geohazards and other.				
Impact Type	Direct	Indirect		Reversible	Irreversible
	The negative impact is direct and irreversible.				
Impact Duration	Temporary	Short-term	Medium-term	Long-term	Permanent
	The impact for an affected worker(s) can be from short-term to permanent.				
Impact Extent	Local	Municipal	Regional	National	International
	The impact is local to municipal, it will not extend beyond the Project affected villages and Sisian and Kajaran communities.				
Impact Magnitude	Negligible	Low		Medium	High
	The impact magnitude is high.				
Receptor Value/ Sensitivity	Negligible	Low		Medium	High
	The sensitivity of the receptors is considered medium.				
Impact Significance	Negligible	Minor		Moderate	Major
	The impact significance is moderate. Mitigation measures are necessary to reduce the impact magnitude and potential damage to workers health.				

Mitigation Measures

- Develop an **Operations Emergency Preparedness and Response Plan**, covering the relevant types of emergency situations possible at the Project sites and corresponding plan of actions.
- Assess the need and provide sufficient number of the fire extinguishers and first aid kits when planning maintenance/repair works.
- Organize proper storage of chemicals and other materials used during road repair/maintenance works, provide secondary containment for liquid substances to minimize impacts in the event of chemical release or accidental spill.

Residual Impacts

[82] EBRD procurement considerations and guidance to clients. https://www.ebrd.com/documents/procurement/procurement-covid19-guidance.pdf; Interim Advice for IFC and EBRD Clients on Migrant Workers and COVID-19. https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/publications/publications_tipsheet_covid-19_migrantworkers

With the implementation of the mitigation measures, emergency situations can be prevented, and impact significance reduced to **minor.**

Monitoring

Monitoring activities should include regular maintenance of the firefighting equipment, first aid kits, electrical equipment, and storage areas.

3.6.5.2 Risks of Traffic Accidents

Collisions and accidents can involve a single or multiple vehicles, pedestrians or bicyclists, and animals. Many factors can contribute to traffic accidents during the road operation phase. Some are associated with the behaviour of the driver or the quality of the vehicle, while others are linked to the organization of the road maintenance/repair works.

Risks of Traffic Accidents during operations and maintenance					
Impact Nature	Positive			Negative	
	The impact is negative.				
Impact Type	Direct	Indirect	Reversible	Irreversible	
	The negative impact is direct and irreversible.				
Impact Duration	Temporary	Short-term	Medium-term	Long-term	Permanent
	The impact for an affected worker(s) can be from short-term to permanent.				
Impact Extent	Local	Municipal	Regional	National	International
	The impact is local.				
Impact Magnitude	Negligible	Low	Medium	High	
	The impact magnitude is medium.				
Receptor Value/Sensitivity	Negligible	Low	Medium	High	
	Wherever human health is at risk the receptor sensitivity must be seen as high.				
Impact Significance	Negligible	Minor	Moderate	Major	
	The impact significance is considered to be moderate.				

Mitigation Measures

- Setting up a perimeter for the maintenance/repair works – using proper barriers, cones and other barricades will inform drivers when the worksite begins and ends.
- Increase workers and work site visibility – by using high-visibility clothing. High-visibility clothing includes things like hats, vests and armbands with reflective or fluorescent materials. Additional lights can be used to increase visibility of the crew working in the evening or during periods when it is difficult to see.
- Post traffic signs before the work zone for drivers to adjust to changes like slowdowns or reduced lanes. Allow drivers enough space to safely transition out of the work zone and back into the regular flow of traffic.

Residual Impacts

The residual impact significance is **minor**.

Monitoring

Monitoring activities should include collection of data on the statistics of the traffic collisions and their severity. If there are parts of the road associated with an increased number of accidents, additional measures should be executed (i.e., crossing for pedestrians, bridge for animals, installation of the road sign etc.).

3.7 Gender Impact Analysis

3.7.1 Introduction and AoI

This section looks into Project risks and impacts that may have gender implications. The AoI for gender-related impacts is aligned with the Project's core socio-economic AoI (**Figure 1**)

comprising territories of the affected villages (rural settlements affected by land acquisition, and /or adjacent to or crossed by the proposed route, existing roads to be used by construction transport, and potential connecting roads).

3.7.2 Reference Criteria

The gender-related risks and impacts are assessed with reference to the baseline analysis documented in **Section 2.2**, and the EBRD PR 2, EIB ESS 9, and ADB SP 1 and SP 2 (for details on the requirements see **Section 4 of ESIA Volume 1**; and for the methodology of impact assessment refer to **Section 5 of ESIA Volume 1**). The assessment and mitigation measures are guided by the following lenders' methodologies and advice:

- EBRD's Guidance documents: 1) Addressing Gender-Based Violence and Harassment in the Construction Sector (2020), and 2) Addressing Gender-Based Violence and Harassment – Emerging Good Practice for the Private Sector (2020);
- EIB's "Protect, Impact, Invest" - the EIB Group Strategy on Gender Equality and Women's Economic Empowerment (2017); and
- ADB's Gender Tool Kit: Transport Maximizing the Benefits of Improved Mobility for All (2013).

3.7.3 Assumptions and Limitations

Same as made for assessing risks and impacts on local economy, employment and labour markets, and land use (see the above sections). However, the particular impacts considered in this section are focused on the local and municipal levels and supplement the labour and procurement splash effects that extend further to Syunik Region and the national (Armenia) level.

3.7.4 Impact Assessment: Construction

The results of the gender baseline analysis and socio-economic study suggest that the socio-economic benefits and opportunities associated with Sisian-Kajaran road construction are mainly gender neutral. The male and female residents of the project affected area are expected to not only be equally exposed to the Project impacts, but equally benefit from socio-economic development perspectives associated with both road construction and operation, such as employment opportunities, local trade and services development, better access to Yerevan and Kapan, and tourism development. At the same time, there are some *gender-specific* Project-related opportunities and risks, that are discussed below, namely:

i) Women employment opportunities (direct, indirect, and induced),

ii) Women entrepreneurship opportunities, and

iii) Gender-Based Violence and Harassment (GBVH) impacts.

In addition, as gender is a cross-cutting topic that interacts with various Project impacts, its analysis is embedded in several other impact assessment sections, including **Section 3.2** – impacts on employment, **Section 3.1** – impacts on economic development and procurement of goods and services, **Section 3.5** – potential risks to community health, safety and security. Gender inclusion in the context of resettlement is covered in the RF and Resettlement Plan.

3.7.4.1 Women employment opportunities

Many **Project's direct jobs** especially worker positions are assumed to target male employees as many of the construction workers' jobs are classified as hazardous. At the same time, part of new direct jobs and a considerable share of **indirect jobs** (with Project suppliers and sub-contractors) (see **Section 3.2.4** for details) are assumed to be staffed by women.

Induced employment opportunities at the construction phase are related to the influx of labour and qualified specialists to the Project-affected communities. Staff visits to the Project area

can be both short-term, for several days or weeks, and long-term, with some staff members staying in the Project area throughout the construction phase. This can lead to a sharp increase in the range of services provided by the existing food, hotel/guesthouses, and retail trade facilities in the area. This will cause an additional demand for labour from businesses servicing Project direct and indirect employees present in the area.

Since most of the workforce in the service and retail trade sectors are women, new job opportunities for women in the Project area will arise besides Project direct and indirect jobs that can be taken by women.

The impact on women employment opportunities during construction is assessed below.

Impact on women employment opportunities due to construction					
Impact Nature	Positive				Negative
	The impact is viewed as positive as result in the increased number of vacancies at the labour markets of various level and widens employment opportunities for women.				
Impact Type	Direct	Indirect		Reversible	Irreversible
	The Project results in creation of direct jobs as well as indirect jobs (with Project suppliers and sub-contractors) and induced jobs (with businesses benefitting from spending by Project direct and indirect employees). Therefore, the Project results in both direct and indirect impact on women employment. The impact is reversible as with the completion of the construction phase the impact will cease.				
Impact Duration	Temporary	Short-term	Medium-term	Long-term	Permanent
	The impact is short-term to medium-term as it would manifest during the Project construction phase (ca. 6 years), but at some locations it may last for a shorter period of time.				
Impact Extent	Local	Municipal (Community)	Regional	National	International
	The impact on women employment manifest mainly in the Project-affected settlements, though may extend to other settlements in two affected municipalities, and to the region.				
Impact Magnitude	Negligible	Low (at the regional level)	Medium (at the municipal and local levels)	High	
	The impact adds benefits as it results in increased women employment and welfare of women and their households. The impact is short-term to medium-term by duration, reversible and extends to local, municipal, and regional levels. It is assumed that 15% of the direct Project jobs (as per employment target proposed in **Section 3.2.4**) (75 jobs) and 50% of the combined indirect and induced jobs (500 jobs) would be staffed by women; of which 30% would be staffed by residents of Sunik Region outside the two affected municipalities, and 70% - by residents of the affected municipalities. The ratio of the combined number of new jobs staffed by women to the total number of the unemployed women within the respective territory is estimated as 3.1% at the regional level and 10.9% at the municipal level. Thus, the impact magnitude is viewed as low at the regional level and medium at the municipal and local levels.				
Receptor Value / Sensitivity	Very low (at the regional level)	Low (at the municipal and local levels)	Medium	High	
	Receptors are women living within a specific territory that possess services or skills (or can develop such) that can be offered to the Project and Project-supporting businesses. The receptor sensitivity depends on the baseline unemployment rate and the existing range of employment opportunities within the respective territory: the higher the unemployment rate and less employment opportunities available for the population (and higher expectations regarding potential new jobs), the higher sensitivity of such group to the impact. The availability of alternative employment opportunities and sources of livelihood (e.g., subsistence agriculture) for the affected population would decrease the receptor sensitivity to the impact. Therefore, the receptor sensitivity is viewed as very low at the regional level, and low at the municipal and local levels. Women based in the affected villages work in the public and private sectors, and are engaged in subsistence farming, household care, and seasonal agricultural work, i.e. have alternative employment options.				
Impact Significance	Negligible (at the regional level)	Minor (at the municipal and local levels)	Moderate	Major	
	The impact significance is overall assessed as minor since the employment opportunities for women are limited and it will not lead to major changes in women's standards of living. It				

Impact on women employment opportunities due to construction	
	should be noted though that the impact significance is higher (and can be viewed as minor to moderate) for women from vulnerable households (women-headed families, women with unemployed family members, etc.).

Mitigation/Enhancement Measures

The following enhancement measures should be implemented to increase magnitude of the potential beneficial impact on women employment:

- organise information campaigns in the Project-affected communities/settlements to promote the application of women for various Project positions.
- Prioritise employment of the local women for the Construction Contractor, Project suppliers and sub-contractors.

Residual Impacts

If the enhancement measures are delivered effectively, the **residual significance** of this beneficial impact would become **minor to moderate at the municipal and local levels,** as more women will have access to employment opportunities and be employed, and will remaining **negligible** at the **regional level**.

Monitoring

The Project will monitor the number of women employed with the Project and review Grievance log for any relevant records and assess the redress progress.

3.7.4.2 Women entrepreneurship opportunities

Influx of labour for various time periods would lead to the HoReCa services volume increase in the region, which will cause an additional demand for the provision of catering and accommodation services to the Project direct and indirect staff. This will enable women entrepreneurship opportunities including those for SMEs, such as catering, canteens, cafés, barber-shops, accommodation (hotel, guesthouse, or apartment renting), agricultural products sales, food retail (small shops), etc. (see also **Section 3.1.4.1**).

Women entrepreneurship opportunities (construction phase)					
Impact Nature	Positive		Negative		
	The impact is positive. The inflow of workers and qualified specialists will call for development of support services and local women will gain an opportunity to set up (jointly or individually) SMEs to produce and sell agricultural products, as well as to services to meet Project needs during the construction phase (catering, local cafés, canteens, barber-shops, accommodation, shops, etc.).				
Impact Type	Direct	Indirect	Reversible	Irreversible	
	The impact is related to the Project construction and considered to be indirect and reversible as it can occur for as long as there is demand for goods/services .				
Impact Duration	Temporary	Short-term	Medium-term	Long-term	Permanent
	The impact can be short-to medium-term as it would manifest during the Project construction stage lasting for about six years.				
Impact Extent	Local	Municipal	Regional	National	International
	The impact is both local and municipal, but will not extend beyond the mentioned levels.				
Impact Magnitude	Negligible	Low	Medium	High	
	The magnitude is seen as low as it can be predicted that some of the households (HHs) will reduce their agricultural activities once members of these HHs gain alternative employment during the Project construction phase. Besides, the receptor groups are not large.				
Receptor Value / Sensitivity	Negligible	Low	Medium	High	
	The sensitivity is low due to the limited ability of the receptor groups to benefit from entrepreneur opportunities.				
	Negligible	Minor	Moderate	Major	

Impact Significance	The significance of the impact in terms how it further translates into larger incomes or improved means of livelihood is expected to be minor; besides it would benefit only certain part of HHs (i.e. the receptor groups are small in the Project communities).

Mitigation/Enhancement Measures

The following enhancement measure should be implemented to increase magnitude of the potential beneficial impact:

- organize special training sessions for women entrepreneurs in order to develop and strengthen entrepreneurial skills.

Residual Impacts

If the proposed enhancement measure is delivered effectively, the residual **impact significance** would remain **minor** and potentially change to **moderate in the medium-term** (depending on the scale of the local initiatives implemented and support provided).

Monitoring

N/A.

3.7.4.3 GBVH Impacts

The Project civil works will be associated with an influx of transient labour (particularly males) into the Sisian and Kajaran communities. There could be a risk that girls and woman living or working near the Project area may suffer from GBVH risks. GBVH may occur among workers, community members and service users: for example, GBVH may happen when male workforce in the Project area (especially those with high income) may sexually exploit people in the local community, or male workers transporting goods (e.g., truck drivers), who can perpetrate GBVH on routes and at truck stops associated with the Project, even if not on the Project site. Income-earning opportunities for women through direct employment in construction or operation stages, or indirect employment (e.g., catering, cafés, food markets, etc.), may also increase household tension and create community backlash against women in some Project affected villages, where the perception is that women should not work outside the home. Also, GBVH cases may occur when recruiting of local women as staff, e.g. demanding sexual favours in exchange for job.

Risks of Gender Based Violence and Harassment (construction phase)					
Impact Nature	Positive			Negative	
	The impact is negative arising due to the construction labour coming to the Project communities.				
Impact Type	Direct	Indirect		Reversible	Irreversible
	The negative impact is directly related to the Project construction stage, and is reversible.				
Impact Duration	Temporary	Short-term	Medium-term	Long-term	Permanent
	The impact is short-term to medium-term as it relates to the construction stage lasting for about six years.				
Impact Extent	Local	Municipal	Regional	National	International
	The impact is local to municipal as it will not extend beyond the Project affected villages and Sisian and Kajaran communities.				
Impact Magnitude	Negligible	Low	Medium	High	
	The magnitude is considered to be medium as relevant regular monitoring and reporting activities will help to assess, manage and prevent GBVH.				
Receptor Value / Sensitivity	Negligible	Low	Medium	High	
	The sensitivity of the receptors is considered low as the baseline gender studies for this region show an active role of women and readiness to protect their rights.				
Impact Significance	Negligible	Minor	Moderate	Major	
	The impact significance is considered to be minor as it is connected to the local level only.				

Mitigation/Enhancement Measures

In order to avoid and reduce the negative impact, it is recommended to plan appropriate **preventive measures (**see also **gender-related mitigation** in **Section 3.2.4)**:

- Appoint a female grievance officer ('confidant') for gender sensitive issues at each construction camp and within the RD for the purpose of the Project; make the contact details of the female confidant available to all staff during recruitment;
- Ensure that the Grievance Mechanism provides for **confidential** channels for reporting incidents and providing support; investigation procedures should be established at the outset of the Project construction stage, which will enable GBVH to be tracked and reported in a safe way.
- Hold trainings on the gender elements of the **Worker Code of Conduct** for the Contractor's and Supervision Engineer's staff.
- Undertake information campaigns aimed at preventing GBVH risks, negative behavioural expressions, and raise awareness among employees and residents of Project-affected villages.

Residual Impacts

If the proposed mitigation measures are delivered effectively, the residual risk could be **minor to negligible**.

Monitoring

The Project will monitor the GBVH – related grievances and track their resolution. This information will be reported in the reports to the Lenders, alongside the information on the completed gender/GBVH trainings for the staff and settlements.

3.7.5 Impact Assessment: Operation

3.7.5.1 Women employment opportunities

In the Kajaran area, men are mainly employed in mining jobs and military service, while jobs for women are mostly available in the social sector, so the employment opportunities for women are limited. In Kajaran Community, most of working age residents are engaged in animal husbandry, gardening and farming (including bee-farming). Limited employment for women is one of the main social challenges in the region. The women's unemployment affects households' standards of living, especially of women headed households. In the Sisian area, especially in the settlements far from Sisian Town and industrial facilities of Shamb settlement, limited employment opportunities are available for both men and women, which is also due to underdeveloped tourism and service sectors in the region.

At the operation phase, the Project road would result in creation of new direct jobs (with the Client and Maintenance Contractor) and a very small number of induced jobs (with businesses servicing transient maintenance workers); majority of such new jobs would be temporary. In addition, new permanent jobs are expected to arise due to development of roadside services (see **Section 3.2.5** for details). The women of the Project-affected settlements will benefit from new 'women-oriented' employment opportunities related to visits of maintenance crews and development of roadside services. The new jobs with roadside businesses would have a continuous positive impact on their/families' standard of living. The fact that women will have an opportunity to work while staying in their communities (near to their residences) will be especially important for women with minor children, because, as described in the baseline, women with minor children consider it difficult to find work in the community due to the lack/scarcity of suitable jobs.

Impact on women employment opportunities (operation phase)		
Impact Nature	Positive	Negative
	The impact is positive as women would benefit from employment opportunities that will arise at the Project operation stage.	

Impact on women employment opportunities (operation phase)					
Impact Type	Direct	Indirect		Reversible	Irreversible
	The road maintenance would result in creation of new direct jobs (with the Client and Maintenance Contractor) and a limited number induced jobs (with businesses servicing transient maintenance workers). In addition, new permanent jobs are expected to arise due to development of roadside services. Therefore, the impacts on employment are both direct and indirect. The aggregated impact on employment is viewed as reversible as it will manifest within the road lifetime will not extend further.				
Impact Duration	Temporary	Short-term	Medium-term	Long-term	Permanent
	The impact is considered to be long-term as the road will exist at during the next 20-30 years as minimum and will create demand for labour related to road maintenance works and operation of roadside businesses.				
Impact Extent	Local	Municipal (Community)	Regional	National	International
	The impact will mainly manifest at the local and municipal levels but may also extend to the regional level. may extend is likely not to extend beyond the local and community levels.				
Impact Magnitude	Negligible	Low (regional municipal and local levels) – at the beginning of road operation		Medium	High
	The impact adds benefits as it results in increased women employment and welfare of women and their households. The impact is short-term to medium-term by duration, reversible and extends to local, municipal, and regional levels. With assumptions used to estimate the number of Project-related jobs (Project direct and induced jobs and to be staffed by women during construction phase (see **Section 3.7.4**, the combined number of such jobs would be around 20 at the regional level and around 50 at the municipal level, which would be around 1% of the total number of the unemployed women registered within the respective territory. Therefore, the impact magnitude is viewed as low at the regional, municipal, and local levels at the beginning of the road operations. In the long run the impact magnitude may increase if the Project-related regional economic development (see **Section 3.1.5**) would include significant growth of HoReCa services in the Project area with new employment opportunities for local women.				
Receptor Value / Sensitivity	Very low (at the regional level)	Low (at the municipal and local levels)		Medium (for local women from vulnerable households)	High
	The receptors are women of working age living i) in the affected villages, ii) in the two affected municipalities outside these villages, and iii) in Syunik Region outside the Sisian and Kajaran Communities. The receptor sensitivity is viewed as very low at the regional level and low at the municipal and local levels. The sensitivity of women is lower compared to the population as a whole (see **Section 3.2.5**) as women are engaged in subsistence farming, household care, and seasonal agricultural work, i.e. have alternative employment options. However, sensitivity of women from vulnerable households is higher and can be viewed as medium for women from vulnerable households.				
Impact Significance	Negligible (at the regional level)	Minor (at the municipal and local levels)		Moderate (for local women from vulnerable households)	Major
	Impact significance is a function of sensitivity of the receptors and impact magnitude and would be negligible at the regional level and minor at the municipal and local levels. It should be noted though that the impact significance is higher (and can be viewed as minor to moderate) for women from vulnerable households (women-headed families, women with unemployed family members, etc).				

Mitigation Measures

The following enhancement measure should be implemented to increase magnitude the potential beneficial impact on women employment:

- The RD to organise short-term vocational trainings for women in the Project-affected settlements in order to help them acquire / relevant qualifications to be employed in the HoReCa sector.

Residual Impacts

If the enhancement measure is delivered effectively, the **residual significance** of this beneficial impact would gradually become **moderate at the municipal and local levels** remaining **negligible** at the **regional level** as more women (especially from vulnerable households) will have gain skills and opportunities to be employed.

Monitoring

N/A.

3.7.5.2 Women entrepreneurship opportunities

With high traffic flows during the road operations, demand for the HoReCa services will increase. Women of the Project-affected communities / settlements may wish to set up and run such business activities. Thus, women entrepreneurship opportunities in food markets, restaurants, cafés, hotels, etc., will arise and can be realised. In addition, the development of agro-tourism and eco-tourism would take place: in particular, production of ecologically clean food by HHs, which is mainly done by women has high chances of development in the Project affected settlements. So, women will gain an opportunity to earn income by turning their daily activities into small business.

Impact on women entrepreneurship opportunities (operational phase)					
Impact Nature	Positive			Negative	
	The impact is considered to be positive as local women will have an opportunity to set up SMEs to offer services such as local cafés, food markets, barber-shops, restaurants, hotels, canteens, etc. At the same time the development of agro-tourism, eco-tourism would take place and production of ecologically clean food by HHs (mainly done by women) would be in high demand, so women will get an opportunity to earn additional income.			
Impact Type	Direct	Indirect	Reversible	Irreversible	
	The impact is indirect and reversible as the services will be in high demand throughout the entire operation of the Sisian-Kajaran road.				
Impact Duration	Temporary	Short-term	Medium-term	Long-term	Permanent
	The impact is considered to be long-term as it is closely linked to the road operation, is to last during the Project lifetime and unlikely to extend beyond it.				
Impact Extent	Local	Municipal	Regional	National	International
	The impact is local as it will not extend beyond the affected communities.				
Impact Magnitude	Negligible	Low	Medium	High	
	The impact magnitude is low given that for the entrepreneurship activities women shall meet certain requirements/knowledge that would not easily be met.				
Receptor Value / Sensitivity	Negligible	Low	Medium	High	
	The sensitivity is low due to the limited ability of the receptor groups to benefit from entrepreneur opportunities.				
Impact Significance	Negligible	Minor	Moderate	Major	
	The impact significance is viewed as minor.				

Mitigation Measures

The following enhancement measure should be implemented to increase magnitude of the potential beneficial impact:

- organize special training sessions for women entrepreneurs in order to develop and strengthen entrepreneurial skills.

Residual Impacts

If the proposed enhancement measure is delivered effectively, the residual **impact significance** would remain **minor**, however will become more sustainable, as more women (especially from vulnerable households) will have gain entrepreneurship skills.

Monitoring

N/A.

3.8 Potential Impacts on Tangible Cultural Heritage

3.8.1 Introduction and AoI

This chapter concerns the impacts on tangible cultural heritage associated with the Project.

The AoIs for tangible cultural heritage are defined as follows (see also methods in **Annex 4**):

- **Direct impact area** that includes a road footprint, comprising the proposed road's 'right-of-way' (15.4m as per the Project design[83]) plus 10m from both sides of the road. Areas where road reinforcements, embankments, culverts, bridges, and other elements were designed, are considered as the road footprint as well, thus treated as the direct impact area. The same principle of direct impact area was applied to connections to secondary roads and intersections. Structural damage of CH units within this area is deterministic.
- **Wider impact area –** up to 500 m on the both sides of the proposed road's footprint /right-of-way conditional upon the complex mountainous terrain. Such a wider approach was necessary in order to consider the situations where physical signs on the surface may not reflect the dimensions of the CH sites. For instance, some archaeological monuments can have underground structures (burial complexes, remnants of fortresses, churches and shrines, other surface finds and traces) and thus can have a potential to extend into/under the proposed road.

3.8.2 Reference Criteria

For the purposes of the impact assessment, the cultural heritage and archaeological baseline conditions (**Section 2.3**) are used as the initial reference criteria for assessing impacts due to the Project construction and operation. Then, the impacts are considered in relation to the relevant legislation of Armenia, the EBRD PR 8, EIB ESS 10 and ADB SR 1 and driven by a risk-based approach (for details on the requirements see **Section 4 of ESIA Volume 1**; and for the methodology of impact assessment refer to **Section 5 of ESIA Volume 1;** additionally a methodology for looking into sensitivities are explained in **Annex 4**).

Internationally accepted GIP sources, such as the Guidance on Heritage Impact Assessments for Cultural World Heritage Properties (UNESCO ICOMOS 2011) and The Burra Charter -the Australia ICOMOS Charter for Places of Cultural Significance (2013) are used as a reference to inform the impact assessment.

3.8.3 Assumptions and Limitations

Methods for determining the value / importance and sensitivity of CH sites as well as assumptions made are detailed in **Annex 4**. As explained in the annex, the methodology included the relevant inputs from interviews, FGDs and consultations conducted during the ESIA's socio-economic study (April-August 2022). This engagement involved the Sisian History Museum, representatives of the ICOMOS-Armenia, carriers of the CH/ICH information / values / traditions such as administrative heads of affected villages, as females and males of working age and pensioners. The collected information was used to understand the nature and value (significance) of CH sites and ICH features to the local stakeholders, as well as the extent of the use of local cultural heritage assets, churches, etc. Further engagement and verification of impact assessment and mitigation is planned during the ESIA disclosure as per the SEP.

[83]Consists of carriageway (9.9m), road shoulders (called 'road edges' in the detailed design) (2×0.6m), safety strips (called 'emergency lanes' in the detailed design) (2m on one side+1.1m on the other side) and verges (2×0.7m).

Assessment of impacts on CH sites identified within /around the potential SDAs is not performed in this section as the locations of the SDAs are not confirmed and may be changed.

3.8.4 Impact Assessment: Construction

The construction activities will entail surface transformation through clearing and grubbing of all vegetation; earth excavations land disturbance and compaction of soils by heavy vehicles; mechanical generation of dust, through vehicle movement and transport of excavated soils; vibration from construction vehicles and works, as well as blasting; backfilling and so on. These aspects would cause changes in the condition of tangible cultural heritage, namely:

- Physical damage to the identified CH sites / fabrics,
- Possibly restricted access to the sites that are visited by local residents and will not be physically damaged (namely, Shrine-sanctuary “Stephan Ukht” at km 2.3+20); and
- Potential loss or damage to chance finds and/or undiscovered CH assets.

As noted in the baseline (**Table 9**), 46 sites (67 units) are likely to be affected. The sites are distinguished by various physical conditions, values, locations relative to the proposed road, links to the surroundings elements and contents and other features (refer to CH profiles in **Annex 5**). An aggregate assessment of impacts on CH sites is provided below with a focus on physical disturbance.

Impact on cultural heritage sites due to modelled vibration is assessed in **ESIA Volume 3. Section 3.2.** The results of impact assessments fit together, and both sets of mitigation measures should be implemented.

Impact of Project construction activities on CH sites					
Impact Nature	Positive			Negative	
	The impact on CH sites in the affected area is negative as it could lead to the destruction or damage of these sites and resources.				
Impact Type	Direct	Indirect	Reversible	Irreversible	
	The impact of the construction works will be direct because it will occur as physical disturbance. The impact is irreversible as archaeological and cultural heritage resources are a finite resource that cannot be re-created.				
Impact Duration	Temporary	Short-term	Medium-term	Long-term	Permanent
	The impact is permanent because the loss of heritage is possible and the impact cannot be reversed.				
Impact Extent	Local	Municipal (Community)	Regional	National	International
	The impact is expected to occur along the proposed road, so it is local.				
Impact Magnitude	Negligible	Low	Medium	High	
	Magnitude of impacts can vary from low to high reflecting the scale from a risk of impact to partial or insignificant disturbance/ change in attributes and quality through to physical disruption and severe damage to key features or elements of the CH sites.				
Receptor Value / Sensitivity	Very low	Low	Medium	High	
	Sensitivity of the receptors (CH sites) varies across the CH sites. It is assessed as **low for 20 sites** mainly encompassing natural monuments (e.g., units 1, 22, 23, 30, 65 and 71), section of diatomite origin lacustrine sediments including caves therein and in colluvial sediment formations (e.g., units 17, 56, and 75), siliceous limestone raw-material source 2 (unit 73), some structure remains (e.g., units 21, 36 and 74). **12 sites have been grades as having medium sensitivity**, e.g., Shrine-sanctuary "Stephan Ukht" (unit 2), Medieval village remains 1 (unit 66), Flint raw-material source for making stone tools (unit 50) and others. **14 sites are attributed with high sensitivity,** such as "Qaraberd" Bronze-Iron Age fortress (units 3-15), "Syuni berd" fortress (units 18-20), Tomb field or cemetery in Aghitu (unit 25), Medieval village remains and Spring-monument (unit 41) and others.				
Impact Significance	Negligible	Minor	Moderate	Major	
	Impact significance will vary from minor to major as a function of specific CH sensitivity values and magnitudes of impact.				

Mitigation Measures

- Using the **CH site-tailored mitigation measures** provided in **Annex 9** to develop a **Cultural Heritage Management Plan**. Agree the Plan with Lenders and the relevant National Authorities and implement it. Any site-specific sub-plans stemming from this Plan (including trial trenching, safeguard excavations, determination of protection measures such as demarcation of sites, limitations to vehicle movement or blasting) should be properly documented and implementation monitored and reported.
- The **Cultural Heritage Management Plan** should ensure the following:
    - If the project site contains cultural heritage or prevents access to previously accessible cultural heritage sites, the Contactor will, based on consultations with users of the site, allow continued access to the cultural site, or will provide an alternative access route, subject to overriding health, safety and security considerations.
    - Hire a qualified **CH Expert** from an authorized institution to be present during the construction works and implement archaeological surveillance for all construction sites, as well as to help implement all heritage focused mitigations and reporting to Client/Lenders.
    - Prepare and submit monthly reports on heritage focused mitigations delivery to the Client/Bank.
    - Coordinate, with support of the RD, with the Ministry of Education, Science, Culture and Sport to obtain a status of registration for the discovered CH sites. Provide the information obtained from the additional surveys of the CH sites, as envisioned in **Annex 9**, to the Ministry to facilitate their decision-making on the registration.
    - If relocation of graves or other CH units would be required, a separate relocation action plan (project) should be prepared, agreed with all key parties, consulted with key stakeholders, and implemented by the specialised contractor
    - Select sites for construction camps, equipment lay-down areas, SDAs, access roads, quarries and other sites not determined yet, in consultation with the Cultural Heritage Expert and using the recommendations developed as part of this ESIA. Ensure that all CH surveys, assessments and mitigations are included in the evolving Cultural Heritage Management Plan.
- Align the **Cultural Heritage Management Plan** with the **Construction Noise and Vibration Management Plan (inclusive of the Blasting Management sub-plan)**, so that the vibration and blasting mitigation measures are extended to the CH sites. E.g.,
    - include therein the pre-construction condition survey of all CH sites located within 25 m from the proposed road footprint (the border of construction site) and within 40 m from the minimal charge blasting source and within 200 m from the tunnel portals (as there is a potential of larger charge blasting); as well as all monitoring and control actions that the CH Expert should perform jointly with the engineers responsible for the Noise and Vibration Management Plan [and CH Monitor to observe].
    - For the heritage sites/objects located close to the alignment and construction site, there should be permanent instrumental monitoring of vibration level by the Contractor and oversight of the monitoring results by Supervision Engineer. For heritage objects likely to be impacted by the alignment the vibration threshold was conservatively set by the ESIA as 6 mm/s to ensure no risk of damage (see **Volume 3, Section 3.2.2**).

- Prior to construction works, develop a **Chance Finds Procedure**[84] for the Project and train the relevant workers in applying it (so that they can identify the chance finds, stop the works and notify the management); keep the training log up to date and include reporting on it in monitoring reports.
- Deliver briefing to all workers involved in implementing heritage focused mitigations.

- Either the RD or the Supervision Engineer is to hire a qualified **Cultural Heritage Monitor** to ensure independence and objectivity of CH Monitor's oversight.
- If the use of SDAs 1, 2, 3, 4 and 5 is confirmed apply the mitigation measures as specified for these SDAs in **Annex 9**. After the mitigation is implemented, the SDAs can be used.
- If the possibility of arranging SDAs in the Shenatagh and Qirs Valleys are further explored, conduct the surveys as indicated for these SDAs in **Annex 9.**

Residual Impacts

Residual impact of no more than **minor significance** is expected provided that the mitigation measures are implemented.

Monitoring

The Cultural Heritage Management Plan will contain monitoring provisions. Cultural Heritage Expert employed by the Project's Construction Contractor will be responsible for monitoring according to the Cultural Heritage Management Plan. Cultural Heritage Monitor hired by the Supervision Engineer will oversee the work of Cultural Heritage Expert.

In addition, it should be noted that after the excavations are finished, the archaeological works report must be submitted by the excavation units to the RA Archaeological Commission and to the Contractor. Based on the report the Contractor will declare the end of the planned archaeological activities and the Commission will advise the RA Ministry of Education, Science, Culture and Sport to declare the construction areas "archaeologically free".

3.8.5 Impact Assessment: Operation

During the operations, all maintenance works are expected to take place within the road's footprint. However, there is a risk of accidental damage to CH sites if the Maintenance Contractors leave the boundaries of the 'construction corridor'. Another risk relates to damage to CH sites from highway vehicle movement vibration. Both risks are assessed below. The risk of easy access to the CH sites is seen as insignificant as most of them are located next to the existing roads or small paths/tracks, and thus not considered further.

Impacts on the CH sites is terms of its local use due to increased operational noise is discussed in **ESIA Volume 3. Physical Environment, Section 3.2**.

Impact of Project operation and maintenance activities on CH sites		
Impact Nature	Positive	Negative
	The potential impact of accidental damage to CH sites during maintenance works is negative. The risk of damage to CH sites from operational traffic induced vibrations is also negative.	

[84] A template of this procedure can be found in the 2023 EBRD's guidance note for PR8 at https://www.ebrd.com/documents/environment/guidance-note-performance-requirements-8-cultural-heritage.pdf. In addition, the regulations with regards to 'chance finds' are defined by the RA Law No. HO-261 (1998) "On the protection and use of immovable historical and cultural monuments and historical environment". Particularly, according to Article 11 of the Law, if during the construction, agricultural and other works, the unknown historical and cultural monument/heritage is discovered, the above-mentioned works should be stopped and the authorized state body should be immediately informed by the local self-government bodies.

Impact of Project operation and maintenance activities on CH sites					
Impact Type	Direct	Indirect	Reversible	Irreversible	
	Both risks are direct as they derive from regular operations and occasional maintenance activities. Any damage to CH sites is seen as irreversible.				
Impact Duration	Temporary	Short-term	Medium-term	Long-term	Permanent
	The impact is permanent because the loss of heritage is possible and the impact cannot be reversed.				
Impact Extent	Local	Municipal (Community)	Regional	National	International
	The impacts may occur along the proposed road, so they are local.				
Impact Magnitude	Negligible	Low	Medium	High	
	Magnitude of accidental damage to CH sites during maintenance is low, given low occurrence probability and very few CH sites that will remain to be close to the road. Magnitude of impact from operational traffic induced vibrations to CH sites is also featured with low probability and a small number of receptors and is assessed as low.[85]				
Receptor Value / Sensitivity	Very low	Low	Medium	High	
	Sensitivity of the receptors (CH sites) to these particular risks is seen as low to medium.				
Impact Significance	Negligible	Minor	Moderate	Major	
	Impact significance will vary from minor to moderate as a function of specific CH sensitivity values and magnitudes of impact.				

Mitigation Measures

- Prior to commissioning the road, install the speed limitation signage for the relevant CH sites, as determined in the specific protection measures for these CHs.
- Restrict repair work sites to the road's right-of-way and limit maintenance vehicle movements and machinery activities to the access roads arranged during the construction;
- Comply with the demarcation of the CH sites; if such was not preserved since construction, retreat the CHMP and CH site-specific sub-plans and comply with the relevant protection measures and activities regimes.
- RD is to monitor its Maintenance Contractors' compliance with the CH sites protection measures during operations.

Residual Impacts

With the delivery of the proposed mitigation, the **risks would be negligible,** if not fully avoided.

Monitoring

RD will monitor its Maintenance Contractors' compliance with the CH sites protection measures during operations.

[85] Studies by the United States highway agencies assessing the impact of operational traffic induced vibrations show that both measured and predicted vibration levels are less than any known criteria for structural damage to buildings. In fact, normal living activities (e.g., closing doors, walking across floors, operating appliances) within a building create greater levels of vibration than highway traffic. https://www.fhwa.dot.gov/Environment/noise/regulations_and_guidance/analysis_and_abatement_guidance/

3.9 Potential Impacts on Intangible Cultural Heritage

3.9.1 Introduction and AoI

This chapter concerns the impacts on intangible cultural heritage (ICH) associated with the Project.

The AoI in relation to ICH is not attached to the proposed alignment, as ICH is generally embedded in traditional residential and economic patterns. Communal knowledge and belief systems (e.g., oral history and rituals) are often part of the tangible elements of a culture (e.g. a cemetery or a church), so direct impacts to physical objects or places may also affect intangible cultural values. Thus, in line with the Lenders' standards the ICH AoI covers the potentially affected villages and their *'practices, representations, expressions, knowledge and skills that communities, groups and, in some cases, individuals recognise as part of their cultural heritage and which are transmitted from generation to generation'* (EBRD PR8).

3.9.2 Reference Criteria

Same as for tangible CH above.

3.9.3 Assumptions and Limitations

Same as for tangible CH above.

3.9.4 Impact Assessment: Construction

No adverse impact on ICH features that are registered in the national list of values and representative list of UNESCO is expected due to the Project.

A negative impact is predicted for the spring monument (Vaghatin administrative area, unit 41, km 11.9+00, adjacent to the Medieval village remains) that is of local importance and occasionally used by the locals who enjoy having rest near the spring. This local behavioural pattern will be ceased for some period until the relevant mitigation measures for this CH site are implemented, as stated above and in **Annex 9**. Due to its insignificance and given the proposed mitigation, the impact on the use of this spring by the villagers and road users is not assessed in detail.

The assessment of the cultural landscapes (especially sensitive on the northern side of the Bargushat tunnel) is embedded in the landscape and visual amenity assessment, **ESIA Volume 3, Section 3.8.**

3.9.5 Impact Assessment: Operation

As noted in the baseline analysis, the local residents predict a potential revival of ICH features (traditions, practices, and rituals) in their settlements owning to the road operations and a resultant improved accessibility to the region. The consultations suggest that the presence of some of the ICH values, such as baking Lavash and Gata in tondir, crafting Dudik and playing Duduk music, seeing Armenian cross-stones (Khachkars) in the villages, carpet weaving, or mulberry vodka making can serve as an additional trigger for tourism and trade development in the region. No impact is expected on *regular* social rituals (wedding, baptising or funerals) that are linked to the operating cemeteries and/or churches, nor on the in-village celebrations.

The potential impact of the road operation on ICH is assessed below.

Impact of Project operations on ICH features				
Impact Nature	Positive		Negative	
	Over the last several decades the local traditions, practices, and rituals have been losing their importance and extent. This dynamics can be reversed, which is a positive impact.			
Impact Type	Direct	Indirect	Reversible	Irreversible

Impact of Project operations on ICH features					
	The impact is indirect as it does not stem from road operations but rather can build on the SME, roadside or tourism development evolving due to the road. The impact is reversible as it can exist as long as there are the carriers or practitioners of ICH features and the demand / interest among tourists or road users towards local traditions and crafts.				
Impact Duration	Temporary	Short-term	Medium-term	Long-term	Permanent
	The impact can be of various durations.				
Impact Extent	Local	Municipal (Community)	Regional	National	International
	The impact is expected to occur at the settlements and in the communities.				
Impact Magnitude	Negligible	Low	Medium	High	
	Magnitude of impacts can be low as there would be not many carriers or practitioners of ICH features. Though the magnitude may increase to medium over some years.				
Receptor Value / Sensitivity	Very low	Low	Medium	High	
	Receptors are locally existing ICH features; they are widespread in the region and Armenia. They only modestly contribute to local livelihoods and bear importance (high value) to few groups. Thus, the sensitivity of the receptors is seen as low.				
Impact Significance	Negligible	Minor	Moderate	Major	
	Impact significance will vary from minor (in the first years of operation) to moderate (in the future) as a function of sensitivity values and magnitudes of impact.				

Enhancement Measures

- Engage with the Ministry of Economy (Committee for Tourism) and Ministry of Education, Science, Culture and Sport to inform about a potential for developing tourism and reviving ICH features and to promote a state-facilitated support in this regard.

Residual Impacts

With the implementation of enhancement measures, the impact **will remain minor to moderate**, however the practice of ICH features would become more sustainable.

Monitoring

N/A.

4 STAKEHOLDER ENGAGEMENT AND GRIEVANCE MECHANISM

4.1 Background

Stakeholder engagement on the Project started as early as March 2016 during the Project feasibility study and occurred in waves of activities matching active phases of project development, namely during:

- The ADB-financed Project Feasibility Study and EIA process in 2016-2018.
- The ESIA process ongoing since April 2021:
  - ESIA Inception Stage Stakeholder Engagement (April – December 2021);
  - ESIA Scoping Stage disclosure and consultations (April -May 2022);
  - ESIA Socio-Economic Study (May – July 2022 and follow up on various outstanding issues on July - September 2022 and March – April 2023) (see **Annex 1**);
- Resettlement Planning:
  - Framework Preparation (December 2021) and

- Resettlement Plan Preparation (August – December 2022 with follow up on various outstanding cases ongoing as of this report preparation in May 2023).

The summary of the ESIA and resettlement engagement events and synthesis of their results are briefly covered in the below tables, whereas the details can be found in the Project's draft **Stakeholder Engagement Plan (SEP).** Further stakeholder engagement, as planned as per the SEP, are outlined at the end of this section.

4.2 Summary of Stakeholder Engagement Events during the Preparation of the ESIA and Resettlement Documents

From April 2021 to May 2023 up to 200 engagement events were held, as summarised below. Most very organised with support of the RD and regional, municipal, and local authorities. The engagement follows the requirements of the EBRD (PR 10), EIB (ESS 2), and ADB (SPS) and GIP principles for meaningful stakeholder engagement (refer to the SEP for detailed explanation of Lenders' requirements and GIP principles).

Table 15. Summary of Stakeholder Engagement Events (April 2021 to May 2023)

	Date	Event	Topics
	General ESIA Stream – around 25 engagement events (and numerous calls and email exchanges) and around 130 interviews, FGDs and consultations as part of the socio-economic study		
1.	8-10 April 2021 and	**Three meetings** with i) Syunik Regional Administration and Zangezur State Sanctuary Authorities, ii) Kajaran Community Administration, and iii) Geghi Administrative Area Administration,	Presentation of the Project team, Presentation of the Project components, Scope of E&S works to be performed within the Project, Sensitivity of the Project area, including biodiversity and cultural heritage issues; concerns, expectations and recommendation of the stakeholders
2.	20 April 2021	**Two meetings** with i) Sisian Community Administration and ii) Darbas Administrative Area Administration	
3.	8-9 December 21	**Three meetings** with i) Syunik Regional Administration, ii) Kajaran Community Administration, and iii) Sisian Community Administration	The current status of the Project; The current design of the Project; Principles, procedures, and time schedule of project implementation; ESIA and LARF related issues
4.	14 April 2022	A 30-day scoping disclosure launched. *Announcements published, invitations to participate in scoping meetings and to comment on the scoping report circulated, invitation phone calls made to NGOs, etc.*	
5.	18 -19 April 2022	**Five scoping preparation meetings** with authorities of Sisian Community, Kajaran Community, Administrative heads of Lor and Shenatagh, Vorotnavan, Darbas, Getatagh, and Geghi Settlement	Delivery of the scoping report and leaflets, discussion of future scoping meetings agenda and aims, date, time and venue
6.	21 April 2022	**First scoping** consultation meeting with national state authorities Yerevan	Scoping presentation delivered and various topics discussed
7.	2-3 May 2023	**Five scoping consultation meetings** with the residents, NGOs authorities and any interested parties in Sisian, Darbas, Shenatagh, Kajaran and Geghi	
8.	23 August 2023	**Meeting and joint site visit with** Head of Lernadzor administrative unit.	Follow up on the radiation issue raised by the Head during the scoping meeting.
9.	20 July 2022 & 8 February 2023	**Four consultation meetings** with operators of public utilities - Electric Networks of Armenia CJSC, Gazprom Armenia CJSC, ContourGlobal Hydro Cascade CJSC (Shamb HPP)	Verification if there are any concerns or changes in their infrastructure since 2016 that may affect the project or can be affected by the project
10.	30 March 2023	**Consultation meeting** with Kajaran Community Administration	A possibility for arrangement a SDA in Qirs Valley
11.	6 April 2023	**Consultation meeting** with the Ministry of Environment and RD	Spoil disposal areas and other environmental topics
	Biodiversity Stream – over 20 engagement events (and numerous calls and email exchanges)		

	Date	Event	Topics
12.	03 June, 22 August 2021 and phone calls / emails	Consultation meetings with head of WWF Armenia	Presentation of the Project, agreement to exchange information and to coordinate next steps
13.	19 August 2021, 10 December 2021, 29 April and 7 September 2023 and phone calls/emails	**Consultations** with Head of Zangezur Biosphere Complex SNCO	Coordination on each step in the field work; definition of study areas, the kmz files with new road alignment, SDAs and intersections issued for verification of overlap with the protected areas; Feedback on proposed bridges for animals sought
14.	14 August, 30 October, 5 and 9 November 2021	**Consultation meeting** with Head of Kapan Forest Enterprise and with field worker/ camera trap expert of WWF Armenia	Coordination on the field work, definition of study areas, camera traps and so on
15.	26 November 2021	**Consultation meeting** with heads of all villages located relatively close to the camera trap sites	Discussion about the camera traps installation sites and safety assurance / protection
16.	03 December 2021	**Consultation meeting** with Head of Zangezur Biosphere Complex SNCO, and staff of Zangezur Biosphere and WWF Armenia	Coordination on the field work and installation of camera traps
17.	10 May 2022	**Scoping consultation meeting** with WWF Armenia, Eco-coalition Armenia, BirdLinks Armenia NGO (in Yerevan)	Scoping presentation delivered and various topics discussed
18.	19/20 December 2022	EBRD- and ADB-mission led consultation **meeting with the MoE**	Impacts on biodiversity receptors discussed and possible mitigation, as well as cooperation
	Cultural Heritage Stream – 7 consultation events [NB: CH topics embedded in most of the ESIA general stream engagement events]		
19.	15 July, 18 July, 18-19 August 2022	Five **phone consultations** with the heads of Darbas, Getatagh, Vorotnavan, Lor with Shenatagh, and Noravan settlements.	Verification of the local use of the cultural heritage sites and spread and types of intangible features. Identification of ongoing / planned activities to be considered in a cumulative impact assessment.
20.	23 April 2023	**Workshop** with the Ministry of Education, Science, Culture and Sports, MTAI and National Academy of Science	Validation of the assessment of potential impacts to the registered cultural heritage sites and proposed mitigation measures; need for the road re-alignment
21.	12 May 2023	**Consultation meeting** with ICOMOS Armenia	Presentation of baseline analysis for tangible and intangible cultural heritage, discussion of mitigation measures
	Resettlement Stream – over 20 meetings *In addition, each reachable household affected by land acquisition has been engaged during the Detailed Measurement Survey, socio-economic survey and census as part of the RP preparation*		
22.	27-28 December 2021	**Seven meetings** with heads of seven administrative areas and villagers from eight settlements that are likely to be affected by land acquisition: • Vaghatin Settlement • Vorotnavan Settlement • Lor and Shenatagh settlement • Darbas Settlement • Aghitu Settlement • Geghi Settlement • Lernadzor Settlement	RF related issues Determination that no significant changes occurred in land use within the right-of-way of the proposed road compared to 2016: no new large areas of land alienated, construction permits issued, or new large structures constructed
23.	22-23 August and 6-7 September 2022	**14 public consultations** were organized with the affected persons in the following settlements: • Shenatagh Settlement • Lor Settlement	The information leaflet distributed, participants informed about the upcoming inventory, census and socio-economic surveys, entitlements and procedures for the preparation and implementation of the

	Date	Event	Topics
		• Getatagh Settlement • Darbas Settlement • Geghi Settlement • Kavchut Settlement • Shamb Settlement • Vorotnavan Settlement • Vaghatin Settlement • Noravan Settlement • Aghitu Settlement • Uyts Settlement • Sisian Town • Ishkhanasar Settlement	RP, grievance mechanism, documents required for signing acquisition contract, etc.

During the meetings the affected stakeholders highlighted the following potential benefits that could be expected from the Project:

- potential positive impacts of the road construction on the development of infrastructure, tourism sector and road-related services (hotels or catering), procurement opportunities and diversification of services;
- economic diversification (i.e., reduction of mining employment dominance in the region's domestic product's structure);
- reduction in transports costs for the communities;
- temporary labour opportunities
- greater accessibility of markets for local cattle breeders that would be able to sell their products elsewhere;
- greater accessibility to the villages around and between two communities;
- time saving for the road uses and local residents;
- revival of intangible cultural heritage traditions (e.g., baking Gata or Lavash, wooden crafting) being linked with increased tourism and other opportunities in selling local produce.

During the meetings the representatives of the RD and/or the Consultants addressed the technical (design) and E&S questions raised (see below).

Table 16. Synthesis of Key Issues and Responses from Stakeholder Engagement to Date and inclusion in the ESIA

NB: the issues are presented in the order of descending frequency (i.e., most frequently raises are at the beginning and mentioned once – at the end of the table).

Main issues raised	Initial responses by the RD or Consultant	Project actions in response to engagement	References in the ESIA documents
Land acquisition and compensation mechanisms, entitlements, issues with ownership certificates, cadastral inconsistencies, etc.	The land acquisition will be performed in accordance with the national and EBRD requirements. Detailed measurements and valuations of affected land-plots/properties will be performed by an independent evaluator. The compensation scheme of the property will be market price plus 15%. The actual land users will be identified and their potential losses will be compensated. The land-plots that are informally (illegally) used by the residents as well as crops that will be potentially lost as a result of land-plots allocation for the Project will also be compensated. A special team of lawyers will be established to support the residents to solve registration issues.	All procedures and principles outlined in the RF that will be disclosed as part of the ESIA package. Detailed information was provided to the individual affected households during the inventory, census and socio-economic survey. **Further action:** Private sector stakeholders will require special attention during the Project engagement depending on the ***access*** roads.	Information presented in the RF. Impacts and mitigation presented in **ESIA Volume 4.** Further detailed in the RP.

Main issues raised	Initial responses by the RD or Consultant	Project actions in response to engagement	References in the ESIA documents
	Grievance mechanism will be implemented.		
Location of spoil disposal areas	Presently, eight spoil disposal sites are proposed, five in Sisian-Shenatagh section and three in Qirs-Kajaran section. The Construction Contractor, once selected, should prepare Site-specific Environmental Management Plans for each site that will consider all impacts and mitigation measures. The spoil can be disposed only when the SEMPs are approved by the head of community and RD. Total amount of spoil materials will be about 12 mln.m3. The ESIA will suggest alternative locations of the spoil disposal areas; several options were discussed in situ and it was suggested to develop proposals together.	SDAs reviewed from the E&S point of view and some were scoped out. Three additional/ alternative locations proposed. **Further action:** Construction Contractor will conduct a detailed SDA study using the ESIA recommendations. All spoil disposal sites and required for the construction must be discussed and agreed with the community authorities by the Construction Contractor.	Initially proposed SDAs discussed in **Project Description, ESIA Volume 1,** and Additional/ alternative SDAs in **'Alternatives', ESIA Volume 1.**
Locations of cattle and agricultural underpasses	During the Project design stage several years ago, locations of passages for cattle and agricultural machinery were presented. During the planned socio-economic study the ESIA team will discuss their locations with the heads of settlements and farmers to verify the information and identified changes in agricultural activities since 2017	A lot of consultations held with the technical experts, lenders and RD as new passages proposed require changes to the Project design. **Further action:** passages to be arranged as suggested in the ESIA, unless adjusted during follow-up consultations	Discussed in **ESIA Volume 4,** as well as in **'Alternatives', ESIA Volume 1.**
Green bridges / crossings for wind animals	Potential locations of the green bridges / animal crossings are being developed together with biodiversity community	A lot of consultations held with the technical experts, lenders and RD as proposed animal crossings require changes to the Project design. **Further action:** passages to be arranged as suggested in the ESIA, unless adjusted during follow-up consultations	Discussed in **ESIA Volume 2,** as well as in **'Alternatives', ESIA Volume 1.**
Stability of the planned road, bridges and tunnels	In 2018, the Project passed State Complex Expert Review and received a positive conclusion of the interagency commission established by the RA Government. This Review included the seismic safety/stability issues.	n/a	Seismicity is discussed in **Project Description, ESIA Volume 1.**
Tunnel emergency escape routes	Only the Bargushat tunnel will have an emergency escape route	n/a	Described in **Project Description, ESIA Volume 1.**
Changes to the Project design document	The Project design document passed the State Complex Expertise by the RA Governmental interagency committee. Minor changes into the design document can be required / possible during the construction.	There are some recommendations stemming from the ESIA that require changes to the design	The Project will adopt a **Change Management Procedure** as per the ESAP.
Arrangement of a parking area near the Bargushat tunnel	There could be parking areas near the entrances to the Bargushat tunnel.	The RD is aware of the point.	n/a
Possibility to make the road wider	Many historical and cultural monuments, hydroelectric power stations and other buildings next to the planned road make it impossible to widen it.	n/a	n/a

Main issues raised	Initial responses by the RD or Consultant	Project actions in response to engagement	References in the ESIA documents
Drainage systems of tunnels	All tunnels will have waterproof protection, but only the Bargushat tunnel will have a drainage system, because only that tunnel is longer than 1 km. Water from the drainage system will be accumulated and used for firefighting and other purposes	n/a	Described in **Project Description, ESIA Volume 1.**
Groundwater generation when excavating tunnels	Geological and hydrogeological surveys were done. However, additional clarification and solutions will be provided during the construction	**Further action**: Additional studies will be held during the construction stage.	Groundwater issues are addressed in the **ESIA Volume 3**.
Water quality impact assessment	The Consultant prepared air, soil and water quality as well as noise and vibration sampling and measurement plan and the field works would start in May 2022	Assessment completed as part of the ESIA.	Water quality baseline and assessment is in **ESIA Volume 3.**
Preparation of a national EIA	The ESIA report to be elaborated will be used for the national EIA and State Environmental Expert Review. The validity of the old State Environmental Expert Review's conclusion issued by the Ministry of Environment expired and it is planned to initiate the national EIA process at a later stage.	The RD launched the EIA in March 2023.	Mentioned in **ESIA Volume 1** and in the **SEP.**
Risks of properties' damages due to blasting	Prior to blasting, dated stickers will be attached on the existing cracks. If the stickers are torn and cracks in the walls increased during the construction, there will be appropriate compensation	Vibration baseline measurement and modelling completed. **Further action**: The Construction Contractor will develop the **Noise and Vibration Management Plan**.	Vibration modelling and assessment presented in **ESIA Volume 3.** Pre-construction condition survey will be part of the Noise and Vibration Management Plan**.**
Crossing with existing underground infrastructure	The Project will envision the relocation of all crossed infrastructure (e.g., the Iran-Armenia Gas pipeline in Darbas and Geghi, an irrigation water pipe in Darbas) as needed, based on specific project designs so that the services are not interrupted	**Further action**: The Construction Contractor will develop the **Utilities Protection and Relocation Plan.**	Impact on public infrastructure covered in **ESIA Volume 4.**
Soil erosion in Darbas	Issue with soil erosion along the road shall be considered during the detailed design.	**Further action**: the EBRD commissioned a geological study, the results of which will be considered by the Construction Contractor.	Soil and geology baseline and assessment presented in **ESIA Volume 3.**
Effect on some rural roads close to the planned road.	Temporary access roads will be organized before the start of construction. If during the construction works any property is damaged within the temporary affected areas, the compensation for damages will be provided by the Construction Contractor.	**Further action**: The Construction Contractor will develop the **Traffic Management Plan.**	Impacts on local roads presented in **ESIA Volume 3.** Damage issues covered in the RF and RP.
Biodiversity monitoring and mitigation measures	The ESIA team agrees that monitoring is very important and it will be part of the ESIA and BAP actions. Monitoring may include independent experts and public actors / NGOs.	n/a.	Monitoring actions and responsibilities covered **in ESIA Volume 2** and **BAP.**
Radioactivity in the Lernadzor area	The Project was designed in 2016. Geological studies were carried out in the area of the planned activity and no cases of increased radiation were identified.	Additional meetings at the RD and a follow-up joint site visit with Head of Lernadzor. As a result, it was confirmed that	A section on radiation is in the environmental baseline in **ESIA Volume 3.**

Main issues raised	Initial responses by the RD or Consultant	Project actions in response to engagement	References in the ESIA documents
		uranium-bearing ore fields do not reach tunnel 009 section.	
Reason for constructing the road	Sisian-Kajaran road section is part of the North-South Road Corridor Investment Project. The road construction will be very important for the development of Armenia's economy.	n/a	Reasoning detailed in **ESIA Volume 1,** the NTS and SEP.
Accommodation of workers	Some individual houses can be rented and new accommodation facilities can be created, if needed.	Assumptions about work accommodation strategies are made in the ESIA. **Further action**: The Construction Contractor will develop the **Accommodation Option Risk Assessment** and **Labour and Working Conditions Management Plan** covering worker accommodation.	

4.3 Planned Stakeholder Engagement

A preliminary Stakeholder Engagement Programme for the scoping stage was developed as part of the Scoping Report and delivered in April-May 2022. An updated Stakeholder Engagement Programme is developed as part of the SEP to ensure effective engagement with all identified stakeholders, to create and maintain respectful relations between the RD and stakeholders, and to prevent possible conflicts. It builds on the lessons learnt at the scoping stage and covers the Project design, pre-construction and construction phases.

The Programme should be revised and updated *at least* within one year after the commencement of the construction phase and then prior to commissioning the Project facilities. It provides a specific action plan with the distribution of responsibilities and a timeframe for implementation of the suggested activities. If there would be changes during the Project implementation that require modification of the engagement mechanisms and / or new stakeholders are identified, the Programme should also be updated.

Stakeholder engagement will continue in parallel with ESIA information disclosure and will include several components, with the aim of continuing the facilitation of meaningful consultation and provision of information on the Project and its E&S implications:

- The Project **ESIA disclosure and consultations over 120 days (from 21 July to 1 December 2023)**: this component is led by the Consultant with support of the RD and local authorities. Relevant stakeholder and public consultation meetings and events will follow the disclosure of the draft ESIA package (these will cover the below thematic streams: biodiversity, land acquisition, cultural heritage, and cattle and agricultural vehicle passes). The locations and methods of engagement will be determined taking into account the lessons learnt at the scoping stage and the COVID situation at that time.
- **Consultations with regards to biodiversity issues** started in April 2021 and continue to be held with the "Zangezur Biosphere Complex" SNCO (that is in charge of Zangezur State Sanctuary and other six SPAs); environmental NGOs in Armenia, including WWF Armenia, Birds of Armenia (BoA); “Hayantar” (ArmForest) SNCO and “Sisian Forestry” and “Kapan Forestry” branches; and the MoE. Ecosystem use and dependence on ecosystems discussed during the social baseline studies will be verified during the ESIA consultations.

- **Consultations within the land acquisition mechanisms and compensation approaches** held during the inception and scoping will continue during the ESIA consultations. A separate engagement process is being undertaken during the ongoing preparation of the Resettlement Plan for the Project.
- **Consultations with regards to cultural heritage issues** held during the social baseline studies and scoping consultations will continue during the ESIA consultations (including via thematic consultations). Prior to disclosure, in April 2023, a workshop was held with the Ministry of Education, Science, Culture and Sports to validate the assessment of potential impacts/risks to the registered cultural heritage sites and proposed mitigation measures.
- **Consultations with regards to spoil disposal areas** have been ongoing since the ESIA inception stage (April 2021). They involved the local and municipal authorities, biodiversity stakeholders, and local residents. The consultations support the search for alternative / additional spoil disposal sites that would be required for the Project. Prior to disclosure, in April 2023, the Ministry of Environment was consulted on spoil disposal areas and other environmental topics.
- **Special purpose events**: these events will occur prior to and during the construction stage and will aim at addressing the ESIA commitments and will cover the following topics, *as a minimum:*
    - Completion of RP implementation verified by RP Compliance Report (s);
    - Community health and safety (including pedestrian and road safety and pedestrian passes);
    - Job creation opportunities and challenges, and women participation in labour force;
    - Noise disturbance and spot-specific mitigation measures;
    - Restricted access to some local facilities/roads and alternative access.

In addition, the RD is in the process of preparing the national EIA documentation and holding the Project's EIA disclosure and consultations according to the Armenian legislation (not part of the ESIA). The first round of public scoping meetings was held on 13 and 14 April in Kajaran and Sisian towns; the second round of scoping meetings is planned to be held by the State Environmental Review body in late spring/early summer 2023, and two EIA public hearings will follow in 2023. The feedback documents and comments collected by the RD's national EIA consultant and by the MoE will be analysed by the RD and included in the final version of the EIA report.

Following the disclosure period, the ESIA Disclosure and Consultation Report was prepared to document and summarise the feedback from stakeholders received and engagement activities completed during the ESIA disclosure period. The ESIA Disclosure and Consultation Report will be disclosed together with the updated ESIA package for the Project life-cycle. .

4.4 Grievance Mechanism

As per the EBRD, EIB and ADB requirements, an effective Project Grievance Mechanism should be established by the Client as early as possible in the project development process to be aware and respond to stakeholders' concerns related to the project, especially its E&S performance, in a timely manner.

The RD formally announced and launched the Project Grievance Mechanism for external stakeholders[86] at the scoping meetings held in April-May 2022. The Grievance Mechanism

[86] A separate mechanism is developed to address worker grievances.

within the land acquisition process was described to the PAPs during the Resettlement Plan consultation meetings in August-September 2022[87]. During the ESIA disclosure, as well as prior to commencing construction works on the Project, the RD will again inform all stakeholders about the established Grievance Mechanism.

The RD's Project Grievance Mechanism builds on the existing communication channels used at the RD and national regulations, and supplements these by specific actions needed to meet the EBRD, ADB and EIB requirements.

The Law of the RA "On Fundamentals of Administrative Action and Administrative Proceedings"[88] specifies that the maximum time period for the administrative proceeding shall be 30 days. The law may define special terms – shorter than 30 days or longer time periods. According to the law, applications to administrative body shall be submitted in written form and shall contain full name of an applicant (natural or legal person), address, name of administrative body to which application is submitted, etc.

The current practice of the RD is such that all inquiries, complaints and requests that are made to the RD Director's name are collected and registered in the central database and then distributed to the relevant units / departments for consideration and response provision. If inquiries, complaints and requests are received by individual RD managers under various lender-funded projects, they are registered in the receiving divisions of the RD. Following this, a decision and/or response to the inquirer/complainant is communicated through the channel specified by her/him within one month following the receipt and no later than within 15 days for applications and complaints not requiring further review and verification[89].

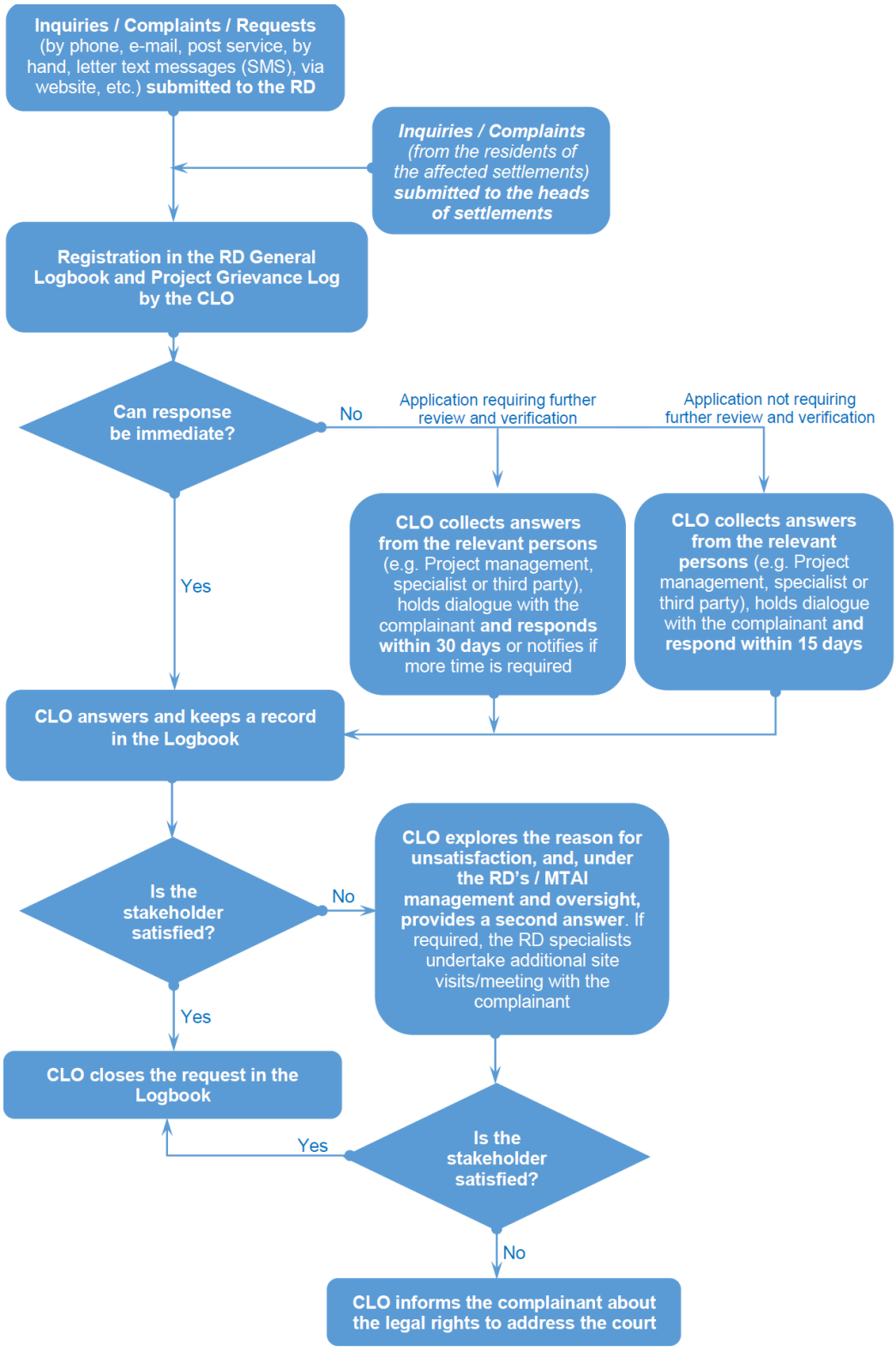
Grievances and suggestions can be addressed to the RD using the contact details below:

Project-related inquiries and grievances can be sent to:	**Mr Artur Sanoyan** NSRCIP Tranches 2 and 4 Project Manager, "Road Department" Fund Government House 3, Republic Square, Yerevan 0010, Armenia artur.sanoyan@armroad.am office: +374 10 51-13-91 (269), mobile: +374 95 111 537
For **general inquiries** stakeholders can approach the RD using the contacts at its website (https://armroad.am/en/contacts)	"Road Department" Fund Government House 3, Republic Square, Yerevan 0010, Armenia +374 10 51-13-91 info@armroad.am

The residents of the villages located along the proposed road can also submit their inquiries and complaints to the heads of their respective villages (namely, to representatives of Kajaran Community Head in Geghi and Lernadzor Administrative Areas, and to representatives of Sisian Community Head in Ishkhanasar, Aghitu, Noravan, Vaghatin, Vorotnavan, Darbas, Lor, Getatagh, and Shenatagh administrative areas). Any inquiries or concerns communicated to the local authorities (heads of villages or communities) will be immediately transmitted to the RD for review and redress.

Prior to the Project construction, the RD will appoint a dedicated Community Liaison Officer who will take over the function of receiving and registering grievances and inquiries for the Project.

[87] The ESIA resettlement team maintains a grievance logbook, the content of which is regularly communicated to the RD.
[88] Adopted on 18 February 2004 http://www.foi.am/u_files/file/FUNDAMENTALS%20OF%20ADMINISTRATIVE%20ACTION%20AND.pdf
[89] https://armroad.am/en/contacts



Source: prepared by ATMS Solutions Ltd. and Ecoline International Ltd.

Figure 44. Project Grievance Mechanism Flowchart

Currently the RD maintains the following inquiry and grievance logbooks:

- General Logbook filled in by the RD, and where information on the letter number, headline, type of the document, sender, date of receiving and responding, concern,

status, term of the writ, etc. is indicated. This log-book is formed by log-books that are maintained by different divisions of the RD (such as environmental, social or technical);

- Safeguard Grievance Mechanism Logbook, which the RD typically maintains together with the Supervision Consultant and Construction Contractor when implementing Land Acquisition and Resettlement Plans for separate road section construction projects funded by international lenders.

In addition to the above communication channels, with the start of the land acquisition process, it will be possible to submit grievances and proposals to the RD in writing using a Sample Grievance Form (see **Figure 45**). Such forms will be published in electronic format on the RD's website and they will also be available in printed form at the community and local administrations and the Project construction sites.

Grievances received by phone, e-mail, mail, text messages (SMS), or messages in instant messengers will also be registered and considered.

The RD aims to protect a person's confidentiality when requested and will guarantee anonymity.

Grievances can also be submitted anonymously. If a complainant prefers to submit a grievance anonymously or through a third-party, this will be accepted, and the RD will respond to the extent feasible (e.g., via general posts on its website or notice boards of the community administration buildings respecting anonymity of an inquirer).

Based on the accumulated experience, the RD will create and maintain a separate Grievance Log for the Project. It will contain all grievances regarding the Project throughout its life cycle. The following information will be recorded in the Log:

- The essence of the received grievance / proposal / appeal;
- Date of application;
- Contact information of the sender (if the complaint was not submitted anonymously);
- Description of the actions taken (investigation, corrective action, preventive action, etc.);
- Date of decision making and closing / providing a response to the sender;
- Details of the sender's consent / disagreement with the decision and measures taken.

Reference No. (for internal purpose only)

Full name:

Name _____

Surname _____

☐ I wish to submit my grievance anonymously

☐ I request not to disclose my identity and contact details without my consent

Contact Details
Please mark how you wish to be contacted (mail, telephone, Telegram, e-mail)

☐ By Post: Please provide mailing address:
_____
_____
_____
_____

☐ By telephone: _____

☐ By e-mail: _____

Preferred Language for Communication

☐ Armenian
☐ Russian
☐ Other, please specify _____

Grievance Description

_____
_____
_____
_____

Date of Incident / Grievance

☐ One-time incident / grievance (date _____)
☐ Happened more than once (how many times?)
_____)
☐ Ongoing (currently experiencing the problem)

Figure 45. Sample Grievance Form

Annex 1. SUMMARY OF THE SOCIO-ECONOMIC DATA COLLECTION METHODOLOGY AND A LIST OF INTERVIEWS, FOCUS GROUPS AND CONSULTATIONS COMPLETED DURING THE 2022 SOCIO-ECONOMIC BASELINE STUDY

The socio-economic study conducted for the purpose of the ESIA deployed qualitative data collection methods that allowed to collect both qualitative and quantitative information and consisted of several steps:

- Collection and desktop review of the available information at the national (Armenia), regional (Syunik Region), municipal (Sisian and Kajaran Communities) Relevant socio-economic baseline data was collected via the available national statistical sources and state bodies' websites, such as the websites of the Statistical Committee of Armenia[90], Syunik Region[91], and Sisian and Kajaran Communities[92]. The analysis of the collected information allowed to generate socio-economic profiles for the national, regional and municipality levels. The main object of this analysis was to understand the context and trends in economy and social development and to identify gaps in socio-economic information. As a result, it was revealed that no desktop information was available at the local level, i.e., settlements within Sisian and Kajaran Communities that might be affected by the Project components, and some parts of information were missing at the communities' level. The gaps were attempted via information requests to the municipal authorities and, most importantly, via the field studies as described below.
- Inception site visits in April 2021[93] and December 2021[94] including interviews and/or consultations with 35 key informants at the regional, municipal and local levels to inform i) the socio-economic sections of the Scoping Report, ii) pre-construction/design stage Stakeholder Engagement Plan (SEP), iii) the determination of the Project socio-economic areas of studies and potential socio-economic Areas of Influence, and iv) the update of the Resettlement Framework.
- Submission of official information requests to the municipal authorities, namely, Sisian and Kajaran Communities (via the RD) in order to gather the necessary (where possible, multi-year) socio-economic baseline information.
- Completion of the large-scale field studies in May – June 2022. This deployed three main qualitative methods tailored to different target groups, namely in-depth interviews with key informants, focus groups and consultations (either individual or group) – for the registry of these refer to the **table** below:

[90] https://www.armstat.am/en/

[91] http://syunik.mtad.am/

[92] http://syunik.mtad.am/about-communities/988/ and https://www.sisian.am (Sisian), http://syunik.mtad.am/about-communities/990/ and http://www.kajaran.am (Kajaran)

[93] In April 2021, interviews and consultations were held with 11 representatives of state bodies: the Syunik Regional Administration (Head of Urban Development Department, Head of Transport and Road Construction Division, Head of Local Government and National Executive Authorities Department, Head of Development Projects and Analysis Division, and Assistant to Syunik Regional Governor), Kajaran Community Administration (Deputy Head, Chief specialist of Urban Development Division), Head of Geghi Rural Administrative Area, Sisian Community Administration (Deputy Head, Head of Urban Development and Economic Sector Coordination Department), Head of Darabas Rural Administrative Area.

[94] In December 2021, interviews and consultations were held with 24 representatives of state bodies: the Syunik Regional Administration (Deputy Mayor, Head of the Urban Development Department), Kajaran Community Administration (Deputy Head, five Urban Development Department Specialists and Engineers), Sisian Community Administration (Deputy Head, three Community Officials, Head of Agricultural and Env. Department, Secretary), Vaghatin Rural Administrative Area (Head and three specialists); and Heads of Vorotnavan, Lor, Darbas, Aghitu, Geghi, and Lernadzor Rural Administrative Areas.

- **in-depth interviews with key informants (at the village levels):** The overall approach was to hold, per each settlement, interviews / consultations with the head of settlements / rural administrative areas, directors and teachers of school / kindergartens (preferably females) (where such institutions existed), local doctors or nurse, farmers, cattle-breeders, land and assets users or owners, bee-keepers and vodka makers, cultural heritage custodians, seasonal residents, local small/micro businesses, vulnerable persons (for the purpose of the study, such were considered to be a single parent, lonely elderly, household below the poverty line, multi-child household, and household with a disabled person), and residents of the houses closest to the existing road that might be used by the construction traffic.

  The information collected related to:

  - Demographic trends and gender composition
  - Ethnic composition, and languages used/spoken locally
  - Economy and employment (including migration and a gender aspect)
  - Livelihoods (both land-based and non-land-based), dwelling conditions, use of ecosystem services, land use and agriculture (including a gender aspect)
  - Incomes and expenditures
  - (Statistical) data on pensioners, socially vulnerable families, refugees from Azerbaijan, infernally displaces people, etc
  - Social facilities and institutions and their accessibility
  - Public infrastructure and use / state of utilities locally
  - Public health and disease vectors
  - Public safety and criminal situation
  - Civic engagement, attitudes towards media and use of digital communication means
  - Tourism and recreation
  - Cultural norms, gender roles, use of cultural heritage locally and locally valued cultural heritage
  - Existing environmental and social issues.
- **focus groups with the residents of the potentially affected villages.** Focus groups were be conducted in larger settlements to verify the livelihood of the households and identify the use of the land within the Project area. *NB: Later, a dedicated household survey was conducted in parallel with the census and inventory studies for the purpose of a Resettlement Plan;* and
- **supplementary consultation meetings with specialist at the community and local levels** to verify thematic information collected via focus groups and to obtain specialist opinions on the range of environmental and social topics, as well as with public infrastructure operators.

- Completion of the additional consultations with the local authorities in July - September 2022 with regards to ongoing and planned developments in Sisian and Kajaran Communities in order to a) inform a cumulative impact assessment for the Project, b) collect additional information about the water springs used in the area, and c) verify the local use of the cultural heritage sites (to cross-check with the data collected from the local residents).
- Observational walks and collection of photo materials during the above socio-economic field visits/studies.

Triangulation has been applied to the extent possible to verify the data collected from various sources (e.g., information obtained during the focus groups verified via in-depth expert

interviews with the key informants; statistical data about the local level (settlements) collected at the municipality level crossed-checked against the data collected at local authorities, schools, medical facilities, shops, etc.).

Prior to field studies, specific study instruments (such as semi-structured/open questionnaires) have been developed for each type of the data collection methods.

For selecting the key informants at the regional, community and admin units/village levels a purposive sampling method was used drawing upon specific recruitment criteria, such as the position and roles of an interviewee in the local community life and social stratum.

Recruitment of focus group participants was arranged with support of the local authorities (head of the administrative units and villages) and other respectful respondents (such as directors of schools), or using own effort, if no direct approach to the target group was found.

Each engagement was preceded by provision of information about the Project and purpose of the socio-economic study. Thus, the information about the Project was delivered to around 180 persons, which contributed to its visibility and raised awareness about it.

Overall, the above combination of desktop and field research methods was considered to be best fitted to collect the information needed for constructing socio-economic profiles and lifestyles of the potentially affected villages and communities, and to identify the local concerns.

In-depth Interviews, Focus Group Discussions and Consultations Completed during the 2022 Socio-Economic Study

№	Date	Interviewees / consultees / respondents	Location	Number of respondents		Type of interaction
				men	women	
Informants from educational institutions (schools)						
1	20.05.2022	School teacher	Geghi village (Kajaran community)	0	1	In-depth Interview
2	26.05.2022	Director of school	Dzagikavan village (Kajaran community)	1	0	In-depth Interview
3	26.05.2022	School head teacher	Dzagikavan village (Kajaran community)	0	1	In-depth Interview
4	26.05.2022	Director of school	Shenatagh village (Sisian community)	0	1	In-depth Interview
5	26.05.2022	School teacher	Shenatagh village (Sisian community)	0	1	In-depth Interview
6	26.05.2022	Director of school	Lor village (Sisian community)	0	1	In-depth Interview
7	26.05.2022	School teacher	Lor village (Sisian community)	0	1	In-depth Interview
8	27.05.2022	Director of school	Vorotnavan village (Sisian community)	0	1	In-depth Interview
9	27.05.2022	School teacher	Vorotnavan village (Sisian community)	0	1	In-depth Interview
10	27.05.2022	Director of school	Noravan village (Sisian community)	0	1	In-depth Interview
11	27.05.2022	Assistant of teacher	Noravan village (Sisian community)	0	1	In-depth Interview
12	28.05.2022	Director of school	Darbas village (Sisian community)	0	1	In-depth Interview
13	28.05.2022	School teacher	Darbas village (Sisian community)	1	0	In-depth Interview
14	29.05.2022	Director of school	Vaghatin village (Sisian community)	1	0	In-depth Interview
15	29.05.2022	School teacher	Vaghatin village (Sisian community)	0	1	In-depth Interview
16	30.05.2022	Director of school	Agitu village (Sisian community)	1	0	In-depth Interview
17	30.05.2022	School teacher	Agitu village (Sisian community)	0	1	In-depth Interview
18	30.05.2022	Director of school	Uyts village (Sisian community)	1	0	In-depth Interview

№	Date	Interviewees / consultees / respondents	Location	Number of respondents		Type of interaction
				men	women	
19	30.05.2022	School teacher	Uyts village (Sisian community)	0	1	In-depth Interview
20	31.05.2022	Director of school	Ishkhanasar village (Sisian community)	0	1	In-depth Interview
21	31.05.2022	Director of school	Ishkhanasar village (Sisian community)	0	1	In-depth Interview
22	02.06.2022	Director of school No.4	Sisian town	0	1	In-depth Interview
Informants from medical institutions						
1	20.05.2022	Medical aid point, nurse	Geghi village (Kajaran community)	0	1	In-depth Interview
2	26.05.2022	Medical aid point, nurse	Getishen village (Kajaran community)	0	1	In-depth Interview
3	26.05.2022	Medical aid point, nurse	Getatagh village (Sisian community)	0	1	In-depth Interview
4	27.05.2022	Noravan medical centre, family nurse	Noravan village (Sisian community)	0	1	In-depth Interview
5	28.05.2022	Darbas medical centre, nurse	Darbas village (Sisian community)	0	1	In-depth Interview
6	29.05.2022	Medical aid point, nurse	Vaghatin village (Sisian community)	0	1	In-depth Interview
7	30.05.2022	Aghitu medical centre, nurse	Aghitu village (Sisian community)	0	1	In-depth Interview
8	31.05.2022	Ishkhanasar medical centre, nurse	Ishkhanasar village (Sisian community)	0	1	In-depth Interview
9	02.06.2022	Sisian medical centre, nurse	Sisian town	0	1	In-depth Interview
Informants from local small/micro business / shops						
1	26.05.2022	Seller	Andokavan village (Kajaran community)	0	1	In-depth Interview
2	26.05.2022	Seller	Andokavan village (Kajaran community)	0	1	In-depth Interview
3	26.05.2022	Seller	Lor village (Sisian community)	0	1	In-depth Interview
4	26.05.2022	Seller	Shenatagh village (Sisian community)	1	0	In-depth Interview
5	31.05.2022	Seller	Ishkhanasar village (Sisian community)	0	1	In-depth Interview
Farmers, cattle-breeders, land and assets users or owners						
1	20.05.2022	Farmers / cattle-breeder	Getishen village (Kajaran community)	0	1	In-depth Interview
2	20.05.2022	Farmers / cattle-breeder	Nor Astghaberd village (Kajaran community)	0	1	In-depth Interview
3	20.05.2022	Farmers / cattle-breeder	Nor Astghaberd village (Kajaran community)	0	1	In-depth Interview
4	20.05.2022	Farmers / cattle-breeder	Getishen village (Kajaran community)	1	0	In-depth Interview
5	20.05.2022	Farmers / cattle-breeder	Nor Astghaberd village (Kajaran community)	1	0	In-depth Interview
6	20.05.2022	Farmers / cattle-breeder	Geghavanq village (Kajaran community)	1	0	In-depth Interview
7	20.05.2022	Farmers / cattle-breeder	Getishen village (Kajaran community)	0	1	In-depth Interview
8	20.05.2022	Farmers / cattle-breeder	Getishen village (Kajaran community)	0	1	In-depth Interview

№	Date	Interviewees / consultees / respondents	Location	Number of respondents		Type of interaction
				men	women	
9	20.05.2022	Farmers / cattle-breeder	Geghi village (Kajaran community)	1	0	In-depth Interview
10	25.05.2022	Farmers / cattle-breeder	Shamb village (Sisian community)	1	0	In-depth Interview
11	26.05.2022	Farmers / cattle-breeder	Dzagikavan village (Kajaran community)	1	0	In-depth Interview
12	26.05.2022	Farmers / cattle-breeder	Kavchut village (Kajaran community)	1	0	In-depth Interview
13	26.05.2022	Farmers / cattle-breeder	Dzagikavan village (Kajaran community)	1	0	In-depth Interview
14	26.05.2022	Farmers / cattle-breeder	Lor village (Sisian community)	1	0	In-depth Interview
15	26.05.2022	Farmers / cattle-breeder	Getatagh village (Sisian community)	1	0	In-depth Interview
16	26.05.2022	Farmers / cattle-breeder	Getatagh village (Sisian community)	0	1	In-depth Interview
17	26.05.2022	Farmers / cattle-breeder	Lor village (Sisian community)	1	0	In-depth Interview
18	27.05.2022	Farmers / cattle-breeder	Noravan village (Sisian community)	1	0	In-depth Interview
19	27.05.2022	Farmers / cattle-breeder	Shamb village (Sisian community)	1	0	In-depth Interview
20	27.05.2022	Farmers / cattle-breeder	Noravan village (Sisian community)	1	0	In-depth Interview
21	29.05.2022	Farmers / cattle-breeder	Vaghatin village (Sisian community)	1	0	In-depth Interview
22	30.05.2022	Farmers / cattle-breeder	Uyts village (Sisian community)	1	0	In-depth Interview
23	31.05.2022	Farmers / cattle-breeder	Ishkhanasar village (Sisian community)	1	0	In-depth Interview
24	31.05.2022	Farmers / cattle-breeder	Ishkhanasar village (Sisian community)	1	0	In-depth Interview
25	02.06.2022	Farmers / cattle-breeder	Sisian town	1	0	In-depth Interview
26	02.06.2022	Farmers / cattle-breeder	Shamb village (Sisian community)	1	0	In-depth Interview
Vulnerable persons (a single parent, lonely elderly, household below the poverty line, multi-child household, or household with a disabled person)						
1	20.05.2022	Resident	Getishen village (Kajaran community)	0	1	In-depth Interview
2	20.05.2022	Resident	Getishen village (Kajaran community)	0	1	In-depth Interview
3	20.05.2022	Resident	Geghi village (Kajaran community)	0	1	In-depth Interview
4	20.05.2022	Resident	Getishen village (Kajaran community)	0	1	In-depth Interview
5	26.05.2022	Resident	Kavchut village (Kajaran community)	0	1	In-depth Interview
6	26.05.2022	Resident	Kavchut village (Kajaran community)	1	0	In-depth Interview
7	26.05.2022	Resident	Shenatagh village (Sisian community)	0	1	In-depth Interview
8	26.05.2022	Resident	Lor village (Sisian community)	0	1	In-depth Interview
9	26.05.2022	Resident	Getatagh village (Sisian community)	0	1	In-depth Interview
10	27.05.2022	Resident	Vorotnavan village (Sisian community)	0	1	In-depth Interview
11	27.05.2022	Resident	Noravan village (Sisian community)	0	1	In-depth Interview
12	28.05.2022	Resident	Darbas village (Sisian community)	0	1	In-depth Interview
13	29.05.2022	Resident	Vaghatin village (Sisian community)	0	1	In-depth Interview
14	30.05.2022	Resident	Aghitu village (Sisian community)	0	1	In-depth Interview
15	30.05.2022	Resident	Uyts village (Sisian community)	0	1	In-depth Interview
16	31.05.2022	Resident	Ishkhanasar village (Sisian community)	0	1	In-depth Interview

№	Date	Interviewees / consultees / respondents	Location	Number of respondents		Type of interaction
				men	women	
Key informants - Heads of administrative units/villages						
1	20.05.2022	Administrative head	Geghi village (Kajaran community)	1	0	In-depth Interview
2	26.05.2022	Administrative head	Lernadzor village (Kajaran community)	1	0	In-depth Interview
3	27.05.2022	Administrative head	Vorotnavan village (Sisian community)	1	0	In-depth Interview
4	27.05.2022	Administrative head	Noravan village (Sisian community)	1	0	In-depth Interview
5	29.05.2022	Administrative head	Vaghatin village (Sisian community)	1	0	In-depth Interview
6	30.05.2022	Administrative head	Aghitu village (Sisian community)	1	0	In-depth Interview
7	30.05.2022	Administrative head	Uyts village (Sisian community)	1	0	In-depth Interview
8	31.05.2022	Administrative head	Darbas village (Sisian community)	1	0	In-depth Interview
9	31.05.2022	Administrative head	Ishkhanasar village (Sisian community)	1	0	In-depth Interview
10	07.08.2022	Administrative head	Shenatagh village (Sisian community)	1	0	In-depth Interview
11	08.08.2022	Administrative head	Geghatagh village (Sisian community)	1	0	In-depth Interview
12	08.08.2022	Administrative head	Lor village (Sisian community)	1	0	In-depth Interview
Seasonal residents						
1	20.05.2022	Seasonal resident	Getishen village (Kajaran community)	0	1	In-depth Interview
2	20.05.2022	Seasonal resident	Getishen village (Kajaran community)	0	1	In-depth Interview
3	20.05.2022	Seasonal resident	Qirs village (Kajaran community)	1	0	In-depth Interview
4	20.05.2022	Seasonal resident	Nor Astghaberd village (Kajaran community)	0	1	In-depth Interview
5	20.05.2022	Seasonal resident	Karut village (Kajaran community)	1	0	In-depth Interview
6	26.05.2022	Seasonal resident	Kavchut village (Kajaran community)	1	0	In-depth Interview
7	26.05.2022	Seasonal resident	Dzagikavan village (Kajaran community)	0	1	In-depth Interview
8	26.05.2022	Seasonal resident	Shenatagh village (Sisian community)	1	0	In-depth Interview
9	26.05.2022	Seasonal resident	Lor village (Sisian community)	1	0	In-depth Interview
10	26.05.2022	Seasonal resident	Getatagh village (Sisian community)	1	0	In-depth Interview
11	27.05.2022	Seasonal resident	Noravan village (Sisian community)	1	0	In-depth Interview
12	27.05.2022	Seasonal resident	Noravan village (Sisian community)	0	1	In-depth Interview
13	29.05.2022	Seasonal resident	Vaghatin village (Sisian community)	0	1	In-depth Interview
14	30.05.2022	Seasonal resident	Aghitu village (Sisian community)	0	1	In-depth Interview
Residents of the houses closest to the existing road						
1	20.05.2022	Resident	Geghi village (Kajaran community)	1	0	In-depth Interview
2	20.05.2022	Resident	Geghi village (Kajaran community)	1	0	In-depth Interview
3	20.05.2022	Resident	Geghi village (Kajaran community)	1	0	In-depth Interview
4	20.05.2022	Resident	Geghi village (Kajaran community)	1	0	In-depth Interview
5	20.05.2022	Resident	Babikavan village (Kajaran community)	0	1	In-depth Interview
6	26.05.2022	Resident	Andokavan village (Kajaran community)	1	0	In-depth Interview

№	Date	Interviewees / consultees / respondents	Location	Number of respondents		Type of interaction
				men	women	
7	26.05.2022	Resident	Pukhrut village (Kajaran community)	1	0	In-depth Interview
8	26.05.2022	Resident	Dzagikavan village (Kajaran community)	1	0	In-depth Interview
9	26.05.2022	Resident	Lernadzor village (Kajaran community)	0	1	In-depth Interview
10	26.05.2022	Resident	Dzagikavan village (Kajaran community)	0	1	In-depth Interview
11	26.05.2022	Resident	Lor village (Sisian community)	0	1	In-depth Interview
12	26.05.2022	Resident	Lor village (Sisian community)	1	0	In-depth Interview
13	27.05.2022	Resident	Shamb village (Sisian community)	1	0	In-depth Interview
14	27.05.2022	Resident	Shamb village (Sisian community)	1	0	In-depth Interview
15	27.05.2022	Resident	Vorotnavan village (Sisian community)	0	1	In-depth Interview
16	27.05.2022	Resident	Vorotnavan village (Sisian community)	1	0	In-depth Interview
17	31.05.2022	Resident	Ishkhanasar village (Sisian community)	0	1	In-depth Interview
18	31.05.2022	Resident	Ishkhanasar village (Sisian community)	0	1	In-depth Interview
Focus Group Discussions						
1	25.05.2022	Farmers, cattle-breeders, land and assets users / owners - 13 persons	Shenatagh village (Sisian community)	9	4	Focus group
2	28.05.2022	Women - 4 persons	Darbas village (Sisian community)	0	4	Focus group
3	28.05.2022	Pensioners - 7 persons	Darbas village (Sisian community)	7	0	Focus group
4	29.05.2022	Farmers, cattle-breeders, land and assets users or owners - 6 persons	Vaghatin village (Sisian community)	4	2	Focus group
5	30.05.2022	Teenagers - 7 persons	Darbas village (Sisian community)	6	1	Focus group
6	30.05.2022	The nearest 5-7 households (50-300m from the proposed road) / land users & owners - 6 persons	Aghitu village (Sisian community)	4	2	Focus group
7	31.05.2022	Farmers, cattle-breeders, land and assets users / owners - 6 persons	Darbas village (Sisian community)	5	1	Focus group
Public infrastructure operators						
1	20.07.2022	Representative of gas supply operator - Head of technical operation department	Kapan town, "Gazprom Armenia" CJSC, Syunik regional branch	0	1	Consultation
2	21.07.2022	Director of "Tatev" branch Chief engineer of "Tatev" branch Head of technical department of "Tatev" branch	Kapan town, "Electric Networks of Armenia" CJSC	3	0	Consultation
3	21.07.2022	Chief engineer of "Sisian" branch	Sisian town, "Electric Networks of Armenia" CJSC	1	0	Consultation
4	08.02.2023	Representatives of "ContourGlobal Hydro	Zoom meeting	3	1	Consultation

№	Date	Interviewees / consultees / respondents	Location	Number of respondents		Type of interaction
				men	women	
		Cascade" (CGHC) CJSC, RD				
			Total:	**99**	**81**	**180**

Annex 2. ANALYSIS OF THE WOMEN'S FGD IN DARBAS WITH REFERENCE TO OTHER FGDS IN DARBAS

Discussions about women's problems and concerns were held in Darbas village of the Sisian community with the participation of four women. On May 28, 2022, the members of the "Women's Resource Centres" of Sisian and Kapan, together with the gender expert, discussed the following issues with the village women according to the planned program:

- decent employment opportunities for women
- food provision and safety for family
- role and workload of women in the family
- availability and quality of social and communal services
- climate change effects
- safety in the community and family
- women's rights, opportunities, and needs

The women of Darbas village consider the issue of ***ensuring decent employment*** to be sufficiently solved. First, most of them work in the *water and canning factories of the neighbouring Shamb village*. At the same time, some women, about 15-20 people, work in the *pottery factory* of the village. Young women and girls consider making things out of clay not only a paid job but also a pleasant activity [95].

Women also work and are the majority in the *educational, health and cultural structures of the village:* primary and basic schools, kindergarten, health centre, and museum/house of culture. A participant of the focus group discussion (FGD), the head of the educational part of the school, mentioned that only 4 of the 20 teachers of the school are men, and all the employees in the rest of the village social structures are women. In the sense of professionalism, all of them have got the appropriate education, have passed certifications, and are respected by the villagers.

Women working in factories and social structures *receive a salary* of about 80,000 to 150,000 AMD per month on average. Women find that they meet the requirements of the jobs they hold and that there is no discrimination in terms of wages. At the same time, *they consider that a salary above 250 thousand AMD will be a "good salary" for a woman*.

> ***If there is a job position that has a fixed salary, women and men are paid the same wage for the same type of work...***
>
> ***FGD women participants from Darbas village***

The service staff of the village supermarket, small shops, and restaurant are also mainly women, *mostly young, who work daily.* High school girls work as guides during the tourist season, accompany tourists, and represent the sanctuaries, churches, historical and cultural monuments of the community.

> ***More than 20 young people in the village have jobs... they work for an average of 6,000 AMD per day... we have guides: Nubar and Nare...***
>
> ***FGD youth participants from Darbas village***

In case of finding a job in other villages or community centres, *women can reach the workplace by intra-community public transport, including taxi.* For example, a young woman from the village was hired to work in the Lori village branch of "Haypost" and used to go to work and

[95] Such opinion was voiced during the FGD of 14-17-year-old youth, among them eight boys and girls from the same village of Darbas.

return by **"marshrutka"** or taxis[96]. The women mentioned that in case of work outside the village, transportation costs are a more serious problem: it can cost them from 500 to 1000 AMD, depending on the distance.

Even though women are employed in other fields, 80-90% of *village girls, women, and female pensioners are engaged in agriculture,* including farming, horticulture (gardening), animal husbandry, and forest goods collection (walnuts, hazelnuts, berries). A part of the natural products collected and produced from the forest is sold or exchanged with other products. Small-scale sales are done by women, and large-scale sales (mainly wheat sales) are done by men.

Each family living in the village, with different degrees of involvement, anyway, is necessarily engaged in farming and animal husbandry, as first of all, the main means of livelihood are the mentioned fields…

FGD women participants from Darbas village

Farming is a double workload for employed women, which ***in case of possibility, they try to share with other members of their family, being more actively involved in household and agricultural work.***

In the village, every child helps their parents, some of us are involved in fieldwork, some - in farming, animal husbandry, and we also help them with housework...

FGD youth participants from Darbas village

People of our age in the village are engaged in farming, horticulture (gardening), animal husbandry, mainly cattle.... recently we started breeding small ruminants: sheep, goats...

FGD pensioner participants from Darbas village[97]

Our men work day and night, sowing wheat, spraying/fertilizing, harvesting, and organizing the sale of crops.... in addition, many also work in community factories...

FGD women participants from Darbas village

One of the important responsibilities of men in the household is solving the problem of heating the house: collecting firewood, chopping dry wood, installing stoves, operating them, etc. The women mention that, naturally, men are the "electricians", "plumbers", "repairmen", and "drivers" of the family, and if there is no man in the family, neighbours and other relatives help.

Food safety and security, according to the results of the women's FGD, is not a serious problem in rural households, as most of the daily ration consists of natural products they grow and provide for themselves. *Rural families have a strongly marked seasonal diet:* in summer - fruits, and vegetables, in winter - dairy products, and meat products. Rural women make preserves from summer food, calling themselves "winter provisions". However, now they are working to develop a refrigeration economy in the village, which will allow them to preserve food in a quality way.

We have only natural "raw" grown vegetables, fruits, and dairy products... from this point of view, we can say that we eat ecologically clean, healthy food..

FGD women participants from Darbas village

The village women do not have any problems in terms of access to necessities, because there is *a supermarket in the village of Darbas with a wide range of products*. The women note that the prices in the supermarket do not differ from the retail prices in the cities of the province.

[96]The village men provide taxi services to the villagers in their own cars when necessary.

[97] A focus group discussion of pensioners was held in Darbas village on May 28, 2022, in which 6-7 male pensioners participated.

They also emphasized with satisfaction that the residents of the neighbouring villages use the supermarket in their village as well.

Regarding the answers to the question about ***women's role and workload in the family***, women agreed, considering the issues of keeping the house clean, providing food, caring for family members, and hygiene being definitely under their control. Fulfilment of the mentioned duties "takes" about 5 to 6 hours of their time daily.

The FGD women participants also mentioned their important role in decision-making on their family issues.

> ***Each family has its approach, but mostly the families of our village decide together what to do...***
>
> ***In the village, every member of the family knows the extent of his/her responsibility and the work share is clearer...***
>
> ***There is no "my and your" money in our house, all the income/money of the home is with me and I cover the main expenses of the family...***
>
> ***FGD women participants from Darbas village***

Education services are available in the village to the extent that the structures of the education system exist and function. Thus, school-aged children of the village attend elementary and primary school (12 and 72 students, respectively), kindergarten (15-20 children), singing and dancing, pottery and painting groups[98]. All teachers have higher education and are regularly certified. The villagers are looking forward to the completion of the new school building construction[99].

The women are satisfied with the quality of education provided by the school, but have the following wishes to improve it:

- classrooms equipped with laboratory equipment and the latest technologies
- updated library, especially with professional and new books in different languages
- necessary equipment and accessories for gymnastics classes.

The youth of the village deeply hopes the new school to be constructed, in terms of expanding the opportunities of providing quality education.

> ***We deeply hope the new school will have football, and tennis courts, as well as all the necessary conditions and specialist trainers for the development of running and athletics...***
>
> ***FGD youth participants from Darbas village***

Access to ***health care services*** in the village is limited to a list of free primary care services delegated to rural clinics by the state. The women participating in the FGD were well-aware of these limitations, hence, instead of complaining about the quality and availability of services, they preferred *to have positions of dentists and midwives at the health center* to get the relevant services free of charge right on the spot. The young people also mentioned the need to have a psychologist in the village.

The women also noted that for high-tech examinations, and serious medical, especially surgical interventions, the patient should be transferred to the town hospital of Sisian, sometimes to the capital.

[98]A comfortable and beautiful two-story building was built in the center of Darbas village by two brothers-philanthropists, on the second floor of which there is a museum with works of art, ethnographic household items, village "**tarazes"** (village national costumes), and other collections donated by residents and guests of the village, and on the first floor, there are classrooms for various groups to lead.

[99]The philanthropist-brothers make large investments in the construction of a new school building of the village, which will serve the children of Darbas and Shamb villages.

Medication is available in the village due to a pharmacy located there.

We are satisfied with the health services of our community, there is a doctor and a nurse who provide first aid...

FGD pensioner participants from Darbas village

The medical center for ambulatory services is normally operating... here we are provided with some medicine, do some examinations...

The presence of a midwife in the village is necessary for the safety of new-borns...

FGD women participants from Darbas village

We don't have a psychologist, both teenagers and, why not, adults need him/her...

FGD youth participants from Darbas village

The availability and quality of ***communal services*** in the village are problematic. First, *the village has no gas supply*, so the main type of fuel is wood, which is widely used in the household (for cooking, boiling water, and heating). The women noted that *about 40% of households have installed solar water heaters* in the past three years, and it is a "salvation" for them: bathing for family members has become easier several times, a significant amount of time has been saved for preparing food, washing dishes, cleaning the house, not taking into account the general improvement of household and life comfort.

It was also noted that it's quite an expensive investment and not available to everyone, although the further savings are obvious as there is no need to buy large quantities of wood.

The issue of electrification in the village has been solved, however, the wiring is frayed, and the electricity often turns off in wind, rain, and snow. *Electricity fluctuations are dangerous,* especially in terms of the *operation of solar heaters*. Therefore, the quick-witted men of the village install self-made "safety devices" to prevent the water heater to go out of order (they said the company that installed does not guarantee such cases, naturally, refusing to repair or replace the equipment for free).

The village has permanent *water supply*: the villagers have water at specific hours of the day, and in case of accidents, which often happen due to old pipelines, they can have no water for several days. In similar cases the same danger threatens the operation of solar water heaters, if they are not adjusted on time, they can "burn out". Water quality also depends on floods, during which drinking water becomes contaminated and murky.

Currently, construction works of a new water pipeline are being carried out in several villages of the community with World Bank financing. The drinking water from Lori village should be delivered to Darbas and Shamb villages. The villagers are looking forward to having round the clock supply of quality drinking water. Simultaneously, the *women, who are the main payers of utility bills,* were concerned about the amount of the "water fee", though *they have never paid for water supply,* hence they do not know how much the total burden of utility costs would increase.

Out of utility payments, we pay for electricity through the postal service, and it's quite normal, for garbage as well, it's expensive to pay land property tax through the postal service, and they also charge a service fee... We still do not pay for the water supply.

FGD women participants from Darbas village

Effects of climate change are noticeable in the village: "...year by year, the amount of snow and precipitation are gradually reduced, and every year the weather turns to drought. Natural springs are drying up, and the amount of water in rivers has significantly decreased", said the village women. The research team informed the FGD participants that deforestation and the use of firewood, in its turn, have a negative impact on climate change.

Almost everyone in the community uses firewood because there is no gas here. It is the only means of heating in our village...

Each household collects its firewood from the forest...

FGD women participants from Darbas village

The women noted that they understand the harm of deforestation from the perspective of climate change and nature protection, and they believe *the gasification of the village will greatly reduce the volume of firewood usage in the village*.

Educational programs for environmental protection should be implemented... it would be better the government invested in energy saving, energy efficiency, and other relevant projects in the community...

FGD women participants from Darbas village

From the point of view of security, the residents of the village feel safe***.*** During the discussion of this issue, both women and young people stated that their community is quite safe, there are no crimes, and cases of domestic violence are insignificant.

It is much safer in the village at the moment... There had been crimes before 2018, but now we have no problems... our village is very safe...

FGD youth participants from Darbas village

Incidents of violence are very few, if there happen family disputes, they are quickly settled voluntarily or with the intervention of a relative...

In general, it is a fairly safe community from a crime perspective.

FGD women participants from Darbas village

While discussing the issues of ***women's rights and roles,*** the women noted with a smile that Syunik women in general, and in their village, have the role of "leader" in their family, hence, from the point of view of rights, they have a strong position***.*** However, they do not have high ambitions in terms of occupying positions in the community administration or elected bodies, as there are many family and work worries, and no time is left for social and political activities.

We don't have a female leader in the village: every woman is the leader of her house...

FGD women participants from Darbas village

The following answers were given to the question ***"what needs and suggestions do women have?":***

- If there are activity centres and a playground for children, women will be more relieved about the safety and development of their children, and they would be able to devote more time to self-development and other activities.
- We highly emphasize the importance to create sports groups in the village, as children wish to play sports.
- We need a social worker, as there are personal problems between teenagers/youth, in a "parent-child" relationship, and to solve all these problems we need professional advice/help from a social worker.
- There are girls and young women who wish to start a small business, for example in the spheres of tourism, sewing, and food, but they are mainly not aware of how to do that... It would be better to launch start-ups and organize courses/seminars, and other relevant events for them.
- It is advisable to have a refrigerator in the village for us to store a lot of goods and provide quality food to family members "all year round".
- The foundation of the seed breeding station is another important issue we'd like to solve in our village because ensuring the stable growth of yields is the main guarantee for our families' well-being.

In general, the results of the women's FGD in Darbas village are consistent with the main conclusions of the regional gender analysis completed in this report. For many issues, the

women's opinions coincided with the answers and clarifications of the youth and pensioners of the village.

Annex 3. MINUTES OF FGDS

The Sisian-Kajaran (North-South Corridor) Road Project: FGDs with the Owners of Properties to be Acquired (Shenatagh)

25.05.2022

Location: Sisian community, Shenatagh rural settlement

Number of FGD participants: 13, including 4 women,

The FGD was facilitated by Suren Gyurjinyan and Kristina Saghatelyan

The Sisian-Kajaran road construction project's features as well as the FGD scope were presented. Within the FGD the following issues were discussed with the attendees.

- What concerns do you have regarding the acquisition of land?
- Any observations and/or recommendations?
- What kind of compensations do you expect?
- Do you have any other job besides agricultural activities?
- What are the sources of income for the villagers?

The discussion began with the examination of the map, the location of bridges and tunnels was identified, and everyone visually conceived the areas and the locations under acquisition:

The participants were asked to present the type and designation purpose of the property under potential acquisition.

- Man 1 owns a sowing area of 2 ha, used as grassland, which is subject to an acquisition, as per the map. He owns other grassland areas as well.
- Man 2 owns a piece of land used as a grassland amounting to one ha.
- Man 3 lives with his wife and three boys. He owns a household, staple, granary, and garden, all of which should be acquired. He uses a land area rented from the community for various purposes. One of his children works at the Agarak mining facility; the other son pursues agricultural activity, and livestock farming and his wife looks after the household.
- Men 4 owns arable land amounting to 2.5 ha; he is occupied with agriculture and working on the arable land.

A question asked by the participants: **We would like to know where the project is to be implemented.**

- The project design has not yet been finalized. For the time being, we try to understand the magnitude of the potential work. Once the project design is finalized, the government will make the list of properties to be acquired. Afterward, the selected property will be discussed and evaluated in great detail.

A question from the facilitators: **What is the designation purpose of the lands?**

- There are community owned lands under community ownership, a pasture of 5-6 ha, and a privately owned grassland.

A question from the facilitators: **Are there any buildings eligible for acquisition, and who owns them?**

- Man 5 owns one staple and one other building to be acquired.

A question from the participants: **Will the compensation rates set by Armenian legislation be applied?**

- The compensation rates will be applied as set by Armenian eminent domain legislation. Moreover, some additional compensations and support will be provided pursuant the IFIs practices.

A question from the participants: What would be the **compensations per square meter?**

- I cannot say because the valuation completion timeframe has not yet been clarified.

A question from the participants: **Will the road have a fee?**

- No, the road will be free of charge.

A question from the participants: **Will the bridges be retractable?**

- The long and short bridges will be assembled using various methods.

Another question was about the location of the passages for cattle. The proposal was to mark it on the map with the passages depicted on it (from the design).

A question to the participants: **What kind of positive changes will the road construction cause?**

- A creation of temporary jobs and trade spots at some locations; it will be fast and easy to reach Kapan for marketing the harvest.

A question from the facilitators: **What kind of negative impact do you see from the ongoing project?**

- Noise, dust, and traffic overload.

The facilitators asked where women are engaged, and they answered:

- They are engaged in crop farming, livestock farming, processing of agriproducts, and sometimes they are engaged in the exchange of goods.

The villagers predominantly emphasized:

- While the Iranian gas pipeline stretches through our village, we do not have gas in our village. Furthermore, according to the project, during the pipeline construction, the village also was supposed to take advantage of it, but it did not happen; several emergency situations emerged that represented a threat to the lives of villagers.

A question to the participants: **What are the main problems of the village?**

- The irrigation system is missing, and there is no electric lighting in the streets. There is no school building; children go to a club.

The Sisian-Kajaran (North-South Corridor) Road Project: Focus Group Discussions with the Owners of Properties to be Acquired (Vaghatin)

29.05.2022

Location: Sisian community, Vaghatin rural settlement

Number of FGD participants: 6, including 2 women,

The FGD was facilitated by Suren Gyurjinyan and Kristina Saghatelyan

The Sisian-Kajaran road construction project's features as well as the FGD scope were presented. Within the FGD the following issues were discussed with the attendees.

- What concerns do you have regarding the acquisition of land?
- Any observations and/or recommendations?
- What kind of compensations do you expect?

- Do you have any other job besides agricultural activities?
- What are the sources of income for the villagers?

The participants were asked to present themselves and the occupations.

- Man 1 was born and raised in Vaghatin; he lives in the village now and owns 1000 sqm of meadow land, which should be acquired by the original plan and which he uses currently. He also owns 9 ha of arable land, where wheat and barley grow, and a 3000 sqm garden with a household plot. He works at the hydropower station as a security guard.
- Man 2 owns 2400 sqm of grassland, an 800 sqm household plot, where potatoes, beans, and other vegetables grow. On the village periphery, he also owns 9 ha of garden and arable land, which has nothing to do with the acquirer, and a 2700 sqm garden. He is in military service on contract. His wife is a teacher.

A question from the facilitators: **If your land areas become subject to an acquisition, would you prefer cash or land compensation?**

- For grassland- nothing, but for the arable land, we would prefer land compensation in the first place, if not possible, then cash payment.

A question from the participants: **How will the price value of the land be decided in case of compensation?**

- As per the legislation of Armenia, in the event of eminent domain, the compensation represents the market price of the property plus 15% of it. Moreover, according to the EBRD regulations, the owners and tenants of the acquired lands are also compensated for harvest and fruit trees, determined by specific methodology.

The participants alluded that there are few arable lands inside the village, cultivated by the owners who do not intend to sell their land areas. Thus, the land purchase will be a bit complicated; at the same time, it is not impossible in the event of a beneficial offer.

A note from the facilitators: *the willingness of the FGD participants to get land compensations indicates that they want continue farming, which is positive "sing" in terms of economic development of the project affected rural settlements. The participants noted that if they get the cash compensation, they would have an amount of money to be used just once, but this is not a good investment. On the other hand, there are still arable lands assigned for sale in the village.*

Some participants own larger land areas currently used as meadow land and are subject to acquisition (amounting to 1000-9000 sqm). These participants preferred material compensation.

The facilitators asked the administrative head of the village the following questions:

- Are there any arable lands for a potential sale in the village?
- Is it possible to acquire arable land beyond the community land areas?

The response was that it is possible, but it is far from the village. Furthermore, the market price of the grassland and arable lands were indicated as follows:

- An arable land of 1 ha costs 300,000 - 600,000 AMD.
- A orchard of 900 sqm costs 300,000 - 500,000 AMD.
- The starting price for 1000 sqm grassland is 500,000 AMD.

To conclude, the market price is a significant factor in deciding cash or land compensation.

A question from the participants: **If I disagree with the market price, will they calculate the land price by its cadastral value? Is the market price higher than the cadastral price?**

- The facilitators replied that in case of a low market price, the land price will be determined according to the cadastral value.

There was an opinion that regardless of the decision over the calculation method, the farmer loses, considering that the land price in the region is not that high and the land can ensure revenue each year.

The facilitators asked the participants to share their proposals and concerns.

- A road connecting the highway with villages is important and useful.
- Farmers prefer to have trade spots close to the road.
- It would be good to create temporary jobs for the farmers during the road construction phase.

The facilitators replied: The contractor may need to attract local labour. The workforce may consist of local people.

The participants wished for the fast implementation of the project. They said that they received the necessary answers to their questions.

The concerns are mainly around the difficulties of moving, noise, and dust caused by the working process.

They proposed to include the farmers' suggestions regarding the risk management of the impact on the natural environment in the Contractor's contract, which is under the control of the government of RA and the road department.

The farmers marked on the map where the pedestrian crossing should connect to the church, gardens, and river, which is important for fishing purposes.

The Sisian-Kajaran (North-South Corridor) Road Project: Focus Group Discussions with the Owners of Properties to be Acquired (Aghitu)

30.05.2022

Location: Sisian community, Aghitu rural settlement

Number of FGD participants: 6, including 2 women,

The FGD was facilitated by Suren Gyurjinyan and Kristina Saghatelyan

The Sisian-Kajaran road construction project's features as well as the FGD scope were presented. Within the FGD the following issues were discussed with the attendees.

- What concerns do you have regarding the acquisition of land?
- Any observations and/or recommendations?
- What kind of compensations do you expect?
- Do you have any other job besides agricultural activities?
- What are the sources of income for the villagers?

The participants were asked to present the type and functional importance of the property under potential acquisition.

The owners of the land areas subject to acquisition are:

- Man 1: I have a land area of 5 ha rented till 2038, used as a mine, through which the North-South road should pass. 2.5 ha of the area is used as a mine; the other part was flattened and used as parking space for technical equipment and material storage. I also own a separate private land area of one ha.

The facilitators informed that a rigorous discussion about the listed property may take place soon. In this case, the compensation form should be agreed upon by a new approach.

- Man 2: I own 2.5 ha of arable land, where we plant barley and wheat, which we sell and consume. I live with my wife. We keep only hens fed by our grown wheat.
- Man 3: I own a 1200-1300 sqm field, 1-ha pasture, 1000 sqm of which is used as arable land, where we plant potatoes, other vegetables, and trees. I built a fountain which is a memory complex for my father. There are also 12-year-old tall trees in the land area.

After the end of the meeting, the facilitators visited the mentioned area. According to archaeologists, the memory complex does not hinder the acquisition.

A question from the facilitators: **If your land areas fall under acquisition, what kind of compensation would you prefer- cash payment or land area?**

- Our community cannot afford the land compensation. It is advantageous to take cash against 1-ha land; most of us would prefer cash payment. We own several areas of 1 ha in various places; we could sell some parts.

The facilitators explained the method to be used to determine the compensations in the event of business or land ownership.

A question from the participants: **How is the land price determined in case of the compensation?** We don't get anything for meadow land, but we would prefer land compensation, in the first place, for the arable land; if not possible, then cash payment.

- As per the legislation of Armenia, if a state interest is recognized, the compensation represents the market price of the property plus 15% of it. Moreover, according to the EBRD regulations, the owners and tenants of the acquired lands get compensation for harvest and fruit trees, determined by a specific methodology.

They also discussed the construction of tunnels, the locations of the acquired land, and the placement of bridges marked on the map.

A question from the participants: **How should we move the technical equipment through the area belonging to particular owners?**

- The contractor will arrange a meeting/discussion with the farmers, inform them about the activities thoroughly, and share details about moving the technical equipment in the area.

A question from the participants: **Why Armenian organizations do not become contractors?**

- The facilitators explained the approach for selection of construction contractors. The participants noted that they would like to see more Armenians involved in the work process.

The Sisian-Kajaran (North-South Corridor) Road Project: Focus Group Discussions with the Owners of Properties to be Acquired (Darbas)

31.05.2022

Location: Sisian community, Darbas rural settlement

Number of FGD participants: 6, including 1 woman,

The FGD was facilitated by Suren Gyurjinyan and Kristina Saghatelyan

The Sisian-Kajaran road construction project's features as well as the FGD scope were presented. Within the FGD the following issues were discussed with the attendees.

- What concerns do you have regarding the acquisition of land?
- What comments do you have?
- What kind of compensation do you expect?
- Do you have any other job besides agricultural activities?
- How are people occupied in general?

The participants were asked to present the type and designating purpose of the property under potential acquisition.

- Man 1 lives in the village and owns 6000 sqm of arable land, 3 ha of grassland, household plot, which should be acquired as per the original plan and which is in use for the time being. He lives with his wife, and both of them are pensioners.
- Man 2 lives with his wife, three children, and mother. He owns a 1000 sqm household plot and a 4500 sqm garden of fruit trees planted in the arable land area. He also owns 4500 sqm of land area used for vegetable farming.
- Man 3 owns a 3000 sqm land area, which is subject to an acquisition, a land area of 2 ha and 4000 sqm. He lives with his mother, wife, and two underage children. He works at the Tatni factory.
- Man 4 owns a land area amounting to 2 ha and 4000 sqm, 2000 sqm of which is for fruit trees of various ages and is subject to an acquisition, as well as a household plot where he lives with his mother, wife, and two children. His main occupation is livestock farming and agriculture. His mother works at school as a teacher.
- Man 5 works at the Tatni factory and lives with his parents, who work at school. They own 3500 sqm of land areas for gardening and 3000 sqm of arable land area that will be subject to acquisition.

The map of the area was examined during the discussion, and the participants were suggested to mark the preferred locations for bridges, crossings of pedestrians, and cattle on the map.

The villagers were curious about the valuation process for the acquired land areas, the approach and compensation.

Facilitators explained and presented the compensation approach with detailed examples during the discussion.

A question from the facilitators: **In the event of acquisition of your land areas, would you prefer cash or similar land compensation?**

- The land compensation is preferable but there are not so many land areas in the village, the land could be compensated by land, the trees – by cash.

A question to the facilitators: **If the land area gets divided and, as a result, the use of the land as before becomes impossible, how will the compensation be implemented? What if the leaseholder has already incurred costs on the acquired land?**

- If the acquisition makes the land use impossible, full compensation will occur. Any cost incurred by the leaseholder will be refunded.

A question from the facilitators: **What concerns do you have? What opportunities do you see for the village development following the road construction?**

- Since the road itself is vital, we foresee a positive change. Hotels can open, new opportunities for tourism development can emerge, markets for agricultural products can be created, and so on.

- We are worried about the noise. The road will pass on the edge of the canyon. Even a loud talk echoes there. We fear that the work activities in that portion of the road will interrupt the serenity of the environment.

The facilitators answered: the environmental specialists will do assessments, and if the noise exceeds the permissible threshold, relevant structures will be built for noise reduction.

There was a question about how to address the issue of partially inaccurate documents related to ownership, leasing, and inheritance. The facilitators answered that it is desirable to have accurate documentation.

The Sisian-Kajaran (North-South Corridor) Road Project: Focus Group Discussion with the Project affected women (Darbas)

28.05.2022

Location: Sisian community, Darbas rural settlement

Number of FGD participants: 4 women

The FGD was facilitated by Astghik Mirzakhanyan and Kristina Saghatelyan

The Sisian-Kajaran road construction project's features as well as the FGD scope were presented. Within the FGD the following issues were discussed with the attendees.

Short introduction: name, age, marital status, hobby.

The discussion started about the school where ten technical workers and 20 teachers work, 4 out of them are men. There are 72 pupils at the school, most of them are boys. They receive vocational and high education outside the village and return upon graduation.

The village has 658 registered people; however, 480 live in the village currently.

Answers to the main questions:

1. **What kind of job can a woman find in your village?**
   - Women are mostly employed in school, at the water, and canning factories of Shamb.

2. **What is the average pay for the job?**
   - 80,000 – 150,000 AMD is the average salary.

3. **Which job positions are demanding in your village?**
   - For the time being, the demand in the labour market is only at the factories. There is also a need for private land cultivation and processing of the natural products received from livestock farming.

1. **Are the requirements realistic? Do you fit the criteria?**
   - Yes, those are sensible requirements; a woman with relevant skills can find the job.

4. **Do women and men get equal pay for the same type of job?**
   - If there is a job position that has a fixed salary, then yes.

5. **Can the woman find a job outside your area?**
   - Yes, of course.

6. **What are the requirements of the workplaces outside your village?**

- There are no special requirements, only the transportation cost should be taken into account.

7. **Are the requirements realistic? Do you satisfy the requirements?**
   - Yes, if we have matching skills and educational backgrounds.
8. **What job offers the best pay for women? What is the monthly salary of one person?**
   - Good pay is a relative thing, but comparatively more than 250,000 AMD salary would be good.

Let's talk about the needs of everyday life.

9. *Food*: **what do you think, is the food (by calories) enough for your family? What do you think, is your food healthy? What does it mean for you to have healthy food? Does the seasonality influence the abundance of food? If yes, then how.**
   - Our daily food ration consists of mainly natural products that we grow ourselves, therefore we can say we eat healthy food. We cultivate vegetables, and fruit and get milk products using only natural raw materials; we can say that we eat ecologically clean and healthy food. Each season has its eating order, which is pretty healthy. Currently, we use non-seasonal food in the form of canned food, but we work towards the development of the frozen food industry that will provide us an opportunity to save the products by keeping their quality.
10. **Could you tell us the prices of some basic products? Are you buying those or producing them yourself? Where do you buy them? Are those products always available? Are those products expensive for you?**
    - Basic products are available for us because there is a supermarket offering a wide variety of products in the village, you can find any products. The price is the same as that in the city.
11. ***Household care*: How many hours do you spend daily on household and family care? Who is helping you, and how?**
    - Women usually take care of family members (elderly people and children); time spent depends on necessity; it takes approximately 5-6 hours, most of the day.
    - Each family member in our village knows their share of responsibility, and the division of labour is clear for everyone.
12. ***Health care*: Are medical services available in your area? If yes, what kind of medical services can you get in your area? Is it necessary to reach the regional centre or capital to receive the needed service? If yes, why and for which services?**
    - We have a medical centre for basic ambulatory services; they work well; they provide some medication, and they complete some check-ups. Yes, of course, for the main serious examinations, and medical interventions, we have to transfer the patient to the city hospital, sometimes in the capital.
13. **How satisfied are you with the medical services? What would you change?**
    - We are satisfied as long as these medical services can address our needs, but we would want to have stomatology service as well.
    - It is also essential to have an obstetrician for the new-born safety.
14. **Are medicines available, and where?**
    - There is a pharmacy in the village, but some medications are missing.
15. ***Education*: Are you satisfied with the quality of educational institutions (kindergarten/school/university) in your region? What are the main problems of these institutions? What is the solution to these problems?**
    - We are satisfied with the quality of school education because 20 teachers with high education are working at our school. There are always improvement areas at all

educational institutions; for instance, a lack of laboratory devices, rooms should be equipped with new technologies, the library should be renewed, as well as necessary property and equipment for the gym.

16. **Who is responsible for that?**
    - We are all responsible for that, individuals, the community, the business sector, everyone who was born and raised in the village, and the state as well.
    - Currently, two benefactor brothers, who live and work in Russia, are significantly investing here.
    - It would be preferable if the state developed some mechanisms to encourage such individuals' activities to cause more investment inflow.

17. ***Public utility*: Are public utilities available in your area? Do you experience any problems with payments? Are the public utilities expensive? Are you happy with the quality of the services? Why?**
    - We pay for electricity via post; it is working well; for the garbage, too, it is expensive to pay for the property tax through the postal service, though, because they take service fee.

18. *Water:* **what is the quality of the drinking water in your area? Which source of drinking water do people mostly use (central water distribution system, well)?**
    - A new water line is under construction to improve the water quality. We do not pay a fee for the water distribution yet.

19. **Have you ever seen a water shortage and/or water pollution in your area? (If yes, in which season of the year, what were the reasons, and so on).**
    - The water quality is high in Shamb, and there is no pollution.
    - During the flooding in Darbas there is sometimes pollution, but not severe.

20. **Do you observe in your area any changes in landscape/weather (for example, considering annual regularity, relatively short periods of snowfall or less snow, decreasing river flows during particular periods within the year, etc.) and since when approximately (if you can estimate)?**
    - Yes, we have noticed that the snow and precipitation level diminishes annually. Every year we have a drought. Natural sources have decreased, and the water level is lower in the rivers.

21. **Are there any supporting programs especially for women looking for jobs? What kind of programs? Could you evaluate the efficiency of those programs? Please bring some examples.**
    - There are no such programs right now, unfortunately.

22. **Are people occupied with agriculture, livestock farming, and fishing? What is the share of those involved in rural activities?**
    - Fishing is prohibited in our area, but some families still go fishing.
    - Every family in the village with various degrees is involved in land cultivation and livestock farming because these sectors primarily provide means of living.

23. **Which agricultural activity is common in your region?**
    - Land cultivation and livestock farming.

24. **Do you help your neighbours in harvesting or other agricultural work? Is it common to help each other? Do you get paid for this (by cash or products)?**
    - For sure, there is a culture of mutual help in our village, but we also have paid services for mowing; each person pays for the machines used in the agricultural work on his land area. Payment methods vary, but mainly it is in cash.

25. **How productive is the land use by the population? In what condition does the population cultivate the land area? Is the land dirty or wasted? What are the other indicators? What is essential for land care?**
    - The land is in a normal condition for the most part because each user provides annual necessary nourishment of the land to increase the crop yield.
26. **Do people consume commodities of household production or sell them? How and where do they sell the products?**
    - Yes, every family depending on the household size, consumes the produced rural products to address their own needs; the rest is for sale. There is a canning factory in the village where we send excess goods such as fruits, vegetables, and berries that we collect in the forest.
27. **Do people in your settlement use firewood? What share depends on firewood (25%, 50%, 75%, all domestic households)? How is the firewood being used?**
    - In the community, almost everyone uses firewood for heating because there is no gas here.
28. **Do local households accumulate firewood for sale?**
    - Each household collects firewood for its use.
29. **What share of the community considers walnut to be an essential mean of life, and what share cultivates it (25%, 50%, 75%, all)? What would you say about hazelnut?**
    - Walnuts and hazelnut are essential means of subsistence along with the rest of the natural goods. They are for consumption and sale.
30. **Do people use pastures (to feed cattle, to make feed for them)?**
    - There are pastures in the communities; most of them belong to the community and are used fully mainly by leasehold.
31. **How would you describe crime and the common picture/situation for the security in your village. Is there domestic violence?**
    - There are few cases of violence, most of all family disputes settle peacefully by family members or by the intervention of a close person.
    - In general, in terms of crime, this is a safe community.
32. **How do people take care of the natural environment? What measures can they take in this direction? Who is responsible for the natural environmental care except for the local population, and what can they implement?**
    - For environmental protection, special conditions should be created such as gas supply processes that can reduce forest cuttings, educational programs, and state support for the community.
33. **What do you think should be changed in your area for better living?**
    - For agriculture and livestock farming, it is necessary to have seed farming stations; and new automation systems for agriculture. It is not possible to use the old ones anymore, as they are outdated from a business perspective.
    - During several years, with our efforts, we got new cattle breeds by interbreeding Simmental, Jersey, and Holstein cattle with the local cows. Such processes under the control of respective specialists could ensure an even better result.
    - As we have already mentioned, children's entertainment centres.

34. **What does a woman need?**
    - Rest, health improvement, help with child care. If there were entertainment centres for children and playgrounds, then women would be more relaxed as children would be busy, and women would be able to focus on self-development and other activities.

-Is it possible if villagers to decide collectively and build a playground?

- There is no facilitators, and we didn't think of it; besides, we don’t have an area for it.

-Is there violence against women?

- We haven't noticed, we don't see it; if it happens, someone from our people goes to help.

-What rights does the daughter-in-law have at home?

- Each family has its approach, but most families decide their duties together.

-What do men do in general, and how are they occupied?

- They work all day and night long, plant wheat, do injections, collect, and organize the harvest sale; many of them work at the factories, too.

-How do you envision your children's future?

- There are three children in an average family. They usually go to universities and institutes after finishing school. Some return to the village, while others settle in the capital and other cities or move to foreign countries.

-Are there any divorced women in the village?

- Yes, two women, they have one child each.

-Does any woman own a business?

- None.

-Is there a hairdressing salon?

- Yes, there is one in the supermarket area, but only for men.

-Is there a leader woman in the village?

- No, we do not have one; each woman is a leader at her home.

-Do women decide how to spend their own money?

- The daughter-in-law answers: I manage the income of our family, and I decide how to spend it.

-How many people work on the staff of administrative head in the village?

- As there has been the enlargement of the communities, few of them work.

-What specialists do you need in the village?

- A social worker, because there are personal problems that can be solved only by the social worker.

-Are women involved in the decision-making process in the village?

- In all honesty, there have not been common discussions in the village for a long time.

-Are there camps, and clubs for children?

- Sometimes for socially vulnerable children there have been organized outside the village, once it was held in the village.
- We value sports clubs for children very much, sport is very important, we have great potential in sport.

-Are there individuals who would be willing to retrain and work in the village in any sector?

- Yes, there are young women who are ready to be retrained and work in the educational and soft manufacturing sectors.

Sisian-Kajaran (North-South Corridor) Road Project: Focus Group Discussion with the Pensioners (Darbas)

28.05.2022

Location: Sisian community, Darbas rural settlement

Number of FGD participants: 7 (all male pensioners)

The FGD was facilitated by Astghik Mirzakhanyan and Kristina Saghatelyan

The Sisian-Kajaran road construction project's features as well as the FGD scope were presented. Within the FGD the following issues were discussed with the attendees.

Seven villagers participated in the interview, including a president of *the kolkhoz* for 15 years in the past; is 77 years old.

1. **What are the income sources for people of your age?**
   - Mostly with livestock farming, land cultivation, and gardening. We usually keep big-sized cattle of 400-500 in livestock farming. Recently, we have started developing small-sized cattle, such as sheep and goats, close to 100 head. We do not hunt. We take advantage of the goods provided by the forest.
2. **What is the share of the population involved in agriculture?**
   - 95% of the villagers are mainly occupied with agriculture.
3. **How do you spend your free time? Do you meet at social gatherings? Where?**
   - Yes, we meet in the middle of the village to share advice on gardening, discuss grain cultivation and livestock farming issues and find solutions.
   - Unfortunately, we do not have an appropriate meeting place where it would be possible to sit down, talk, discuss and play. It would be much better and more convenient to have an entertainment centre where it would be possible to spend leisure time, to discuss our activities and plans.
4. **What kind of means of living do you have, and what additional income do you have?**
   - Besides pension, gardening and livestock farming provide other sources of income due to exchanges and sales. 70% of the population in the village receives help from family members/relatives working in Russia (around 300 families from the village migrated to Russia).
5. **Do people of your age work? If yes, then where?**
   - Mostly no, because workplaces are scarce in the village.
   - In the past, the village had 800 workplaces at the factory of semiconductors. The school has 750-800 pupils; we had a lot bigger community. The number of students shrank by ten as of now.
6. **Do you live with all your family members together? How old are people who leave for a job search? Do they return?**
   - Yes, they go mainly to Russia and rarely come back. Emigration is sizable; the number of young people is lower, and most of our children are studying in Russia.
7. **Do you receive any support from any of the public authorities?**
   - We are not aware of this, maybe others do, but we haven't received anything; they do not give out subsidies. We discuss the problems with the head, but he does not have enough power to provide any support.
8. **Do means of transportation function well? What are the main routes, and why?**
   - Yes, we can commute inside the village and travel to the city twice a day. The purpose is to execute some banking transactions, deal with any other documentation and solve serious health issues. The cost is not a big deal if you do not need it every day (500 AMD). In the past, we would go for food, but now we have a big supermarket in the village, where we can get any product.
9. **Are health care services attainable for you? How would you describe those? Are you happy? Do you have to go to the central hospital and in which case?**
   - We are satisfied with the health care services of our community, there is a doctor and midwife, who provide the first help. We go to the central hospital in case of surgery or harder cases.
10. **Are public utilities available? Are you happy with the quality of those services? Is it hard to afford?**
    - We had a water problem till now which now local self-government tries to solve, we do not have gas in the village, despite the fact that the Iranian gas pipeline passes close to the village less than 1 km distance.

- Since there is no gas, we go to the city for charging cars or other devices, we wish the gas machine to come close to the village as it is a huge need for the village. The village could see huge savings.

11. **Do the population use pastures (to feed the livestock, or prepare feed for them)? If yes, from state or private pastures? When is the grazing season (May-September or…)? Please show on the map where those pastures are.**
    - We use half of the pastures, most of which are planted by villagers on a leasing basis. We plant mostly sainfoin, forage, and wheat, as well as beetroot.
12. **What main challenges do pensioners have in your community? What kind of means do you have to overcome those challenges? Who is responsible for these problems?**
    - Main problems are linked to the weak development of economies. In recent times prices have been soaring for seeds and fuels. We have a big problem with the lack of agricultural machinery. Several villages use one machine which is not enough to ensure timely cultivation. If we had relevant machinery in 5-6 villages, we would get around 1200 tons of wheat from 650 ha of areas that would benefit 450 families.
13. **In your neighbourhood are there any places having religious, sacral, cultural, historical, or archaeological meaning? Is there anything else that is important for your village? Please show it on the map.**
    - We have a church built back in 2005, with a priest.
    - We have sanctuaries where we take our guests.
14. **What predictions can you make for the future development of your village?**
    - Difficult to see the prospects for development. In the past, there were 750-800 children in the village, but now 70-80, the number has reduced by 10. In general, it is possible to develop, but we need significant resources, new workplaces and communal facilities, and so on, and the faith in the future should increase.
15. **To what extent do people take care of the environment? What do they do about this?**
    - We live inside the forest but try not to harm it as much as possible; we organize tree planting and garden cultivation. We take advantage of wild berries and herbs.
16. **Have you heard of the road construction project? Would you like to get to know more about the project?**
    - Yes, we have heard of it and looking forward to the work beginning. We hope we can take advantage of the opportunities the road will create. We will be able to sell the harvest in specific pavilions, and participate in the working process, which will be a temporary solution for unemployment.
17. **Would you like to add anything else?**
    - We propose to open up procurement points to market the goods that the villagers make from livestock farming and harvesting.

The Sisian-Kajaran (North-South Corridor) Road Project: Focus Group Discussion with teenagers (Darbas, teenagers)

30.05.2022

Location: Sisian community, Darbas provincial settlement
8 teenagers of 14-17 age group of the provincial settlement participated in the discussion.
The discussion was held by Suren Gyurjinyan and Kristina Saghatelyan.

The Sisian-Kajaran road construction project's features as well as the FGD scope were presented. Within the FGD the following issues were discussed with the attendees.

1. **How are people of your age occupied in your settlement?**

- We work mostly in construction and in the land cultivation sector. Some young people do pottery, making cups, jugs, and tools. Many girls take dancing and singing classes and are involved in pottery activities. The school occupies most of their time.

2. **How do you spend your free time? What do your community members do in their free time?**
   - Adults work in pottery in their free time, around 15 people.
3. **Are there youth clubs or organizations in your community? Do you visit those? Are you interested in them? If there are not any, how do you think why?**
   - No, there are no such clubs right now. IMPACT club has been closed; it functioned for a long time, the World Vision Armenia project has been over, too, and there have not been any other clubs.
4. **What are your family duties? How do you help your parents?**
   - Every child in the village helps parents; some engage in fieldwork, some in land cultivation, and we also help with household chores.
5. **Would you like to continue your studies? Where and what do you want to study?**
   - Most of us will continue our studies in Yerevan or Kapan. We prefer translation, law, economic and political sectors.
6. **Do young people work in your village? If yes, what do they do, where, and what is the general level of pay? Approximately how many young people till 25 years old work outside their land area?**
   - Yes, they are working, and the average pay is 6000 AMD daily. Around more than 20 young people have a job.
7. **Is it hard for young people to find a job? Where do they try to find a job? How do you get information about available opportunities?**
   - Not hard. There are various working opportunities.
8. **Are you occupied with livestock farming, fishing, hunting, and mushroom and berries collection? Where approximately (mark on the map)? How often do you do it? Does this occupation ensure income for you, or do you consume it at home?**
   - As we have already noted, the income source for the villagers, young people, comes from land cultivation and livestock farming. We certainly get income picking forest products, mostly from berry harvesting.
9. **How would you describe the crime rate and security level in your village?**
   - For the time being, the village is pretty much secure, and the crime rate is low. There are contentious and quarrelsome people in the village. It was like this, especially before 2018, but now we do not have such problems in this regard. It is a very secure village.
10. **In your neighbourhood, are there any places having religious, sacral, cultural, historical, or archaeological significance? Is there anything else that is important for your village?**
    - Yes, of course, we have seven churches, out of which Surb Stepanos church is functioning. We have tourist guides, Nubar and Nare, who accompany tourists and present our sanctuaries and churches.
11. **Have you heard of the road construction project? Would you like to get know more about the project?**
    - We have heard of it. We would like to know what opportunities this will create for youth.
12. **What predictions can you make for the future development of your village?**
    - We see our future as more developed, with more opportunities. We value people's mindset and lifestyle development. We should motivate older ones with our aspirations for new opportunities, which is the development of construction and agriculture of the neighbouring rural settlements.

13. To what extent do people in the village take care of environment? What are they doing?

- Each year at school, we organize events for village clean up. The whole village is engaged in this activity. We collect the garbage, which we do not sort yet. We plan to arrange such events more actively and frequently in the future.

14. Do you have anything to add?

- We can only wish to participate in opening various clubs in our village. We do not have musical instruments, and this is a big chance for talent discovery. We also want to have a pub in the village. The pub would become a meeting place for youth; they would get along and exchange ideas.
- A new school is under construction; hopefully, it will have a football field, tennis court and running path, and opportunities for developing the sport of athletics under the guidance of a professional trainer.
- We would like to have playgrounds for small children. We wish to enrich our library with books in various languages and professional literature.
- Even though we have standard medical services, we do not have a psychologist that both teenagers and older people need.
- We have three families with social vulnerability. Children in these families need cloth, school inventory, health care services, etc.
- We expect this project to cause a positive move in the village and the creation of small businesses. Maybe the hotel business can develop, and new services will be created (cafes, a branch of fishing, and so on).

Annex 4. CH STUDY PRINCIPLES, METHODS AND ASSUMPTIONS

Definitions of study areas / AoIs and approaches

The definitions of the CH study areas are closely linked with the potential areas of Project's influence on tangible and intangible CH. In relation to tangible CH, the study areas covered:

- **Direct study area** – corresponds to the direct impact area and included a road footprint, comprising the proposed road's 'right-of-way' (15.4m as per the Project design[100]) plus 10m from both sides of the road. Areas where road reinforcements, embankments, culverts, bridges, and other elements were designed, are considered as the road footprint as well, thus treated as the direct impact area. The same principle of direct impact area was applied to connections to secondary roads and intersections.
- **Wider study area –** up to 500 m on the both sides of the proposed road's footprint /right-of-way where possible given the existing mountainous terrain. Such a wider approach was necessary in order to consider the situations where physical signs on the surface may not reflect the dimensions of the CH sites. For instance, some archaeological monuments can have underground structures (burial complexes, remnants of fortresses, churches and shrines, other surface finds and traces) and thus can have a potential to extend into/under the proposed road.

The **study area in relation to intangible cultural heritage (ICH)** is not attached to the proposed alignment. ICH is generally embedded in traditional residential and economic patterns. Communal knowledge and belief systems (e.g., oral history and rituals) are often part of the tangible elements of a culture (e.g., a cemetery or a church), so direct impacts to physical objects or places may also affect intangible cultural values. Thus, the ICH study focused on the *potentially affected villages and their 'practices, representations, expressions, knowledge and skills that communities, groups and, in some cases, individuals recognise as part of their cultural heritage and which are transmitted from generation to generation'* (per PR8).

Applicable national legislation

The Law on Preservation and Use of Immovable Monuments of History and Culture and of the Historic Environment (1998)[101] provides the legal and policy basis for the protection and use of monuments in Armenia and regulates the protection and use of historic monuments and sites. Particularly:

- Chapter 11 - When discovering monuments during implementation of construction, agricultural and other activities the works are stopped and authorized body (the Ministry of Education, Science, Culture and Sport) is notified of it in accordance with order defined by legislation.
- Chapter 19 - Any type of the construction activity in the areas containing historical monuments or archaeological sites must be undertaken in agreement with the authorized body.
- Chapter 20 - Newly discovered sites are protected by the Law until they are included in the State Lists.
- Chapter 15 of the Law describes procedures for - amongst other things - the discovery and State registration of monuments, the assessment of protection zones around them and the creation of historic-cultural reserves.

[100]Consists of carriageway (9.9m), road shoulders (called 'road edges' in the detailed design) (2×0.6m), safety strips (called 'emergency lanes' in the detailed design) (2m on one side+1.1m on the other side) and verges (2×0.7m).

[101]https://www.arlis.am/DocumentView.aspx?docid=107521

The Law on Intangible Cultural Heritage (2009)[102] regulates the legal relations arising from the processes of preservation, safeguarding, and development of intangible cultural heritage, including identification, documentation, research, application, recreation, teaching, and dissemination of intangible cultural values, protection of the property rights over such values, maintenance of intangible cultural heritage of Armenia, etc.

Methodology

The CH baseline data collection and analysis methodology included several steps, as described below.

Desktop study

This stage was devoted to collecting information about the archaeological sites and historical monuments from unpublished (archival) and (published) sources, compiling their inventory and comparing them with the list of the archaeological, historical, and natural monuments contained in:

- The RA Government Decision No. 2322-N dated 29.12.2005 "On approval of the State List of Immovable Historical and Cultural Monuments in the RA Syunik Region";
- The RA Government Decision No. 967-N dated 14.08.2008 "On Approval of the List of the RA Monuments of Nature";
- The RA Government Decision No. 385-N dated 15.03.2007 "On Approval of the List of State-owned Immovable Historical and Cultural Monuments that are not subject to Alienation/Acquisition", Annex 9 - Syunik Province.

The desktop study also covered the review of:

- the archaeological study reports prepared by the Institute of Archaeology and Ethnography of the RA National Academy of Sciences related to the Project area,
- Project design and other supportive documents related to the North-South Road Corridor Artashat-Kajaran section (2016-2019), and
- Report for the archaeological and tangible historical-cultural resources prepared for the Sisian-Kajaran Road Section (Tranche 4) in 2016, including the map of CH sites prepared that time.
- National studies on ICH.

The historical information or context for each site was put together and a preliminary mapping of the collected topographic information against the proposed road alignment was carried out. The national studies on ICH were cross-related to the Project area, with a special focus on 22 potentially affected villages (viewed in the historical context in terms of traditions / cultural habits / ceremonies (wedding, funerals, baptising, special celebrations) / access to churches and cemeteries.

Fieldwork activities

Fieldwork activities included systematic field surveys that were carried out within about 500 m on both sides of the proposed highway. Recording, photo-taking and mapping of the archaeological sites / items and context and collection of surface finds were completed for further understanding of their boundaries, spread of cultural layers and relationship with the Project road and its components as well as other facilities associated with the road construction activities (spoil disposal areas, connecting roads, intersections, wild animal

[102] https://www.arlis.am/DocumentView.aspx?docid=121003

passages, cattle and agricultural passages, potential borrow-pits). Drones were used at certain locations that were not accessible during the field survey.

In terms of ICH, the identification of the sites or locations that are considered "sacred" for the local residents, and sites associated with the local festivals, celebrations, culturally important events or traditions was completed. These sites could be cross-stones, memorials with potable water springs, memorials devoted to the victims of war, etc. The GPS locations of such sites (if these were not part of the CH field study) were noted to assess whether they can be impacted during the project implementation.

Another element of the ICH works was to determine which ICH features (registered in UNESCO and national list) are practised in the Project region. The screening indicated that ICH that could be met in the Project region include:

- **From UNESCO list:** (1) Duduk and its music, (2) Armenian cross-stones art. Symbolism and craftsmanship of Khachkars, (3) Lavash, the preparation, meaning and appearance of traditional bread as an expression of culture in Armenia.
- **From national list:** (1) Yarkhushta, group dance, (2) Traditional wedding ceremony, (3) Trndez, Vardavar, Surb Sarqis ritual performances, (4) Gatha, preparation of cultural features, (5) Preparation of vodka from fruits, (6) Preparation and traditions of "Matsun", (7) Easter celebration, (8) New Year celebration, (9) Funeral ceremony, (10) National musical instruments (Tar and Canon), (11) Carpet production.

Further steps were to determine if the local ICH practice results in the income generation and if there are any links between the use of ICH and tourism locally. This was completed via on-site observations and consultations with the local residents and local authorities.

Interviews and consultations

To obtain insights in terms of tangible CH and ICH, interviews and consultations were conducted during the ESIA's socio-economic study (April-August 2022). This engagement involved the Sisian History Museum under the Ministry of Education, Science, Culture and Sport, representatives of the ICOMOS-Armenia the member of which was directly engaged in the survey, the administrative heads of villages and other carriers of the ICH information / values / traditions, such as females and males of working age and pensioners. These meetings helped to understand the value (significance) of CH sites and ICH features to the local stakeholders, as well as the extent of the use of local cultural heritage assets, churches, etc.

On 20.04.2023, a workshop meeting was held with the representatives of the Ministry of Education, Science, Culture and Sports and the National Academy of Science to discuss the predicted impacts on and mitigation for the registered CH sites and cave site in Lernadzor. As a result, it was confirmed that the proposed mitigation is fit-for-purpose and no realignment of the proposed road due to its potential impact on the registered CH sites is required based on the available information. Another meeting was held with the ICOMOS-Armenia on 12 May 2023.

At the subsequent stages (during the ESIA disclosure), further consultations are planned with the local residents and any interested stakeholders, as well as with the Council for Intangible CH Safeguards issues & Department for Protection of Historical and Cultural Monuments (under the Ministry of Education, Science, Culture and Sport).

Analysis of information collected during the fieldwork and synthesis with the desktop information. Identification of CH sites/units that can be affected by Project implementation

The analysis of the sites observed and information collected during the fieldwork was undertaken to understand their state, value and importance and to evaluate the informative potential of the sites, or chance finds, if the structures were partly and not well preserved or were absent completely. The identified sites were assessed in term of whether they would be

unlikely to be affected or not. An effort was invested into determining if the existing archaeological sites had any associated virtual, traditional or historical importance for the local residents.

In parallel, the following tasks were completed:

- Considered the potential for discovering unknown sites or chance finds when the structures are partly and not well preserved or are absent totally,
- Provided a justification for assigning CH value/importance for each CH site, where this was possible (it no additional studies were recommended). The discussion of values/ importance covers was tackled from several ends: a) from the local use perspective / importance for the local residents, b) importance in terms of tourism (part of the routes, potential to become a tourist attraction in the future), and c) scientific importance.
- Grouped the CH sites in terms of their types;
- Grouped the CH sites in terms of their value / importance and consider these parameters as suggested in the sensitivity assessment matrix below.
- Determined the sensitivity of all sites that are identified to be falling within the direct impact area using the criteria presented below. Note that importance and value of the sites are embedded in the sensitivity table.
- Documented the local spread of ICH and use practice of ICH features,
- Provided information about value / importance of the locally practiced/used ICH features and grouped the identified ICH in terms of its level of value/important.
- An attempt was made to develop visuals/maps to represent the ICH distribution, values, however, this appeared to be non-informative.
- Made a judgement about the potential for any ICH loss.
- Provided advice on the need for additional CH protection measures along the existing roads to be used by Project construction transport. Specify these measures, where needed.
- Indicated the no-go areas from the CH perspective, so that no construction camps or other project facilities would be allowed to be located there.

The prediction of whether certain CH sites/units can be affected by the Project activities relied on a number of considerations:

- location of a CH site fully or partially falling within the proposed road alignment (right-of-way) is the key determinant for assessing the potential for the Project impact on this site. Many sites partly or fully fall within the future road footprint (note that such sites are indicated as being at a ‘0 m’ distance from the road). Whether the CH sites would be located over the tunnels, under the bridges, etc. was also considered to scope out certain CH sites from further assessment;
- another important consideration is whether archaeological monuments have any underground structures/barriers (burial complexes, remnants of fortresses, churches and shrines, other surface finds and traces) and thus have a potential to extend into/under the proposed road;
- a distance from a CH site to the proposed road alignment is considered in combination with the scientific, historical or traditional importance and condition the CH site, as well as its local use;
- the presence of the CH units in the State List of Immovable Historical and Cultural Monuments in the RA Syunik Region and expert opinion/conclusion of the archaeologists on their protection status were considered during the impact identification exercise as well.

The size, spread and rarity / availability of similar artefacts/sites in the vicinities and region were assessed in combination with the above aspects in order to determine a sensitivity of the potentially affected CH sites. **Annex 5** describes the historical, architectural, archaeological, geological and natural monuments that can be affected by the Project construction and summarises the results of the completed impact identification and sensitivity and visibility assessment for the individual sites.

A risk-based approach was applied when making any judgements including about the sensitivity of an ICH feature or a CH site and when considering if a CH site/object can be retained intact/protected near the road construction site or SDAs or ICH unaffected, etc.

CH Sensitivity Matrix:

Negligible sensitivity	✓ Few assets (e.g., tangible or not tangible) with very little or no surviving archaeological interest (sites previously heavily damaged or destroyed) ✓ Cultural sites or assets are not legally protected and/or do not have any traditional or customary protection ✓ Local people do not use the CH assets anymore, or this is strongly declining or local people do not use/practice this ICH feature anymore or it is declining ✓ Other similar CH sites are available in the vicinities/ similar ICH are wide-spread around or practiced by the majority in the communities ✓ Sites can easily be repaired, displaced or replaced / ICH practice can be easily restored.
Low sensitivity	✓ Designated or undesignated assets (material or cultural, e.g., tangible or not tangible) of local importance ✓ Assets of limited value, but with potential to contribute to local research objectives, e.g. sites that have been ploughed and are under threat of continued destruction by ploughing ✓ Cultural sites and assets legally recognized but not protected, and/or having a local traditional or customary significance ✓ Local use of the CH assets (tangible or not tangible) is declining, but still continued ✓ Other similar CH sites / ICH practices are not available nearby, but similar sites can be found at the regional or national scale ✓ Sites can be displaced or replaced / ICH practice can be restored, although with some technical difficulties
Medium sensitivity	✓ Assets (material or cultural, e.g., tangible or not tangible) protected under national legislation, sites that are on the protected monument or ICH lists ✓ Assets that can be contribute significantly to acknowledged national or regional research objectives ✓ Local use of the CH and ICH assets is strong and is an important social feature ✓ Other similar CH sites or ICH practices are not available at a regional or national scale ✓ Sites can be replaced or displaced / ICH practice can be restored, but with great difficulties.
High sensitivity	✓ Assets protected under national legislation and/or UNESCO world heritage sites and ICH lists designated for their cultural historic or archaeological value (including nominated sites) ✓ Assets (material or cultural, e.g., tangible or not tangible) that can contribute significantly to acknowledged international research objectives ✓ Local social identity is depending on the CH asset / ICH elements are of great value / importance for the local livelihoods ✓ Other similar CH sites are not available at an international scale / no similar ICH practice is found elsewhere ✓ Assets cannot be displaced or replaced / ICH practice cannot be restored.

Recommendations

Methodology on the development of the mitigation procedures and safeguard policy is based on the mitigation hierarchy. First, actions are considered for avoiding and then for minimizing the impacts on the archaeological sites and historical-cultural monuments. The guiding principles are the following:

1. If the physical boundaries of the sites fall within the proposed road footprint / right-of-way, the road route is advised to slightly amend. If not possible, then archaeological excavations of the affected parts are required. The volume and surface of the

excavations as well the estimation of the resources depend on the specific site and must be calculated and clarified precisely before the start of the construction (trial trenching may be required);

2. If the buffer zones of the registered sites fall under the RoW, but no physical signs are visible, then trail trenching would be required to specify whether there are existing cultural layers or not. If during such tests cultural layers are discovered, the archaeological excavations will be required as well;
3. At some points (i.e. interchanges) minor changes of the road design can be suggested or required to alleviate the direct impact of the road Project on the archaeological sites or on some of their parts;
4. At the construction areas, where no archaeological sites are known chance, a chance find procedure should apply. The construction contractor will need to hire an archaeologist who will observe the topsoil removal and stop the works if artifacts appear in the disturbed earth. The main tasks of the archaeologist observing the construction process will include the inspections of the sites which are not directly impacted by the road construction, but are very close to the area of the Project activities.

After the excavations are finished the archaeological works report must be submitted by the excavation units to the RA Archaeological Commission and to the Contractor. Based on the report the Contractor will declare the end of the planned archaeological activities and the Commission will advise the Ministry of Culture to declare the construction areas “archaeologically free”.

Cultural landscapes and visual impact assessment

Cultural landscapes can be affected in terms of how the road will look within these landscapes and the view from the CH site would change as a result of the Project as well. Most of these views will be from specific cultural heritage sites, looking on to the roadway. The principle is assessing how the view from the CH site would change as a result of the road. The assessment is one of loss of CH amenity as a result of the changed landscape and associated visual impact.

The CH value of the sites is assessed recognising that none are directly affected by the road (i.e. sensitivity of the receptor). The magnitude of the visual impact from that receptor will then be assessed and the two combined to provide an overall significance rating. The role of the CH sites in intangible heritage is also assessed viz. whether the CH sites feature in specific social practices, rituals and festive events and where that may occur the importance of the viewshed to such events.

Finally, it is recognised that the study area (specifically on the northern side of the tunnel) as a cultural landscape. In order to establish this landscape's significance, its various components were evaluated at least at a macro level, i.e.:

a. How much of this landscape is the product (or by-product) of human intervention over the years, and if so, how important is that? Are there components that are the result not only of construction and planting, but also traditions and historic practices, the sustainability of which could be threatened by the new development?

b. Does the receiving environment comprise different spatial character areas? If so, then where and how would they be described and their extents defined?

c. How important are this landscape's component settlements, planting patterns, transport routes and other imprints? Are there products of human intervention in this landscape that detract from its significance(s)?

d. Are there built elements or groups of built elements that would be considered historical landmarks, markers or important historical orientation points in this landscape?

e. Are there natural elements that would be considered landmarks or important orientation points in this landscape? If so, then where?

f. Are there important outlooks that may be affected by the new development? If so, then where?

g. Are there settings that help to define an important architectural grouping or other manmade feature? If so, then where?

Once the significance of the landscape has been defined using international criteria such as the Burra Charter and its derivatives including Heritage Victoria's Landscape Assessment Guidelines and others, establish the landscape's potential heritage threats and sensitivities. For example:

a. Would outlooks that define a particular heritage site be affected/threatened? Identify the nature of that potential threat and plot those.

b. Similarly, would outlooks from scenic routes be affected?

c. Would settings defining a particular heritage site be affected/threatened? Identify the nature of that potential threat and plot those.

d. Would specific sites be physically threatened, e.g., known archaeological sites or sites with archaeological potential? Identify where.

Annex 5. DESCRIPTION OF THE HISTORICAL, CULTURAL AND ARCHAEOLOGICAL SITES ALONG THE PROPOSED ROAD THAT ARE LIKELY TO BE AFFECTED

Legend

- Natural monument
- Shrine, chapel
- Tomb field, cemetery
- Remnants of settlements
- Spring monument
- Flint raw materials, stone tools
- Settlement
- Diatomit, sediments
- Structure remnants
- Church
- Fortress
- Cave

CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
1	Natural monument *(newly discovered)*	km 1.4+50	Sisian	589637.11	4378309.154

The natural monument is located on the right edge of the proposed road. It is a formation that appeared as a result of abrasion and weathering of a natural rock and has a shape of an opened mouth of a predator. It will be affected as it is located within the road alignment. It bears no scientific value, is not used or valued locally and has no connection to locally practiced traditions.

Visibility (from the road): it is within the proposed road alignments; if relocated, will be visible and will continue adding to the local landscape in terms of aesthetic value

Potential to extend into/under the proposed road: n/a (as it is within the alignment)

Importance: local

Likelihood of impact: high

Sensitivity: low

CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
2	Shrine-sanctuary "Stephan Ukht" *(newly discovered)*	km 2.3+20	Sisian	589742.85	4377476.55

The shrine is situated at the distance of 12 m to the Project road alignment. Medieval pottery sherds were collected from the area around the shrine, showing the existence of more early activities. Most probably, the shrine is related to the large settlement and tomb field, located some 200-250 m south-west. During the road construction works special protection measures will be required in order not to damage the shrine and its historical context. This site bears some scientific value and is also valued by the locals, hence during the road construction and operation stage the shrine must be accessible for the locals.

Visibility (from the road): it is integrated into the local landscape and will be visible from the Project road during its operation.

Potential to extend into/under the proposed road: unlikely

Importance: regional

Likelihood of impact: high

Sensitivity: medium

CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
3-15	Settlement and tomb field *(included in the State list of monuments)*	km 2.5+50 - km 3.7+50	Sisian	589941.37	4377328.339

This site encompasses several CH units (NN. 3-15). One element of the site is included in the Syunik Region's State List of Monuments as a tomb field with the code 8.6.4.1. To the west from it, on the top of the hill overlooking Sisian, the so-called "Qaraberd" Bronze-Iron Age fortress can be found (code 8.6.4). Presumably, the tomb field belongs to the fortress functioning period. It occupies a large area, approx. 1-1.5 km in length and 200-250 m in width. In general, the site was heavily meliorated and intensively cultivated (it belongs to Sisian Forestry Authority), some of its parts are very well preserved and presented by tombs constructed with gravel-stone fill and with cromlechs composed of big stone blocks, as well as by traces of circular dwelling constructions. These objects often appear next to each other and belong to different periods. Judging from the surface finds (pottery sherds) collected from the destroyed parts of the site, the settlement and the tomb field can be dated by the Iron Age and High Medieval Period.

Overlaying the road design and the archaeological units shows that the main parts of the latter will be affected during the road excavation works. The rest is scattered to up to 80m from the road side (on the surface). In general, this site is a serious archaeological barrier for the Project, it bears a scientific value. It is not used locally and has a limited aesthetic value as part of the natural landscape.

Visibility (from the road): will be visible after the road construction; some parts will be under the proposed road.

Potential to extend into/under the proposed road: likely (it occupies a large territory)

Importance: national

Likelihood of impact: high

Sensitivity: high

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CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
16	Section of diatomite origin lacustrine sediments 1 *(newly discovered)*	km 4.6+00	Sisian	590622.36	4375555.182

The middle stream of the Vorotan River basin has preserved deposits of lacustrine sediments of diatomite origins, which contain the geological history of the Quaternary lake existing within the boundary of the Vorotan depression. These diatomite formations contain rich fossil floral and faunal remains (leaves, insects, fish imprints and mammalian remains) and are very important sources for understanding the geological history of Armenia and the whole region, as well as for the reconstruction of the Pleistocene environment. The sections of such deposits, containing the described finds, are determined as paleontological localities. They are not connected to the local traditions or cultural practices, and bear no aesthetic value.

This site will be affected during the construction works, as it falls under the alignment.

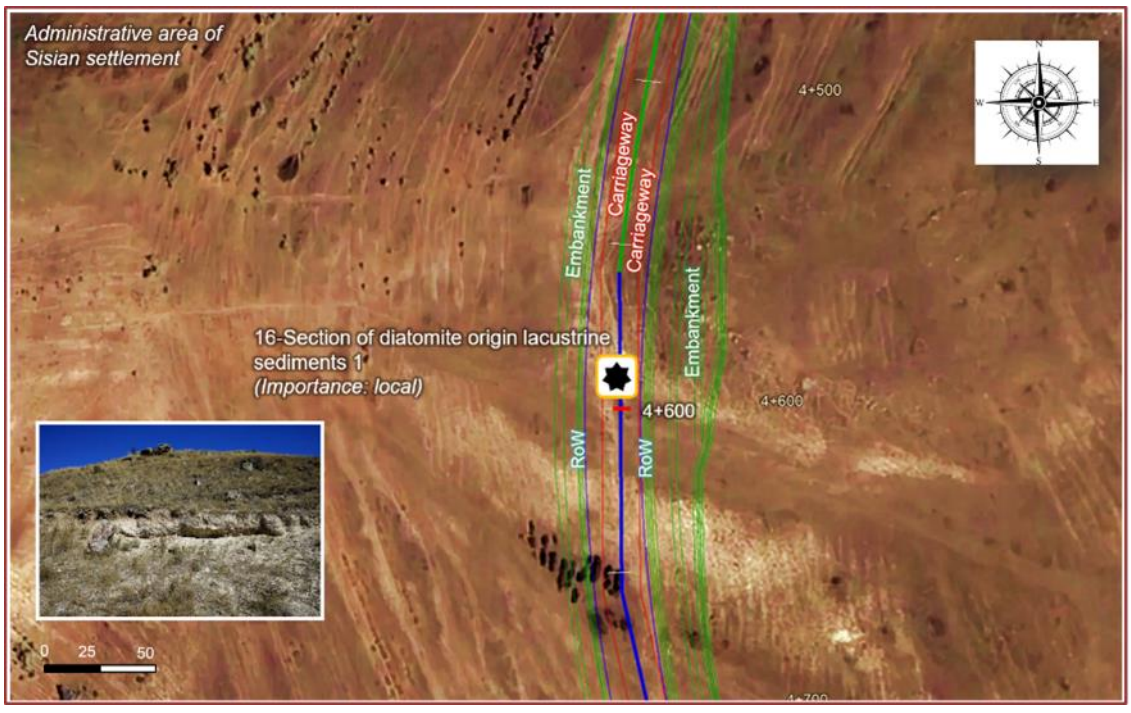
Visibility (from the road): will be visible from the proposed road (after construction)

Potential to extend into/under the proposed road: n/a as located within the alignment

Importance: local

Likelihood of impact: high

Sensitivity: medium



CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
17	Section of diatomite origin lacustrine sediments 2 *(newly discovered)*	km 4.9+50	Sisian	590755.48	4375228.52

This section of diatomite origin lacustrine sediments is located above tunnel TU001 that will start from km 4.8+50 and end at km 5.3+00. It is likely that during the construction works of the tunnel the basal part of the sediment will be opened, which then, will require special studies and protection measures.

The site is not connected to the local traditions or cultural practices, and bears no aesthetic value.

Visibility (from the road): will not be visible as this section of the proposed road will pass via the tunnel.

Potential to extend into/under the proposed road: unlikely

Importance: local

Likelihood of impact: low

Sensitivity: low

CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
18-20	Tomb field *(newly discovered)*	km 5.1+00 - km 5.5+50	Uyts	590882.84	4375188.719

Most probably this site is a necropolis of the Bronze Age fortress that existed in neighbourhood of the so-called "Syuni berd" fortress, which, however, is not included in the State List of Monuments as a separate site. The units are scattered around at 24-140m to both sides of the proposed road and for some 450m along it. Those units of the necropolis (tomb field) that are located close to the proposed road may be affected during the construction works (for example unit 20 is some 24m from the road at km 5.5+50, see the lower photo).

Taking into consideration that a tunnel will be constructed starting at km 4.8+50 and ending at km 5.3+00, part of the CH units will stay above it and will not be affected, while some units (especially the tombs located in close proximity to the existing Sisian-Aghitu road) will be affected. The exact area of impact can be determined only after safeguard excavations. The site has a scientific value. No local use or practiced traditions are known to be associated with it.

Visibility (from the road): will not be visible as this section of the proposed road will pass via the tunnel. Potentially visible at 54-55 km

Potential to extend into/under the proposed road: unlikely

Importance: national

Likelihood of impact: medium

Sensitivity: high

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CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
21	The unclassified structure remains 1 *(newly discovered)*	km 6.0+00	Aghitu	591739.53	4375149.877

The area of the unclassified structure remains 1 is heavily meliorated. This complicates making a suggestion about its function or time period. Archaeological finds are not identified as well.

It is highly unlikely that this site can have a scientific value. It is not used or valued locally and has no connection to locally practiced traditions. This unit falls within the road alignment and will be potentially affected.

Visibility (from the road): unlikely to be visible after construction

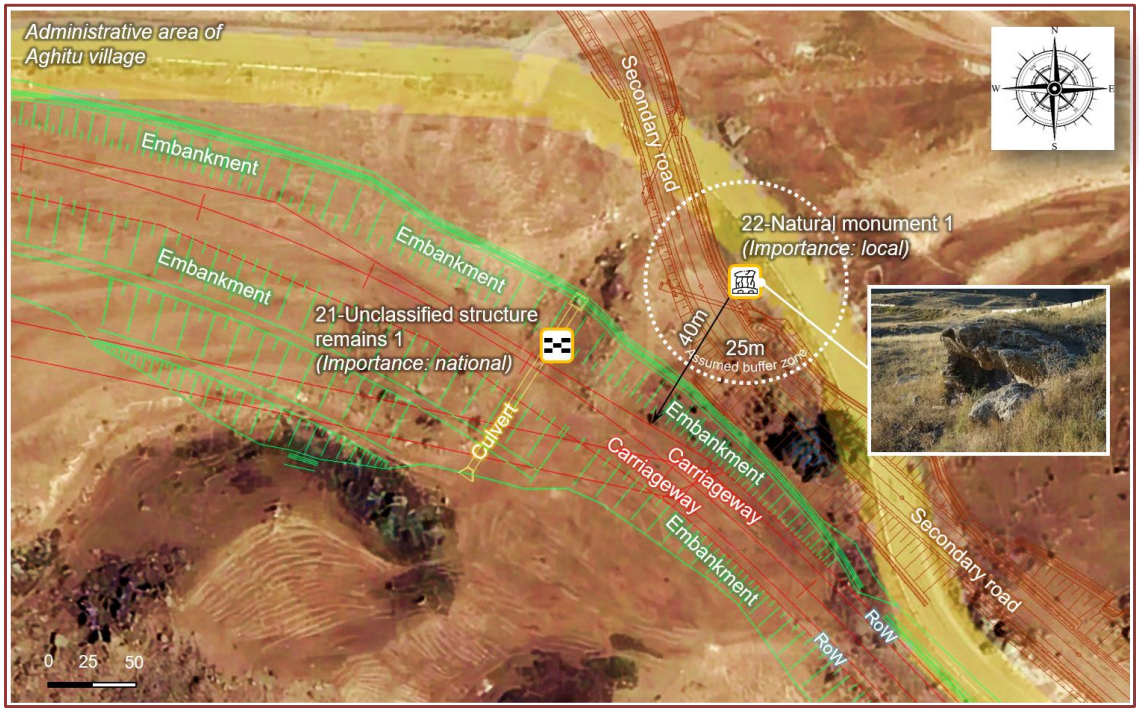
Potential to extend into/under the proposed road: n/a as located within the alignment

Importance: national

Likelihood of impact: high

Sensitivity: low

No picture



CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
22	Natural monument 1 *(newly discovered)*	km 6.0+40	Aghitu	591791.68	4375166.81

The natural monument is located to the right edge of the proposed road and next to the secondary road. It is a formation that appeared as a result of abrasion and weathering of a natural rock. Due to its location, it may be affected during the construction. It bears no scientific value, is not used or valued locally and has no connection to locally practiced traditions.

Visibility (from the road): it is within the secondary road alignments; if relocated, will be visible and will continue adding to the local landscape in terms of aesthetic value

Potential to extend into/under the proposed road: n/a (as it is within the alignment)

Importance: local

Likelihood of impact: high

Sensitivity: low

The map is provided above

CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
23	The unclassified structure remains 2 *(newly discovered)*	km 6.5+50	Aghitu	592164.03	4374775.299

The area of the site is meliorated; it is almost impossible to determine its function (tomb or structure remnants) and time period to which it belongs. No archaeological materials were discovered. It is highly unlikely that this site can bear scientific value. It is not used or valued locally and has no connection to locally practiced traditions. This unit falls within the road alignment and will be potentially affected.

Visibility (from the road): unlikely to be visible after construction

Potential to extend into/under the proposed road: n/a as located within the alignment

Importance: national

Likelihood of impact: high

Sensitivity: low

No pictures

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CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
24	Structure remnants or settlement 1 *(newly discovered)*	km 6.8+50	Aghitu	592429.32	4374625.949

The remnants of wall structures and traces of separate constructions are visible on the surface; hence it is likely that there is a settlement here. As there are no archaeological surface signs, the period to which the settlement may belong are unknown. Based on the existence of the Early Medieval period cemetery or tomb field presented by slab graves located ca.100 m south-east from the site, it can be assumed with high level of confidence that the settlement refers to the same time period. In general, the whole complex can be a part of the Late Hellenistic and Early Medieval Periods Aghitu village or town, and synchronous to the large funerary monument of the 6th-7th centuries AD standing in the centre of the modern village of Aghitu.

The desktop and field study reveal that this CH feature is a newly discovered archaeological unit - it is not present in the State List of Monuments.

The site elements are scattered around the proposed road and partly fall within its alignment, so the site will be affected by the construction works.

The site is expected to have a scientific value; no local use or practiced traditions are known to be associated with this site. It bears a limited aesthetic value.

Visibility (from the road): will be visible from the proposed road after construction

Potential to extend into/under the proposed road: likely

Importance: national

Likelihood of impact: high

Sensitivity: high

CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
25	Tomb field or cemetery *(newly discovered)*	km 7.0+20	Aghitu	592573.23	4374540.644

This newly discovered archaeological unit is located about 100 m south-east of the previous one (see CH unit 24). It is presented by slab graves visible in the section of sediments, which more probably are dated back to the Early Medieval Age. This site is not included in the State List of Monuments. It scattered on and around the proposed road, largely falling within the future alignment.

Obviously, this archaeological unit will be affected by the Project. These burials have no aesthetic value as such; however, they do have a historical and archaeological significance.

No local use or practiced traditions are known to be associated with this site. It bears an aesthetic value.

Visibility (from the road): will be visible from the proposed road after construction

Potential to extend into/under the proposed road: likely

Importance: national

Likelihood of impact: high

Sensitivity: high

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CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
26	Structure remnants or settlement 2 *(newly discovered)*	km 7.6+30	Aghitu	593025.74	4374152.794

This newly discovered archaeological unit is located below the southern side of the basaltic cliff formation, south of Aghitu village. It is one of the oldest terraces of the Vorotan River. At the northern part of this formation, the Aghitu-3 Upper Palaeolithic cave and a Bronze-Iron Age and Classical-Medieval Periods large fortified settlement (at the top of the cliff) are located. Below the terrace, there are numerous caves with traces of intensive occupation that are verified by contours of wall structures overlooking the Vorotan valley with some noticeable incline and with thousands of pottery fragments spread in the area.

The Iron Age and High Medieval Period samples can be easily noticed in the site (see the lower photo). It is clear that the site is a result of the vital activities of people occupying the noted settlement. As per the Project design, it is planned to construct a bridge here. After the plotting of the CH area, the actual surface and volume of safeguard excavations will be determined.

No local use or practiced traditions are known to be associated with this site. It bears an aesthetic value.

Visibility (from the road): will be visible from the proposed road after construction

Potential to extend into/under the proposed road: likely

Importance: national

Likelihood of impact: high

Sensitivity: high

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CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
27-29	Structure remnants in the shape of walls and tombs 1 *(newly discovered)*	km 8.7+90 - km 8.8+30	Aghitu	594129.25	4373887.3

Traces of wall structures on the ground and circular structures leaving an impression of tombs are visible in this newly discovered site. Hence it can be assumed that remnants of a settlement and/or tomb field can be found here.

The lack of surface archaeological finds is not allowing to have any assumptions about the chronological frames of the site's designation. Potentially, it might belong to the Bronze Iron Age.

Overpaying the proposed road with the noted CH units suggests that the site largely falls within the alignment. Thus, it will be affected during the construction.

No local use or practiced traditions are known to be associated with this site. It bears a limited aesthetic value; it might have a scientific value (to be determined during additional research).

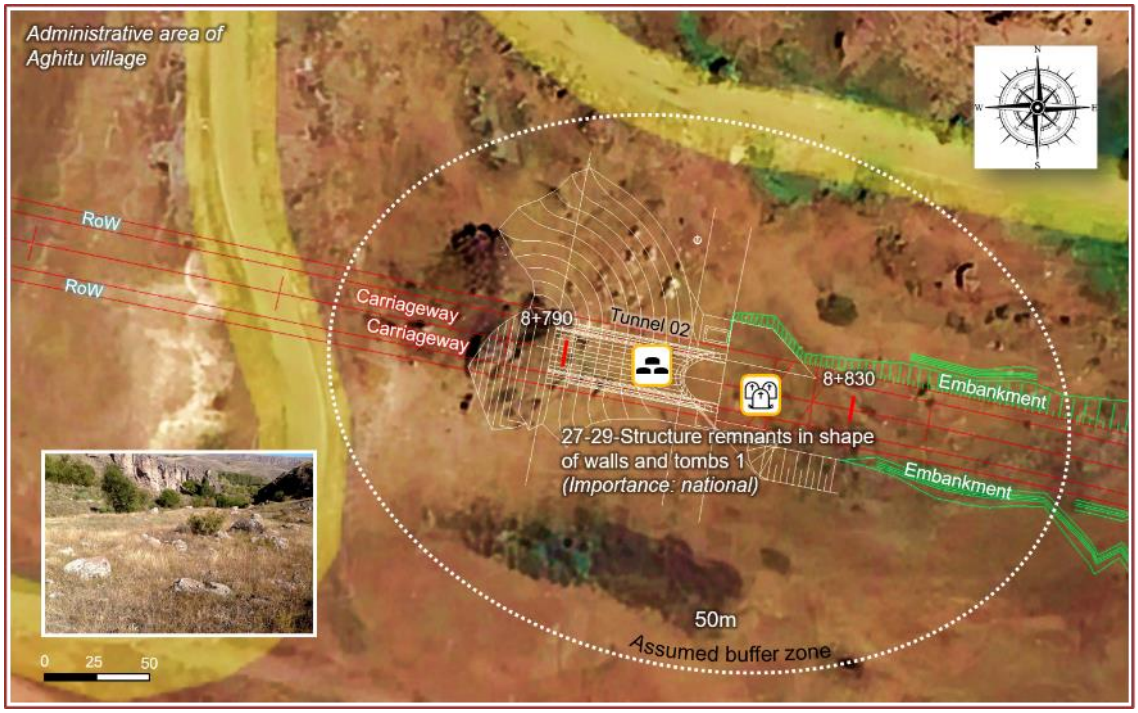
Visibility (from the road): will be visible from the proposed road after construction

Potential to extend into/under the proposed road: likely

Importance: national

Likelihood of impact: medium

Sensitivity: high



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CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
30	Natural monument 2 *(newly discovered)*	km 9.0+30	Aghitu	594383.92	4373824.688

Natural monument 2 located within the boundaries of Aghitu settlement is a formation of abrasion and weathering of a natural rock. It has a shape of a prehistoric animal. It will be affected as it is located within the road alignment. It bears no scientific value, is not used or valued locally and has no connection to locally practised traditions.

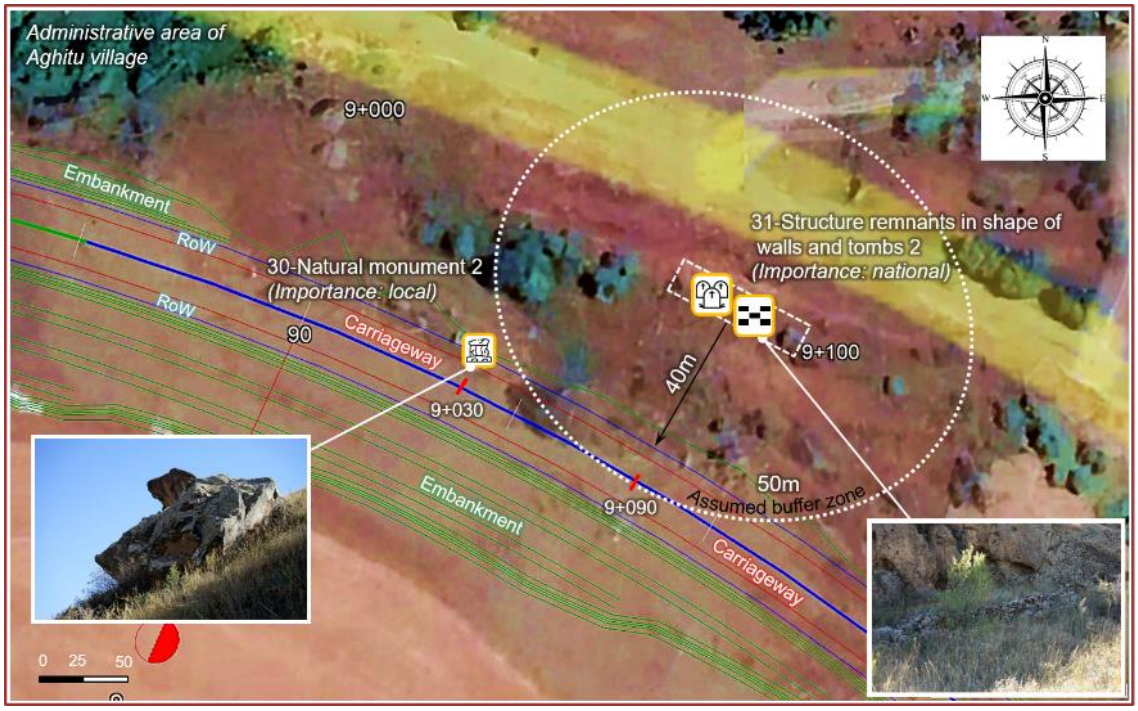
Visibility (from the road): will be visible from the proposed road after construction (if relocated)

Potential to extend into/under the proposed road: n/a as located within the alignment

Importance: local

Likelihood of impact: high

Sensitivity: low



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<table>
<tr><th>CH unit</th><th>Type of the CH</th><th>Location to the proposed road</th><th>Community</th><th colspan="2">GPS coordinates</th></tr>
<tr><td>31</td><td>Structure remnants in shape of walls and tombs 2 (newly discovered)</td><td>km 9.0+90</td><td>Aghitu</td><td>594435.65</td><td>4373827.65</td></tr>
<tr><td colspan="3">Traces of wall structures on the ground and circular structures leaving impression of tombs are visible here, which allow to conclude, that more probably they are the remnants of a settlement and\or tomb field. A complex consisting of several rock-shelters front part of which are separated by a wall structure were observed (see figure). The lack of surface archaeological finds does not allow to make assumptions about the chronological frames of the site. It bears a limited aesthetic value, but might have a scientific value.
It is located outside the road alignment (ca. 40m from the road edge), however, can be impacted by the construction operations, especially the earthworks.
Visibility (from the road): will be visible from the proposed road after construction
Potential to extend into/under the proposed road: unlikely
Importance: national
Likelihood of impact: medium
Sensitivity: medium</td><td colspan="3">  </td></tr>
<tr><td colspan="6">the map is provided above</td></tr>
</table>

CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
33	Natural monument 2 *(newly discovered)*	km 9.2+50	Noravan	594583.13	4373677.823

Natural monument 2 located within the boundaries of Noravan settlement is a formation of abrasion and weathering of a natural rock. It has a shape of a phallic stella. It will be affected by the construction works, as it is located almost at the right edge of the proposed road alignment. It bears no scientific value, is not used or valued locally and has no connection to locally practised traditions.

Visibility (from the road): will be visible from the proposed road after construction (if relocated)

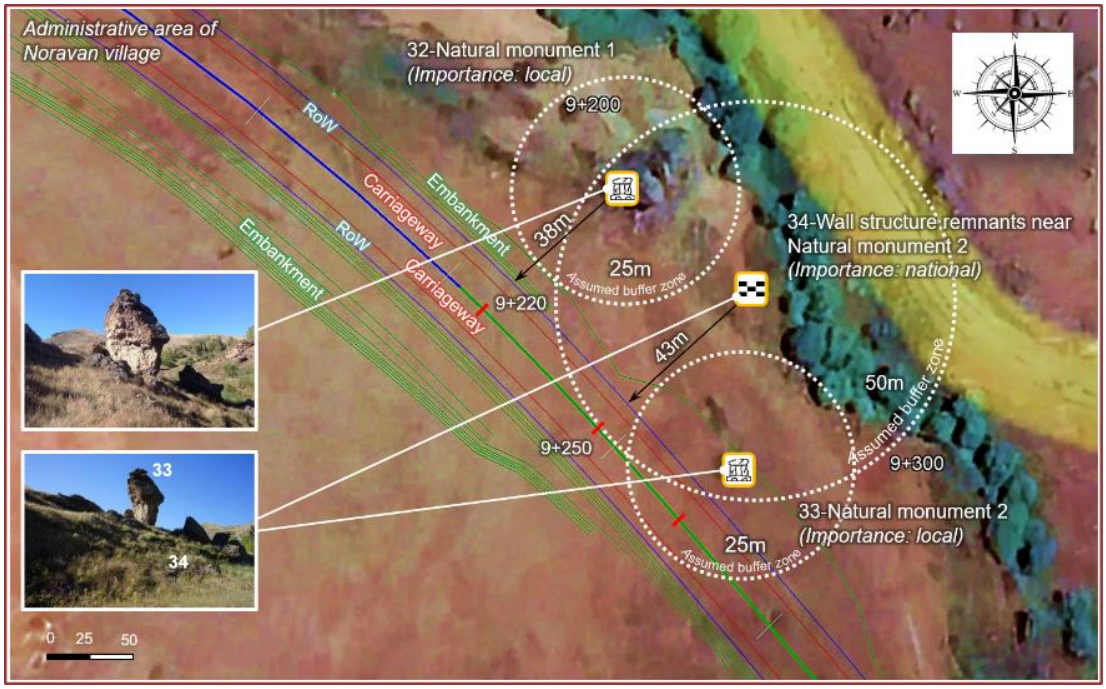
Potential to extend into/under the proposed road: n/a as located within the alignment

Importance: local

Likelihood of impact: high

Sensitivity: low

See the photo on the map



NB: Item 32 that is depicted on the map is not expected to be affected and thus not described in the text above.

CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
34	Wall structure remnants near Natural monument 2 *(newly discovered)*	km 9.2+50	Noravan	594582.88	4373719.889

This newly discovered site is located at the bottom of the hill, where Natural monument 2 (see item 33) is situated. The designation and time period are not clear. It can be affected as it is located close (38 m) from the right edge of the proposed road. The CH unit bears some aesthetic value - in combination with CH unit 33; no local use or practiced traditions are known to be associated with this site.

Visibility (from the road): will be visible from the proposed road after construction

Potential to extend into/under the proposed road: unlikely

Importance: national

Likelihood of impact: medium

Sensitivity: low

The map is provided above.

CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
36	Remnants of a truncated settlement *(newly discovered)*	km 9.5+00	Noravan	594711.82	4373483.479

This newly discovered site is a settlement, which is fully destroyed, because of the melioration of the area with the use of agricultural machinery.

The lack of surface archaeological finds does not allow to make assumptions about the chronological frames of the site. Mapping of the proposed road alignment and the CH unit allows to conclude the site is likely to be affected.

The site may have a scientific value; it bears no visual / aesthetic attraction. No local use or practiced traditions are known to be associated with this site.

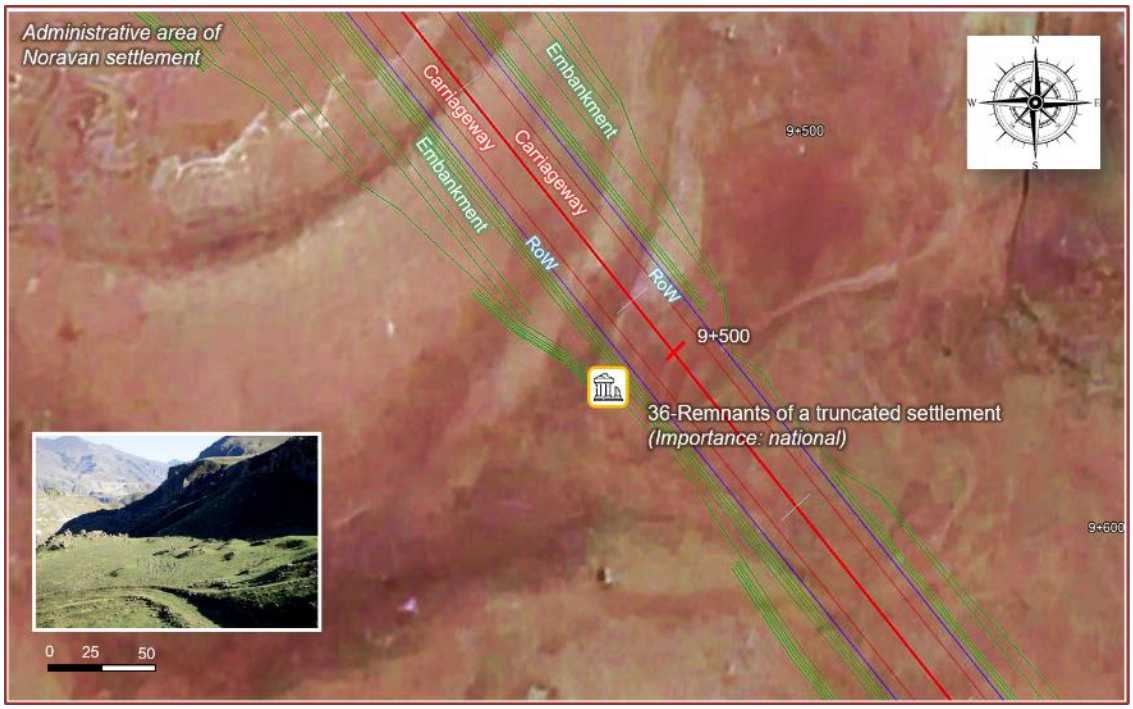
Visibility (from the road): will be visible from the proposed road after construction

Potential to extend into/under the proposed road: likely

Importance: national

Likelihood of impact: medium

Sensitivity: low



CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
37	Natural monument 3 *(newly discovered)*	km 9.7+00	Aghitu	594813.28	4373323.102

The Natural monument 3 is located within the boundaries of Aghitu settlement and is a formation that appeared as a result of abrasion and weathering of a sandstone origin natural rock. There is a semi-destroyed wall beneath the monument. The impact of rainwater and wind "carved" lots of cup-marks and lines on the surface of the rock, creates "amazing" scenes. This site is unlikely to be affected as it is located 40m away from the left edge of the proposed road and is a solid formation, however, the semi-destroyed wall can be affected (which is conditioned by its state).

The site does not have a scientific value. No local use or practiced traditions are known to be associated with this site.

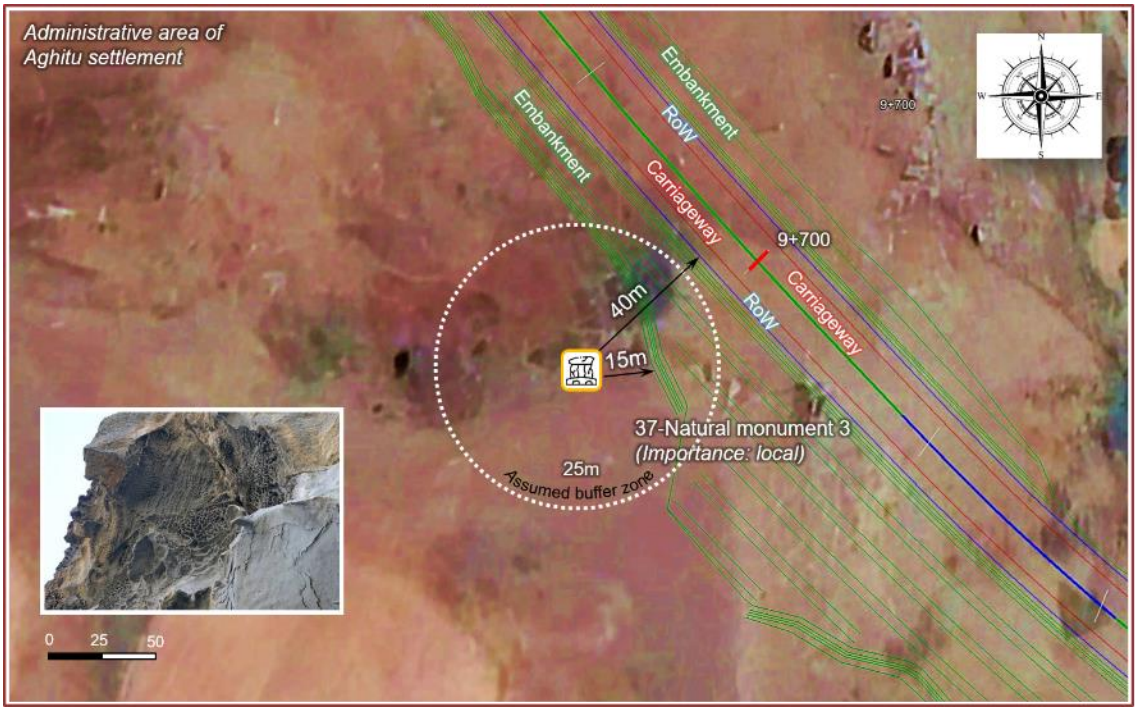
Visibility (from the road): will be visible from the proposed road after construction

Potential to extend into/under the proposed road: unlikely

Importance: local

Likelihood of impact: negligible (for the natural monument) and medium (for the semi-destroyed wall)

Sensitivity: low



CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
38	Section of diatomite origin lacustrine sediments *(newly discovered)*	km 10.6+00	Vaghatin	595603.62	4372883.26

The site was recorded close to the administrative border of Vaghatin community. The distance between the site and the embankment to be constructed on the right side of the Project road is 30 m. It is not located within the Project's direct impact area; however, it is likely that during the construction works the basal part of those sediments will be opened, which then will require the application of special study and protection measures.

The site does not have a scientific value. It is not associated with the local traditions or cultural practices, however, can bear limited aesthetic value.

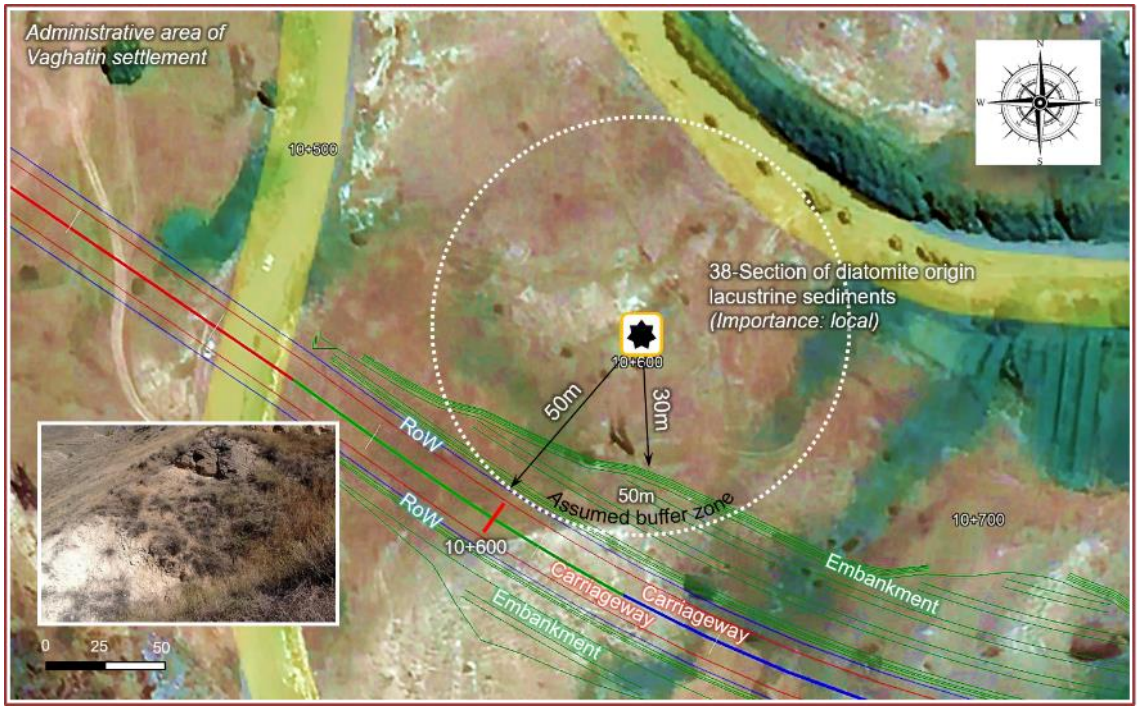
Visibility (from the road): will be visible from the proposed road after construction

Potential to extend into/under the proposed road: unlikely

Importance: local

Likelihood of impact: low

Sensitivity: low



CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
39	Surface finds around wall structure remnants *(newly discovered)*	km 10.8+90	Vaghatin	595807.70	4372771.011

The area is a small hill, on the slopes of which structures of wall remnants are visible. Based on the limited amount of badly preserved Late Chalcolithic Period pottery fragments and the existence of an obsidian flake, it is possible to conclude that the traces of naturally eroded and partially removed early (more probably dating to the first half of the IV Millennium BC) settlement remnants can be found here.

Mapping of the proposed road alignment and this CH site reveals that the site falls within the road alignment. Thus, it can be affected during the construction works.

The site's scientific value is to be clarified. It bears no aesthetic value. No local use or practiced traditions are known to be associated with this site.

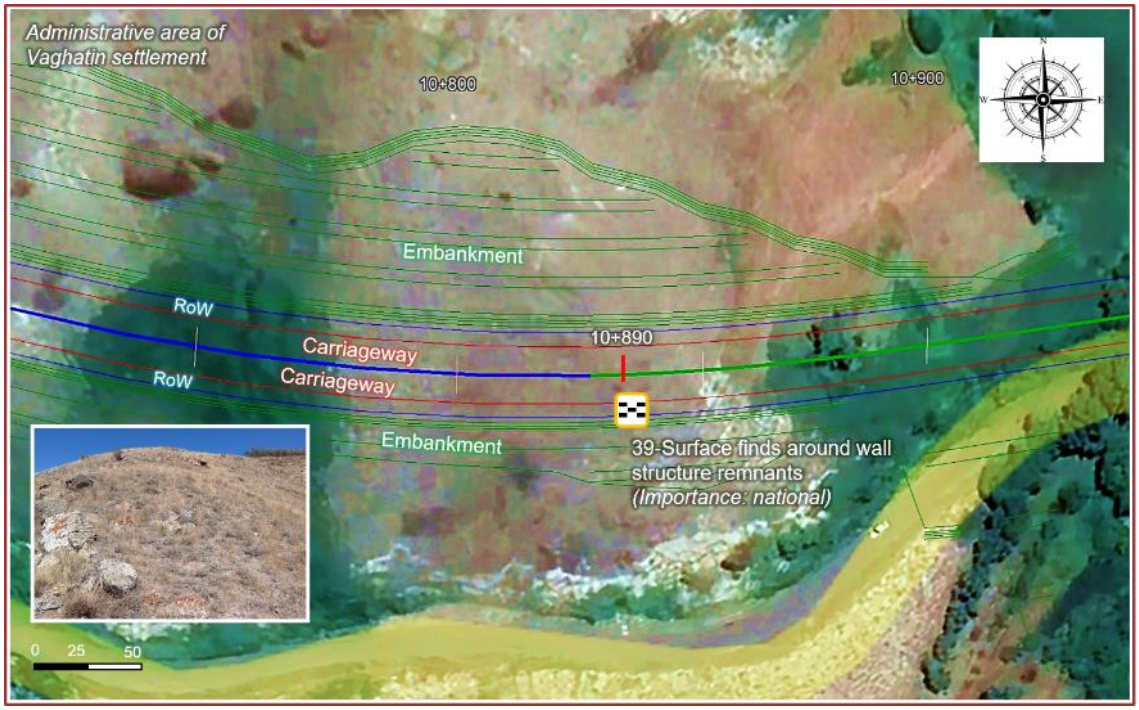
Visibility (from the road): will be visible from the proposed road after construction (partly)

Potential to extend into/under the proposed road: n/a as located within the alignment

Importance: national

Likelihood of impact: high

Sensitivity: low



CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
40	Wall structure remnants *(newly discovered)*	km 11.2+30	Vaghatin	596196.00	4372761.728

The area of this newly discovered unit is a steep hill, at some parts of which eroded and washed sediments of the diatomite origin lacustrine deposits are visible. There are wall structures present at the top of the hill; their designation and time period is not known due to the absence of surface archaeological finds. Taking into consideration the position of these walls in comparison with the local relief, it can be assumed that the remains of a tower or a guard point can be found here.

Mapping the location of this site against the proposed road alignment suggests that the site will be affected during construction.

The site's scientific value is to be clarified. It bears no aesthetic value. No local use or practiced traditions are known to be associated with this site.

Visibility (from the road): will be visible from the proposed road after construction

Potential to extend into/under the proposed road: n/a as it is (partly) within the alignment

Importance: national

Likelihood of impact: high

Sensitivity: low

CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
41	Medieval village remains and Spring-monument *(newly discovered)*	km 11.9+00	Vaghatin	596715.64	4372393.013

This complex represents the Medieval village remains. This has been determined based on the traces of house foundations found there. The spring supplied water to the village in the past, nowadays it is converted into the spring monument. In the surroundings of the spring, there is a natural rock formation in a shape of a stella with a hole in its middle part. It was brought here some time ago from another place and has a local origin.

This site partly falls within the proposed road alignment and thus can be partly affected during construction.

The site's scientific value is to be clarified. It bears no aesthetic value. However, it is used locally as a rest area near the spring. No local traditions are known to be associated with this site.

Visibility (from the road): will be visible from the proposed road after construction

Potential to extend into/under the proposed road: likely

Importance: national

Likelihood of impact: high

Sensitivity: high

CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
42-45	Wall structures preserved in the area of old gardens *(newly discovered)*	km 12.1+00 - km 12.5+90	Vaghatin	596856.03	4372211.17

The identified units are spread over a large area, around 500 m in length, which is currently covered by fruit bearing and other trees (seems to be 'wild gardens'), and which, judging by wall structure remnants were functional at least during the High or Late Medieval Period. This site probably hosted the monastic gardens of Vorotnavank. The designation and time period of the preserved wall structures are not clear (probably those are gardeners' houses or wine production structures).

Overlaying of the proposed road with the considered site shows that the latter partly falls within the alignment and then extend for another ca. 160m beyond the road. The site will be affected during the construction works.

The site's scientific value is to be determined. It bears a limited aesthetic value and currently is partly used for gardening. No local traditions are known to be associated with this site.

Visibility (from the road): will be visible from the proposed road after construction

Potential to extend into/under the proposed road: likely (within the road alignment and beyond)

Importance: national

Likelihood of impact: high

Sensitivity: medium

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CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
46	Section of diatomite origin lacustrine sediments *(newly discovered)*	km 12.5+90	Vorotan	597138.84	4371825.094

Diatomite origin lacustrine sediments were identified within the administrative borders of Vorotan village, at km 12.5+90, close to the left edge of the proposed road. Based on the mapping of the Project road alignment and the considered site, it can be concluded that the latter will be affected by the construction works and an additional study and protection measures will be required.

The site does not have a scientific value. It is not associated with the local traditions or cultural practices, however, bears aesthetic value.

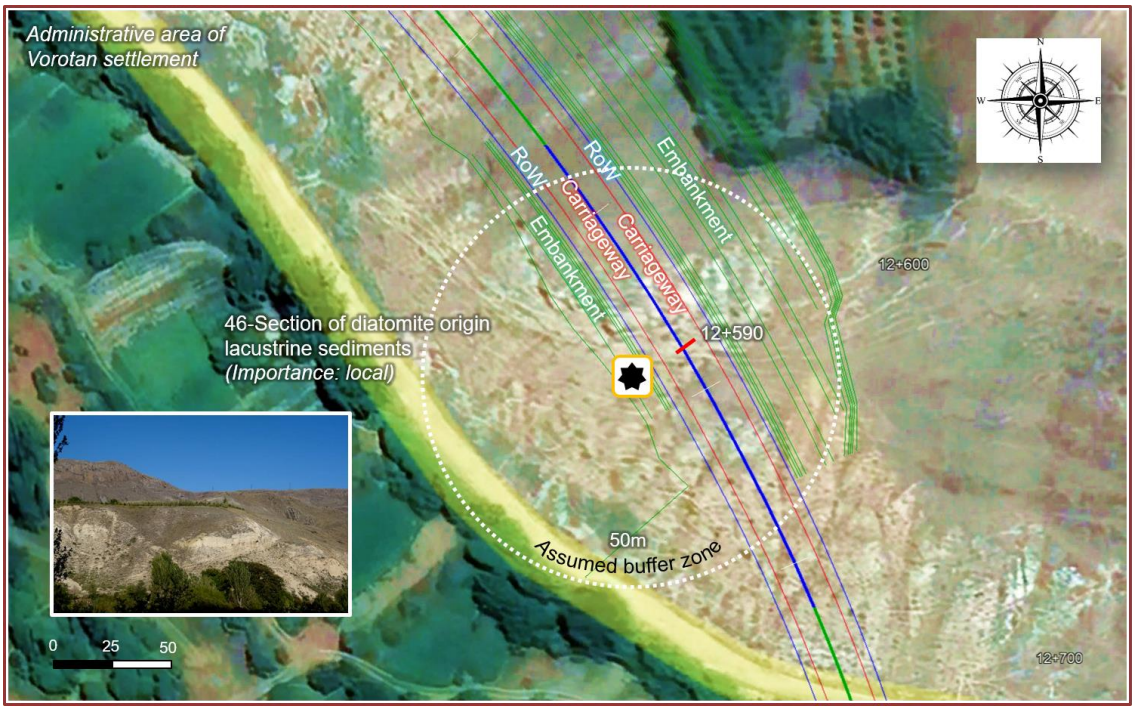
Visibility (from the road): will be visible from the proposed road after construction (partly within the alignment)

Potential to extend into/under the proposed road: likely

Importance: local

Likelihood of impact: high

Sensitivity: moderate



CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
47-49	Vorotan (Vorotn) Medieval village remains and cemetery, Bronze-Iron Age tomb field *(included in State list of monuments)*	km 13.2+40 - km 13.5+50	Vorotan	597371.12	4371210.728

This site is registered in the Syunik Region's State List of Monuments with the codes 8.78.2 and 8.78.2.1.

During the fieldworks, the damaged Bronze-Iron Age and Classical Period tomb field were also discovered. The Iron Age and Classical Period pottery fragments collected from the surface of the site, allow concluding that it is a multilayer and complex archaeological site - a Bronze-Iron Age and Classical Period tomb field together with the Medieval village remains.

The complex consists of two parts; the first is located near km 13.2+40 (house foundations, cemetery and tomb field and the second is around 300 m south, near km 13.5+50 (in this part only cemetery and tomb field were found). The site is facing the Vorotnaberd Fortress located to the west. It is obvious that the area of the Bronze-Iron Age tomb field (its existence was also confirmed by numerous chance finds from the area around the Vorotnaberd Fortress, as well as in the described area) was later converted into the Early and Late Medieval Period cemetery that was associated with Vorotnaberd Fortress and the settlement around it.

The most important parts of the site are falling within the road alignment and will be affected by the construction works; thus, complex mitigation measures to preserve its historical-cultural value are required.

The Vorotan (Vorotn) Medieval village remains, cemetery and tomb field can be considered as the second significant archaeological barrier for the Sisian-Kajaran road construction project after the Qaraberd settlement and tomb field (items 3-15). Only after plotting of the area it will be possible to determine the actual surface.

No local use or practiced traditions are known to be associated with this site. It bears a limited aesthetic value; but has a high scientific value.

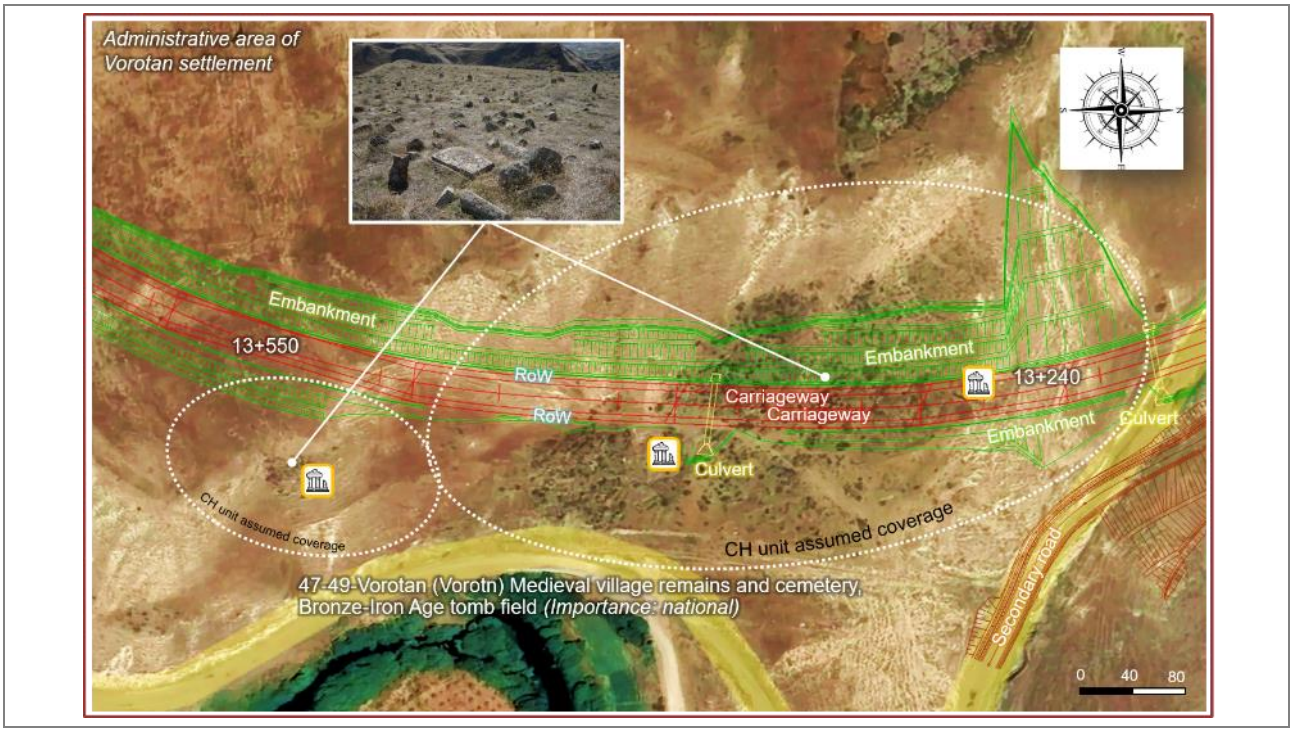
Visibility (from the road): will be visible from the proposed road after construction

Potential to extend into/under the proposed road: likely (and partly within the alignment)

Importance: national

Likelihood of impact: high

Sensitivity: high


Administrative area of Vorotan settlement
Embankment
13+550
RoW
RoW
Carriageway
Carriageway
Embankment
13+240
Embankment
Culvert
Culvert
CH unit assumed coverage
CH unit assumed coverage
47-49-Vorotan (Vorotn) Medieval village remains and cemetery, Bronze-Iron Age tomb field (Importance: national)
Secondary road
0 40 80

CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
50	Flint raw-material source for making stone tools *(newly discovered)*	km 15.2+00	Darbas	597376.53	4369479.943

This site was identified southwest from the merging point of the Vorotan River with Shamb Reservoir. Flint, like obsidian served as a raw material for making tools by humans. In Syunik Region such raw material was used around 40,000 years ago by anatomically modern humans occupying the Aghitu-3 cave. While the use of obsidian by the inhabitants of the cave for tool production is well known, the history of flint sources is still unknown.

This site is partly within the road alignment and thus will be affected during the construction.

No local use currently or practiced traditions are known to be associated with this site. It bears limited aesthetic and scientific values.

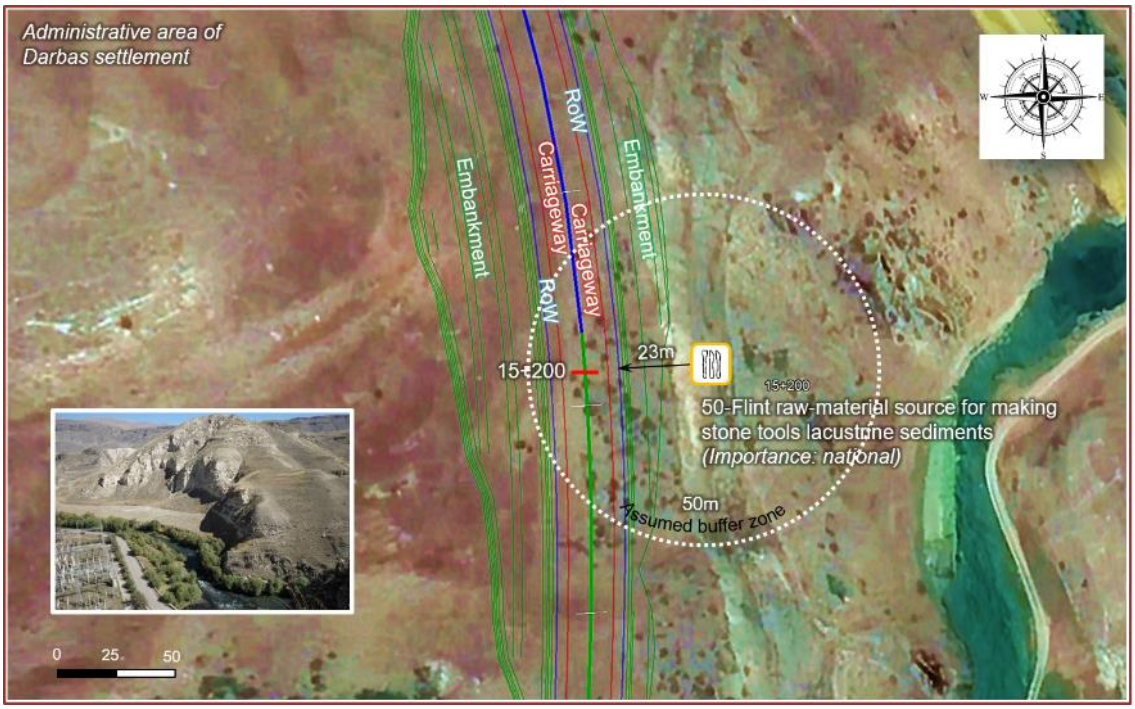
Visibility (from the road): will be visible from the proposed road after construction

Potential to extend into/under the proposed road: likely

Importance: local

Likelihood of impact: high

Sensitivity: medium



CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
51	Structure remnants in the shape of tombs *(newly discovered)*	km 15.6+60	Darbas	597366.60	4369017.052

The area of this newly discovered unit occupies the slopes of a small hill, where structures in the shape of small tombs with rock shields are noticed. They can represent the structures of Bronze Iron Age tombs. However due to the absence of surface archaeological finds it is impossible to determine the site's designation and time period. The site is within the proposed road alignment and will be affected by the construction.

No local use or practiced traditions are known to be associated with this site. It bears no aesthetic value; but is expected to have a scientific value (to be determined during additional research).

Visibility (from the road): will be visible from the proposed road after construction (if relocated partly)

Potential to extend into/under the proposed road: n/a as it is within the road alignment

Importance: national

Likelihood of impact: high

Sensitivity: medium

CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
52-53	Shrine (church) ruins, cemetery and khachkars (Parvants) *(included in the State List of Monuments)*	km 17.6+90	Darbas	598052.12	4367209.368

This site is registered in the Syunik Region's State List of Monuments with the code 8.31.3 and represents a 13th-15th centuries cemetery and ruins of a shrine. Inside the shrine, a fragment of a khachkar could be seen, and on the opposite hill (to the east) there is a khachkar lying on the ground.

A large part of the site, especially the shrine and the adjacent small gorge will be affected, as they fall within the alignment and the fill (the rest of the site extends to ca. 92m from the proposed road). The shrine that is adjacent to the road alignment from the right side will appear under the fill.

The site has a scientific value; no local use or practiced traditions are known to be associated with this site. It bears a limited aesthetic value.

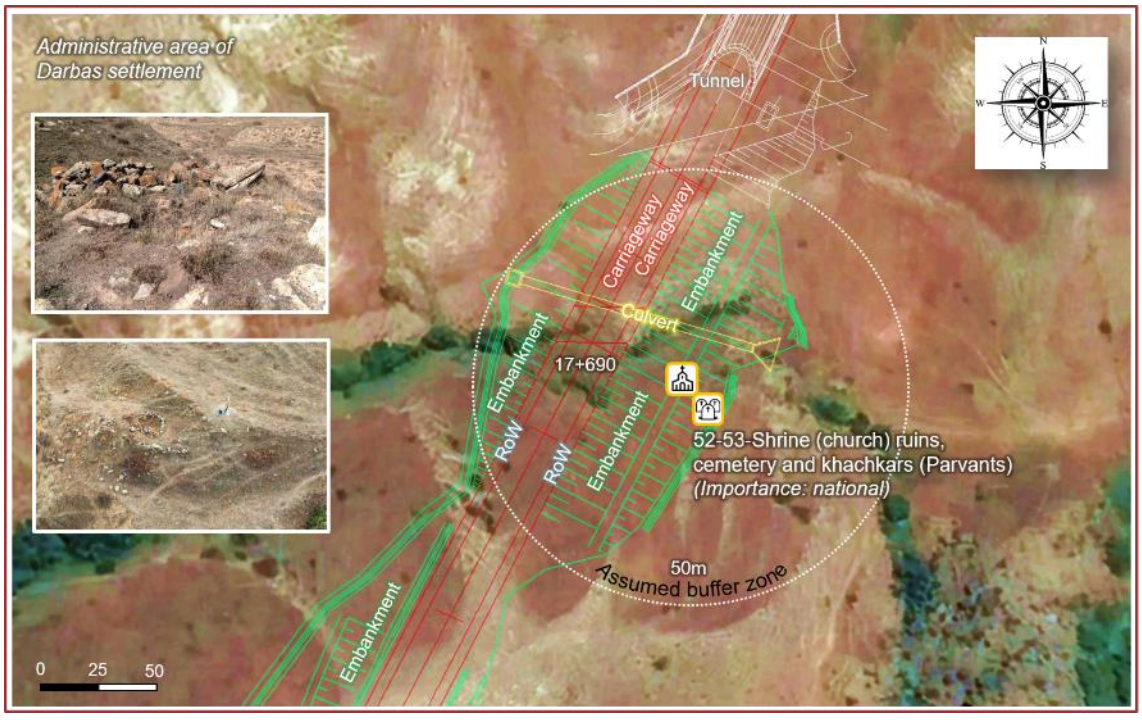
Visibility (from the road): will be visible from the proposed road after construction

Potential to extend into/under the proposed road: likely

Importance: national

Likelihood of impact: high

Sensitivity: high



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CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
56	Cave complex carved in a section of diatomite origin lacustrine sediments *(newly discovered)*	km 22.7+50	Lor	597679.78	4362642.305

Such kind of structures are widely spread in Syunik Region. The city of Goris and the adjacent villages are the best example, where people lived in the caves until the 1950s. In this part of Syunik the existence of such caves is associated with the diatomite origin lacustrine sediments, which are very soft and easily processed. Similar monuments exist in the area of the following geological formations - Shamb, Ltsen, Darbas, Getatagh, Shenatagh, and Lor, where thick deposits of diatomites can be found.

The cave complex identified at km 22.7+50, most probably was created in the near past, during the 30s of the XX century and has no historical-cultural value. The site is located across the alignment and will be affected by the construction.

Visibility (from the road): likely it will be visible from the proposed road

Potential to extend into/under the proposed road: likely

Importance: national

Likelihood of impact: high

Sensitivity: low

CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
57	Mardakayr Medieval village remains and Tsaru S. Hovhannes church, tomb field *(included in the State List of Monuments)*	km 23.1+60	Lor	597692.66	4362200.24

This site is registered in the Syunik Region's State List of Monuments with the codes 8.41.6 and 8.41.4 and represents the Medieval village remains and Tsaru S. Hovhannes church (1686) located on the slope of the hill (code 8.41.6) as well as a tomb field dating to II-I Millennium BC 50 m (code 8.41.4). During the fieldworks, no traces of Medieval village remains, church or tomb field were noticed. Only one gravestone and one khachkar were found on site.

The external signs of the monument were fully truncated, because of the heavy melioration of the area and these units are recorded as 'destroyed' in the State List of Monuments. According to the Project design, the site is 50 from the proposed road and a bridge will be constructed between km 23.0+59.56 and km 23.2+15.58.

Visibility (from the road): likely to be visible from the proposed road

Potential to extend into/under the proposed road: likely

Importance: national

Likelihood of impact: medium

Sensitivity: high

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CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
58	Medieval village remains *(newly discovered)*	km 23.3+90	Lor	597842.15	4362030.18

The area of this newly discovered site is a hill with wall structure remains visible on the north-eastern slopes. They look like foundations of former dwellings. Judging from the limited amount of High Medieval period ceramic fragments collected at the place, it can be proposed that this newly recorded unit that is not included in the State list of monuments of Syunik region, is a Medieval village. The site does not fall within the Project road RoW, however is located close to the road embankment.

The site has some scientific value, but bears no aesthetic value.

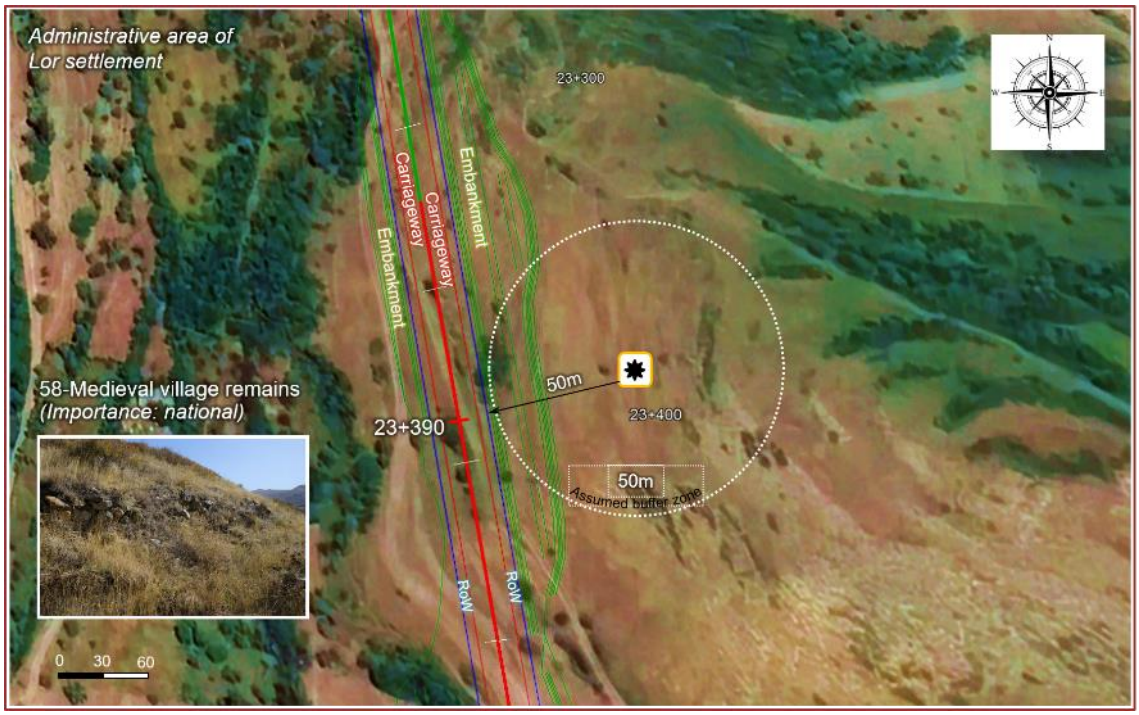
Visibility (from the road): will be visible from the proposed road

Potential to extend into/under the proposed road: unlikely

Importance: national

Likelihood of impact: low

Sensitivity: moderate



CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
61	Surface finds at the base of a hill with an Iron Age fortress *(newly discovered)*	km 25.6+60	Shenatagh	597753.35	4359756.663

During the fieldworks some Iron Age pottery fragments were collected, without a clear archaeological context. Additional studies of the surrounding area showed that there is an Iron Age fortress atop the hill, east from km 25.6+00 that is *not included* in the State List of Monuments.

Most probably the above-mentioned surface fragments relate to the fortress as they have been collected from the slope of the hill where the fortress is located. Apparently, the fortress will not be affected during the construction. However, as per the initial expert view, the surface finds can be affected during the construction as they can be found within the proposed alignment.

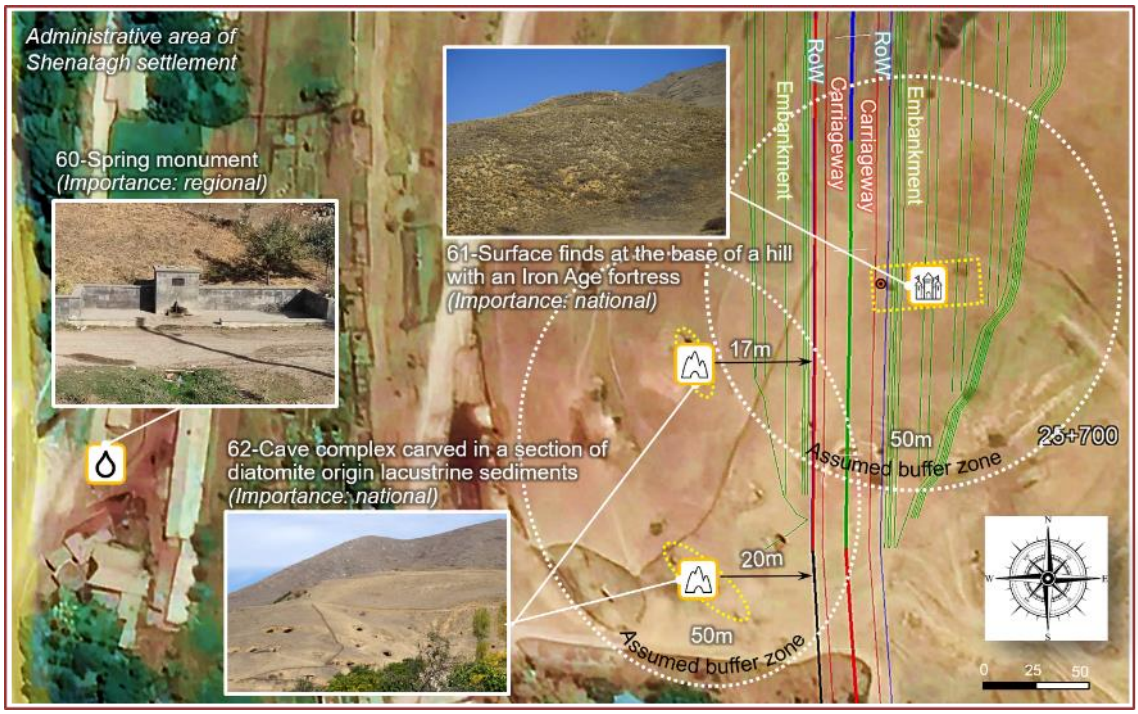
Visibility (from the road): it will unlikely be visible from the proposed road

Potential to extend into/under the proposed road: likely

Importance: national

Likelihood of impact: medium

Sensitivity: high (for surface finds)



NB: Item 60 that is depicted on the map is not expected to be affected and thus not described above.

CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
62	Cave complex carved in a section of diatomite origin lacustrine sediments *(newly discovered)*	km 25.7+00	Shenatagh	597749.93	4359700.232
As noted earlier, such artificial caves are widely spread in Syunik. The area of Shenatagh village is also rich in such caves. The time period of these structures is unknown; however, they are used nowadays for keeping cattle and producing biofuel or *"atar"* as the locals call it. These caves are situated on the slopes of the hill at km 25.7+00, partly fall under the road alignment and hence will be affected during the road construction, especially taking into account that a bridge will be constructed here. **Visibility (from the road):** will be visible from the proposed road **Potential to extend into/under the proposed road:** likely **Importance**: national **Likelihood of impact**: high **Sensitivity**: medium	 				
The map is provided above					

CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
63	"Sagu ghala" fortress *(included in the State List of Monuments)*	km 26.4+90	Shenatagh	597645.02	4358944.114

This site is registered in the Syunik Region's State List of Monuments with the code 8.71.1 and represents a Medieval fortress located 1 km south from Shenatagh village. During the fieldwork within the fortress area, it was found that the fortress seats within the southern suburbs of the village and a part of the hill of the site was recently destroyed as a result of bypass road construction. Only some part of the stratification walls of the fortress are well preserved.

All the attempts to collect surface archaeological finds in order to clarify the time period of the site were useless. The site will be affected because of the Project bridge to be constructed in the vicinities. As per the road design, the last pillar of the bridge will be erected on the hill near the fortress.

The site has a scientific value and is on the state list, it is already under impact though. No local use or practiced traditions are known to be associated with this site. It bears no aesthetic value.

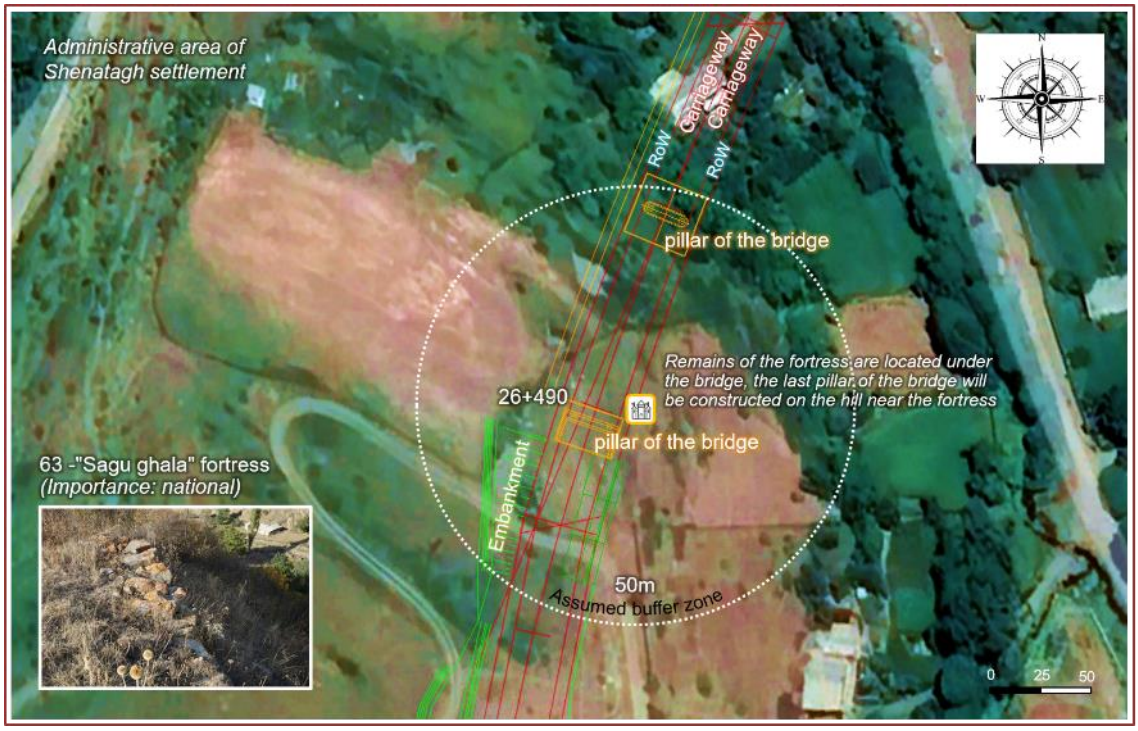
Visibility (from the road): unlikely to be visible from the proposed road

Potential to extend into/under the proposed road: likely

Importance: national

Likelihood of impact: high

Sensitivity: high (protected under the national legislation and cannot be replaced)



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CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
64	Natural monument complex 1 *(newly discovered)*	km 26.9+20	Shenatagh	597596.56	4358515.157

Natural monument complex 1 has appeared as a result of abrasion and weathering of a natural rock and has a shape of a stellae. The mapping of the proposed road alignment relative to this site suggests that the site will be affected as it is located near the northern portal (km 26.9+20) of Bargushat tunnel. The monument cannot be relocated and preserved.

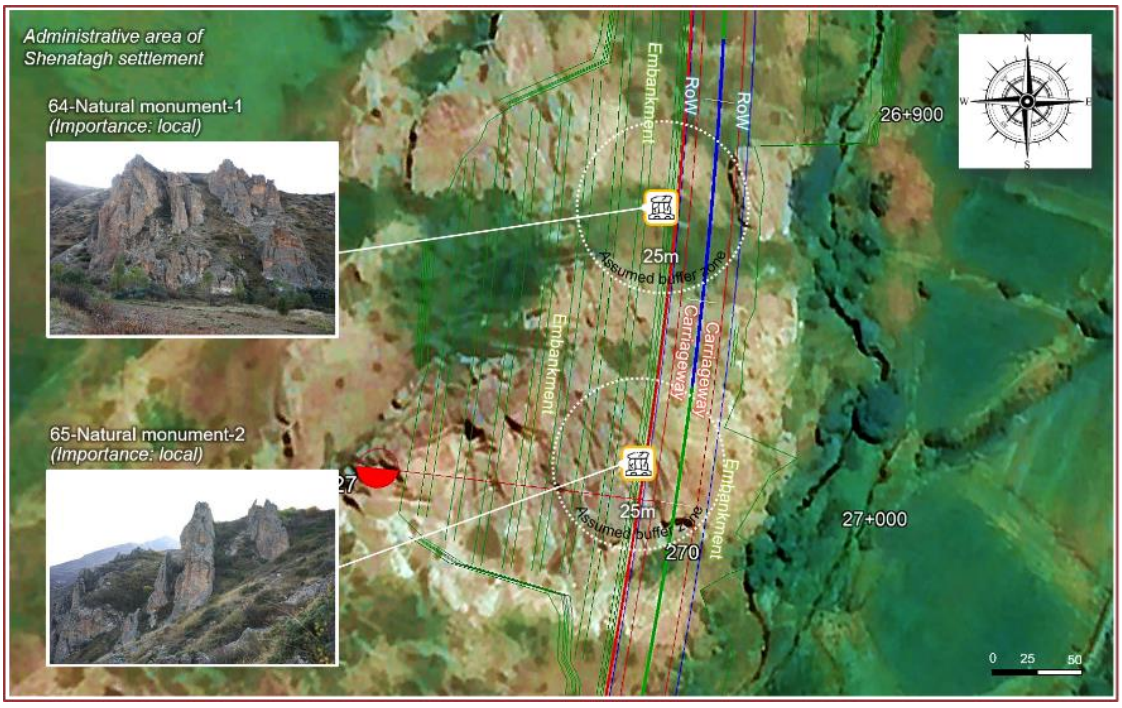
Visibility (from the road): will be visible from the proposed road

Potential to extend into/under the proposed road: unlikely

Importance: local

Likelihood of impact: high

Sensitivity: low



CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
65	Natural monument complex 2 *(newly discovered)*	km 26.9+90	Shenatagh	597591.84	4358452.271

Natural monument complex 2 has appeared as a result of abrasion and weathering of a natural rock and is shaped as a stellae. The mapping of the proposed road alignment relative to this site suggests that the latter will be affected as it is located near the northern portal (km 27.1+00) of Bargushat tunnel. The monument cannot be relocated and preserved.

Visibility (from the road): will be visible from the proposed road

Potential to extend into/under the proposed road: unlikely

Importance: local

Likelihood of impact: high

Sensitivity: low

The map is provided above.

CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
66	Medieval village remains 1 *(newly discovered)*	km 36.1+40	Geghi, Qirs section	595660.36	4349504.577

The Medieval village remains are represented by the traces of walls that are visible on a flat slope. The site is located near the northern side of the former Kitsk (Qirs) village, which is now abandoned. The site was partly destroyed as a result of the village construction during the Soviet Union era. High Medieval Period - 13th-15th centuries pottery fragments were noticed and collected.

The site partly falls within the road alignment. It has some scientific value though such remains are not rare in the area; no local use or practiced traditions are known to be associated with this site. It bears no aesthetic value.

Visibility (from the road): will be visible from the proposed road (where not destroyed)

Potential to extend into/under the proposed road: likely

Importance: national

Likelihood of impact: high

Sensitivity: moderate

CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
67	Church *(included in the State List of Monuments)*	km 36.3+00	Geghi, Qirs section	595627.95	4349362.214

This site is registered in the Syunik Region's State List of Monuments with the code 8.112.1.2. This church was built in the 18th century and is poorly preserved. There are some fragmented grave-stones existing in the vicinity. This site will be affected as it is located near the right edge of the Project road at km 36.3+00 and under the bridge.

To preserve the historical-cultural value of the church, the configuration of the fill shall be changed.

This site has a scientific value, is not used or valued locally and has no connection to locally practiced traditions. The nearest settlement has been abandoned for years; no local use or associated traditions have been identified.

Visibility (from the road): will be visible from the proposed road, but partly destroyed if the road design is not changed

Potential to extend into/under the proposed road: likely

Importance: national

Likelihood of impact: high

Sensitivity: high

The map is provided above

CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
68	Medieval village remains 2 *(included in the State List of Monuments)*	km 36.6+50	Geghi, Qirs section	595661.18	4349001.66

According to the State list of the monuments of Syunik region, the Medieval village remains (15th-17th centuries) (code 8.112.1.1) are still visible in the shape of dwellings' foundations at the south-eastern side of abandoned Qirs village (was populated until the Artsakh war) The monument was heavily suffered because local Azeri Turk inhabitants used the site as their cemetery. The site does not fall within the Project road alignment, however it is located at the distance of 50 m from the edge of the road alignment. Hence, special protection measures during the construction stage will be required.

The site has some scientific value, but bears no aesthetic value.

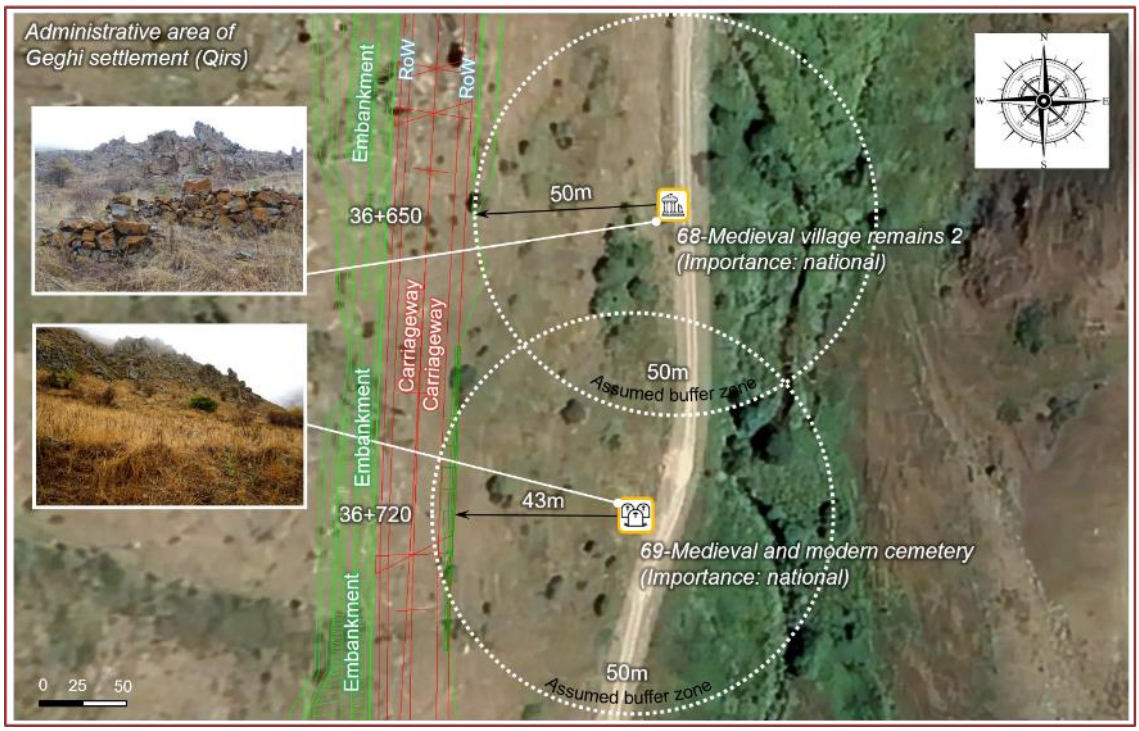
Visibility (from the road): will be visible from the proposed road

Potential to extend into/under the proposed road: unlikely

Importance: national

Likelihood of impact: low

Sensitivity: moderate



<table>
<tr><th>CH unit</th><th>Type of the CH</th><th>Location to the proposed road</th><th>Community</th><th colspan="2">GPS coordinates</th></tr>
<tr><td>69</td><td>Medieval and modern cemetery (included in the State List of Monuments)</td><td>km 36.7+20</td><td>Geghi, Qirs section</td><td>595647.02</td><td>4348925.67</td></tr>
<tr><td colspan="3">The cemetery is located in southern part of Qirs abandoned village. According to the State list of the monuments of Syunik region (code 8.112.1.1.1.) It is synchronous to the 15th-17th centuries Medieval village remains (see CH unit 68 above). The monument was heavily suffered because local Azeri Turk inhabitants used the site as their cemetery. The site does not fall within the Project road alignment, however is located at the distance of 43 m from the edge of the road alignment. Hence, special protection measures during the construction stage will be required.
The site has some scientific value, but bears no aesthetic value.
Visibility (from the road): will be visible from the proposed road
Potential to extend into/under the proposed road: unlikely
Importance: national
Likelihood of impact: low
Sensitivity: moderate</td><td colspan="3">  </td></tr>
<tr><td colspan="6">The map is provided above.</td></tr>
</table>

CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
71	Natural monument 1 *(newly discovered)*	km 42.5+70	Nor Astghaberd	598682.12	4344327.34

Natural monument complex 1 has appeared as a result of abrasion and weathering of a natural rock. Reminds an erected guarding tower. Currently, it is an aesthetic-decorative monument within the surrounding landscape. The distance between the site and the edge of the Project road is 25 m, however, it is located in the area where the road embankment will be constructed, therefore, will be directly impacted. The monument cannot be relocated and preserved.

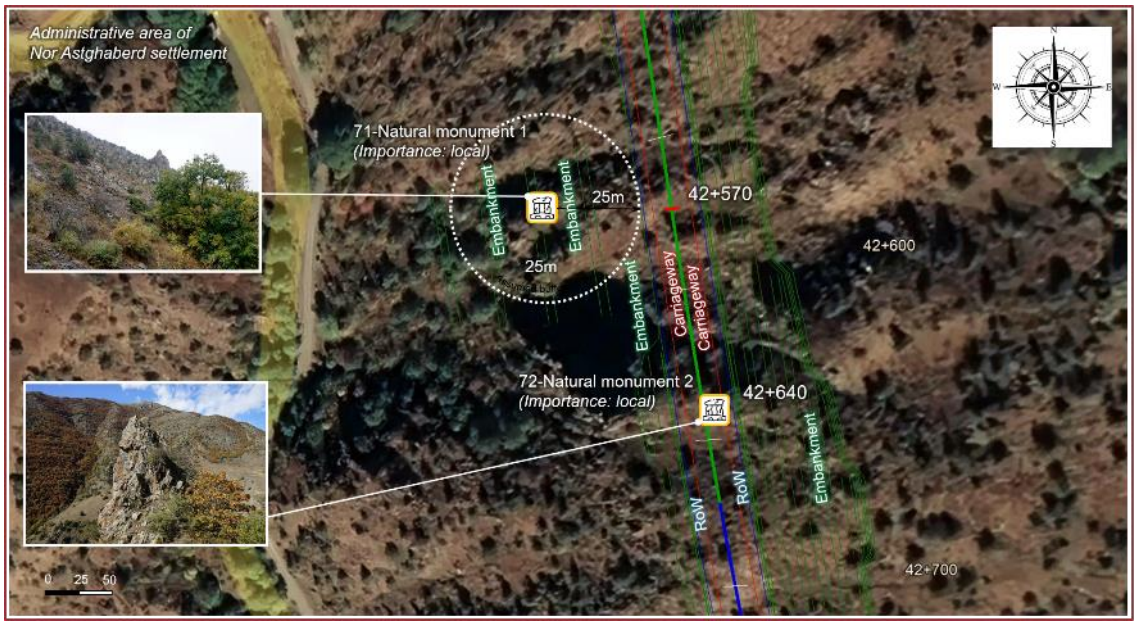
Visibility (from the road): will not be visible from the proposed road as will be destroyed during the construction

Potential to extend into/under the proposed road: n/a as it is within the area of road embankment

Importance: local

Likelihood of impact: high

Sensitivity: low



CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
72	Natural monument 2 *(newly discovered)*	km 42.6+40	Nor Astghaberd	598733.25	4344258.561

Natural monument complex 2 has appeared as a result of abrasion and weathering of a natural rock. It reminds a mask of a soldier in a helmet. It bears no scientific value, is not used or valued locally or connected to local traditions. The mapping of the proposed road against the site shows that the latter falls within the alignment and thus will be affected. The monument cannot be relocated and preserved.

Visibility (from the road): will not be visible from the proposed road as will be destroyed during the construction

Potential to extend into/under the proposed road: n/a as it is within the alignment

Importance: local

Likelihood of impact: high

Sensitivity: low	
The map is provided above	

CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
73	Siliceous limestone raw-material source 2 *(newly discovered)*	km 47.0+00	Geghi	601429.88	4342042.15

This site was identified at km 47.0+00, at the left bank of the Geghi River (the tributary of the Voghji River), close to the eastern border of Geghi community. Inclusions made from similar raw material are known from the Upper Palaeolithic Aghitu-3 cave. The distance between the site and the edge of the Project road is 55 m, however, the road embankment area is located closer (approx. 15-20 m), hence special protection measures will be required during the construction stage.

The site does not have a scientific value. It is not associated with the local traditions or cultural practices, however, can bear aesthetic value.

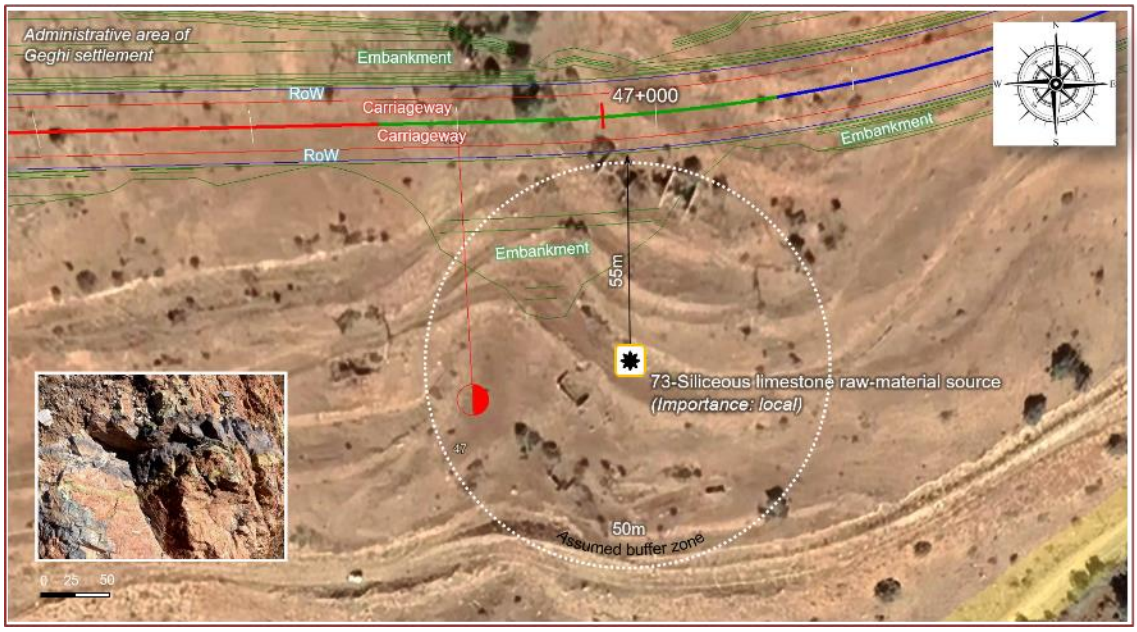
Visibility (from the road): will be visible from the proposed road after construction

Potential to extend into/under the proposed road: unlikely

Importance: local

Likelihood of impact: low

Sensitivity: low



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CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
74	Structure remains (Medieval village remains) *(newly discovered)*	km 48.6+00	Geghi, Verin Geghavank section	602987.61	4342238.885

The traces of dwellings and other structures were discovered on the slope starting from the gorge of the Geghi River. They bear the signs of most probably Medieval village remains. However, the lack of surface archaeological finds does not allow to determine the time period more precisely. Such dwellings are wide spread in the area.

Mapping of the proposed road alignment and the archaeological unit suggests that the latter can be affected as it is located close to the left side of the road alignment at km 48.6+00.

Visibility (from the road): will be visible from the proposed road

Potential to extend into/under the proposed road: likely

Importance: national

Likelihood of impact: high

Sensitivity: low (similar sites are common in the region)

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CH unit	Type of the CH	Location to the proposed road	Community	GPS coordinates	
75	Cave-complex Lernadzor-1 *(newly discovered)*	km 53.2+20	Lernadzor, Kavchut section	607138.97	4340774.495

This complex is located at km 53.2+20, at the western suburbs of Kavchut village. It is a cave-complex with multiple niches originated in the colluvial sediment formations as a result of mechanical weathering. It is dry and light inside. The wall structure in front of the central niche of the cave and traces of artificial modifications (carvings) of the inner walls show that the complex was used by people. It is difficult to determine the time period of the cave-complex as surface archaeological finds are absent. This is due to the intensive weathering of the walls of the structure, as well as long-term cattle keeping activity inside.

This newly identified unit can be affected during the construction works as it falls within the alignment.

Visibility (from the road): unlikely will be visible from the proposed road

Potential to extend into/under the proposed road: n/a as it is within the alignment

Importance: national

Likelihood of impact: high

Sensitivity: low (other similar sites are very common in the region)

NB: Item 76 that is depicted on the map is not expected to be affected and thus not described above.

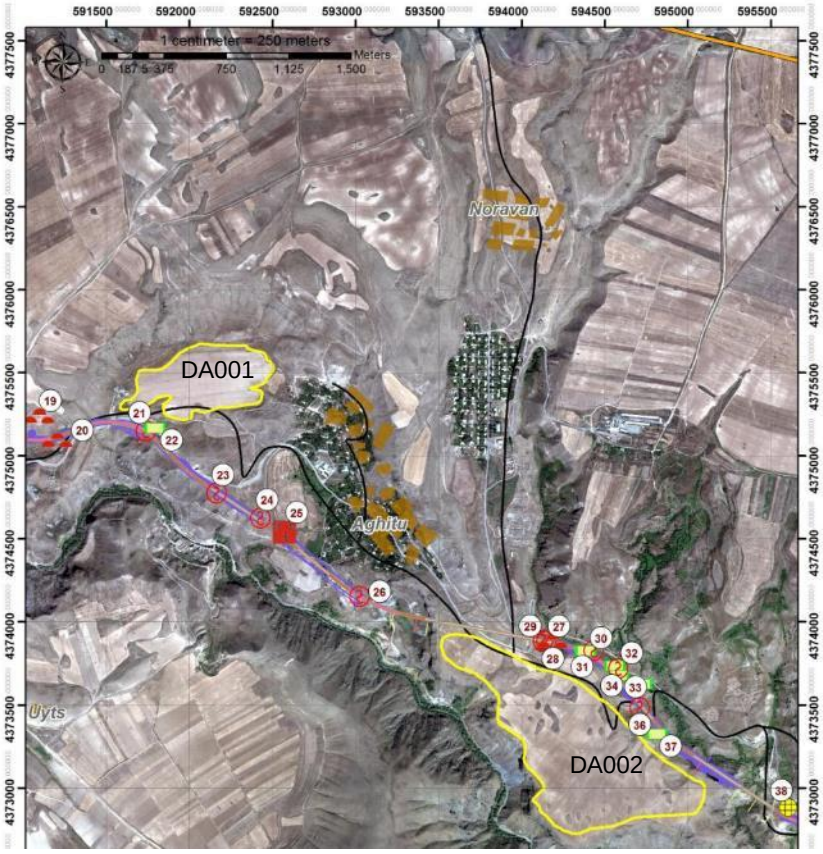
Annex 6. CH SITES WITHIN AND AROUND THE POTENTIAL SDAS PROPOSED IN THE DETAILED DESIGN

NB: All maps and photos in this annex are prepared by the ESIA Consultant.

Overarching mitigation measures for the CH sites located near to / within the potential SDAs are proposed in Section 3.8.4, and site-specific mitigation is set out in Annex 9.

Spoil disposal area DA 001

DA 001 is proposed in Aghitu administrative area, at north-western outskirts of Aghitu village (**Figure B 1**). This area was investigated during the 2016 archaeological study within the framework of the ADB-funded feasibility study for the Project. The 2022 fieldworks completed during the current ESIA process revealed no new archaeological findings within the boundaries of DA 001, which is a ploughed field (**Figure B 2**), so the 2022 interpretation is provided below. Several historical-cultural sites are found at the south-western boundary of DA 001 (**Figure B 1**), of which unit 21 is of particular interest and its mitigation will apply. Thus, the use of this SDA will require some mitigation measures through the creation of a buffer zone for the CH sites for protecting them from being damaged by accident.



NB: Numbers in circles correspond to the CH units

Figure B 1. Locations of the DA001 and DA002 spoil disposal areas and nearby CH sites

a) View of DA 001 from the west (Aerial image) *b) View of DA 001 from the east (Aerial image)*

Figure B 2. View of spoil disposal area DA001

Spoil disposal area DA 002

DA 002 is also suggested to be within the Aghitu administrative area, south-east from Aghitu village, on a wide plateau, on the right side of the road to Noravan village (**Figure B 1**). Its site, similarly to that of DA 001, is an agricultural field, which has been intensively cultivated for many years (**Figure B 3**)[103]. Some parts of the potential SDA escaped agricultural activities and seem to retain their nearly original view. Even through some damage has been caused to them, it is possible to see that these "islands" resemble Bronze-Iron Age period burial mounds (**Figure B 3, d)**). Additional archaeological investigations (possibly test excavations) are required to determine the character of these features. If they appear to be tombs, it will be necessary either to abstain from using this SDA at all or to carry out archaeological excavations to preserve their historical-cultural values prior to any spoil disposal. Additional archaeological investigations will be carried out together with the mitigation actions for units 28, 31, 34, 36, and 37 (see **Annex 9**)

a) Western part of DA002 (Aerial image) *b) View of DA 001 from the west (Aerial image)*

Figure B 3. View of spoil disposal area DA002

Spoil disposal area DA 003

DA 003 is proposed to be arranged within the Darbas administrative area, about 1.5 km north-east from Darbas village (**Figure B 4**). During the study of the area, which is in fact a narrow

[103] Loss of assets will be compensated as per the entitlements in the Project's Resettlement Framework.

valley (**Figure B 5**), no archaeological sites were identified. Yet, the area is famous for diatomite lacustrine deposits of Pleistocene, which contain rich fossilized flora and fauna allowing to reconstruct the climate and environments of the past. Sections of such deposits are found within DA 003; thus, before its exploitation additional studies of diatomite sections are required to save the geological value of the quaternary formations, as stated in **Annex 9**.

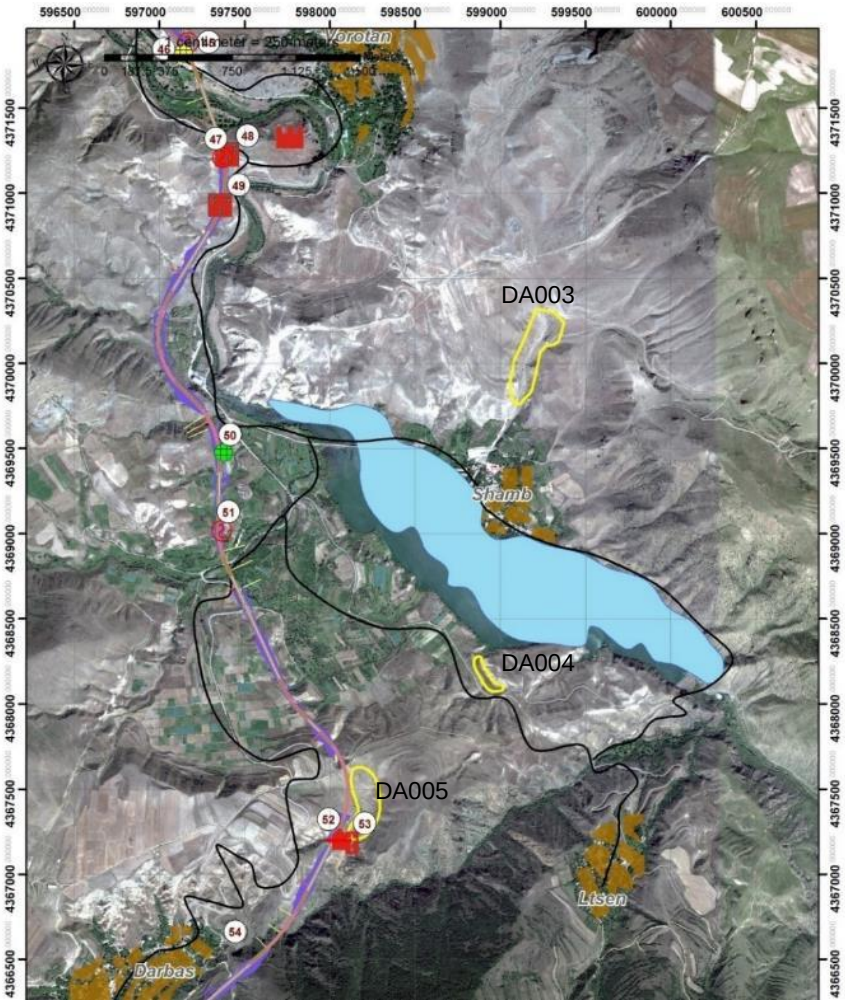


Figure B 4. Locations of the DA003, DA004 and DA005 SDAs and nearby CH sites

Figure B 5. Main view of DA 003 from the south-west (Aerial image)

Spoil disposal area DA 004

The area suggested for DA 004 is also within the Darbas administrative area, 4 km north-east from Shamb village (**Figure B 4**). The selected area is a narrow gorge of a seasonal stream (**Figure B 6**) draining into the Shamb Reservoir, on the right side of the road to Ltsen village. During the study of the area no archaeological issues were recorded. However, as above, diatomite lacustrine deposits of Pleistocene are found within the limits of DA 004. The same recommendations as for DA 003 would apply (see also **Annex 9)**.

Figure B 6. Main view of DA 004 from the south-east (Aerial image)

Spoil disposal area DA 005

The area suggested for DA 005 is within the Darbas administrative area, around 2 km north-east from Darbas village (**Figure B 4**). DA 005 area is a narrow valley (**Figure B 7**) on the left side of the functioning road to Darbas. It is very close to the proposed road. This area was investigated during the 2016 field study, as part of the ADB-funded feasibility study for the Project. During the current 2022 ESIA study of the area no new archaeological findings were made. The only issue relates to the remnants of the Medieval Parvants shrine with adjacent khachkars and cemetery which is located atop the south-western edge of DA 005 (**Figure B 7**). This historical-cultural unit 52-53 (site 31) was discussed in the frame of the CH sites along the proposed road and mitigation measures were suggested for its preservation (**Annex 9)**. In terms of spoil disposal on DA 005, the CH site will stay above the level of dumping and will be not affected. Similarly, to DA 004 and DA 003, diatomite lacustrine deposits of Pleistocene are found within the DA 005 site. So, additional study will be carried out together with the mitigation actions for units 52-53, see **Annex 9**).

Figure B 7. View of DA 005 from the south and location of the Parvants shrine, which is above the DA 005 (Aerial image)

Spoil disposal area DA 006

DA 006 is proposed to be located within the Geghi administrative area, next to the abandoned village of Kitsk. It starts at the north-western outskirts of Kitsk and continues along a valley (**Figure B 8** and **Figure B 9**). During the 2022 fieldwork, no archaeological finds were recorded within the boundaries of DA 006. Note that this SDA is to be significantly reduced due to biodiversity issues and due to its inefficient *remaining* size is suggested to be excluded from the Project (see ESIA Volume 1).

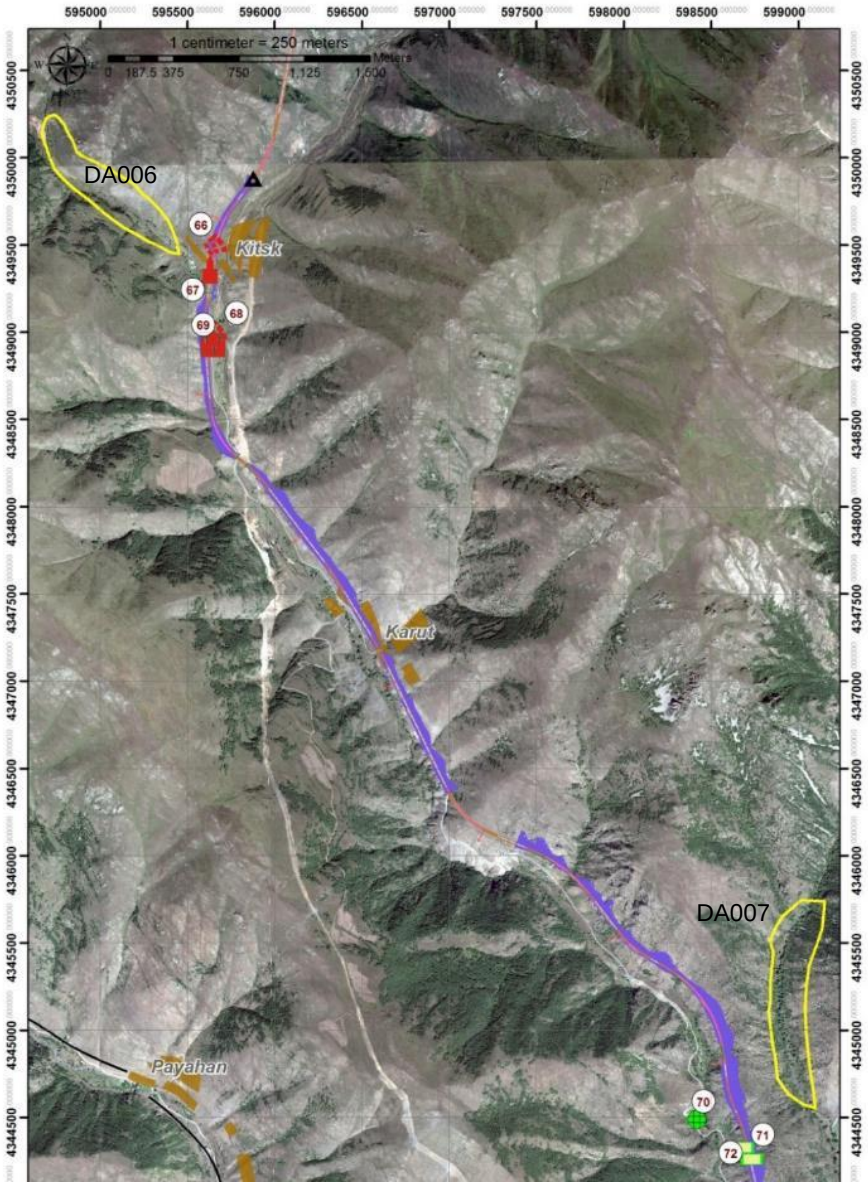


Figure B 8. Locations of the DA006 and DA007 spoil disposal areas and nearby CH sites

Figure B 9. Main view of DA 006 from the south-east

Spoil disposal area DA 007

The area suggested for DA 007 is in the Geghi administrative area, next to the abandoned village of Karut. It is located along a valley south-east from Kitsk (**Figure B 10**). During the ESIA field survey of the area no archaeological finds were recorded within the boundaries of DA 006, except for some interesting structures spreading along the southern boundary of the area (**Figure B 10**). These are possibly the traces of water canals supporting the work of water mills during the late Medieval period. Thus, before this SDA can be used, it will require some mitigation measures to be implemented, i.e., the creation of a buffer zone for protection of the mentioned cultural features and saving them for being directly affected. Note that this site was rejected during the ESIA process due to biodiversity issues and concerns of the local authorities.

a) View of DA 007 from the south (Aerial image)

b) Structures at the southern boundaries of DA 007

Figure B 10. View of spoil disposal area DA007

Spoil disposal area DA 008

The area suggested for DA 008 is within the Lernadzor administrative area. It is located along a valley, north-west from Kavchut village (**Figure B 11** and **Figure B 12**). During the ESIA fieldwork study of the area no archaeological finds were recorded within the boundaries of DA 008. This site was however rejected during the ESIA process due to biodiversity issues and concerns of the local authorities.

Figure B 11. Location of the DA008 spoil disposal areas and nearby CH sites

Figure B 12. Main view of DA 008 from the south-west (Aerial image)

Annex 7. LOCATIONS OF ADDITIONAL PASSAGES FOR CATTLE AS PROPOSED DURING THE INTERVIEWS AND CONSULTATIONS AT THE AFFECTED SETTLEMENTS

As additional passages require adjustments or changes to design, the following categorisation of changes is used and further work between the designers and local communities is required (see ESIA Volume 1 for explanations):

Category 0 (Cat 0)	No changes, usage of nearest structures is proposed as is, additional stakeholder engagement will be required (where indicated as *)
Category 1 (Cat 1)	mitigation can be implemented without changing the alignment or design criteria.
Category 2 (Cat 2)	mitigation can be implemented by changing the alignment but without changing the design criteria (e.g., changes to speed or gradient)
Category 3 (Cat 3)	mitigation can be implemented only after changing the design criteria (change of speed, gradient), then changing a vertical or horizontal alignment

Reason for additional proposals: statements by the local residents that they need the crossing for maintaining their agricultural activities and indications of the potential locations on the map.

Additional cattle crossing proposed	**Existing solutions in the 2019 Detailed Design**				**Solutions as of 27 Feb 2023 - to be included in the ToR for designers**
Station	Station	Evaluation comments per design	Fulfilled by design?	If no, recommendations of the technical team	
	2+700 KM	Cattle Crossing (CC001) 5.0x3.0m, L = 35.11m	no	Provision of extra cattle crossing at km 4+675 recommended	Leave the envisioned cattle crossing at 2+700 as it is
4+675 KM	4+760 KM	Tunnel portal (T01 North portal)	no	Consider enlarging planned culvert at km 4+375 to enable a cattle crossing	Cat 1 – arranging a crossing too close to the tunnel portal is unsafe (also need to lift the tunnel), so it is only possible to enlarge the closest planned culvert*
9+305 KM	9+296 KM	CW Culvert (CB022) 1.5mx1.5m	no	Consider enlarging planned culvert at km 9+296 to enable a cattle crossing	Cat 1 - enlarging the closest planned culvert
9+770 KM	9+527 KM	CW Culvert (CB022) 1.5mx1.5m	no	Cattle crossing at 9+770 is difficult due to the emergency ramp; consider enlarging planned culvert at km 9+527 to enable cattle crossing or provide an extra underpass at km 9+650.	Cat 1 - enlarging the closest planned culvert
	12+223 KM	Cattle crossing (CC005) 5.0x3.0m, L = 25.10m	no		The envisioned cattle crossing at 12+223 will remain as it is
13+300 KM	13+361 KM	CW Culvert (CB030) 1.5mx1.5m	no	Consider enlarging planned culvert at km 13+361 to enable a cattle crossing	Cat 1 - enlarging the closest planned culvert
15+890 KM	15+900 KM	Bridge (BR007) 15+769 - 16+015 KM, 72.0x16.80m max. between two piers	yes	None	Cat 0 - Cattle will pass under the nearest bridge in 10 m
18+700 KM	18+690 KM	CW Culvert (CB044), 1.5x1.5m	no	Consider enlarging planned culvert at km 18+690 to enable a cattle crossing	Cat 1 - enlarging the closest planned culvert
19+350 KM	19+050 KM	Bridge (BR09) 19+034 - 19+136 KM, 42.0mx25.3m max. between two piers	large bridges close by	Check whether bridges are sufficiently close to required cattle crossings	Cat 0 - Cattle will pass under the nearest bridge in 250 m*
19+490 KM	19+600 KM	Bridge (BR010) 19+624 - 19+708 KM, 28.0x20m max. between two piers			Cat 0 - Cattle will pass under the nearest bridge in 100 m*
20+255 KM	20+218 KM	CW Culvert (CB046), 1.5x1.5m	no	Consider enlarging planned culvert at km 20+218 to enable a cattle crossing	Cat 1 - enlarging the closest planned culvert
20+375 KM	20+497 KM	CW Culvert (CB047), 1.5x1.5m	no	Consider whether planned culvert at km 20+497 is sufficiently close and if yes,	Cat 1 - enlarging the closest planned culvert

Additional cattle crossing proposed	Existing solutions in the 2019 Detailed Design				Solutions as of 27 Feb 2023 - to be included in the ToR for designers
Station	Station	Evaluation comments per design	Fulfilled by design?	If no, recommendations of the technical team	
				should be enlarged to enable a cattle crossing	
20+865 KM	20+642 KM	CW Culvert (CB048), 1.5x1.5m	no	Consider whether planned culvert at km 20+642 is sufficiently close and if yes, should be enlarged to enable a cattle crossing	Cat 1 - enlarging the closest planned culvert and explaining to the villagers that it is 225 m from the desired location*
21+535 KM	21+100 KM	Bridge (BR011) 20+968 - 21+100 KM, 48x26m max. between two piers	Large bridge is likely too far away and not useful given the topography	Consider possibility of adapting SR012 for use as a cattle crossing	Cat 1 - enlarging the closest planned culvert in 500m* OR
	21+800 KM	Sec, Road SR012			Cat 1: place the SR above the alignment (minor modification), but it will be in 250 m from the desired location though*
22+135 KM	22+009 KM	CW Culvert (CB052), 1.5x1.5m	Sec, Road SR012 provides a crossing to the required area	Consider possibility of adapting SR012 for use as a cattle crossing	Cat 1: Adaptation of SR012 for use as a cattle crossing
22+515 KM	22+476 KM	CW Culvert (CB053), 1.5x1.5m	no	Consider enlarging planned culvert at km 22+476 to enable a cattle crossing	Cat 1 - enlarging the closest planned culvert
22+900 KM	22+677 KM	CW Culvert (CB054), 1.5x1.5m	BR012 is sufficiently sized and close	None	Cat 0 - BR012 is in 200m and cattle can pass under it*
23+800 KM	23+710 KM	CW Culvert (CB58), 1.5x1.5m	no	Consider enlarging planned culvert at km 23+710 to enable a cattle and pedestrian crossing	Cat 1 - enlarging the closest planned culvert in 50-90 m to enable a cattle and pedestrian crossing
25+780 KM			BR015 is sufficiently sized and covers this location	None	Cat 0 - BR015 is in 20m and cattle can pass under it
26+625 KM		Bridge (BR016) 26+257 - 26+504 KM, 72x34m between two piers	BR016 is sufficiently sized and covers this location; but re-routing of access tracks required		Cat 0 - BR016 is in 100m and villagers and cattle can pass under it*
35+975 KM	36+350 KM	Bridge (BR017) 36+315 + 36+537 KM, 66x20m between two piers	BR017 is sufficiently sized and close	None	Cat 0 - BR017 is in 400m and cattle can pass under it*
44+690 KM			no	Location not considered appropriate for a cattle crossing. The road is cut into the side of a steep slope.	no options - unless the southern part is lowered - CAT 3

Annex 8. LOCATIONS OF PEDESTRIAN CROSSINGS AS PROPOSED DURING THE INTERVIEWS AND CONSULTATIONS AT THE AFFECTED SETTLEMENTS

As additional pedestrian crossings require adjustments or changes to design, the following categorisation of changes is used and further work between the designers and local communities is required (see ESIA Volume 1 for explanations):

Category 0 (Cat 0)	No changes, usage of nearest structures is proposed as is, additional stakeholder engagement will be required (where indicated as *)
Category 1 (Cat 1)	mitigation can be implemented without changing the alignment or design criteria.
Category 2 (Cat 2)	mitigation can be implemented by changing the alignment but without changing the design criteria (e.g., changes to speed or gradient)
Category 3 (Cat 3)	mitigation can be implemented only after changing the design criteria (change of speed, gradient), then changing a vertical or horizontal alignment

Reason for proposals: statements by the local residents that they need the crossing for maintaining their daily activities and indications of the potential locations on the map.

Pedestrian crossings	**Existing solutions in the 2019 Detailed Design**				**Solutions as of 27 Feb 2023 - to be included in the ToR for designers**
Station	Station	Evaluation comments per design	Fulfilled by design?	If no, recommendations of the technical team	
21+735 KM	21+844 KM	CW Culvert (CB051), 3.0x3.0m	Pedestrian crossing cannot be provided at a grade due to highway speed	Walkway along SR012 should be provided	Cat 1 - provide a walkway along SR 012 (from 21+800 KM to the 21+735 KM - the needed location) *
23+330 KM	23+100 KM	Bridge BR012 23+065 - 23+221KM, 66x13m between two piers	Pedestrian crossing cannot be provided at grade due to highway speed	None	Cat 0 - BR012 is in 230m and villagers can pass under it*
23+640 KM	23+710 KM	CW Culvert (CB58), 1.5x1.5m	no	Consider enlarging planned culvert at km 23+710 to enable a cattle and pedestrian crossing	Cat 1 - enlarging the closest planned culvert in 50-90 m to enable a cattle and pedestrian crossing
23+650 KM	23+710 KM	CW Culvert (CB58), 1.5x1.5m	No	Consider enlarging planned culvert at km 23+710 to enable a cattle and pedestrian crossing	Cat 1 - enlarging the closest planned culvert in 50-90 m to enable a cattle and pedestrian crossing
23+965 KM	24+100 KM	Bridge (BR013) 24+041 - 24+143 KM, 42x20m between two piers	BR013 is sufficiently sized and close	None	Cat 0 - BR013 is in 135m and villagers can pass under it*
24+480 KM	24+100 KM	Bridge (BR013) 24+041 - 24+143 KM, 42x20m between two piers	No, BR013 too far away.	Consider enlarging planned culvert at km 24+400 or providing an alternative pedestrian crossing possibility	Cat 1 - enlarging the closest planned culvert (in 80m) to enable a pedestrian crossing
24+850 KM	24+855 KM	CW Culvert (CB062), ? x1.5m	BR014 is sufficiently sized and close	None	Cat 0 - BR014 is in 250m and villagers can pass under it*
25+190 KM	25+100 KM	Bridge (BR014) 25+136 - 25+250 KM, 48x24m between two piers	BR014 is sufficiently sized and covers this location	None	Cat 0 - BR014 is in 100m and villagers can pass under it*
25+350 KM			No, and track up the hillside is not considered in the design	Alternative vehicular access from BR015 should be considered.	Cat 0 - BR014 is in 250m and villagers can pass under it*
25+575 KM	25+800 KM	Bridge (BR015) 25+730 - 25+886 KM, 66x24m between two piers	BR015 is sufficiently sized and close	None	Cat 0 - BR015 is in 25m and villagers can pass under it*
26+575 KM	26+250 KM	Bridge (BR016) 26+257 - 26+504 KM, 72x34m between two piers	BR016 is sufficiently sized and covers this location; but re-routing of access track required	Area likely to be significantly disturbed during construction; re-routing of access track through BR016 should be considered	Cat 0 - Area likely to be significantly disturbed during construction; re-routing of access track through BR016 should be considered

Annex 9. CH SITE-SPECIFIC MITIGATION MEASURES AND ESTIMATED BUDGET AND TIMING

NB: Use of non-intrusive methods might be considered instead of trial trenching.

Site	CH units	Type of the CH monument	Location, point	Potential to be impacted	CH code from the State List of Monuments / CH Status	Potential importance	Mitigation measures	Estimated budget, USD	Timing, months
1	1	Natural monument	km 1.4+50	likely	newly discovered	local	1. Relocate next to the proposed road as an aesthetic-decorative monument	4,000.00	less than 1
2	2	Shrine-sanctuary “Stephan Ukht”	km 2.3+20	likely	newly discovered	regional	1. Develop and implement protection measures to avoid damage during construction works. 2. The earthworks should be performed under the supervision of an Cultural Heritage Expect (CH Monitor). 3. Arrange an alternative temporary access to the shrine for the locals. 4. Arrange a fencing or other protection for the site ensuring the buffer zone that will be determined by the CH Expert / Monitor / state bodies.	2,000.00	N/A
3	3-15	Settlement and tomb field	km 2.5+50 - km 3.7+50	likely	8.6.4.1	national	1. Complete trial trenching (i.e., test excavation); 2. Plot the impacted area; 3. Consider if the change of embankment configuration can exclude impacts; 4. If not or partially possible, identify surface and volume of the required safeguard excavations; 5. Complete safeguard excavations	180,000.00	4 to 6
4	16	Section of diatomite origin lacustrine sediments 1	km 4.6+00	likely	newly discovered	local	1. Develop and implement special protection measures to avoid damage during construction works (e.g., fencing, speed limits)	2,500.00	N/A
5	17	Section of diatomite origin lacustrine sediments 2	km 4.9+50	likely	newly discovered	local	1. Research impacts and protect the basal part of the sediment that will be opened during the tunnel construction	2,500.00	less than 1

Site	CH units	Type of the CH monument	Location, point	Potential to be impacted	CH code from the State List of Monuments / CH Status	Potential importance	Mitigation measures	Estimated budget, USD	Timing, months
6	18-20	Tomb field	km 5.1+00 - km 5.5+50	likely	newly discovered	national	1. Complete trial trenching (i.e., test excavation); 2. Plot the impacted area; 3. Identify surface and volume of the required safeguard excavations; 5. Complete safeguard excavations to preserve the affected units	60,000.00	1 to 2
7	21	Unclassified structure remains 1	km 6.0+00	likely	newly discovered	national	1. Complete trial trenching; 2. Plot the impacted area; 3. Identify surface and volume of the required safeguard excavations; 4. Complete safeguard excavations to preserve the affected units	30,000.00	less than 1
8	22	Natural monument 1	km 6.0+40	unlikely	newly discovered	local	1. Consider the embankments of the secondary road can be adjusted. 2. If not, relocate next to the proposed road as an aesthetic-decorative monument	4,000.00	less than 1
9	23	Unclassified structure remains 2	km 6.5+50	likely	newly discovered	national	1. Complete trial trenching; 2. Plot the impacted area; 3. Identify surface and volume of the required safeguard excavations; 4. Complete safeguard excavations to preserve the affected units	25,000.00	less than 1
10	24	Structure remnants or settlement 1	km 6.8+50	likely	newly discovered	national	1. Complete trial trenching (i.e., test excavation); 2. Plot the impacted area; 3. Consider if adjusting embankments can help avoid some impacts. 4. Based on this, identify surface and volume of the required safeguard excavations; 5. Complete safeguard excavations	25,000.00	less than 1
11	25	Tomb field or cemetery	km 7.0+20	likely	newly discovered	national	1. Complete trial trenching (i.e., test excavation); 2. Plot the impacted area with the focus on southern part of the tomb field; 3. Identify surface and volume of the	45,000.00	3 to 6

Site	CH units	Type of the CH monument	Location, point	Potential to be impacted	CH code from the State List of Monuments / CH Status	Potential importance	Mitigation measures	Estimated budget, USD	Timing, months
							required safeguard excavations; 4. Complete safeguard excavations		
12	26	Structure remnants or settlement 2	km 7.6+30	likely	newly discovered	national	1. Complete trial trenching (i.e., test excavation); 2. Plot the impacted area; 3. Consider the adjustment of a bridge pillar can help avoid impacts; 4. If not or partially, identify surface and volume of the required safeguard excavations; 5. Complete safeguard excavations; 6. Develop and implement special protection measures	35,000.00	2 to 4
13	27-29	Structure remnants in shape of walls and tombs 1	km 8.7+90 - km 8.8+30	likely	newly discovered	national	1. Complete trial trenching (i.e., test excavation); 2. Plot the impacted area; 3. Identify surface and volume of the required safeguard excavations; 5. Complete safeguard excavations	45,000.00	less than 1
14	30	Natural monument 2	km 9.0+30	likely	newly discovered	local	1. Remove and place next to the proposed road as an aesthetic-decorative monument	4,000.00	less than 1
15	31	Structure remnants in shape of walls and tombs 2	km 9.0+90	likely	newly discovered	national	1. Develop and implement special protection measures during the construction, especially the earthworks.	13,000.00	N/A
16	32	Natural monument 1	km 9.2+20	unlikely	newly discovered	local	N/A		N/A
17	33	Natural monument 2	km 9.2+50	likely	newly discovered	local	1. Consider if adjustment of the embankment can help avoid impacts. 2. If not, remove and place next to the proposed road as an aesthetic-decorative monument	5,000.00	less than 1
18	34	Wall structure remnants near Natural monument 2	km 9.2+50	likely	newly discovered	national	1. Complete trial trenching; 2. Plot the impacted area; 3. Identify surface and volume of the required safeguard excavations or needed protection measures; 4. Complete safeguard excavations	30,000.00	less than 1

Site	CH units	Type of the CH monument	Location, point	Potential to be impacted	CH code from the State List of Monuments / CH Status	Potential importance	Mitigation measures	Estimated budget, USD	Timing, months
							or implement the protection measures		
19	35	Natural monument 3	km 9.4+00	unlikely	newly discovered	local	N/A		
20	36	Remnants of a truncated settlement	km 9.5+00	likely	newly discovered	national	1. Complete test excavation in one part of the site that is closer to the road; 2. Plot the impacted area; 3. Identify surface and volume of the required safeguard excavations or needed protection measures; 4. Complete safeguard excavations or implement the protection measures	25,000.00	less than 1
21	37	Natural monument 3	km 9.7+00	likely	newly discovered	local	1. Consider if adjustment of the embankment can help avoid impacts. 2. If not, remove and place next to the proposed road as an aesthetic-decorative monument	5,000.00	less than 1
22	38	Section of diatomite origin lacustrine sediments	km 10.6+00	likely	newly discovered	local	1. Conduct a study of the basal part of the sediment that may open during the construction works. 2. Develop and implement protection measures	3,000.00	less than 2
23	39	Surface finds around wall structure remnants	km 10.8+90	likely	newly discovered	national	1. Perform test excavations to clarify historical-cultural value of the structures. 2. Develop and implement mitigation measures (e.g., safeguard excavations or needed protection measures)	35,000.00	less than 1
24	40	Wall structure remnants	km 11.2+30	likely	newly discovered	national	1. Perform test excavations to clarify historical-cultural value of the structures. 2. Develop and implement mitigation measures (e.g., safeguard excavations or needed protection measures)	35,000.00	1 - 2

Site	CH units	Type of the CH monument	Location, point	Potential to be impacted	CH code from the State List of Monuments / CH Status	Potential importance	Mitigation measures	Estimated budget, USD	Timing, months
25	41	Medieval village remains and Spring-monument	km 11.9+00	likely	newly discovered	National (spring is local)	1. Complete trial trenching; 2. Plot the impacted area; 3. Identify surface and volume of the required safeguard excavations; 4. Complete safeguard excavations and retain the spring and access to it, if possible	45,000.00	1 - 3
26	42-45	Wall structures preserved in the area of old gardens	km 12.1+00 - km 12.5+90	likely	newly discovered	national	1. Perform test excavations to clarify historical-cultural value of the structures. 2. Develop and implement mitigation measures (e.g., safeguard excavations or needed protection measures)	40,000.00	less than 1
27	46	Section of diatomite origin lacustrine sediments	km 12.5+90	likely	newly discovered	local	1. Conduct a study to identify protection measures required to preserve the sediments during construction. 2. Develop and implement protection measures	3,000.00	?
28	47-49	Vorotan (Vorotn) Medieval village remains and cemetery, Bronze-Iron Age tomb field	km 13.2+40 - km 13.5+50	likely	8.78.2 and 8.78.2.1	national	1. Complete field work to determine the number of and to remove all the gravestones and the stellae; 2. Complete trial trenching and plotting of the impact area; 3. Consider if the change of embankment configuration can reduce impact; 4. Determine the actual surface and volume of the required safeguard excavations to excavate the graves and tombs and relocate to another place, 5. Complete safeguard excavations.	130,000.00	4 to 6
29	50	Flint raw-material source for making stone tools	km 15.2+00	likely	newly discovered	national	1. Develop and implement protection measures required to preserve the site during construction	2,000.00	less than 1
30	51	Structure remnants in shape of tombs	km 15.6+60	likely	newly discovered	national	1. Perform test excavations to clarify historical-cultural value of the structures.	25,000.00	less than 1

Site	CH units	Type of the CH monument	Location, point	Potential to be impacted	CH code from the State List of Monuments / CH Status	Potential importance	Mitigation measures	Estimated budget, USD	Timing, months
							2. Develop and implement mitigation measures (e.g., safeguard excavations or needed protection measures)		
31	52-53	Shrine (church) ruins, cemetery and khachkars (Parvants)	km 17.6+90	likely	8.31.3	national	1. Change the configuration of the embankment. 2. If not possible to change, complete plotting for safeguard excavations; 3. Excavate the whole site and reinstall it in the vicinities	165,000.00	1 to 3 (if the excavation will be required)
32	54	"Arzuman's bridge" and Medieval road	km 18.6+00	unlikely	8.31.10	national	N/A		
33	55	Enclosed khachkar or "Loriki khach (Lorik's Cross)"	km 22.2+00	unlikely	8.41.2.1	national	N/A		
34	56	Cave complex carved in a section of diatomite origin lacustrine sediments	km 22.7+50	likely	newly discovered	national	1. Perform test excavations to identify the site's borders and size. 2. propose and implement mitigation measures (either safeguard excavation or special protection measures)	20,000.00	1 to 2
35	57	Mardakayr Medieval village remains and Tsaru S. Hovhannes church, tomb field	km 23.1+60	likely	8.41.6 and 8.41.4	national	1. Carry out the construction works under the supervision of an archaeologist. 2. Perform test excavations to identify the site's borders and size. 3. Consider an adjustment of an embankment. 4. Propose and implement mitigation measures (either safeguard excavation or special protection measures)	125,000.00	N/A
36	58	Medieval village remains	km 23.3+90	likely	newly discovered	national	1. Develop and implement protection measures to avoid damage during construction works. 2. The earthworks should be performed under the supervision of an archaeologist.	14,000.00	N/A

Site	CH units	Type of the CH monument	Location, point	Potential to be impacted	CH code from the State List of Monuments / CH Status	Potential importance	Mitigation measures	Estimated budget, USD	Timing, months
37	59	Section of diatomite origin lacustrine sediments	km 23.9+50	unlikely	newly discovered	local	N/A		
38	60	Spring-monument	km 25.7+00	unlikely	-	regional	N/A		
39	61	Surface finds at the base of a hill with an Iron Age fortress	km 25.6+60	likely	newly discovered	national	1. Perform test excavations to identify the site's borders and size. 2. propose and implement mitigation measures (either safeguard excavation or special protection measures)	30,000.00	1 to 2
40	62	Cave complex carved in a section of diatomite origin lacustrine sediments	km 25.7+00	likely	newly discovered	national	1. Conduct test excavations. 2. Consider if adjustments to the embankment can reduce impacts. 3. Complete safeguard excavations	10,000.00	1 to 3
41	63	"Sagu ghala" fortress	km 26.4+90	likely	8.71.1	national	1. Field work to suggest possible re-locations of the bridge's pillar. 2. Plot the remaining impacted area; 3. Conduct safeguard excavations at some parts of the site	135,000.00	1 to 2
42	64	Natural monument complex 1	km 26.9+20	likely	newly discovered	local	The monument cannot be relocated and preserved. No mitigation is possible		
43	65	Natural monument complex 2	km 26.9+90	likely	newly discovered	local	The monument cannot be relocated and preserved. No mitigation is possible		
44	66	Medieval village remains 1	km 36.1+40	likely	newly discovered	national	1. Conduct trial excavations at the relevant parts of the site. 2. Plot the impact area. 3. Identify surface and volume of the required safeguard excavations. 4. Complete safeguard excavations	35,000.00	1 to 3
45	67	Church	km 36.3+00	likely	8.112.1.2	national	1. Complete trial trenching to identify and map graves, if any, and to determine exact protection measures for the church and graves; 2. Move the pillars away from the church as much as technically feasible; 3. Establish protection measures for the church and graves, for instance	2840,000.00	1 to 3

Site	CH units	Type of the CH monument	Location, point	Potential to be impacted	CH code from the State List of Monuments / CH Status	Potential importance	Mitigation measures	Estimated budget, USD	Timing, months
							fencing or else; 4. complete safeguard excavations = relocation of (some) graves, if required		
46	68	Medieval village remains 2	km 36.6+50	likely	8.112.1.1	national	1. Complete trial trenching and map affected areas; 2. Establish special protection measures for the construction stage	12,000.00	N/A
47	69	Medieval and modern cemetery	km 36.7+20	likely	8.112.1.1.1	national	1. Complete trial trenching and map affected areas; 2. Establish special protection measures for the construction stage	10,000.00	N/A
48	70	Siliceous limestone raw-material source 1	km 42.3+00	unlikely	newly discovered	local	N/A		
49	71	Natural monument 1	km 42.5+70	likely	newly discovered	local	The monument cannot be relocated and preserved No mitigation is possible.		
50	72	Natural monument 2	km 42.6+40	likely	newly discovered	local	The monument cannot be relocated and preserved. No mitigation is possible.		
51	73	Siliceous limestone raw-material source 2	km 47.0+00	likely	newly discovered	local	1. Consider if adjustments to the embankment can help avoid impact. 2. Develop and implement special protection measures	3,000.00	N/A
52	74	Structure remains (Medieval village remains)	km 48.6+00	likely	newly discovered	national	1. Complete trial trenching; 2. Plot the impacted area; 3. Identify surface and volume of the required safeguard excavations and needed protection measures; 4. Complete safeguard excavations and implement the protection measures	35,000.00	1 to 3
53	75	Cave-complex Lernadzor-1	km 53.2+20	likely	newly discovered	national	1. Perform text excavations. 2. Complete a total excavation as the relocation of the site is not possible	25,000.00	2 to 4
54	76	Tomb field	km 53.3+60	unlikely	newly discovered	national	N/A		
DA 001	Several historical-cultural sites are found	Aghitu	likely	Bordering on unit 21	n/a	1. Mitigation as proposed for Unit 21 above.		Budget of unit 21	1

Site	CH units	Type of the CH monument	Location, point	Potential to be impacted	CH code from the State List of Monuments / CH Status	Potential importance	Mitigation measures	Estimated budget, USD	Timing, months
	at the south-western boundary of DA 001					2. If needed, additional fencing at the buffer zone for the CH sites before any spoil disposal			
DA 002	Potentially Bronze-Iron Age period burial mounds	Aghitu	likely	Bordering on units 28, 31, 34, 36, and 37	n/a	Additional investigation will be carried out together additional studies recommended for units 28, 31, 34, 36, and 37 (see above). If safeguard excavations are required, then additional budget will apply as indicated to the right.		Additional budget of 6,000	1 to 2
DA 003	Potential for of diatomite lacustrine deposits of Pleistocene	Darbas area	likely	Not yet researched extensively	n/a	Complete trial trenching / additional investigation		2,000	1
DA 004	Potential for of diatomite lacustrine deposits of Pleistocene	Darbas area	likely	Not yet researched extensively	n/a	Complete trial trenching / additional investigation		2,000	1
DA 005	Potential for of diatomite lacustrine deposits of Pleistocene	Darbas area	likely	Bordering on units 52-53	n/a	Additional investigation will be carried out together with the mitigation actions for units 52-53 (see above).		Budget of units 52-53	1 to 2
	Additional SDA proposed in	Shenatagh Valley	n/a	Not yet researched	n/a	Cultural heritage field survey		3,000	1
	Additional SDA proposed in	Qirs Valley	n/a	Not yet researched	n/a	Cultural heritage field survey		3,000	1
							Total estimated budget, USD	**1,779,000.00**	